Effect of School-Based Income Generating Activities on the Financial Performance of Public Secondary Schools in Kenya

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This study was conducted to determine the value added by Income-Generating Activities (IGAs) on the financial performance of public secondary schools, in terms of assets, liability portfolio, and net worth. Secondary school managers have the gigantic task of balancing meager resources between subsistence and development needs as well as good performance in national examinations. However, macro-economic shocks such as inflation, fuel shortage, and crop failure, among others, often militate against the success of public schools. School-based IGAs enable public schools to cope with external economic shocks, without necessarily passing down budgetary adjustments to parents. However, the country lacks a clear policy guideline to facilitate the initiation, management, accounting, reviewing, and financial reporting of IGA projects. Besides, there is no documented information regarding the value added by IGA initiatives to the financial performance of public secondary schools. The study found that IGA and non-IGA schools were significantly different in terms of category, student population, age, annual income, and number of paid workers. Schools having IGAs were 1.9 times more likely to own as many assets as schools not having IGAs. Besides, IGA schools were about 2.2 times less likely to have their liability in excess of the median threshold. Regarding net worth, the study found that schools having IGAs were about 2.1 times more likely to be operating above the median threshold; suggesting that schools having IGAs were wealthier than non-IGA schools. Based on the findings, this study concludes that IGA projects were beneficial to schools by improving the ability of schools to accumulate assets and manage their liabilities. The study recommends the need to: formulate an appropriate policy framework to guide and standardize IGA activities; initiate suitable training programs for school IGA managers; as well as engage business development managers to advice schools on IGA matters.

Keywords: income-generating activities, financial performance, public secondary schools, education financing, macro-economic shocks

Introduction

Education is an indispensable element for socio-economic, political and technological development world over (Psacharopoulos, 1985). At the dawn of independence, the government recognized the need for a well-educated work force, which was required to speed-up socio-economic and political development. Qualified human resource was also required to replace departing colonial officers and expatriates (Government of Kenya (GoK), 1965; Njeru & Orodho, 2003). Since independence, about one-third of the

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national budget has consistently been devoted to the education sector, with a view to establishing and expanding facilities, sustaining the human resource, improving accessibility as well as assuring quality at all tiers.

Consistent investment in education has seen the number of public secondary schools rise from 150 in 1963 to more than 5,000 in 2010; while enrollment has grown significantly from about 30,000 learners in 1963 to about 1.3 million learners in 2010 (Government of Kenya, 2009, 2010). The growth in secondary school enrollment is linked to the expanded access to primary education, particularly through free primary education program, reintroduced in the 2007/2008 financial year. Secondary education provides a vital link between basic education and the world of work as well as further training at higher levels. It is therefore, an important sub-sector of education in the preparation of human capital for development and provision of life opportunities (Onsomu, Muthaka, Ngware, & Kosimbei, 2006).

As noted by the World Bank (2008) provision of good quality secondary education is a critical tool in generating opportunities and benefits of socio-economic development. Educating people mean putting opportunities in their hands, and is recognized as one of the best anti-poverty strategies ever. Despite its importance in national development, the cost of providing quality secondary education has been escalating, while resources have been dwindling due to perennial budgetary constraints (Onsomu et al., 2006; Omukoba, Simatwa, & Ayodo, 2011).

The government started addressing the issue of education financing way back in 1980s, by formulating the Sessional Paper No. 1 of 1986 on Economic Management for Renewed Growth, which reduced secondary education financing from 38% to 30% (Government of Kenya, 1998; Omukoba et al., 2011). In 1987, the World Bank conducted a study, which culminated to a publication titled Education in Sub-Saharan Africa, Policies for Adjustment, Revitalization and Expansions (World Bank, 1988). The publication influenced sub-Sahara African countries, including Kenya to initiate user fees in the social sector. The recommendations of the study were reflected in two successive policy documents—the Kamunge Report and the Sessional Paper No. 6 on Education and Training for the Next Decade and Beyond (Government of Kenya, 1988a, 1988b).

The two documents provided a policy framework for the implementation of cost-sharing and the purpose was to facilitate the sharing of education financing responsibility between GoK and Non-governmental Organisations (NGOs), private sector, religious organisations, development partners, and communities/beneficiaries (Government of Kenya, 1988b; Onsomu et al., 2006; Omukoba et al., 2011). Within this policy framework, the government's role included professional development, teachers' remuneration, infrastructure, administration and management, as well as bursaries and scholarships for needy learners. Responsibilities for other players included physical infrastructure development and maintenance, payment of tuition fees, public examinations, catering and accommodation in boarding schools, school amenities, student's personal expenses and remuneration of non-teaching staff (Government of Kenya, 1988b; Onsomu et al., 2006).

The most critical challenge associated with the cost-sharing policy is the marginalization of children from poor families, who cannot pay school fees (Onsomu et al., 2006). With about one-half of the Kenyan population living below the poverty line, financing secondary education for their children has been a nightmare for many households. This challenge implies that cost-sharing marginalizes the very poor segment of society that really needs secondary education to open opportunities for work and further training (Onsomu et al., 2006). As noted by Todaro (1994), children of the poor, especially in rural areas are seldom able to proceed beyond

the first few years of schooling and that their relatively poor school performance may have something to do with their disadvantaged economic circumstances. Due to poverty, some school children often go without meals, which in turn, affect their participations and learning achievements.

On their side, school principals have had to operate in a difficult environment of resource constraints and unfavourable macro-economic conditions. As a result, schools have had to contend with high debts in fees arrears, which are often transferred to suppliers of goods and services. By October 2006, secondary schools in the republic were owed a total of KES 12 billion in fees arrears. In view of this, suppliers and contractors were owed equally huge sums of money forcing some of them to pull out of contracts and press charges for damages. Indebtedness affects the management of schools because a large proportion of income goes to debt servicing, with little or nothing left for development needs. This compels school boards to raise fees very often to adjust to macro-economic conditions, which disadvantages students from poor families (Onsomu et al., 2006).

The government has reacted to this situation with two most critical policy measures to enable parents and schools cope with financing difficulties (Omukoba et al., 2011; Ndolo et al., 2011). To cushion parents, guidelines for school fees chargeable by district, provincial, and national schools was formulated and disseminated. However, most schools found the guidelines impractical, particularly due to economic realities within which they operate. Results have been too much pressure on school managers as they try to balance available resources between subsistence, development, and performance needs of their institutions. In line with World Bank recommendations for alternative sources of education financing, emphasis has been put on mobilization of local resources to enable secondary schools cope with financing difficulties (World Bank, 1990; Ndolo et al., 2011). In this regard, secondary schools have been urged to initiate income-generating projects to support their budget deficits.

