

# Exploring the Impact of Quality Education Management on Pupils' Academic Performance. A Case Study of Basic Schools in Ghana

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## Abstract

Generally, research on educational management omits its impact on pupils' academic performance in basic schools. This research fills this gap by assessing the effect of quality education management functions on the academic performance of pupils in government basic schools in Ghana. A questionnaire was used to obtain data from headteachers, teachers, pupils, and the Parents' and Teacher Association, totalling 240 respondents from 15 schools in Accra-Ghana. The findings indicated that teachers' effort has the highest impact on pupils' academic performance among all the managerial function variables in the research. The research recommends that the Ghana government and educational stakeholders emulate Singapore's system of teacher development, which has enabled them to achieve educational excellence acknowledged across the globe.

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**Keywords:** Ghana education; basic schools; quality education management; academic performance

## Introduction

The 21st century is experiencing profound changes that have never been seen before. This is a result of the global awareness that education is key to national, social, and individual development. Education helps in the eradication of poverty, eliminates ignorance, and brings about innovation and creativity that are fundamental to national development. This explains why the United Nations Sustainable Development Goals documented “quality education” as its fourth national goal, which has become the blueprint for a sustainable world (Grahl 2021). Armah (2021) reported on *Citi News Ghana* (19 May 2021) that in a constantly increasing global world, the most precious asset is not the natural resources (oil, gold, timber, cocoa) that will lead Ghana into prosperity, but rather the educated men and women who will lead the workforce by turning the wheels of innovation and technology. It is the capacity of a nation’s human resources that determines its economic growth and development. This explains why developed countries (such as China, Germany, Japan, the United States of America, the United Kingdom, France, and Australia) persistently promote quality education management and are presently experiencing high-quality student performance as compared to developing countries. The ability of schools to achieve success depends on the goals set and strategies to be implemented for change. Schools formulate goals and decisions on how these goals can be achieved, and this is made possible by the manager of the institution.

The history of education in Ghana bears evidence that educational management had been in existence before Ghana gained independence. Management in basic schools has become a concern of the masses because basic education is globally accepted as the basis for all levels of education (Etor, Mbon, and Ekanem 2013). Education management seeks to enhance the material and human resources that are crucial for educational instruction processes that promote pupils’ academic success. The issue of quality education management has been a catch-cry among educational philosophers because of international reports such as the Program for International Students Assessment (PISA) on the academic performance of pupils. Research has shown that when the education system is effectively managed, the performance of the pupils will be enhanced. Education management is, therefore, vital to ensure the satisfactory education of pupils enabling them to withstand the present competition in the job market and giving them a competitive advantage.

Educational stakeholders need to consider the benefits that come with quality education management, and they need to provide all the resources a country needs to achieve this objective. Headteachers in basic schools are the leaders of education management, who create a serene atmosphere, maintain discipline, plan for the school, identify challenges in the school, and seek to enhance academic success (Rijal et al. 2017). However, all of these efforts are evaluated by the rate at which the institution meets the requirement of

society (Grissom, Egalite, and Lindsay 2021). The school environment, within which learning takes place, contributes to pupils' ability to learn and perform well.

The role that parents play in pupils' learning is also important to realise pupils' academic success in school. Parents assist in the completion of assignments, motivate pupils to regularly attend school, and are responsible for the financial assistance of the pupil, all of which are collectively important for academic performance. Research conducted by Brew, Nketiah, and Koranteng (2021) discovered that parents' finances, their educational qualifications, together with the learning environment, teachers, school facilities, and stationery are contributing factors to students' academic success. You (2018), OECD (2013), as well as Teixeira, Amoroso, and Gresham (2017) buttress this point that the social, economic, psychological, and physical learning environment helps to improve pupils' academic performance. A report by the World Bank (2018a) indicates that although progress in learning is relatively slow and several factors have been attributed as the cause of this challenge, what researchers mostly emphasise is the education management system. Research conducted by Grissom et al. (2021) concluded that the ability to achieve good student learning outcomes, effective teaching, building a strong school climate, and eliminating teacher turnover, depends on the selection and preparation of an effective principal workforce. However, effective monitoring and supervision remain paramount to integrating teachers, pupils, and resources (Malunda et al. 2016).

The theory of industrial organisation opines that the delivery of the scale of the factory and the enterprise management personnel in an industry are rightly related to the association and management technology promoting input and output of productivity (Lucas 1978). This will indicate that in the course of maintaining quality and quantity, a different approach of management can result in a different outcome. The current literature (Bloom et al. 2014) on leadership references management practice by different organisations and the association between theoretical and experimental evidence. Other scholars have discovered that there is a positive nexus between management practices and the work output of an organisation regarding survival, profitability, and growth.

