



SCHOOL MANAGEMENT PRACTICES, TEACHERS EFFECTIVENESS, AND STUDENTS' ACADEMIC PERFORMANCE IN MATHEMATICS IN SECONDARY SCHOOLS OF CROSS RIVER STATE, NIGERIA

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ABSTRACT

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This study assessed school management practices, teachers' effectiveness and students' academic performance in mathematics in Cross River State's secondary schools. The study was guided by two formulated null hypotheses. The study adopted the factorial research design. Simple and proportionate stratified random sampling techniques were adopted in selecting a sample of 2,145 (893 teachers and 1252 students) from a population of 6,356 teachers, and 39,468 senior secondary school students respectively. "School Management Practices Questionnaire" (SMPQ), "Teachers' Effectiveness Questionnaire" (TEQ), and Students' Mathematics Achievement Test (SMAT) were all used as instruments for data collection. The reliability of the instrument was established using the Gutman Split-Half (GSH) reliability technique, with coefficients of .919, .889, and .952 obtained for SMPQ, TEQ, and SMAT respectively. The null hypotheses were all tested at .05 alpha level using Pearson correlation matrix and multiple regression. Multiple regression was employed as a multivariate statistical tool due to its ability to examine the combined effect of several independent variables on a dependent variable. Findings revealed that principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, effective communication, teachers' effectiveness, and students' academic performance are significantly related. The eight independent variables jointly predicted teachers' effectiveness ($F=505.47, p<.05$) and students' academic performance ($F=728.16, p<.05$) significantly. It was recommended that secondary school principals should perform their routine duties of school management regularly and consistently in order to boost teachers' effectiveness and improve students' academic performance in mathematics.

Contribution/Originality: This study is one of few studies which have assessed inter-relationships among some school management practices, teachers' effectiveness and students' performance in Mathematics. The study also contributes to existing literature by determining the partial and cumulative effects of some school management practices on teachers' effectiveness and students' performance respectively.

1. INTRODUCTION

The quality of many secondary schools in Cross River State has created doubts in the minds of right-thinking scholars due to the poor rate of students' academic performance, and low level of teachers' effectiveness (Bassey,

Owan, & Agunwa, 2019; David-West & Kaegon, 2017; Owan, Arop, & Agunwa, 2019; Robert & Owan, 2019; Shamaki, 2015). Ideally, teachers and students were expected to be at the optimum level in their performance to aid the goal attainment of teacher education specifically (Arop, Owan, & Ekpong, 2018a, 2018c; Dos Santos, 2019; Etim, 2019; Fahara & Tobías, 2019; İhtiyaroğlu, 2019; Olajide, Kola, & Adeyemi, 2019; Omorobi, Mbon, Owan, & Ekpenyong, 2020) and the entire educational system generally (Owan, 2018b). Many teachers in Cross River State are performing below expectations in terms of their punctuality, record keeping, instructional delivery, professional behaviour, time management, shaping of learners' behaviour, and relationship with students (Owan et al., 2020). Lessons are rarely delivered objectively; instead, many teachers have shifted focus to the discussion of irrelevant ideas without communicating the right lesson content and experience.

An effective teacher is one with a positive attitude, clear lesson delivery, effective time management, strong lesson structuring, proper classroom management, good chalkboard management, good disciplinary approaches, proper classroom arrangement, an understanding of learners' individual differences, high level of punctuality, decent dressing, good grasp of subject mastery, good record keeping, effective communication skills, and other good personal characteristics such as honesty, politeness, flexibility, simplicity, trustworthiness, firm and fairness and so on (Owan, 2018a). Arop, Owan, and Ekpong (2018b); and Owan and Ekpe (2019) mere observation of many secondary school teachers in Cross River State shows a clear contrast and disparity between an ideal teacher and underperforming ones. This ineffectiveness has not gone unnoticed, especially given the fact that it has compounded a negative influence on the academic performance of students in both classroom and standardized examinations (Owan, Nwannunu, & Madukwe, 2018) as well as the overall effectiveness of the school (Oqua, 2019; Owan, 2019).