Such projects are expected to help schools generate additional resources, cut down operational costs, and finance other activities at the school level. It was also expected to reduce the burden of education financing on the part of parents, by enabling schools to finance part of their operational costs from self-generated funds without necessarily passing the burden to parents (Kogolla, 2006). In this regard, the idea of school-based IGAs has been promoted in various forums, including annual conferences of secondary school heads. Whereas some schools have initiated IGA projects, others are still planning to do so. What is not clear is the financial performance of schools that have initiated IGA projects; are they better off that schools that are yet starting such projects? In other words, do such projects add any value to the financial performance of schools? What challenges are experienced by schools in managing such projects? These are the key concerns that inspired the planning and conduct of this study.

Financial Performance

The subject matter of how to measure financial performance of business ventures has been a source of intellectual debate among management scholars. While scholars in the field of strategic management emphasize the use of market-based performance and accounting measures, critics note that such measures reflect the market perception of future earnings, while accounting-based measures provide historical financial data. As noted by Ramanujam and Varadarajan (1989), decisions regarding diversification are made using profitability data derived from financial statements and hence, it would be more appropriate to use accounting-based measures of performance to assess the performance of small-scale business ventures.

Accounting-based measures of performance have been applied by many scholars. For instance, Bettis and Hall (1985) used asset value and net worth to explain the financial performance of small businesses. The study found a significant correlation between asset value and explanatory variables such as business age, size, reputation, and stability. Other studies that have applied accounting-based indicators of financial performance include Grant (1988) and Lei (1994). These studies used asset value, liability portfolio, and net worth to measure the performance of business ventures. As noted by Grant (1988), a unit change in net worth of a business venture is an important measure of performance and is often employed by analysts and business owners to assess effectiveness and efficiency.

In addition, Sandoval (2001) found a positive relationship between two indicators (asset value and liability portfolio) and background factors such as business age, legal status, and type of business activities. Even though the literature review suggests lack of universal indicators of firm performance, the application of accounting-based measures has been widespread. The choice of asset value, liability portfolio, and net worth for the purpose of this study is based on the realization that the financial performance of business ventures is more directly reflected in such indicators rather than in stock price, which is limited to businesses listed in stock markets (Grant, 1988).

Statement of the Problem

The introduction of cost-sharing in education financing in Kenya has come with its challenges to parents and educational institutions (Government of Kenya, 1988b; Onsomu et al., 2006; Omukoba et al., 2011). For a population already gasping under the burden of poverty, haphazard increment in school fees translates to further marginalization and trans-generational vicious cycle of poverty (Kogolla, 2006). Yet, denying children's opportunity for education amounts to a violation of their fundamental right and shutting down an important exit route from poverty (Government of Kenya, 2005). Besides, schools are obligated to provide education in the best way possible within the framework of available resources. The most important outcome of good institutional management is exemplary performance in national examinations. However, achieving academic excellence under circumstances of resource constraints is a toll order for most school principals.

Secondary school managers operate in a difficult environment of trying to balance between subsistence, development, and better performance in national examinations. In view of this, the idea of school-based IGAs becomes necessary for schools to cope with macro-economic dynamics, without necessarily passing down budgetary adjustments to parents (Kogolla, 2006; Onsomu et al., 2006). Such projects are expected to help schools generate additional resources, cut down operational costs, and finance other activities at the school level (Kogolla, 2006). Even though government officials have been on the forefront in promoting the notion of IGAs in schools, there is no clear policy guideline to facilitate initiation, management, accounting, reviewing, and financial reporting of such projects. In addition, although some schools have initiated IGA projects, there is no documented information regarding the value added by such initiatives to the financial performance of schools. There is no documentation on whether schools having IGAs are better off than those yet to initiate similar projects.

Studies already conducted in this area have not quite brought out the element of financial performance of schools, particularly based on universal accounting indicators. For instance, Omukoba et al. (2011) found that money generated through school-based IGAs was used to purchase teaching and learning materials, facility maintenance, infrastructure development, and staff motivation. However, such projects were constrained by

inadequate funding, poor management of records, and lack of qualified personnel. The study concluded by stating that school-based IGAs were useful in generating additional income. Similarly, Ndolo et al. (2011) noted that profits from school-based IGAs lowered the overhead cost of education and subsequently increased access. The proceeds were used to purchase learning materials and to provide physical facilities. In his study, Getange (2005) noted that school-based IGAs had played an important role in reducing fee deficits; thus, making the management of schools easier.

This study was conducted to determine the effect of school-based IGAs on the financial performance of schools in terms of asset value, liability portfolio, and net worth. In this regard, the study sought to determine the value added by IGAs to the financial performance of secondary schools. In other words, are schools with IGAs better off than those yet to initiate such projects? The information obtained from the study will go a long way in bolstering advocacy for appropriate policy guidelines to facilitate and standardize the initiation and management of such projects. The information is also useful for schools intending to start similar projects.

Objectives of the Study

The broad objective of the study was to generate information that would stimulate debate on the need for appropriate policies to facilitate the establishment and management of school-based IGAs. Specifically, the study sought to: determine the effect of IGAs on the value of assets owned; examine the effect of IGAs on the liability portfolio; and determine the effect of IGAs on the net worth of secondary schools.

Theoretical Framework

The study is framed within postulates of the Resource Dependency Theory (RDT) to explain the behavior of public secondary schools to initiate business enterprises for supplementary income. The theory, which is founded on the principles of the open system theory, postulates that even though all organizations have internal resources, most of them are not self-sufficient and therefore, must depend on external resources to support their operations and aspirations (Gulati & Sytch, 2007). On this basis, deficiency in resources is perceived as the key force driving organizations to initiate business ventures to reduce uncertainty and risks of bankruptcy.

The theory further postulates that organizations have varying degrees of dependency on resources from the external environment, consequently, inadequate control of the external environment may interfere with the achievement of organizational goals and ultimately threaten the very existence of such organizations (Heeley, King, & Covin, 2006). The theory further states that an organization can increase its management of the external environment through the following strategies: altering "organizational interdependence" through integration or diversification; establishing collective structures to form a "negotiated environment"; and using legal, political or social action to form a "created environment" (Pfeffer & Salancik, 1978). Based on this, organizations should seek to proactively control the resources in order to achieve organizational effect.

