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Panel Data Analysis on the Usage of Venture Capital Financing and Firms' Financial Performance: The Case of Small and Medium Enterprises in Nairobi City County, Kenya

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Abstract:
SMEs play a critical role in the development of most economies and their success has both political and economic ramifications for most governments globally. Successful SMEs have been associated with employment creation and therefore their growth contributes to the overall Gross Domestic Product (GDP) of most economies. However, SMEs growth is dependent on their financial performance. Venture capital provides capital to start-ups and SMEs which have shown growth potential. In light of the above, data was collected from a sample of 51 venture capital-backed SMEs. The study used firm level panel data of the venture capital-backed SMEs in Nairobi City County, Kenya for a period of five years from 2013-2017. Huasman test was done to determine the most specific and appropriate test for each study model specification. Both ROA and TAP were used as dependent variables while venture capital financing methods, management cost of venture capital and venture capital management support were independent variables. The size of SMEs and age were used as control variables. The study used random effects for the analysis of ROA and fixed effect for TAP as guided by the results of Huasman tests. The study results showed that $R^2 = .1051$, indicating that 10.51% of the variance in SMEs financial performance (TAP) is significantly explained by venture capital financing. Therefore, SMEs financed by venture capital are likely to register higher financial performance as measured by TAP. Further, results of regression analysis revealed that venture capital financing methods (p> .05), cost of venture capital (p>.05) and venture capital management support (p>.05) were not statistically significant and thus do not have significant effect on SMEs financial performance as measured by ROA. Management cost of venture capital, however, was found statistically significant (p<.05). The results also revealed that the size of an SME (firm size) has statistically significant effect on SMEs performance (p<.05). In conclusion, it is evident that management cost of venture capital is positively associated with financial performance as measured by TAP. The result suggests that cost of venture capital is responsible for the development of technical and managerial skills critical for the internal operation of the business and this immensely contributes to better financial performance of venture capital –backed SMEs. Therefore, SMEs should embrace good financial management practices which result in higher return on assets and total asset productivity.

Keywords: Venture capital financing, management cost of venture capital, financial performance, return on asset (ROA) and total asset productivity (TAP)

1. Introduction

The focus on the usage of a financing model that facilitates firms' growth has received increasing attention globally given that SMEs good financial performance support the growth of Gross Domestic Products (GDP) of most economies. This is because the financial performance of a firm is associated with various growth objectives of many small and medium enterprises globally. Fledgling firms like Small and Medium Enterprises (SMEs) are viewed as carriers of national visions of most economies because of the economic impact, especially on employment creation in developing economies. A number of studies (Quatraro & Vivarelli, 2018; Maad & Liedholm, 2008) contend that SMEs have been considered as main drivers of employment generation hence the focused on their performance. Usage of venture capital leading to adherences of good venture capital financing practices is one of the key catalysts to SMEs efficiency and growth. Therefore, submitting to good use of venture capital and structures will not only aim at assisting SMEs in better monitoring and effective control of business, but will also ensure a long-term enhancement of firm's financial performance and sustainability (Ehikioya, 2009).

According to Giuliano (2018), measurements of financial performance against a common standard are incredibly valuable and rewarding; they show how a firm learns about its strengths, weaknesses and opportunities for growth. As a business practice, measuring the financial performance of an enterprise against other similar businesses is a critical way to

ensuring success. It is imperative that venture capital backed SMEs know the effect of venture capital financing usage on firm's financial performance standards. Financial benchmarks exist in the venture capital industry and their usage is critical for SMEs growth (Memba, Gakure and Karanja, 2012).

Kenya is rated as one of the fastest growing countries in venture capital financing in Africa. According to African Private Equity and Venture Capital Association (AVCA 2020) report, Kenya, which accounted for 18% of the $ 3.9 billion total deals in a five-year period from 2014 to 2019, is the second leading country in venture capital financing in Sub Saharan Africa after South Africa which accounts for 21% for venture capital deals. This good performance by Kenya has attracted many foreign venture capital firms wishing to invest in Nairobi City County, taking advantage of the County's economic hub, good infrastructure network and educated human capital. However, much of the growth is attributable to the agriculture and service sectors (IFC, 2019).