In an exposition, Offem, Arop, and Owan (2019) pointed out that in recent times, students' academic performance in Cross River State, and other sister states in Nigeria, has become a national problem. The poor academic performance of secondary school students in both classroom and standardized examinations such as JAMB, WAEC, NECO, and NABTEB examinations have called for scrutiny of the efficacy of the Nigerian educational system (Offem et al., 2019). Based on the performance of Cross River State students in 2018 West African Senior School Certificate Examination (WASSCE), Cross River State was ranked 20th out of the 36 States in Nigeria (Bassey, Ubi, Anagbogu, & Owan, 2020). There was also another instance of poor students' academic performance at the secondary level at the Unified Tertiary Matriculation Examination (UTME) in 2018 (Bassey et al., 2020). The breakdown of the aggregate scores of students at various intervals is presented in Table 1.

Table-1. Scores of students in 2018 Unified Tertiary Matriculation Examination (UTME) in Nigeria.

Score	180 and above	160-179	150-159	Below 150	Total
Year 2018	1873013	2,250,726	2167759	4,131,689	10,423,187
Percentage	17.97	21.59	20.80	39.64	100

The figures as presented in Table 1 shows a massive amount of failure especially if the pass mark was to be set at scores from 180 and above. Currently, the official minimum cut-off mark set by JAMB which qualifies one for admission into tertiary institutions in Nigeria are as follows: public universities = 160 marks, private universities = 140 marks, public polytechnics = 120 marks, private polytechnics = 110 marks, and colleges of education = 100 marks. The new minimum standards were set since many students usually struggle to reach the initial 200 marks formerly set by JAMB (Bassey et al., 2020). Even with as low as 160 marks on a scale of 400 marks which qualifies one for admission into universities, a higher percentage of students (60.44%) are still unable to pass.

The poor performance of students as earlier stated could be mediated by poor teachers' effectiveness. When the teachers alike their students are underperforming, then the performance of the entire school system is jeopardized and ineffective (Bassey et al., 2020). In a study, Owan et al. (2019) described an effective school system as one that is characterized by highly motivated teachers, good students' academic performance in standardized examinations, adequate leadership orientation, effective staff disposition, high school enrolment figures, good quality of leadership, high secondary school graduates' enrolment into tertiary institutions, low extent of truancy, low drop-out rates,

and class repeating figures, amongst others. It follows, therefore, that an effective school system will be able to render services that will sustain students' academic performance (Arop, Owan, & Agunwa, 2019).

In a study, Mupa and Chinooneka (2015) discovered that teachers do not use a variety of teaching methods and they do not prepare a variety of media for use in teaching and learning. Teachers' instructional materials are limited to textbooks and syllabuses and do not go beyond that. Pupils learn in harsh and uncondusive teaching and learning environments and there is low morale among teachers. Using a correlational approach, Offem et al. (2019) found that students' perception of suspension and expulsion management is significantly related to their academic performance. This implies that students' academic performance improves as the management of discipline (in terms of suspension and expulsion) increases. Research evidence has shown some correlates of students' performance and teachers' effectiveness (Igwe, Ndidiamaka, & Chidi, 2017; Nakpodia, 2011; Oluchi, 2013; Owan, Duruamaku-dim, Ekpe, Owan, & Agurokpon, 2019) which suggests that attempts have been made to resolve this issue within the formal school system. For instance, it has been discovered that principals' supervisory, leadership and communication competencies are significantly related to teachers' work performance in terms of instructional delivery, attendance to classes, note writing, and record keeping respectively (Owan & Agunwa, 2019). Principals' supervisory, leadership and communication competencies have significant composite influence on teachers' work performance in terms of instructional delivery, attendance to classes, notes writing and record keeping (Owan & Agunwa, 2019). Other variables such as disciplinary control, classroom management, and teachers' motivation significantly influence secondary school students' academic performance respectively (Owan & Ekpe, 2019; Owan et al., 2018). This finding implies that the proper disciplinary control, effective classroom management, and teachers' motivation affects the performance of students. This has a link to the present study since all these variables are part of school management practices. It has also been revealed that the utilization of conflict management strategies (arbitration, dialogue, and effective communication) had a joint significant influence on secondary school teachers' job effectiveness (Arop et al., 2018b; Owan, 2018a) showed that. This finding suggests generally that secondary school principals who are able to manage conflict using the three strategies identified will be able to take advantage of the strengths peculiar to each technique. The combined use of these strategies makes the principal more effective in resolving different types of conflicts in the organisation.