On this note, effectiveness may be related to proactive management of the competitive external environment to support its quest for acceptable outcomes and actions. To describe the notion of organizations managing the competitive environment to its advantage, Pfeffer (1987) coined the term Controlling Orientation (CO). The CO is propelled by the strategic need for an organization to proactively manage its competitive environment to achieve superior financial performance (Pfeffer & Salancik, 1978). In this regard, Pfeffer and Salancik (1978) came up with the conceptual framework illustrated in Figure 1 to analyze the cost and

consequences of the CO. The framework may also be used to analyze how the dynamics of the model may change in response to changes in asymmetric inter-dependence.
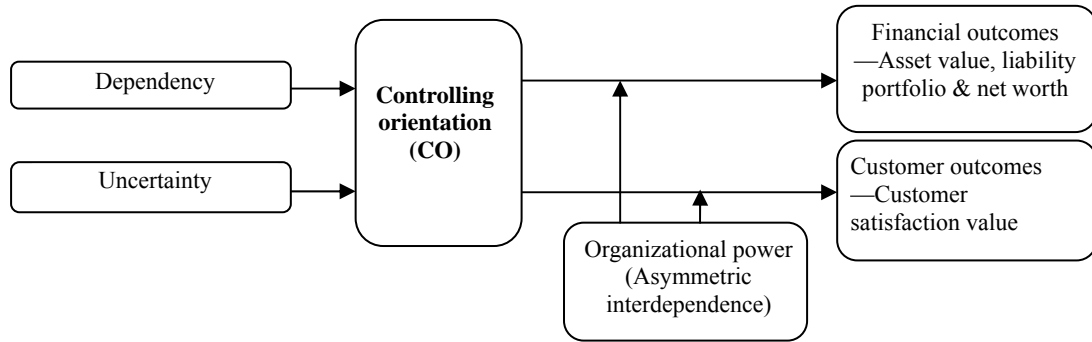

Figure 1. Resource dependency theoretical framework. Source: Pfeffer and Salancik (1978).

RDT argues that lack of self-sufficiency of required resources creates potential dependence on the other parties; yet the dependency on the external environment introduces the element of uncertainty into an organization's decision-making because an organization may not have adequate control of resource flows from the external environment. The theory then introduces the element of high firm power, as a key strategy in managing the external environment and ensuring resource flows. The ability of a firm to manage the external environment to its advantage is sought because of the power and control possibilities inherent in the state of dependency and uncertainty (Heeley et al., 2006).

The theory further holds that a high firm power will moderate the relationship between CO and outcomes. The theory suggests that firms should tackle the aspect of increasing dependency and uncertainty by effectively managing external resources to its advantage; thus, enable the firm to generate wealth and ensure self-sufficiency. Consequently, the greater the CO of an organization, the better will be its financial performance as organization's power increases. In this study financial outcome was measured in terms of asset value, liability portfolio, and net worth. To determine the effect of IGAs on the financial performance of schools, the analysis took into account the influence of schools' background factors, as listed in Figure 2.
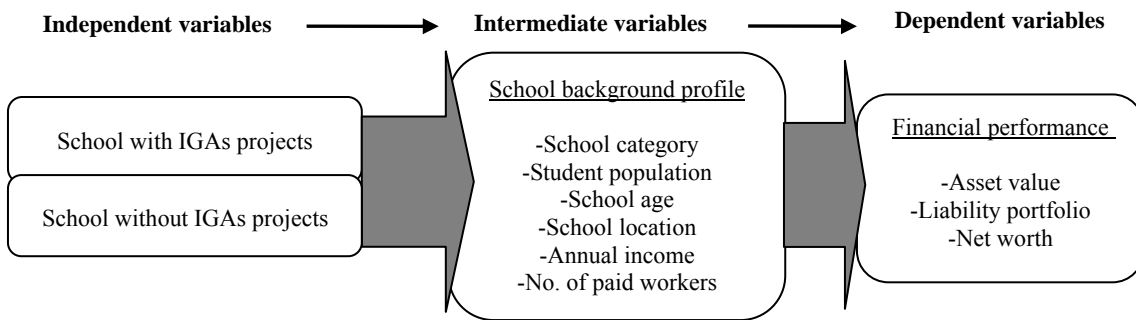

Figure 2. Conceptual framework.

The literature review highlights an array of theoretical linkages between the organization's involvement in business and financial performance. The main reason why organizations initiate business ventures is to earn supplementary income, minimize risks, and improve performance. Based on this premise, schools with IGAs are likely to perform better than schools without IGAs.

Research Design

The study applied the static group comparison design; one of the operational research designs commonly applied in management studies. The design has two groups—project beneficiaries and non-beneficiaries, which are not randomly constituted. The beneficiary group consisted of secondary schools that had initiated business ventures. The study involved examination of selected indicators of financial performance of schools with IGAs and schools without IGAs. The design used in this study had two main approaches for data collection, processing and analysis, viz. quantitative and qualitative. The quantitative approach elicited quantifiable and numerical data, which were used to generate descriptive statistics, cross-tabulations as well as statistical significance tests. The qualitative approach captured in-depth information arising from the experiences and opinions of school principals and deputy principals.

Compared with other evaluation designs, static group comparison design is the most effective in controlling the effect of confounding factors, including a background profile of the schools. In addition, unlike true experimental and quasi experimental designs such as a pretest-posttest, where data are collected from the same respondents more than once, in this design, data were captured only once. This makes the design less vulnerable to validity threats such as instrumentation. Details of the design and the approaches used in this study have been discussed in the following publications: Babbie (1973), Fowler (1993), C. F. Nachmias and D. Nachmias (1996), Bryman and Cramer (1997), and Owens (2002).

The study targeted schools that had been in existence for at least 10 years, while IGAs must have been initiated at least three years earlier. Inclusion in the sampling frame was based on whether a school had complete accounting records, particularly balance sheets summarizing assets, and liabilities at the end of the immediate financial year. The schools were selected through a stratified random procedure, where each was given an equal chance of inclusion. The stratification was based on the category of schools; viz. national, provincial or district. Data were collected between April and August 2011. The process entailed the identification of schools meeting the criteria for inclusion, which included the availability of comprehensive accounting records and willingness to avail such records to the researcher, as well as a willingness to be interviewed. Those who consented were interviewed and information in accounting records was extracted.

Research Method

The study covered 117 public secondary schools, drawn from seven provinces in the country. The sample size was obtained from a national population of 3,868 schools. Two data collection instruments were used to source information, including a survey questionnaire, which sourced information from deputy principals; and an Interview Schedule, which was applied on the Board of Governors (BoG) and Parents-Teachers' Association (PTA) members. Financial performance was measured in terms of asset value, liability portfolio, and net worth. The measurement was based median scores, which allowed comparative analysis of scores above and below the median. The information was extracted from school audited financial reports and the information weighted for the student population, school category, IGA age, type of business activities, net income, and number of paid workers. Secondary information was used to verify data sourced through interviews with the key informants.