In Kenya, SMEs employ more than 80% of the working population and play a critical role in its economic growth and development strategies (ITC, 2019). Nevertheless, the share of the SMEs driven sectors in the overall economy of Kenya is at lower level and can be referred to as a shallow financial market (IMF, 2007). Despite the low development of SMEs performance in Kenya, extant literature, however, shows a strong link between firms' financial performance development and economic growth of a country. Countries with better functioning financial performance of its strategic sectors or institutions grow faster (Levine, 2005). In Kenya, considering its notable contribution to economic growth, SMEs sector performance has got government attention for more structural transformation and support. For instance, government support measures to spur the performance of SMEs sector by having created cheap credit funds such as Uwezo Fund, Women and Youth Enterprises Fund. The creation of these fundshas not yet yielded the much-yearned SMEs financial performance and subsequent growth of SMEs. Lack of critical conceptualization of financial performance measures and overlooking the implication of financial ratios by newly formed firms have contributed to the 'death' of most nascent companies (Ongore & Kusa, 2012).

Empirical literature shows that the liberalization measures can contribute to enhance deepening of the sector and ensuring efficient allocation of resources (McKinnon 1973; Shaw 1973). In addition, a report by the Kenya National Bureau of Statistics (2016) on Micro, Small and Medium Establishment (MSME) indicates that an economic plan and strategies to support the financial performance of SMEs has not born desired fruit to augment their contribution to the economy. There has also been various policy measures intended to stimulate and enhance the financial performance of the start-up SMEs without much success. Nevertheless, the impact of venture capital financing and factors on the performance of the SMEs has not adequately been analyzed.

1.1. Problem Statement

Quite a number of institutions are faced with the problem of poor financial performance. The problem is exacerbated when it comes to fledgling start-ups as majority lack basic knowledge in book keeping and financial management. In this regards, financial performance indicators are rarely given consideration by a number of nascent entrepreneurial firms. Owners, managers and financiers of these enterprises are faced with various challenges relating to financial performance and subsequently firms' growth (Musibah, 2014). The growth of SMEs is dependent upon the financial performance. Therefore, firms' ability to implement good industry practices as regards to financial performance is key for the usage of venture capital fund. Adherence to financial principles and practices is one of the key catalysts to organizational efficiency and success (Owiredu & Kwakye, 2020). According to Memba, Gakure and Karanja (2012), SMEs in Kenya have difficulties in evaluating their financial performance and thus they hardly grow beyond their start-up stage. Other studies have also documented positive correlation between poor financial management and business failures or stagnations (Boru, 2019; Rehman & Rehman; 2013 Ntow-Gyamfi & Laryea- Afoley, 2012; Movasi, Nekoueizadeh, 2012).

Despite the fact that performance of venture capital in Kenya is outstanding in East Africa Region, there is a disconnect between venture capital and the growth of venture capital-backed SMEs in the country (Gucu, Mworia, 2017). Financial performance of firms generally represents an indication whether or not there is value creation during the process of an entrepreneurial activity. The business nature of SMEs is wrought with threat competition and good financial performance indicators are key dashboard signals during the usage of venture capital funds. The study therefore intends to examine if usage of venture capital fund influences the financial performance of venture capital-backed SMEs in Nairobi City County, Kenya.

To achieve this objective, SMEs financial performance is measured using return on assets and return on asset and total assets productivity. Venture capital financing is analyzed based on venture capital financing methods, cost of venture capital and venture capital management support. The study, therefore, bridges this gap and systematically identifies venture capital financing methods that effect the financial performance of SMEs in Nairobi City County using panel data from 2003-2017. The study investigates research hypotheses and then presents the empirical results of venture capital financing model. The model examines three fundamental hypotheses:

- $H0_1$: The use of venture capital financing methods does not have significant effect on the financial performance of SMEs in Nairobi City County
- $H0_2$: The cost of venture capital does not have a significant effect on the financial performance of SMEs in Nairobi City County, Kenya and,
- $H0_3$: Venture capital management support does not have a significant effect on financial performance of SMEs in Nairobi City County, Kenya.

2. Literature Review

The study reviewed a number empirical literature to conceptualize some critical factors and study gaps regarding the variables of the study.

2.1. Venture Capital Financing Methods and Growth of SMEs

In the recent past, various empirical studies on aspects of venture capital firms in availing resources for the growth of fledgling firms in several countries have received considerable attention. Some fundamental and salient features of venture capital financing which characterize its relationship with SMEs are financing methods and its staging structure through sequential rounds. In a study investigating barriers to SMEs innovation capacity in Tanzania, Ndesaulwa, Kikula and Chao (2017) found that with every round of financing, a new venture capital firm would offer new financial resources to SMEs in exchange of a percentage of the equity shares in SMEs governance structure. These rounds ensure continued availability of the working capital for the SMEs. As a result, a good working relationship between venture capitalist and the SMEs is cemented through exchange of equity shares. The study findings reveal that rounds of financing are critical for a firm's growth because they also redefine the governance structure of the SMEs they fund in addition to provision of working capital.