Several challenges militate the achievement of educational objectives in Ghana. These include a lack of headteachers' professional development, a lack of opportunity for teachers to further their education, inadequate infrastructure, poor school environment, limited resources, and ineffective educational policies. Among these challenges, the major concern among educational stakeholders has been the poor academic achievement of the pupils. It is the integration of efforts by all educational stakeholders that can provide enough impetus to jointly shoulder the managerial challenges in basic schools. This will provide a promising initiative to achieve a good educational outcome in Ghana.

None of the existing literature on education management refers to the impact that managerial functions have on pupils' academic performance in basic schools in Ghana,

most especially in Accra. This research is, therefore, unique by filling the gap in literature regarding the impact of quality education management functions on pupils' academic performance in basic schools in Ghana. The researchers used stepwise logistic regression analysis to assess education management functions that contribute to pupils' academic performance in basic schools in Accra-Ghana. We conducted this research because this kind of analysis has not yet been performed in Accra. A descriptive survey research design was used to present a response to the hypothesis. In the next section, a review of related literature is presented, followed by a discussion of Henri Fayol's management theory. The methodology of our research is presented, along with a discussion of the results. The paper concludes with some recommendations.

## Literature Review

Concerning this research, education management is the role that headteachers play in government basic schools in Ghana. The concept of education management came to the fore in the 1980s, when education economics started emphasising its role (Verger and Curran 2014). The education management role cuts across areas of monitoring and supervising teachers, initiating and innovating programmes and activities, goal setting, ensuring school discipline, promoting teamwork, and ensuring a positive school climate and culture. According to GivingCOMPAS (2020), education management impacts the learners, families, school authorities, and the community. The authors are also of the view that democratic management of schools requires the participation of teachers, the community, pupils, and non-teaching staff. The complex nature of education management poses a challenge in measuring and assessing how it yields results. Unfortunately, research in education lacks attention to the impact that education management makes in enhancing pupils' academic performance.

Research by Bush and Glover (2016) highlights the limited literature on quality education management's influence on pupils' academic performance, and ascribes it to the ambiguity in the definition of quality education management. Kaehler and Grundei (2019) posit that the issue of management has been well established and gained roots among philosophers, but does not present concrete characteristics in indigenous textbook definitions. Research conducted by Lewin and Stuart (2016) discovered that performances in education continue to dwindle below average among developing countries, which means that the factors leading to poor performance need to be amended in the education policies to overcome the challenges. Their findings indicate that school management practices influence the academic performance of pupils. This has similarly been reported by Orphanos and Orr (2014), namely that education management practices enhance pupils' academic performance. From these findings, we see that the role of managers remains paramount to the achievement of pupils' academic success. However, the ability of the headteacher to achieve his or her managerial roles hinges on the institutions in which they find themselves. To evaluate the efforts that educational managers apply to enhance pupils' academic performance, Csikszentmihalyi and Wong (2014) found that headteachers' effective leadership role has a good bearing on students'

academic success. This finding corroborates the findings of Hallinger (2018) on school principals' impact on pupils' academic performance. His research findings show that effective school principals positively contribute to the achievement of pupils' academic success. In addition to these findings was the finding that effective roles of school principals have a positive impact on children with learning difficulties. Several authors (Atkinson 2013; Bush and Kiggundu 2011; Farahbakhsh 2007; Masci, De Witte, and Agasisti 2016) postulate that pupils' academic performance can be improved if there is an improvement in the roles performed by the education management committees. According to Bloom (2014), United States schools situated in urban areas experienced a massive improvement in the pupils' performance, which was attributed to the distinctive management functions that public schools adopted. Research conducted by Bloom (2014) on 1 800 headteachers to measure quality management on students' performance in secondary schools in eight countries discovered that quality management has a strong correlation with pupils' academic performance.

The World Bank (2017; 2018b) as well as Maimela (2016), OECD (2013), and Teixeira et al. (2017) also state that school facilities and resources such as laboratories, school buildings, classrooms, teaching and learning materials, teacher-pupils ratio, infrastructure, library facilities, teacher capacity building, teacher motivation, the physical learning environment (that entails modern school buildings, water, lights, ventilation, space, equipment, and furniture) are important elements to the attainment of pupils' academic performance. However, research by Ye-large (2021) reports that some schools in Ghana have inadequate classrooms for pupils, as some schools in this era are situated under trees, and there is an inadequate supply of teachers, especially in rural areas. Similarly, recent research conducted by the World Bank in collaboration with the Ghana government (on 10 000 low-performing schools in Ghana) discovered that most schools do not have good classrooms, they lack computers, computer laboratories, and libraries, and have teacher deficits (Ministry of Education 2021). A report by MicroSoft Asia Society (2018) indicated that in this 21st century, Ghana schools lack computers for teaching and learning, which causes computer lessons to be taught on blackboards (refer to figure 1 below). To understand the roles of teachers, headteachers, and parents as school managers that enhance pupils' academic achievement, we need to understand the school management practices that apply to low-performing schools. More so, the strategies needed to manage a school to boost pupils' academic performance should be regarded as paramount in all sectors of education.