Both quantitative and qualitative techniques were applied to process, analyze, and interpret the data. Processing quantitative data began with coding open-ended data, keying-in, cleaning, transformation, analysis,

and interpretation. Quantitative analysis was carried out at bivariate and multivariate levels. Bivariate analysis obtained cross-tabulations with Chi square (χ^2) and one-way Analysis of Variance (ANOVA) for significance tests; while multivariate analysis obtained odds ratios and significance tests. When applying the binary logistic regression models, the predicted variable takes the value 1 with a probability of success θ, or the value 0 with probability of failure $1 - \theta$. In this study, the dependent variables included asset value, liability portfolio, and net worth, with only two possible values—above the median score or below the median score. The model is often expressed as indicated below:

$$\mathrm{Logit}\,[\theta(Y)] = \log\left[\frac{\theta(Y)}{1 - \theta(Y)}\right] = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \ldots + \beta_i X_i + \varepsilon_i$$

where Y = the predicted variable (Asset value, liability portfolio, or net worth); $\theta(Y)$ = the probability that a school is above threshold; $1 - \theta(Y)$ = the probability that a school is below threshold; α = the constant term of the equation; β_1, β_2, ..., β_i = regression co-efficients associated with independent variables; X_1, X_2, ..., X_i = independent variables; and ε = the error term. Although the model has several output parameters, this study was interested in the odds ratios also denoted as $Exp(\beta)$. The Statistical Package for Social Sciences (SPSS) and Microsoft Excel packages were used to facilitate quantitative analyses. Qualitative data were processed and analyzed following three steps. In the first step, data were organized and summarized in line with key thematic areas. The second step involved description of the summary sheets to produce a preliminary report. The third step involved systematic analysis and interpretation of the preliminary report, which was then integrated with quantitative data in the final report (Best & Khan, 2004).

Study Findings

School-based Income-Generating Activities (IGAs) play an important role in education financing by enabling schools to absorb macro-economic shocks without necessarily passing more financial obligations to parents, most of who struggle to keep their children in school. Returns from IGA investments enable schools to expand their asset base and manage their liabilities. The findings presented in this section are organized under three thematic headings in line with the objectives and purposes of the study. Data were collected from 117 public secondary schools with complete accounting records and whose principals or deputy principals accepted to participate in the interviews.

Involvement in Income-Generating Activities

The study found that out of 117 schools, 46 (39.3%) had initiated IGAs, while 71 (60.7%) had not. Among the schools having IGAs, up to 21 (45.7%) had been running the projects for between three and five years, 14 (30.4%) reported having IGAs for six to eight years, eight (17.4%) reported nine to 11 years, while three (6.5%) had been having IGAs for more than 11 years. The schools engaged in various business activities, which are presented in Table 1. The most common IGA notable in Table 1 is commercial farming and the crop types farmed included wheat, sugarcane, tea, and coffee. This is followed by dairy farming which was reported by 26.1% of the schools. Next is poultry farming, stated by 23.9%; renting out school facilities such sports ground, dining halls, and seminar rooms (21.7%); agro-forestry (19.6%), where some schools developed tree and vegetable seedlings, which were sold at surrounding markets. In addition, up to 19.6% of the participants mentioned bakery production, including the production of bread and cakes for sales as well as for internal

consumption.

Table 1

Type of Business Activities

Valid responses	Frequency	Percent of responses	Percent of cases
Commercial farming	15	13.8	32.6
Dairy farming	12	11.0	26.1
Poultry rearing	11	10.1	23.9
Renting out school facilities	10	9.2	21.7
Agro-forestry	9	8.3	19.6
Bakery production	9	8.3	19.6
Cyber cafe services	8	7.3	17.4
Rental houses	8	7.3	17.4
Renting out school bus	7	6.3	15.2
School uniforms	6	5.5	13.0
Water vending	5	4.6	10.9
Livestock feed sales	4	3.7	8.7
Stationery shop	3	2.8	6.5
Furniture making	2	1.8	4.3
Total	109	100.0	236.9

Additional forms of IGAs carried out by secondary schools included, cyber cafe services, reported by 17.4% of the schools. The services included type-setting, printing, photocopying, and internet access. Another 17.4% of the schools engaged in rental houses, while 15.2% rented out school buses to earn income. Various types of business activities have varying levels of risks and potential output, which in turn, influence overall financial performance. In their study, Ndolo et al. (2011) found that crop farming was the main IGA activity for up to 41.4% of the schools; this was followed by livestock keeping 31.8% and brick making at 12.3%.

Attributes of IGA and Non-IGA Schools

The study focused on the attributes that are likely to have some influences on the financial status of secondary schools, including school category, student population, school age, school location, and number of workers paid from school income. The purpose was to determine variables that are likely to confound the relationship of IGAs and financial performance of schools.

School category. The sample included six (5.1%) national, 42 (35.9%) provincial, and 69 (59.0%) district schools. In terms of gender, 23 (19.7%) were pure girls' schools, 19 (16.2%) were boys' schools, while 75 (64.1%) were mixed schools. In Kenya public secondary schools are categorized on the basis of catchment area and infrastructural development. Such categorization also influences the level of government funding, which in turn, is likely facilitate or constrain financial performance. In relation to IGAs, all the six (100.0%) national schools had initiated IGAs; out of 42 provincial schools, 17 (40.5%) had IGAs; while at the district level, 23 (33.3%) out of 69 schools had started IGA projects. Based on this distribution, the analysis obtained a computed χ^2 value of 10.320, with two degrees of freedom and a *p*-value of 0.006, which was significant at 0.01 error margin. This implies that IGA and non-IGA schools were significantly different in terms of government categorization.

Student population. The student population can either facilitate or constrain financial performance,

depending on the socio-economic status of catchment areas, macro-economic dynamics, as well as financial planning and management skills among school managers (Onsomu et al., 2006). Whereas schools having large populations are likely to have higher income from school fees, those with smaller population may have lower income than their peers. However, the high student population comes with correspondingly high operational costs, which may negatively affect the financial performance of a school, particularly, if not properly managed. In this study, out of 117 schools, three (2.6%) reported having less than 150 students, 17 (14.5%) had between 150 and 199 students, while 33 (28.2%) indicated having 200 to 249 students. Those having 250 to 299 were 42 (35.9%) schools, another 19 (16.2%) reported a student population ranging between 300 and 349, while three (2.6%) schools had 350 or more students.

Figure 3 shows that all the three (100.0%) schools having below 150 students had no IGA projects; the category of 150 to 199 students included four (23.5%) schools having IGAs and 13 (76.5%) non-IGA schools, while those in the range of 300 and 349 students included 11 (57.9%) IGA schools and eight (42.1%) had no such projects. Among schools having 350 or more students, up to two (66.7%) had initiated IGA projects, while one (33.3%) school had not. The results suggest that schools having a larger student population were more likely to establish IGAs than those with smaller populations. In this regard, student population and IGA initiation were significantly associated (χ^2 = 10.529, df = 5, and 0.062), which implies that IGA and no-IGA schools were significantly different in terms of student population.
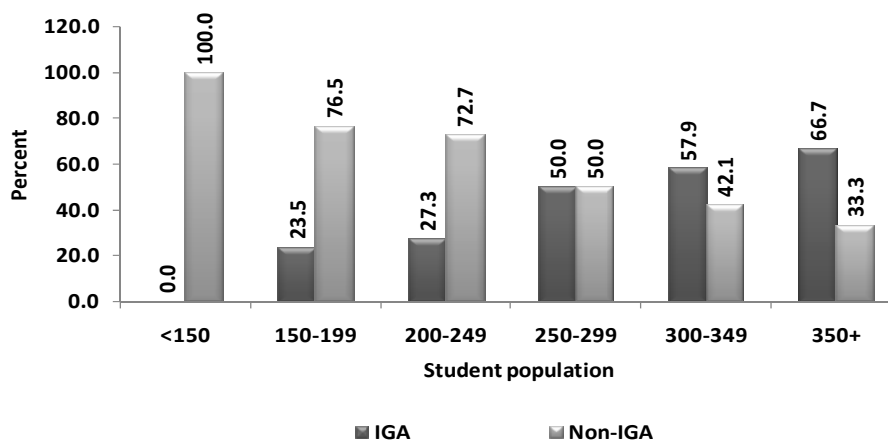

Figure 3. Student population among IGA and non-IGA schools.