Catalini, Guzman and Stern (2017) investigated venture growth with or without venture capital financing in an imperfect capital market where a venture capitalist encounters the challenges of information asymmetry. Active monitoring, staged funding, and syndication were found to alleviate the problem of moral hazard. The net effect was risk reduction in the portfolio of venture capital. Further, the study found that staged funding acts as successful device in controlling information asymmetries. Subsequently, the study concluded that syndicated funding combined with active monitoring gives a higher profit to the start up. This is attributable to venture capitalists free –riding mechanism in monitoring. The empirical finding by Catalini, Guzman and Stern (2017) shows the existence of information asymmetry in venture capital. In an atmosphere of an imperfect capital market confounded with uncertainty and moral hazard, Wang and Zhou (2012) found out that staged financing method was used by Chinese firms to evaluate the moral hazard. Wang and Zhou further obtained some unique results to create a deeper understanding of the performance of venture capital - backed firms and the role of staged financing. They found that staged financing can achieve high efficiency and play a dual complementary mechanism to contracting while staged financing plays a crucial role in controlling moral hazard.

Syndication involves two or more groups of venture capitalists contribute each proportion of the amount needed to finance a small business (Wagner, 2017). Most financing that involves a syndicate of two or more venture groups, providing availability of more capital for a working capital and follow-on cash needs to one particular entrepreneur has been found to contribute to firm's good financial performance (Xiao, Lawson & North, 2013). In a study of venture capital in Canada with respect to firms that make more or less extensive use of upfront, staged or syndication financing to reduce investment risk, Xia, Lawson and North found that firms try to overcome information asymmetry. Thus, the study found that syndication reduces investment risk more than either upfront or staged financing. This finding is also corroborated by Syed, et al. (2012) in their study of Pakistan firms.

2.2. Cost of Venture Capital and Growth of SMEs

Practical review of a revenue-driven structure such as venture capital financing of start-up firms requires a deep understanding of the costing system analysed using a model. To the extent of conceptualizing the practical aspect of various costs in venture capital financing using an empirical evidence, Shields and Shields (2005) identified some direct and indirect cost variables or drivers of sales revenue of a firm. For revenue drivers, their study considered several characteristics to describe the nature of the relation between the revenue-driver and sales revenue, such as the linearity of the relationship. The study found that some cost variables contribute positively while others negatively to the growth of firms. Subsequently, even though cost containment is vital in venture capital financing with regards to profitability of the SMEs, its primary objective is to foster efficiency and financial performance. Costs containment is primarily a means of directing expenditure at the core business needs (Aruomoaghe & Agbo, 2013), and capital allocation could be supported through the process where management would put some structures in place in order to get optimal returns to capital and subsequently realize some level of growth owing to cost allocation.

A study about Luthuanian SMEs conducted by Savaneviciene, Venckuvience and Girdduaskiene (2015) on 50 companies financed by risk venture capital funds provides a very interesting dimension of the cost of venture capital financing. The study was carried out in the period of the year 2012 to 2013 to establish a possible effect of investment on venture capital after a year of investment with the results of the data reported. Using four key financial indicators as measures of growth of venture capital funded firms with reference to cost of venture capital namely: turnover, solvency ratio, total assets and number of employees, the study found that varying levels of cost of venture capital contributed to different amounts of increased revenues.

Of these, five cases were analysed and the study results implied that venture capital financing could have had some effect on the financial indicators. The results indicated that positive impact on turnover percentage change was noted and this revealed the increase in change was 1200 percent compared to the year before investment. It is worth noting that investments by companies require substantial cost elements in early stage of the company (when a company is incorporated). From the study, it was clear that the indicators for solvency ratio had increased significantly for three cases. The study concluded that there are positive indications that venture capital financing triggers good financial performance and growth of firms and also inspires entrepreneurship which enhances the competitiveness of start-ups based on varying levels of cost containments.

2.3. Venture Capital Management Support and Growth of SMEs

Financial and human resource capital are two important ingredients that play a crucial role in venture capital financing. Beck and Demirguc -Kunt (2006) study of 76 firms in Australia found that capacity building of a firm's stakeholders is fundamental for revenue growth not only of the organization but also of the global economy. Dagogo and Ollor (2009) while studying 120 SMEs in Ghana used business development, project appraisal and due diligence, monitoring and supervision and strategic management as major components of management support. Dagogo and Ollor found that technical support comprised training and counseling, lobbying and advocacy, business linkages and networks and engineering and production. They further found that the management support was the major driver for higher performance of venture capital – backed SMEs.