This research presents unique factors of education management that enhance pupils' academic performance, which is quite different from the existing literature. It uses a stepwise logistics regression model to examine headteachers' professional development, the physical learning environment, monitoring and supervision, teachers' and pupils' input, and PTA involvement as possible means of ensuring pupils' academic performance in a multivariate framework. This research endeavours to inspire the government of Ghana and its educational stakeholders to revise basic education policies in order to make management functions more paramount in the education system.



**Figure 1:** Teaching information and communication technology lesson on blackboard

**Source:** MicroSoft Stories, Asia Society (2018)

### Fayol's 14 Principles of Management Theory (1925)

Henri Fayol's 14 principles of management theory are relevant to this research topic because they focus on management principles that managers should implement to yield a positive impact on the organisation and educational institutions. Moreover, in Ghana presently, government policies may undermine quality issues even though the educational system seeks quality for the citizenry. For this reason, the use of quality management theory to explain school management will help headteachers to implement these principles rather than only complying with government policies (which may, at times, cause a conflict of interest). Fayol's (1925) theory (see iEduNote 2022) asserts that the administration of an organisation—whether big or small, public or private—needs the same rational functions or processes (iEduNote 2022). This is equally applicable to headteachers' management of schools. Fayol's 14 principles are discussed below.

#### *Division of Work*

Fayol expects that headteachers will assign duties to the teachers, thereby assuring a fair division of the workload. It is, however, prudent that this division of work is done based on the staff's areas of specialisation. Assigning teachers tasks in their area of specialisation will enable them to achieve due diligence in their work, command mastery over their work, foster speed and accuracy, and work with passion. Specialisation is vital for the teaching staff to perform their routine jobs (Uzuegbu and Nnadozie 2015). Fayol believes that assigning duties to the staff based on their area of specialisation, and giving different tasks to different people, can enhance quality, effectiveness and efficiency, especially in educational institutions (Cletus et al. 2018).

### *Authority and Responsibility*

In an educational institution, the headteacher has a legal duty to command, order, and instruct teachers, students, and non-teaching staff to perform their duties to achieve a common goal. This unity of command enhances teamwork and eliminates working in silos, thereby achieving greater success.

### *Discipline*

Discipline is the core value of the workplace. Fayol observed that the absence of law promotes disorderliness in the workplace. The formation of strict rules and regulations is a mechanism for controlling staff. The presence of strict rules and regulations enhances fair agreements and the application of sanctions for bad conduct. In the education sector, the headteacher outlines the laws, rules, policies and regulations to regulate the staff. This discipline is exhibited through the staff's compliance with the code of ethics, policies, rules and laws of the teaching profession, and helps in the accomplishment of the school's goals and objectives (Ayoub et al. 2019).

### *Unity of Command*

This is a concept that provides a hierarchy whereby the employees have one superior who is directly above them (Bacud 2020). Fayol believes that one manager is appropriate to handle employees. Employees receiving direction and orders from one manager and reporting directly to the manager enhance orderliness to achieve a common objective. This principle applies to an educational institution because the school is under the custody of a headteacher. The teachers, students and non-teaching staff are expected to obey the directions of the headteacher to achieve the school's goals.

### *Unity of Direction*

Fayol observes that an organisation needs a central objective to be followed by all to achieve that unified objective. At the school level, staff members need one direction through coordination and focus from the headteacher. All the staff members are expected to perform the same task towards a common goal. It is the headteacher who ensures unity of direction by having one plan or objective that needs to be achieved by all and sundry, and he is responsible for monitoring progress in the school.

### *Subordination of Individual Interest*

According to Fayol, various individuals join the organisation, each with their own interests, but it is prudent for each individual's interests to be surrendered for the interest of the organisation. Similarly, an educational institution requires the headteacher to ensure that each staff member's interests do not override the general interest of the school, or else the educational institution will not meet its objectives.

### *Remuneration*

Fayol posits that there is no perfect system; workers need motivation to boost their morale to work, and they require a salary and incentive packages such as rent allowance, fringe benefits, and medical allowance, which all function as motivators. He suggests that employees should be given reasonable, fair, and satisfactory salaries commensurate to their work done. This, according to him, will bring about productivity, eliminate conflict, enhance synergy, and eliminate tensions in the workplace. Managers in the educational service are to ensure that the employees are given good salaries and better incentive packages to boost their morale to work effectively and efficiently.

### *Degree of Centralisation*

This implies formal authority at the organisational level. Major decisions are made by the top managers. There should be a balance between the management of the organisation and the decision-making power. The educational institution also needs centralised decision-making to improve the quality of work in the school.

### *Scalar Chain*

This is the obligation and authority of the organisation, which must be disseminated from the highest to the lowest level (Poperwi 2018). Fayol opines that a top-to-bottom communication and authority chain needs to be followed by headteachers and subordinates. The scalar principle requires that organisations and institutions should have the concept of authority that flows through a chain of commands, connecting at a particular time, thereby forming a basic organisational structure.