Furthermore, IGA schools reported a mean student population of 266 (standard deviation = 41.9), while non-IGA schools indicated a mean population of 240 (standard deviation = 50.4). One-way ANOVA was applied to determine if there was any significant difference between the mean population of IGA and non-IGA schools. In this regard, the analysis obtained a computed $F_{(1, 115)}$ statistic of 8.508 and a p-value of 0.004, which confirms that IGA and non-IGA schools were significantly different in terms of student population.

School age. The age of a school is likely to determine the extent to which its infrastructural facilities and marketing structures are developed; which in turn, may have a bearing on financial performance. In this regard, older schools are likely to have better market reach and higher financial performance than relatively younger institutions. This study indicated that out of 117 schools, four (3.4%) were aged below 20 years, 24 (20.5%) were in the 20 to 29 age bracket, while 32 (27.4%) fell in the 30 to 39 age group. Those aged between 40 and 49 were 37 (31.6%) schools, another 13 (11.1%) were in the 50 to 59 age bracket, while seven (6.0%) schools

had been in existence for at least 60 years.

The results presented in Figure 4 show that all the four (100.0%) schools aged below 20 years had not initiated IGAs. Among those aged 20 to 29 years, only seven (29.2%) had initiated IGAs, while 17 (70.8%) had not. However, among schools in the category of 50 to 59 years, six (46.2%) had started IGAs; seven (53.8%) had not. In the category of 60 years or more, all the two (100.0%) schools were having IGA projects. Consequently, the analysis obtained a computed χ^2 value of 16.878, with six degrees of freedom and a *p*-value of 0.010, which suggests that IGA and non-IGA schools were significantly different in terms of age.
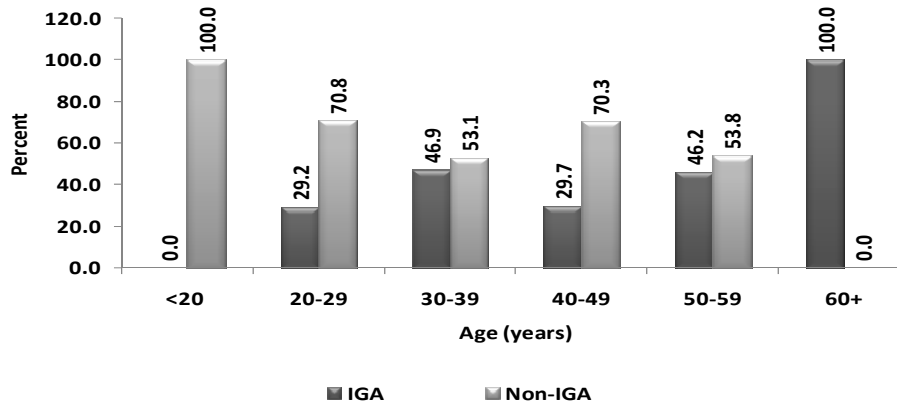

Figure 4. Association between school age and IGA ownership.

Further analysis revealed that schools having IGAs had a mean age of 42.6 years (standard deviation = 13.5), while schools not having IGAs reported a mean age of 36.8 years (standard deviation = 10.7). Using one-way ANOVA, the analysis obtained a computed $F_{(1, 115)}$ statistic of 6.643 and a *p*-value of 0.011, which was significant at 0.05 error margin. This confirms that IGA and non-IGA schools were significantly different in terms of age. In other words, schools having IGAs were relatively older than those not having such projects. Arguably, older schools were better placed in terms of resources to finance IGA activities than relatively younger schools. Consequently, age is one of the intermediate factors likely to influence overall financial performance of IGA and non-IGA schools.

School location. Whereas urban-based schools are exposed to wider marketing opportunities, rural schools are closer to agricultural raw materials and production factors. Both scenarios have inherent advantages and disadvantages, which may influence the overall performance of an organization. This study found that out of 117 schools, 69 (59.0%) were located in rural settings, while 48 (41.0%) were urban-based. In relation to IGA initiation, out of 69 rural schools, 28 (40.6%) had initiated IGAs and while 41 (59.4%) had not. Among the urban schools, 18 (37.5%) had started IGA projects, against 30 (62.5%) that had not. The analysis obtained a computed χ^2 value of 0.020 (corrected for continuity), with 1 degree of freedom and a *p*-value of 0.886, which was not significant. This suggests that IGA and non-IGA schools were not significantly different in terms of area of location.

Annual income. Average net income represents the rate of return on investments; which also determines the ability of schools to save and build internal capital. Average net income was calculated from the accounting records for the preceding one-year period. Out of 117 schools, three (2.6%) had an annual income of below KES 10 million, 20 (17.1%) was earning between KES 10 and 19.9 million, 80 (68.4%) were in the KES 20 to 29.9 million income bracket, another 10 (8.5%) reported incomes in the range of KES 30 to 39.9 million, while

four (3.4%) schools indicated an annual income of KES 40 million or more. Besides, the results in Figure 5 show that all the three (100.0%) schools having incomes below KES 10 million had not initiated IGA projects; among those in the KES 30 and 39.9 million income bracket, six (60.0%) schools had started IGAs, while four (40.0%) had not.
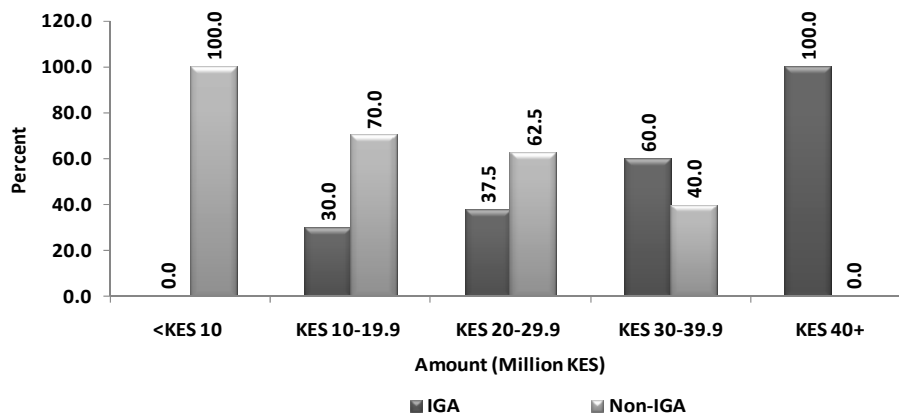

Figure 5. Variation of IGA and non-IGA school's annual income.