In a recent analysis, Cho and Honorati (2014) study based on 37 firms in Hungary, carried out an impact evaluation comprising types of management support considered key in building and growing a sustainable MSME sector focusing on women managed enterprises. The study found that management support which addresses access to finance by burgeoning entrepreneurs was more effective for women entrepreneurs and existing businesses. The key lesson gleaned was that mere access to credit and loans alone could not automatically guarantee entrepreneurial growth but rather when incorporated with management support. So critical is the incorporation of management support in venture capital that Xiao, Laswson and North (2013) study of SMEs in Canada called it non –financial indicator suitable for measuring a firm's financial performance since management support could be undertaken at all levels of an organization.

According to KPMG and EAVCA (2017), a firm giving both financial and non-financial support will find that their contributions are critical and these enhance the credibility of the firm to the third parties. This aspect of duality in management support lends credence to the venture capitalists promise to provide further nonfinancial assistance to the firms they fund. KPMG and EAVCA study explored the extent of growth of Swedish SMEs supported by the management of venture capital in addition to financing. The study concluded that the venture capitalists would realize certain level of financial loss in the event its functions of undertaking nonfinancial support are not accomplished. Combining financial and non-financial contributions by measuring its return on asset is therefore paramount. The KPMG and EAVCA study results corroborate the findings byMuthee- Mwangi and Ngugi (2014) where a survey among Kenyan firms showed that venture capitalists are actively involved in extending management and technical support to SMEs, they fund which improves firms' financial performance.

Capacity building is a key factor in enhancing financial performance, growth and competitiveness of SMEs in Kenya. This is key particularly to entrepreneurs in Africa where enterprises have remained small over the years (Ongore & Kusa, 2012). Entrepreneurs who start a business are keen to seeing it survive and eventually grow. Various barriers, including financial and non-financial problems, hinder their growth. The non-financial barriers include lack of the necessary skills, knowledge and linkages. Lack of cohesive skills training, a skills training policy and strategy are also some of the growth barriers (Dagogo & Ollor, 2009). Lack of management training in the SME sector is evidently a constraint to financial performance as pointed out by Karuri (1992) where the study finds lack of technical skills and management support limited the growth of all the 67 SMEs studied.

Lee, Kelly, Lee and Lee (2012) study focussed on 20 programmes across Europe specifically capacity building, monitoring and evaluating venture capitalists and SMEs for a period of five years. During the survey, it was found that when investors are trained but not monitored, the investment objectives would take longer to achieve. In the case of SMEs when they were not trained, the outcomes took longer to be evaluated while others were not evaluated at all. The study shows that when evaluation takes longer, this leads to high mortality rate of the SMEs projects and thus does not contribute to growth of firms.

2.4. Financial Performance and Growth of SMEs

While considering the growth of firms, financial performance is an important dimension as it fosters efficiency in the value and manner the firm is being managed. Financial performance refers to how well a facility performs with regards to the utilization of the funds allocated (Giuliano, 2018). According to Firer and William (2003) study, in the traditional view of a firm, it acquires resources from investors, employees and suppliers to generate goods and services for its clients. This view describes financial performance as the firm's financial returns from the consumption of tangible resources. Firer and William found that the firm's objective is the creation of wealth for stakeholders by transforming their stakes into goods/services. Subsequently, the study found that the resource of firms comprises collections of physical and intangible assets and capabilities. This provides a different stake on financial performance. Based on these findings, the study concluded that financial performance is primarily a function of efficient utilization of a firm's assets (both tangible and intangible).

A study conducted by Kaplan and Norton (2004) in United Kingdom found that the resource-based organizations depend on diverse set of capabilities that are distinct but perfectly immobile tangible assets throughout the firms and may include financial assets, plant, equipment, and raw materials. The Kaplan and Norton study used two ratios in analysing a company's performance measures. These were return on assets (profitability ratio) and personnel productivity (productivity ratio) commonly used in comparing a company's financial performance.

A positive relationship between firms' value-added activities and financial performance has been found in a number of studies (Mavridis, 2004; Abdulsalam, 2011; Fathi et al., 2013). The studies reveal that firms depend on a heterogeneous set of resources and capabilities that are distinct throughout the firms. According to Musibah (2011) firms' financial performance (ROA and ROE) plays a major role in providing an explanation of banks growth. Memba, Gakure and Karanja (2013) study's findings on Kenya's SMEs show that there is improvement on financial management when firms

start using venture capital. A study in Ghana (Owiredu & Kwakye, 2020) established that a firm's board size is positively associated with financial performance as measured by both ROE and ROA. Therefore, a number of empirical studies reviewed provide evidence of a positive relationship between firms' value-added activities and financial performance.