### *Order*

This means that work in the organisation should be done in an orderly manner to avoid chaos. Fayol posits that people in the organisation need to be given the right tools to work with to enhance their efficiency. In an educational institution, the headteachers should make provision for teaching and learning materials for the teachers to work with in order to achieve their objectives and enhance pupils' performances. Moreso, the headteachers need to ensure that the educational institution's environment is safe and clean to work in.

### *Equity*

This requires justice, fairness, and care in the development of the school organisation (Estrin, Gozman, and Khavul 2018). According to Fayol, employees desire to be treated fairly. The educational sector equally requires the headteachers to treat the teaching staff and students fairly and equally because a successful institution promotes equity. The headteachers are expected to cultivate the habit of teamwork, effective communication channels, accommodating staff, and exhibiting a democratic leadership style.



### *Stability of Tenure of Personnel*

Fayol suggests that the right calibre of employees should be recruited and trained on the job to retain them for a long period within the organisation. This process tends to help the organisation to grow rapidly. Stable employees reduce turnover and enhance productivity. The educational institution needs headteachers to focus on teacher retention by providing them with in-service training and workshops to empower them with new knowledge and skills in the teaching job and also to provide them with other motivational factors that will inspire the teachers to remain in the profession.

### *Initiative*

This is the act of beginning or starting an activity in the organisation. Fayol believes that managers and headteachers should encourage employees to share their experiences and new ideas with them, and they should allow the employees to take the initiative. This motivates and inspires the employees to feel that their knowledge is appreciated, and they will be eager to suggest more ideas to add value to the organisation and institution. From this, the managers and the headteachers can acquire new ideas and knowledge. It will also help the employees to be willing to perform the work of the manager or the headteacher even when they are unsupervised (Okpara 2016).

### *Esprit De Corps*

This is a French phrase that implies organisational spirit as an idea in administrative management. It suggests teamwork, unity, and involvement of the employees in the organisation. At the school level, the headteachers are to ensure the spiritual growth of the school as it enhances the development of the educational institution by promoting mutual respect, trust, and understanding (Suprpto 2020). Figure 2 presents an image of the 14 principles of Fayol.



**Figure 2:** Fayol’s key principles of management

**Source:** Ali and Kanis (2021)

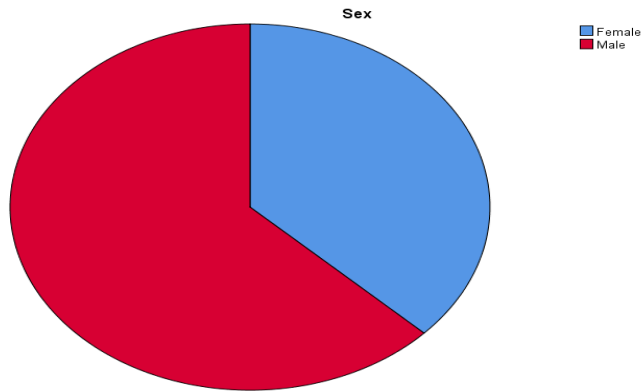
## Method

The purposive sampling method was used to select the schools and the headteachers for this research. Simple random sampling was used to select the teachers, pupils, and the PTA for the study. One headteacher, two teachers, 10 pupils, and one parent were selected from each of the 15 chosen schools in La-Nkwantanang Madina Municipal Education Directorate-Accra to participate in the survey that totalled (N = 240). Table 1 presents the gender of the respondents. Figure 2 below shows the gender distribution of the respondents, and figure 3 shows the categories of the respondents.

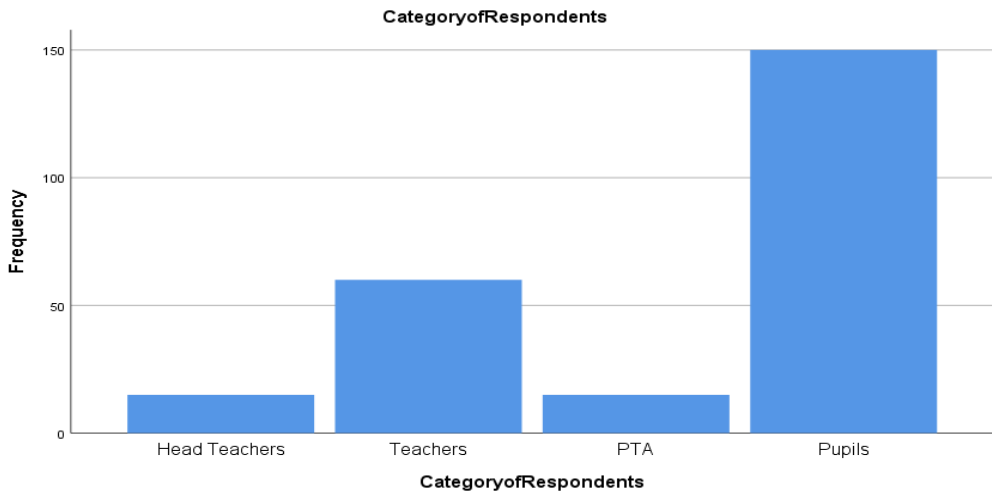
**Table 1:** Gender distribution of the respondents