The analysis obtained a computed χ^2 value of 10.749, with 4 degrees of freedom and a *p*-value of 0.030, which was significant at 0.05 error margin. This affirms that IGA and non-IGA schools were significantly different in terms of annual income. Further analysis indicated that schools having IGAs reported a mean annual income of KES 25,804,348 (standard deviation = 7,620,497.4), while schools having no IGAs indicated a mean income of KES 21,300,000 (standard deviation = 6,019,848.1). Using one-way ANOVA, the analysis obtained a computed $F_{(1, 115)}$ statistic of 12.647 and a *p*-value of 0.001, which was significant at 0.01 error margin. This implies up to 99% chance that the mean annual income of schools with IGAs and that of schools without IGAs was significantly different.

Number of paid workers. The number of paid workers is one of the key indicators of productivity and performance of school-based IGAs. Although a large workforce may be an indication of high financial performance, it may translate to a huge wage bill, which is likely to affect overall financial performance. This study found that out of 117 schools, 18 (15.4%) had below five paid workers, 81 (69.2%) reported having between five and nine workers, 17 (14.5%) indicated 10 to 14 workers, while one (0.9%) had 15 or more workers. In relation to IGAs, Figure 6 shows that among 18 schools with less than five paid workers, only two (11.1%) had initiated IGAs, while 16 (88.9%) had not.

In the category of 10 to 14 workers, eight (47.1%) had started IGAs and nine (52.9%) had not. The analysis revealed that IGAs initiation was significantly associated with the number of paid workers ($\chi^2 = 8.487$, *df* = 3, and *p*-value = 0.037). In other words, IGA and non-IGA schools were significantly different in terms of the number of paid workers. Furthermore, schools with IGAs reported a mean of 7.4 workers (standard deviation = 2.8) and non-IGA schools indicated a mean of 6.1 workers (standard deviation = 2.7). Using one-way ANOVA, the study obtained a computed $F_{(1, 115)}$ statistic of 6.449 and a *p*-value of 0.012, which was significant at 0.05 error margin. This confirms that IGA and non-IGA schools were significantly different in terms of the number of paid workers. Hence, the number of such workers was likely to influence financial performance.
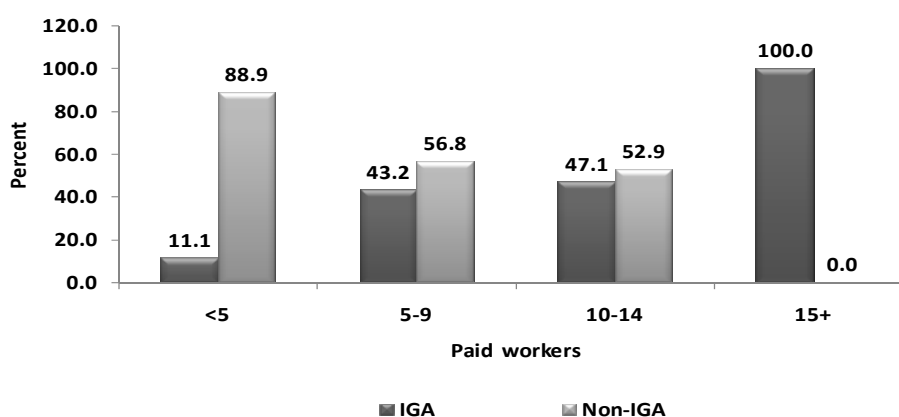
Figure 6. Number of paid workers and IGA initiation.

The findings presented in this sub-section show that schools in the two categories were significantly different in terms of category, student population, age, annual income, and number of paid workers. However, bivariate analyses techniques lack the capability to determine the effect of independent variables on a dependent variable. This necessitated application of multivariate techniques, which in this case was the binary logistic regression model. Consequently, the significant school attributes were incorporated in the regression models to determine the effect of school-based IGAs on the financial performance of secondary schools.

Effect of School-Based IGAs on the Financial Performance of Schools

The financial performance of schools was measured in terms of asset value, liability portfolio, and net worth. Information on these indicators was extracted from audited school financial reports. The idea was to determine how IGA and non-IGA schools differ or similar in terms of the stated indicators, when school attributes are factored into the equation.

Asset value. The study found that out of 117 schools, 34 (29.1%) had assets valued at less than KES 100 million, 31 (26.5%) reported assets in the range of KES 100 to 199 million, while 38 (32.5%) had assets valued at between KES 200 and 299 million. Besides, 13 schools ranged between KES 300 and 399 million in terms of asset value, while only one school owned assets in excess of KES 400 million. In relation to IGAs, the results in Table 2 show that among the schools owning assets valued at below KES 100 million, nine (26.5%) had initiated IGAs and 25 (73.5%) had not. Among the schools owning assets valued at KES 100 to 199 million, up to 13 (41.9%) had initiated IGAs, while 18 (58.1%) had not.

Table 2

Association Between Asset Value and IGA Status

Asset value (million KES)	IGA schools		Non-IGA schools	
	Frequency	Percent	Frequency	Percent
< 100	9	26.5	25	73.5
100-199	13	41.9	18	58.1
200-299	15	39.5	23	60.5
300-399	8	61.5	5	38.5
400+	1	100.0	0	0.0
Total	46	33.9	71	60.7

Based on this, the analysis obtained a computed χ^2 value of 8.675, with 4 degrees of freedom and a p-value of 0.054, which was significant at 0.1 error margin. This suggests that IGA and non-IGA schools were significantly different in terms of asset value; implying that the value of assets owned by IGA was significantly different from the value of assets owned by non-IGA schools. Further analysis indicated that IGA schools had a mean asset value of KES 206,191,304, while non-IGA schools reported a mean value of KES 165,094,444, a difference of about KES 41,096,860. Using one-way ANOVA, the analysis obtained a computed $F_{(1,\ 115)}$ statistic of 5.985, with a p-value of 0.016, which was found to be significant at 0.05 error margin. This confirms that the two groups were significantly different in term asset value. In other words, IGA schools owned more assets than non-IGA schools.

The median asset value for all the schools was KES 187,000,000; hence, schools reporting asset values higher than the median value were considered to be wealthier than those reporting values below the median. With this categorization, multivariate analysis was performed to determine the role of school-based IGAs on the financial performance of public secondary schools, while taking into account the effect of significant school attributes, which may confound the difference between IGA and non-IGA schools. The process generated two models; the first model did not contain school attributes; however, the second model incorporated significant attributes as determined through bivariate analysis. The results presented in Table 3 show that IGA schools were about 1.6 times more likely to own assets above the median score than non-IGA schools.