3. Methodology

The main objective of this study was to establish the effect of usage of venture capital financing on financial performance of SMEs in Nairobi City County, Kenya and determine if there is a relationship between venture capital financing and SMEs financial performance. To achieve this, the study used explanatory research design. Explanatory research design would help to establish the causal relationship between the variables and show how the study variables are related (Boru, 2019). The target population for the study was 97 SMEs venture capital-backed SMEs which had received venture capital financing for a period of not less than five years in Nairobi City County, Kenya. Purposive sampling was used to get a sample size of 51 SMEs. The SMEs selected had been in existence for at least 10 years and had financial statements for five continuous years from 2013 to 2017 giving a total of 255 observations. The period of data collection lasted for three months. In order to establish the relationship between usage of venture capital financing and performance of SMEs, the study used firm level panel data for the 51-venture capital-backed SMEs in Nairobi City County. The study used primary data which were both quantitative and qualitative.

3.1. Model Specification

In order to establish the effect of usage of venture capital on the performance of venture-capital backed SMEs in Nairobi City County, we formulated the model in the form:

$Per_{it} = \alpha + \beta X_{it} + \varepsilon_{it}$ .... (1)

Where, Per_{it}, represent performance measures for SME i at time t, with i =1.... N, t = 1.... T, α is a constant term, β = coefficient of the explanatory variables, X_{it}= explanatory variables and ε_{it} = the error terms.

Specifically, the study model can be expressed incorporating the study variables as follows:

$ROA_{it} = \alpha + \beta_1 VCFM_{it} + \beta_2 MCVC_{it} + \beta_3 VCMS_{it} + \beta_4 FSIZE_{it} + \beta_5 FAGE_{it} + \varepsilon_{it}$ .... (2)

$TAP_{it} = \alpha + \beta_1 VCFM_{it} + \beta_2 MCVC_{it} + \beta_3 VCMS_{it} + \beta_4 FSIZE_{it} + \beta_5 FAGE_{it} + \varepsilon_{it}$ .... (3)

The definition of the study variables are as follows:

ROA= Return on asset and is measured by the ratio or percentage of net profit before taxes to total assets of an SME.

TAP = Total asset productivity and is measured by the ratio or percentage of net sales to total assets of an SME.

VCFM = Venture capital financing method is measured by type of venture capital financing method used in disbursing funds to SMEs by venture capitalists

MCVC = Management cost of venture capital and is measured by the total amount of capital incurred to meet the management cost of venture capital-backed SMEs

VCMS = Venture capital management support is measured by the number of trainings proffered in a year by the venture capitalists to the employees of the venture capital-backed SMEs

FSIZE = Firm size is the total assets owned by the SME and is measured by the log of total assets of an SME.

FAGE = Age of the firm is measured by the total number of years the SME has been in operation.

4. Findings and Discussions

The study used balanced panel data since it is a more sensitive measurement of changes that had taken place between points in time and was run through Stata Version 14. This yielded results which were more robust, consistent and stable to lend credence to generalization about the study population implying that the sample was more representative.

4.1. Descriptive Statistics

The results of the descriptive statistics for the study are provided on table 1.

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Return on Asset	255	-.080	1.280	.324	.219	.558	.153	.164	.304
Total Asset Productivity	255	.010	1.470	.698	.327	-.499	.153	-.913	.304
Venture Capital Financing Methods	255	1.000	3.000	1.886	.620	.078	.153	-.433	.304
Management Cost of VC	255	.060	12000.00	623.876	1708.256	4.379	.153	20.020	.304
Venture Capital Management Support	255	.000	5.000	1.831	1.487	.683	.153	-.314	.304
Firm Size	255	.840	6.280	3.054	1.038	.239	.153	-.094	.304
Age of the Firm	255	6.000	55.000	14.067	7.879	3.099	.153	12.514	.304
Valid N (listwise)	255								

Table 1: Descriptive Statistics

Table 1 presents results of the descriptive statistics. The skewness statistic shows that the data of the study variables were normally distributed as all except management cost of venture capital had skewness statistic of less than 1. For the performance measures, the minimum and maximum values of return on assets (ROA) were -.080 and 1.280 respectively with a mean of .324 while the standard variation was .219, which was less than 1.000, indicating a little variation in SMEs profits. For total asset productivity (TAP), another performance measure, the minimum and maximum values were 0.010 and 1.147 respectively with a mean value of .698 and the standard variation of .327, also less than 1. This indicated the existence of little variability of efficiency with which the SMEs used their assets to generate sales. The predictor variable of venture capital financing methods and venture capital management support had standard deviations of 0.620 and 1.487 respectively showing slight variability in the management support venture capitalists offer to the SMEs they finance. However, the management cost of venture capital, also a predictor variable, had minimum and maximum values of 0.060 and 12,000 respectively and a standard deviation of 1708.256, indicating a very wide variability of the management cost of venture capital among SMEs. This showed that the management cost of venture capital varied greatly among the SMEs. The mean score representing the firm size, 3.054, suggested that the SMEs owned a sizeable asset base capable of generating better returns while the standard variation of 1.038 indicated little variation in terms of asset possession. On average, the age of the SMEs was 14 years, indicating that SMEs being financed were not relatively young and the standard deviation of 7.879 suggests that that SMEs vary substantially in years of operation and that age could be a consideration in the selection of SMEs being financed by venture capitalists.