Respondents	Male	Female	Total
Headteachers	10	5	15
Teachers	31	29	60
Pupils	103	47	150
PTA	7	8	15
<b>Total</b>	<b>151</b>	<b>89</b>	<b>240</b>

Source: Field 2021



**Figure 2:** Respondents' gender distribution



**Figure 3:** Category of respondents

An existing questionnaire was used to obtain data from the 240 respondents. The questionnaires were administered to respondents who willingly agreed to participate in the survey. The pupils used in the research were those whose parents approved their consent for the research. The use of a questionnaire was appropriate to obtain data from

a large number of respondents and to ensure the generalisation of the findings. The raw data were cleaned to enhance the quality of the responses. Lee et al. (2021) opine that data cleaning is a vital process in enhancing data to be devoid of errors. Each of the variables tested in the questionnaire had a Cronbach's Alpha of 0.79 as minimum and 0.88 as maximum. According to Basu (2021), a Cronbach's Alpha between 0.70–0.95 is regarded as an accepted score. The data received were then coded and entered in version 22.0. of the Statistical Package for Social Sciences (SPSS). After this, the data were analysed through stepwise logistic regression analysis and correlational analysis to evaluate the impact of management functions on pupils' academic performance. Stepwise logistics regression analysis was used to assess the management functions significant to the academic performance of the pupils in basic schools in Ghana. Usually, the stepwise logistics regression model is an integral section of data that aims at the relationship existing between a dichotomous response variable and explanatory variables. In addition, the stepwise logistic regression model is a generalised linear model that has two parts (random component and systematic component). The former in this research signifies the pupils' academic performance, which is defined as:

### PAP

$$= \begin{cases} 1, & \text{if the pupils' academic performance is obtained through management functions} \\ 0, & \text{if the pupils' academic performance is not obtained through management functions} \end{cases}$$

Where PAP indicates pupils' academic performance. At present, this research seeks the probability that  $PAP_i = 1$  that is  $P(PAP_i = 1)$  interpreted as the probability that pupils' academic performance will be better following the binomial distribution. The latter is a linear combination of the explanatory variables together with their parameters for estimation that are represented by  $\beta_0 + \beta_1x_1 + \beta_2x_2 + \dots + \beta_mx_m$ . The explanatory variable could be qualitative (categorical), quantitative (continuous), or a combination of the two (mixture).

The logistic regression model formular is:

$$\text{logit}(\pi_i) = \log_e \left( \frac{\pi_i}{1 - \pi_i} \right) = x_i^T \beta$$

The  $X_i$  represents the vector of continuous measurement that conforms with the covariates, and the  $\beta$  is the vector containing the parameter estimates. Regarding the binary response variable PAP with multiple explanatory variables  $X_1, X_2, \dots, X_m$  its model in equation (2) is:

$$\pi(x) = \frac{\exp(\beta_0 + \beta_1x_1 + \beta_2x_2 + \dots + \beta_mx_m)}{1 + \exp(\beta_0 + \beta_1x_1 + \beta_2x_2 + \dots + \beta_mx_m)}$$

In respect to this research, academic performance is binary, which is the dependent variable and has two levels in equation (1): 0 if the academic performance of pupils is not enhanced by the education management functions; or (2): 1 if the pupils' academic

performance is enhanced by education management functions. The factors perceived to enhance pupils' academic performance represent the explanatory variables. This includes headteachers' professional development, the physical learning environment, monitoring and supervision, teachers' commitment, pupils' commitment, and PTA's involvement. The formula for the logistic regression model is:

$P$  (if pupils' academic performance is achieved by education management functions)

$$= \pi(x) = \frac{e^{g(x)}}{1+e^{g(x)}}$$

$P$  (if pupils' academic performance is not achieved by education management functions)

$$= 1 - \pi(x) = \frac{1}{1 + e^{g(x)}}$$

The  $g(x)$  signifies the function of the linear combination in respect of the independent variables together with their parameter estimates. This is known as the logit function and is specified in the research variables as:

$$g x = \beta_0 + \beta_{1tfd} + \beta_{2me} + \beta_{3dm} + \beta_{4poi} + \beta_{5ti} + \beta_{6se} + \beta_7PTAs + \beta_{8pi} + \varepsilon$$

The *tfd*, *me*, *dm*, *poi*, *ti*, *se*, *PTAs*, and *pi* represent the explanatory variables earlier defined, and also, the  $\varepsilon$  indicates the error term.

## Hypothesis

Regarding the formula for the logistic regression model stated earlier, the present formula tests the hypothesis at a 5% significance level as:

- $H_0$  = there is no significant relationship between the pupils' academic performance and the associated determinants.
- $H$  = there is a significant relationship between pupils' academic performance and the respective determinants.