Table 3

Multivariate Results on Asset Value Among Schools

	Variables in the equation	B	S.E.	Wald	df	Sig.	Exp(B)
Model 1	IGA initiation	0.445	0.132	11.365	1	0.022[**]	1.560
	Constant	0.637	0.241	6.986	1	0.051[*]	1.891
Model 2	IGA initiation	0.646	0.196	10.863	1	0.024[**]	1.908
	School category	0.184	0.084	4.798	1	0.131	1.202
	Student population	-0.394	0.156	6.379	1	0.053[*]	1.483
	School age	-1.620	0.776	4.358	1	0.134	5.053
	Annual income	0.089	0.057	2.438	1	0.237	1.093
	No. of paid workers	0.292	0.114	6.561	1	0.051[*]	1.339
	Constant	1.923	0.454	17.941	1	0.000[***]	6.841

Notes. [*], [**], [***] significant at $p < 0.1$, 0.05, and 0.01, respectively.

However, when model 1 was adjusted to incorporate school attributes, such as category, student population, school age, average annual income, and number of paid workers, IGA schools became 1.9 times more likely to own assets above the median score. Furthermore, the results show up to 95% chance that the involvement of IGAs was likely to improve the financial performance of IGA schools by about 30% higher than the performance of non-IGA schools in terms of asset value. This led to the rejection of null hypothesis stating that "schools having IGAs and those not having IGAs are not significantly different in terms of asset value".

Liability portfolio. All functional organizations cannot exist without incurring liabilities. However, effective management of the liability is one of the factors critical for excellence in financial performance. In this regard, liabilities expanding over a period of time may curtail business operations, growth, and threaten their very survival (OECD, 2001). Data in the liability portfolio were obtained from accounting records, drawn

at the end of the immediate trading period. This study found that out of 117 schools, 79 (67.5%) reported a liability portfolio of less than KES 10 million; seven (6.0%) has liabilities ranging between KES 10 and 19 million, 23 (19.7%) indicated that they had debts in the range of KES 20 to 29 million, while eight (6.8%) had a liability of KES 30 million or more. Regarding IGA status, the results in Table 4 indicate that among schools having a liability of less than KES 10 million, 37 (46.8%) had started IGAs, while 42 (53.2%) had not.

Among those having liabilities of KES 20 to 29 million, five (21.7%) had initiated IGAs, while the majority, [18 (78.3%)] had not. Based on this distribution, the study obtained a computed χ^2 value of 9.768 with three degrees of freedom and a *p*-value of 0.021, which was significant at 0.05 error margin. This implies up to 95% chance that IGA and non-IGA schools were significantly different in terms of liability portfolio.

Table 4

Liability Portfolio and IGA Status

Liability portfolio (Million KES)	IGA schools		Non-IGA schools	
	Frequency	Percent	Frequency	Percent
< 10	37	46.8	42	53.2
10-19	0	0.0	7	100.0
20-29	5	21.7	18	78.3
30+	4	50.0	4	50.0
Total	46	39.3	71	60.7

Furthermore, the analysis obtained a mean liability of KES 6,058,239 for IGA schools and KES 10,661,563 for non-IGA schools, which reveals a difference of KES 4,603,324. One-way ANOVA was then applied to determine if there was any significant difference between schools in the two groups, as regards liability portfolio. The analysis obtained a computed $F_{(1,115)}$ statistic of 4.178, with a *p*-value of 0.043, which was significant at 0.05 error margin. This confirms that IGA schools had a relatively lower liability than non-IGA schools. The study found the median score of liabilities at KES 1,450,000. Schools reporting liabilities above the median value were considered to be at a higher risk of poor financial performance than those having their liabilities below the median score.

Table 5

Multivariate Results on Liability Among Schools

	Variables in the equation	B	S.E.	Wald	df	Sig.	Exp(B)
Model 1	IGA initiation	0.081	0.024	11.391	1	0.026**	1.084
	Constant	0.868	0.330	6.918	1	0.057*	2.382
Model 2	IGA initiation	0.781	0.213	13.444	1	0.003***	2.184
	School category	0.578	0.217	7.095	1	0.047**	1.782
	Student population	0.514	0.335	2.354	1	0.221	1.672
	School age	0.033	0.011	9.000	1	0.043**	1.034
	Annual income	0.021	0.013	2.609	1	0.277	1.021
	No. of paid workers	-0.411	0.207	3.942	1	0.129	1.508
	Constant	1.408	0.224	39.510	1	0.000***	4.088

Notes. *, **, *** significant at *p* < 0.1, 0.05, and 0.01, respectively.

When the model 1 is adjusted to incorporate school attributes, the schools having IGAs became about 2.2 times less likely to have their liability in excess of the median score (KES 1,450,000). This implies that

adjusting model 1 to include background attributes of schools increased the odds ratios between IGA and non-IGA schools. Besides, the results were significant at 0.01 error margin; thus, suggesting up to 99 percent chance that schools having IGAs and those not having IGAs were significantly different in terms of liability portfolio. This prompted rejection of the null hypothesis stating that "there is no significant difference between alliance and non-alliance SMEs in terms of liability portfolio".

Net worth. Net worth is the difference between a firm's assets and liabilities. It represents an entrepreneur's claim on a business entity after all liabilities have been addressed. Information on net worth was computed from accounting records for the immediate trading period. The results showed that up to 46 (39.3%) of the schools had a net worth of less than KES 100 million, 23 (19.7%) were worth between KES 100 and 199 million, 38 (32.5%) were valued at between KES 200 and 299 million, another nine schools ranged between KES 300 and 399 million, while one school had a net worth of KES 400 million or more. In relation to IGA initiation, the results presented in Table 6 show that among schools valued at below KES 100 million, 12 (26.1%) had started IGAs, while 34 (73.9%) had not. In the category of KES 100 to 199 million, 10 (43.5%) schools had IGAs against 13 (56.5%) schools that did not have IGAs. More still, out of the nine schools valued at KES 300 and 399 million, seven (77.8%) had started IGAs, while two (22.2%) had not.

Table 6

Net Worth and IGA Initiation

Net worth (million KES)	IGA schools		Non-IGA schools	
	Frequency	Percent	Frequency	Percent
< 100	12	26.1	34	73.9
100-199	10	43.5	13	56.5
200-299	16	42.1	22	57.9
300-399	7	77.8	2	22.2
400+	1	100.0	0	0.0
Total	46	39.3	7	60.7

Based on this, the analysis obtained a computed χ^2 value of 10.789, with 4 degrees of freedom and a *p*-value of 0.029. This was significant at 0.05, which suggests up to 95% chance that IGA and non-IGA schools were significantly different in terms of net worth. Consequently, IGA schools were likely to be higher in terms of net worth their non-IGA counterparts. More still the analysis found that on average, IGA schools were worth KES 200,133,065 compared to non-IGA schools worth KES 155,180,690—a difference of KES 44,952,375. One-way ANOVA was used to determine if there was a significant difference between the two groups in terms of net worth. In this regard, a computed $F_{(1, 115)}$ statistic and a *p*-value of 0.008 were obtained. This shows that IGA and non-IGA schools were significantly different in terms of net worth. In other words, schools with IGAs were richer than schools without IGA projects.