4.2. Empirical Results

The study ran two tests to establish the most appropriate for each model equation: The fixed effect model and the random effects model. For ROA, the results of fixed effect are indicated in Table 2.

```
. xtreg ROA VCFM MCVC VCMS FSIZE FAGE, fe

Fixed-effects (within) regression              Number of obs      =        255
Group variable: Venturecode                    Number of groups   =         51

R-sq:                                          Obs per group:
     within  = 0.0467                                       min =          5
     between = 0.0267                                       avg =        5.0
     overall = 0.0247                                       max =          5

                                               F(5,199)           =       1.95
corr(u_i, Xb)  = -0.5046                        Prob > F           =     0.0876

─────────────┬────────────────────────────────────────────────────────────────
         ROA │      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
─────────────┼────────────────────────────────────────────────────────────────
        VCFM │   .0233024   .0441251     0.53   0.598    -.0637104    .1103152
        MCVC │   .0000375   .0000186     2.02   0.045     8.76e-07    .0000741
        VCMS │   .0223396   .0168695     1.32   0.187    -.0109264    .0556055
       FSIZE │  -.1392848   .0652559    -2.13   0.034    -.2679666    -.010603
        FAGE │   .0001329   .0024614     0.05   0.957    -.0047209    .0049866
       _cons │   .6386616   .2224755     2.87   0.005     .1999495    1.077374
─────────────┼────────────────────────────────────────────────────────────────
     sigma_u │  .21765648
     sigma_e │  .12480145
         rho │  .75257404   (fraction of variance due to u_i)
─────────────┴────────────────────────────────────────────────────────────────
F test that all u_i=0: F(50, 199) = 10.66                   Prob > F = 0.0000
```

Table 2: ROA Using Fixed Effect

The results of random effect for ROAis also shown in Table 3

```
Random-effects GLS regression                  Number of obs      =        255
Group variable: Venturecode                    Number of groups   =         51

R-sq:                                          Obs per group:
    within  = 0.0379                                        min =          5
    between = 0.0469                                        avg =        5.0
    overall = 0.0398                                        max =          5

                                               Wald chi2(5)       =       7.25
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =     0.2026

─────────────┬────────────────────────────────────────────────────────────────
         ROA │      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
─────────────┼────────────────────────────────────────────────────────────────
        VCFM │   .0009828   .0306376     0.03   0.974    -.0590658    .0610314
        MCVC │   9.75e-06   .0000126     0.78   0.438    -.0000149    .0000344
        VCMS │   .0080881   .0125254     0.65   0.518    -.0164612    .0326374
       FSIZE │  -.0640823   .0251161    -2.55   0.011    -.1133088   -.0148557
        FAGE │  -.0009979   .0020742    -0.48   0.630    -.0050632    .0030674
       _cons │   .5108193   .1061234     4.81   0.000     .3028213    .7188172
─────────────┼────────────────────────────────────────────────────────────────
     sigma_u │  .18133976
     sigma_e │  .12480145
         rho │  .67858937   (fraction of variance due to u_i)
─────────────┴────────────────────────────────────────────────────────────────
```

Table 3: Roa Using Random Effect

Table 4 shows the results of Huasman test for ROA.

```
. hausman ROA_fixed .

                ―― Coefficients ――
                 (b)          (B)           (b-B)      sqrt(diag(V_b-V_B))
              ROA_fixed    ROA_Random     Difference          S.E.

       VCFM    .0233024     .0009828       .0223196        .0317547
       MCVC    .0000375     9.75e-06       .0000277        .0000137
       VCMS    .0223396     .0080881       .0142515        .0113003
      FSIZE   -.1392848    -.0640823      -.0752026        .0602289
       FAGE    .0001329    -.0009979       .0011308        .0013252

                         b = consistent under Ho and Ha; obtained from xtreg
          B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                        =         7.37
                Prob>chi2 =       0.1943
```