## Results

Regarding our findings, what is valued most is the actual deviation of the mean value for the research variables. The standard deviation for the dependent variable (pupils' academic performance) is 1.91. In addition, the statistics for headteachers' professional development, the physical learning environment, teachers' effort, pupils' effort, and PTA support were 0.20, 1.54, 2.37, 1.86, and 0.24, respectively. More so, the values for skewness, the kurtosis, and the Jarque-Bera test that identified the normal distribution of the variables are presented in table 2 below. The independent variables and the dependent variables (pupils' academic performance, physical learning environment, monitoring and supervision, teachers' effort, and support from the PTA) were negatively skewed to the left when compared with the normal distribution. Furthermore,

the headteachers' professional development and the pupils' effort were positively skewed to the right. The kurtosis value for the dependent variable was seen to be greater than the usual value of 3. This shows that the shape given by this distribution is leptokurtic. The explanatory variables (monitoring and supervision, physical learning environment, and the PTA's support) are assumed to be mesokurtic for the shape, as they have kurtosis values that are approximately 3. The rest of the variables (teachers' effort, pupils' effort) were seen to be platykurtic for the shape, as they have their kurtosis to be approximately less than 3. Ideally, the normal value of the skewness is "zero," whereas kurtosis is "three" when the observed series is normally distributed. The findings from the skewness and kurtosis of the research variables tally with the Jarque-Bera (JB) test statistics where all the values are not zero or approximately zero. The JB test was used to indicate whether the series is normally distributed or not normally distributed, and the null hypothesis that the series follows a normal distribution is in contradiction to the alternative hypothesis that the series is not normally distributed. Results from the JB test reject the null hypothesis that the series is normally distributed. This means that the series is not normally distributed.

**Table 2:** Descriptive statistics

Variables	Mean	Std. Dev.	Skewness	Kurtosis	J-B test
Dependents variables					
Pupils' academic performance	7.62	1.90	-2.39	10.45	329.91***
Independent variables					
Educational management functions					
Headteachers' professional development	5.82	0.20	0.74	1.63	16.82***
Physical learning environment	6.17	1.54	-1.62	2.54	45.19***
Monitoring and supervision	9.54	2.37	-0.48	2.46	5.21**
Teachers' effort	7.50	1.86	-1.82	2.19	58.97***
Pupils' effort	2.21	0.24	1.17	2.03	27.04***
PTA's support	6.16	1.54	-1.96	2.60	65.31***

**Abbreviation:** The \*\*\* and \*\* show that the null hypothesis Jarque-Bera (JB) normality at 1% and 5% significance level was rejected.

### Multicollinearity Test

This research tested the multicollinearity of the independent variables by the use of VIF and tolerance. Table 3 below presents the outcome of the multicollinearity test results based on the research independent variables. The values for the VIF are lower than 10, and that of tolerance is more than 0.2. This indicates that there is no multicollinearity among the multiple logistic regression model variables in the equation when the pupils' academic performance is the dependent variable. As there is no multicollinearity in the multiple logistic regression in the research, we estimated the determinants of pupils' academic performance in the next section.

**Table 3:** Multicollinearity test with VIF and tolerance

<b>Independent variables (Education management function)</b>	<b>VIF</b>	<b>Tolerance</b>
Headteachers professional development	8.24	0.46
Physical learning environment	1.88	0.87
Monitoring and supervision	5.21	0.75
Teachers' effort	4.27	0.81
Pupils' effort	9.16	0.74
PTAs' support	6.43	0.55

**Abbreviation:** The values of VIF and tolerance are from the dependent variables (pupils' academic performance). The values for the VIF are expected to be lower than 10, whereas tolerance is expected to be more than 0.2.

### **Assessment of the Effect of Education Management Functions on Pupils' Academic Performance**

#### *Summary of the Model*

The summary of the model offers information on the value of the model. This summary is presented in table 4 below. Table 4 displays the value of the Cox and Snell R-square and the Nagelkerke R-square that shows the number of variations in the variable explained by the model ranging from the value 0 as a minimum to approximately 1 as the maximum value. These statistics are described as Pseudo R-square statistic values than the R-square value used in a multiple linear regression analysis output. The findings from the Cox, Snell R-square, and the Nagelkerke R-square provide the values 0.581 and 0.785, which imply that between 58.1% and 78.5% of the variability in respect to the variable (pupils' academic performance) explain the set of explanatory variables in the model. In addition to this finding, is that a substantial number of variations in the response variable have been explained. Table 4 presents a -2log-likelihood value of 22588.163, which is comparatively less than an empty model (step 0) containing the constant alone from the logistic regression output, implying that the final model is useful in predicting the likelihood of pupils' academic performance being good or bad.