The analysis obtained a median score of KES 159,500,000; thus, schools whose net worth were above this value were considered to be performing better than schools below the median score in terms of net worth. The results summarized in Table 7 shows that multivariate analysis obtained two models—model 1, which did not incorporate school attributes, indicated that IGA schools were about 1.7 times more likely to be above the median score in terms of net worth than non-IGA schools.

However, when the model was adjusted for background attributes, IGA schools became about 2.1 times more likely to be operating above the median threshold. The result was significant at 0.05 error margin; thus,

suggesting up to 95 percent chance that IGA schools were stronger than non-IGA schools in terms of net worth. In other words, schools having IGAs were wealthier than those not having IGAs. In view of this, the null hypothesis stating that "there is no significant difference between IGA and non-IGA schools in terms of net worth" was rejected for not being true.

Table 7

Multivariate Results on Net Worth Among Schools

	Variables in the equation	B	S.E.	Wald	df	Sig.	Exp(B)
Model 1	IGA initiation	0.546	0.167	10.689	1	0.018[**]	1.726
	Constant	0.312	0.110	8.045	1	0.049[**]	1.366
Model 2	IGA initiation	0.765	0.223	11.768	1	0.037[**]	2.149
	School category	0.226	0.098	5.318	1	0.062[*]	1.254
	Student population	0.821	0.394	4.342	1	0.274	2.273
	School age	0.469	0.245	3.664	1	0.337	1.598
	Annual income	0.231	0.170	1.846	1	0.482	1.260
	No. of paid workers	-0.163	0.061	7.140	1	0.053[*]	0.850
	Constant	1.848	0.345	28.692	1	0.000[***]	6.347

Notes. [*], [**], [***] significant at $p < 0.1$, 0.05, and 0.01, respectively.

Conclusions and Implications

This study was initiated primarily to determine the influence of IGAs on the financial performance of public secondary schools in Kenya. School-based IGAs provide supplementary financial resources, which help schools to adjust to macro-economic shocks without necessarily transferring additional financing burden to parents, most of whom dwell in poverty. Although public secondary schools are increasingly engaging in IGAs, documentation on the value added by such initiatives in the financial stability of schools remains limited.

In countries, such as the US, school based IGAs have played a key role in education financing and has improved the financial performance of secondary schools. With proper planning and management, school IGAs have the tremendous role to play in enhancing the financial strength of the education sector. IGAs have the potential of reducing the demand for educational financing from the exchequer, it can liberate public schools from financial stress, lessen the financing burden on parents, motivate teachers and enhance the performance of students in external examinations (Onsomu et al., 2006; Omukoba et al., 2011).

Asset value is one of the accounting-based measures, which has been used time and again by empirical studies to gauge the performance of business enterprises. Asset value is a direct measure that corresponds with the level of investment and revenues. The application of this indicator is founded on the conjecture that as an organization improves its revenues, it has a high propinquity to acquire more assets; thus expand asset base. Asset value can easily be derived from audited financial accounts for a trading period.

With this in mind, the study found that IGA and non-IG schools were significantly different in terms of asset value. More specifically, schools having IGAs were 1.9 times more likely to own as much assets as schools not having IGAs. Furthermore, the financial performance of IGA schools was about 30% higher than the performance of non-IGA schools in terms of asset value. The findings suggest up to 95% chance that involvement of schools in IGAs enabled them to improve their financial performance by acquiring more assets that schools not involved in such activities. Although schools are encouraged by the government to initiate IGAs, there is no proper policy guideline and funding for such IGAs. Consequently, schools rely on their fee

collections to initiate and sustain IGAs. This is however difficult for new schools that are yet to establish their structure and market presence.

Through such IGAs, schools are able to derive supplementary resources to fill funding gaps due to underfunding by the government. IGAs have the potential to improve revenues, which then allow schools to meet their operational needs, as well as acquire capital assets. Based on the findings, this study concludes that IGA initiation was advantageous in improving revenues and the ability of schools to accumulate assets; consequently, IGA schools were wealthier than their peers not having IGAs.

Liability portfolio is also an accounting-based measure of financial performance. The study found that IGA and non-IGA schools were significantly different in terms of outstanding liabilities at the time of the study. In this regard, IGA schools were 2.2 times less likely to have their liabilities in excess of the median threshold (KES 1,450,000). This finding was significant at 99 percent confidence level. This suggests that schools having IGAs were less exposed to uncertainties and the risk of passing sudden financing obligations to parents than schools not having IGAs. Organizations cannot exist without incurring liabilities. However, financial sustainability can only be achieved when liabilities are managed effectively, which in turn, depends on the revenue base. Increasing revenues corresponds with a decrease in liability portfolio. This study reveals that schools having IGAs were more likely to manage their liabilities than those not having such projects. With minimal liabilities, schools are able to assure learning continuity with minimal interruptions and are able to cope with financial shocks with minimal involvement of parents.

As regards net worth, again the study found that schools having IGAs were about 2.1 times more likely to be operating above the median threshold. This suggests up to 95 percent chance that schools having IGAs were wealthier than those not having IGAs. The most critical benefit obtained from school IGAs included financial resources, which enabled schools to manage their operations, invest in assets, and service their liabilities. In view of this, the involvement of schools in IGAs added value in terms of returns on investment, as well as the ability to accumulate assets, manage liabilities, and improve overall net worth.

The government should encourage more public secondary schools to initiate IGAs to supplement their funding by developing an appropriate policy framework to guide and standardize IGA activities. Some schools had not fully realized the potential of their IGA projects due to inadequacy of management skills. The government should come up with appropriate training programs for school principals and bursars to improve skills in IGA management. Alternatively, schools should be permitted to engage business development managers to strengthen IGA activities, expand market horizon, and enhance returns on investments.

Business development managers may also be engaged at the district level to supervise and advise schools within a particular district as regards IGA development. Marketing of IGA produce may be expanded by creating functional linkages with agro-processing firms. The government should sensitize school managers to involve in various IGAs; information should be disseminated through websites, conferences, seminars, and exhibitions.

Directions for Further Research

The study focused on the financial performance of schools having IGAs and those not having IGA projects. Its scope focused on the financial performance indicators and background attributes of schools, which are likely to have some influence on financial performance. However, the study did not examine factors influencing performance of IGAs, the survival rate of such IGAs, funding sources for IGAs, and funding challenges. These

are potential areas for future research activities to provide more information that would shape the policy direction for school-based IGAs.

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