Table 4: Hausman Test for ROA

The study therefore confirmed Random Effects as the appropriate model for ROA. The fixed effect results for total assets productivity are shown in Table 5.

```
. xtreg TAP VCFM MCVC VCMS FSIZE FAGE, fe

Fixed-effects (within) regression            Number of obs      =      255
Group variable: Venturecode                  Number of groups   =       51

R-sq:                                         Obs per group:
     within  = 0.1051                              min =        5
     between = 0.0612                              avg =      5.0
     overall = 0.0579                              max =        5

                                             F(5,199)           =      4.68
corr(u_i, Xb)  = -0.6553                     Prob > F           =    0.0005

─────────────────────────────────────────────────────────────────────────
        TAP    Coef.    Std. Err.      t     P>|t|    [95% Conf. Interval]

       VCFM   .0278416   .0522831     0.53   0.595   -.0752585    .1309416
       MCVC   .0000701   .000022      3.19   0.002    .0000267    .0001135
       VCMS   .0073142   .0199884     0.37   0.715   -.0321021    .0467305
      FSIZE  -.3321322   .0773207    -4.30   0.000   -.4846052   -.1796591
       FAGE   .0018573   .0029165     0.64   0.525   -.0038938    .0076085
      _cons   1.5756     .2636078     5.98   0.000    1.055776    2.095423

    sigma_u  .38576364
    sigma_e  .14787529
        rho  .87188298   (fraction of variance due to u_i)
─────────────────────────────────────────────────────────────────────────
F test that all u_i=0: F(50, 199) = 17.53              Prob > F = 0.0000
```

Table 5: Total Asset Productivity Using Fixed Effect Model

The study also ran the random effects test for total asset productivity as shown in Table 6

```
. xtreg TAP VCFM MCVC VCMS FSIZE FAGE, re

Random-effects GLS regression                Number of obs      =      255
Group variable: Venturecode                  Number of groups   =       51

R-sq:                                         Obs per group:
     within  = 0.0885                              min =        5
     between = 0.0839                              avg =      5.0
     overall = 0.0773                              max =        5

                                             Wald chi2(5)       =    16.94
corr(u_i, X)   = 0 (assumed)                 Prob > chi2        =    0.0046

─────────────────────────────────────────────────────────────────────────
        TAP    Coef.    Std. Err.      z     P>|z|    [95% Conf. Interval]

       VCFM  -.0205967   .0411726    -0.50   0.617   -.1012935     .0601
       MCVC   .000036    .000017      2.13   0.034    2.81e-06    .0000693
       VCMS   .0003127   .016478      0.02   0.985   -.0319836    .032609
      FSIZE  -.1456661   .0367626    -3.96   0.000   -.2177195   -.0736126
       FAGE  -.0007684   .0026482    -0.29   0.772   -.0059588    .0044221
      _cons   1.169406   .150664      7.76   0.000    .8741097    1.464702

    sigma_u  .27893056
    sigma_e  .14787529
        rho  .78060357   (fraction of variance due to u_i)
```

Table 6: Total Asset Productivity Using Random Effects Model

Finally, the study ran the Huasman test for total asset productivity. The results are indicated in Table 7.

```
. hausman TAP_Fixed .

                ——— Coefficients ———
              (b)          (B)          (b-B)        sqrt(diag(V_b-V_B))
           TAP_Fixed    TAP_Random    Difference         S.E.

    VCFM    .0278416    -.0205967      .0484383         .0322234
    MCVC    .0000701     .000036       .0000341         .000014
    VCMS    .0073142     .0003127      .0070015         .0113143
   FSIZE   -.3321322    -.1456661     -.1864661         .068022
    FAGE    .0018573    -.0007684      .0026257         .0012218

                        b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                        =        15.87
                Prob>chi2 =      0.0072
```

Table 7: Hausman Test for Total Asset Productivity

Fixed Effect was confirmed the most specific and appropriate model for TAP.