**Table 4:** Results from the summary of the model

<b>Step</b>	<b>-2log-likelihood</b>	<b>-2log-likelihood</b>
1	22588.163	22588.163

#### *Omnibus Test of Model Coefficient*

The result from the omnibus test of the model coefficient indicates the sum of how well the model performs over and above the empty model (a model without a predictor variable entered). This is known as the goodness of fit test. Table 5 provides the *p*-value of the model as 0.000, which is less than the significance level of 0.05, a Chi-square value of 133.041, and a degree of freedom (df) 27. This implies that the model

significantly fits better than an empty model (step 0), resulting in the rejection of the null hypothesis. This, therefore, shows that there is a significant relationship between the education management functions of headteachers and the pupils' academic performance. This is evident from the fact that the model confirmed that the educational management function is significant ( $p$ -value < 0.000).

**Table 5:** The Omnibus Test of Model Coefficient Results

	<b>Chi-square</b>	<b>df</b>	<b>Prob. Value</b>
Step	133.01	27	0.000
Block	133.041	27	0.000
Model	133.041	27	0.000

### *Model Estimation Results*

After confirming the significance of the logistic regression model, there is a need to find the effect of the education management functions on the pupils' academic performance in government basic schools in Ghana. This is done by the use of a logistic regression model to assess the relationship between education management functions and pupils' academic performance. The result is based on the parameter estimates, the Wald test, standard error values, odds ratio, and the  $p$ -values of the variables in the research. The interpretations are based on the parameter estimates regarding the odds ratio,  $p$ -values, and the Wald test values ( $exp(\beta)$ ). The  $p$ -values, as well as the Wald test, will identify the variable that significantly contributes to the response variables, and the odds ratio ( $exp(\beta)$ ) shows the multiplicative effect of the variables likely to enhance pupils' academic performance. The intercept and the parameter estimate of 0.850,  $p$ -value 0.000, and a Wald test value of 68.561 are statistically significant and are different from zero at a 1% significance level.

The explanatory variables (education management functions) perceived to enhance pupils' academic performance in government basic schools are the improvement in headteachers' professional development. This was supported by the odds ratio of 1.178, showing that continuous improvement in the headteachers' professional development is 1.178 times more possible to enhance pupils' academic performance. The physical learning environment at a 5% significance level had a statistically significant  $p$ -value of 0.020 with an odds ratio of 1.161, which shows that the physical learning environment is 1.161 times more likely to improve pupils' academic performance. Monitoring and supervision were seen to be statistically significant at a 1% level, using the Wald test and odds ratio values of 7.715 and 1.121. This means that monitoring and supervision are 1.121 times more likely to improve pupils' academic performance. Among all the explanatory variables, it was the teachers' effort that outperformed all the rest of the variables, with the largest Wald test value (26.909) that enhances pupils' academic performance with an odds ratio of 1.391. The pupils' effort also had a contributing factor. From the results, the pupils' effort had a statistically significant impact on their



academic performance, with a positive parameter estimate of 0.330 and an odds ratio of 1.391. Support from the PTA also indicated a statistically significant factor in enhancing pupils' academic performance, with positive parameter estimates and odds ratios of 1.356 and 1.211.

## Discussion

### **Headteachers' Professional Development**

The research revealed that headteachers' professional development contributes to the pupils' academic performance. It is the professional development of the headteachers that builds their critical thinking abilities, makes them visionaries, able to coordinate, initiate teamwork, be innovative and creative, monitor and supervise, and possess leadership qualities to manage the staff and the pupils. It helps in the planning of the school and setting attainable goals and objectives. However, research in Ghana by Lonyian and Kuranchie (2018) revealed that headteachers in Ghana do not receive any professional training. They do not receive any administrative training or pre-headship training and do not have the opportunity for continuous professional development. Their assumption of duty is based on the number of years and work experience in the teaching profession. This poses a challenge to their management of schools, as they lack the qualities and skills to effectively manage schools and the authority to sanction staff. This was confirmed by the Ghana Minister of Education, stating that a study conducted by the National Teaching Council discovered that 94.5% of the headteachers in Ghana government schools never had any formal training in education management (Adutwum 2022). This confirms why the academic performance of government basic schools in Ghana is under par. Aliakbar (2011) opines that most educational philosophers believe that change in the current educational system can be made possible by beginning with education management, because educational managers can be a barrier to school innovation and improvement if their management does not conform to their professional knowledge. Hence the professional development of the headteachers is crucial.

### **The Physical Learning Environment**

Another finding from the study was that the physical learning environment also contributes to pupils' academic success. A report by Donkor (2013) in the *Ghanaian Daily Graphic* states that the school is the next vital surrounding of the pupils because they spend more than half of the day there. For this reason, pupils need a hygienic and sanitary learning environment, since the absence of it has a negative impact (especially on girls) as they wander around to search for water to the detriment of their education. She also referenced a story about an 8-year-old boy who lost his life when he fell into his school's pit latrine at Nima, a suburb of Accra-Ghana; a tragedy which emphasises the need for safety of the school environment. In addition, a poor school environment can contribute to absenteeism and a high drop-out rate of pupils (Donkor 2013). This supports why the OECD (2020) formulated the Learning Environment Evaluation Programme (LEEP), which was launched in 2013 to provide an instrument and analysis that will enable school managers, policymakers, and researchers to invest in the

improvement of the learning environment to enhance the education, social health, and the well-being of pupils.