4.3. Regression Analysis Results
          In order to achieve the objective of the study, a regression analysis was performed. The study had two specific equation models, that is equation 2 and equation 3. For each model, the study performed two tests: Fixed effect, and Random effects test for each equation. These are indicated as shown in Table 2, 3, 5 and 6 above. Huasman test was performed to determine which model is consistent and appropriate for each equation and the results of which are shown in Table 4 and Table 7. Thus, Hasman test results were used to decide whether our study model would be analyzed using either fixed or random effects. The decision criteria; if the result of the Hausman is statistically significant, the study would use fixed effect and if not we would use random effect. In this study, the Huasman test result was not statistically significant for return on asset while it was statistically significant for total asset productivity. The results of Hausman tests are as shown in Table 4 for ROA and Table 7 for TAP.
          Table 3 shows the results of regression analysis using random effects. The results of the analysis reveal that venture capital financing methods ($p > .05$), cost of venture capital ($p > .05$) and venture capital management support ($p > .05$) were not statistically significant and thus do not have significant effect on SMEs financial performance as measured by ROA. The results however show that the size of an SME (firm size) has statistically significant effect on SMEs performance ($p < .05$). The results however indicate that the control variable, size of an SME is negatively related to ROA which is in agreement with the findings of Gozalez, Guzman, Pombo and Trujiilo (2012); Rehman and Rehman (2013). The age of the firm as a control variable was found not to have a significant relationship with RAO and this supports the finding of Owiredu and Kwakye (2020).
          Hausman test for total asset productivity revealed that fixed effect was the most specific and appropriate for equation two (2) of the study model specification. Huasman test result for TAP is shown in Table 7. Therefore, the study analyzed the effects of TAP using fixed effect. The results of which are shown in Table 5, where $R^2 = .1051$, indicating that 10.51% of the variance in SMEs financial performance (TAP) is significantly explained by venture capital financing. Therefore, SMEs financed by venture capital are likely to register higher financial performance as measured by TAP. This study finding is supported by Musibah (2011) and Oriwedu and Kwakye (2020) findings. Venture capital financing method was found not statistically significant ($p > .05$) and thus didn't have a significant relationship with TAP. Management cost of venture capital was found statistically significant ($p < .05$), however, the regression coefficient was extremely low (0.0000701) indicating that an increase by one unit in venture capital cost would cause a paltry0.0000701 increase in financial performance of SMEs as measured by TAP. Venture capital management support was not statistically significant ($p > .05$). Firm size, as was in ROA, was found to be statistically significant ($p < .05$) but was also found to be negatively related to financial performance of SMEs. The outcome of firm size may suggest that small firms are more efficient in their financial performance but as firms grow and become larger and complex, financial efficiency is reduced. The study finding is in agreement with Abbasi and Malik (2015), Quatraro and Vivarelli (2018), Bottazzi, Coad, Jacoby and Secchi (2011) results which found that the negative impact on the initial size of a firm is significantly larger for young firms and that financial performance and subsequently growth of a firm depends negatively on firm size and that the relationship doesn't seem to be linear, with larger firms possibly displaying low variability in their growth dynamic.
          The results on age was not statistically significant ($p > .05$) and that a firm's financial performance is independent of its age. While the study finding is supported by the works of Coad, Segarra and Teruel (2012) and Mabange, Ngorora-Mazimure and Makanyeza (2020) that firm's financial performance does not change with age. Coad, Segarra and Turuel (2015) study also finds that firms financial performance deteriorates with age. Older firms have expected lower asset productivity which lowers profitability.

5. Summary and Conclusions

The study provides empirical evidence of the impact of venture capital financing on SMEs financial performance. The paper analyzed the link between the usage of venture capital financing and firms' financial performance: the case of SMEs in Nairobi City County, Kenya. The study reveals that management cost of venture capital is positively associated with financial performance as measured by TAP. The result suggests that cost of venture capital is responsible for the development of technical and management skills critical for the internal operation of the business and this immensely contributes to better financial performance of venture capital –backed SMEs. This shows that the SMEs financial performance is affected by factors within the management control, that is management cost of venture capital. Thus, the study rejected the null hypothesis that the cost of venture capital does not have a significant effect on the financial performance of SMEs in Nairobi City County, Kenya.

Further, the study established that firm size is negatively associated with firms' financial performance measured by both ROA and TAP. The outcome suggests that small firms are better placed to follow good financial management practices which are key for their growth and this helps improves their financial performance. As firms grow, they become complex and the larger size affects their productivity efficiency. Venture capital financing methods were found to have no significant impact on the SMEs financial performance. This clearly shows that the financial performance of venture capital-backed SMEs does not depend on the type of investment strategy of venture capital financing: upfront, staged or syndicated adopted by venture capitalist. The same is true for venture capital management support. Age of firms was found to have little effect on firms' financial performance and this means that in venture capital financing, the financial performance is independent on a firm's age. This indicates that little emphasis mat be laid on a firm's age when venture capitalists identify SMEs for financing. The study outcome of the study could assist venture capitalists and SMEs to recognize the critical role played by cost of venture capital in influencing the financial performance during venture capital financing. Therefore, the study recommends that venture capital –backed SMEs should put in place measures that not only control but also encourage sufficient allocation of enough fund for management cost during the budgeting process since if well managed cost will contribute to a good financial performance and growth of venture capital-backed SMEs.

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