### **Monitoring and Supervision**

This research discovered that monitoring and supervision help in the achievement of pupils' academic performance. This finding resonates with the finding of Sunaryo (2020), who posits that headteachers' monitoring of teachers in school contributes to the effective performance of the teachers to achieve pupils' learning outcomes. Research conducted by Kwapong and Mensah (2018) regarding the impact of headteachers' supervisory practices on teachers' performance (in Effutu Municipality in Ghana) revealed that the performance of the teachers in that municipality was due to the headteachers' supervisory role.

### **Teachers' Effort**

This research revealed that teachers' efforts are vital in accomplishing good academic performance of pupils. The Ghana News Agency (2012) reported on Mamease school in the Eastern Region of Ghana that had a zero per cent pass rate in the Basic Education Certificate Examination. The Deputy Eastern Regional Minister, Mr Ebenezer Okleley Terlabi, called on teachers to be innovative by finding ways to salvage the situation. This implied that teachers' efforts could have prevented the pupils who took the examination from scoring zero. A study by Mensah (2016) indicates that the promotion of teacher quality is a requisite element in the improvement of primary and secondary education. This implies that the professional development of teachers is relevant in the classroom management of the pupils for effective teaching and learning. Another study conducted by Abakah (2019) also testified that the continuous professional development of teachers helps in the improvement of the pupils' academic performance.

### **Pupils' Effort**

From the research findings, the pupils also have a role to play in achieving academic success. Pupils need to have the enthusiasm to attend school and perform their class and home assignments to enable them to grasp the concepts being taught in school, thereby enhancing the chances of their success.

### **Parents' and Teacher Associations' Efforts**

From the findings of this research, the PTA (Parents' and Teacher Association) contributes to the academic achievement of pupils. When the teachers perform their duties at school, the parents need to continue at home by assisting pupils with their assignments, paying pupils' school fees and levies, and ensuring that the child goes to school early and regularly at all times. This finding has similarly been reported by Murundu and Murundu (2020), namely that parents' supervision of their children's assignments influences the academic achievement of the pupils in primary schools. They emphasise that parents' assistance with children's homework is able to improve

pupils' performance by 55% in school, but many parents across the globe neglect this role to the detriment of their children's educational success.

## Recommendations

The researchers recommend that Ghana adopt Singapore's system of recruiting teachers from the top graduating class with good academic credentials and commitment to serving student bodies. Teachers with a master's degree should mentor every newly recruited teacher. Teachers having 100 hours of mentoring should qualify for professional development annually. Every school should have funds to support teachers' development by travelling abroad to assess the educational systems in other countries. Teachers' performance appraisals must be conducted annually regarding their impact on the academic development of the students, their relationship with parents, the community, and the school as a whole. Exceptional teachers should receive a bonus from school coffers. Teachers must be evaluated to see if they are capable of occupying other career paths, such as a specialist in research or the curriculum, or becoming a school principal with an increment in remuneration. Teachers with principal qualities must be promoted to middle management teams and trained to occupy managerial roles. Each of the managerial positions should have special training to groom candidates for school leadership and transformation. Singapore implements these strategies because they believe that high-quality teaching and pupils' academic performance hinge on an effective school leader or headteacher (Asia Society 2022).

## Conclusion

Education management in basic schools has become a public focus since it is clear that good educational management is fundamental for good basic education. Although some educational philosophers have researched the headteachers' management functions in school, there is a paucity of literature on how the roles of headteachers influence pupils' academic performance in basic schools, especially in Accra-Ghana. This research filled the gap in literature on educational management functions' impact on pupils' academic performance in Accra-Ghana. The research used headteachers' professional development, the physical learning environment, monitoring and supervision, teachers' effort, pupils' effort, and the support from the PTA as education management variables, which were analysed by a stepwise multiple logistic regression model. The pupils' academic performance was a dichotomous response variable. The goodness of fit test (that entailed the Omnibus test, Hosmer and Lemeshow test) was used to identify the estimated logistic regression models' significance and to predict the likelihood of improving the pupils' academic performance in government basic schools in Accra-Ghana. The results that emerged from the Wald test values, odds ratio values, *p*-values for the headteachers' professional development, the physical learning environment, monitoring and evaluation, teachers' effort, pupils' effort, and the support from the PTA, showed that these made a significant contribution to the likelihood that the pupils' academic performance can be enhanced. Findings from the results indicated that among all the managerial functions variables, the teachers' role had the biggest influence on

the academic achievement of the pupils. The researchers conclude that improving the academic performance of the pupils requires a collective effort (of headteachers, teachers, pupils, and PTA) to provide enough impetus to jointly shoulder the factors that militate pupils' academic performance.

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