In another study, Owan et al. (2019) used a path analytic approach to examine the composite interaction of supervisory and records management with secondary school system effectiveness in terms of students' academic performance, teachers' job effectiveness and principals' administrative effectiveness. The results of multiple regression and path analyses showed that supervisory management and records management practices have a significant joint contribution to students' academic performance by 66.4%, teachers' job effectiveness by 71%, and principals' administrative effectiveness by 86.8%. Supervisory management and records management practices have a significant influence on students' academic performance, teachers' job effectiveness, and principals' administrative effectiveness Owan et al. (2019). The findings of Owan et al. (2019) are very relevant to the current study due to the variables covered which provides a basis for the current study.

Although existing literature has built a basis for this study, this study used a unique approach to show whether school management practices could have an influence on the teachers' effectiveness as well as students' academic performance. In this study school management practices such as principals' leadership techniques, teachers' motivation, teachers' discipline, students' records management, school supervision, conflict management, students' discipline, and effective communication were considered. This study investigated the relationships and interaction of all these independent variables with teachers' effectiveness and students' academic performance in Mathematics.

The main purpose of this study was to assess school management practices, teachers' effectiveness and students' academic performance in Mathematics in secondary schools of Cross River State, Nigeria. The study examined specifically:

- i. The inter-correlation among principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, effective communication, teachers' effectiveness, and students' academic performance in Mathematics.
- ii. The composite influence of principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, and effective communication on teachers' effectiveness and students' academic performance in Mathematics.

1.1. Statement of Hypotheses

The following null hypotheses were formulated and tested in the study.

Ho: There is no significant inter-correlation among principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, effective communication, teachers' effectiveness, and students' academic performance.

Ho: Principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, and effective communication have no significant composite influence on teachers' effectiveness and students' academic performance.

2. METHODS

This study adopted a factorial research design. This design is used in situations where the researcher is interested in examining the association between two or more independent variables with an (or several) dependent variable(s) (Owan et al., 2019). According to Idaka and Anagbogu (2012) factorial research design makes it possible to manipulate several independent variables at the same time and to observe their effects on the dependent variable. It is used to study the main effects of the different variables as well as the combined effect due to interaction of the independent variables. This design was considered well suited to the study due to the exploration of eight school management practices as independent variables and their composite predictions on the two dependent variables (teachers' effectiveness and students' academic performance) respectively.

The target population of this study comprised 6,356 teachers, and 39,468 senior secondary school students distributed across 272 public secondary schools in Cross River State. The accessible population of this study consisted of 2,976 teachers and 17,886 senior secondary students distributed across 136 public secondary schools. From the accessible population, a proportionate stratified random sampling technique was adopted in selecting 30 percent of teachers and seven percent of senior secondary students. Thus, a total of 893 teachers and 1252 senior secondary students were eventually selected resulting in an overall sample of 2,145 participants.

Three instruments were used for data collection including "School Management Practices Questionnaire (SMPQ)", "Teachers' Effectiveness Questionnaire (TEQ)", and "Students' Mathematics Achievement Test (SMAT)." All the questionnaires were designed by the researchers and arranged on the revised four-points Likert scale of Strongly Agree, Agree, Disagree, and Strongly Disagree, to measure their respective constructs. The SMPQ comprised 24 items which measured the following variables principals' leadership techniques (Items 1 – 4), conflict management (Items 5 – 8), teachers' motivation (Items 9 – 12), teachers' discipline (Items 13 – 16), school supervision (Items 17 – 20), students' records management (items 21 – 24), students' discipline (Items 25 – 28), and effective communication (Items 29 – 32). The TEQ was designed with ten items to measure teachers' effectiveness. The SMAT comprised twenty objective test questions in mathematics that was adapted from the SS2 mock examination past question. The choice of the achievement test was to measure students' academic performance in mathematics, while past questions of mock examination were used due to their standardised nature.

The three instruments were validated by three test and measurement experts in test and measurement in the Department of Educational Foundations, University of Calabar, and two experts in the Department of Educational Administration and Planning, University of Calabar. The reliability of the instruments was established through

Gutman split-half technique after a trial testing was conducted in using 40 teachers and 80 students randomly selected from four public secondary schools in Calabar Municipality and Calabar South LGAs of Cross River State. The respondents used in the trial test were not included in the sample but were part of the study's population. The reliability estimates of .919, .889, and .952 for SMPQ, TEQ, and SSAP respectively indicated that the instruments were internally consistent for measurement.

The instruments were all administered by the researchers in the sampled respondents accordingly. In achieving objective and unbiased responses, the teachers were used in assessing the management practices of their principals. Students were used in assessing the effectiveness of their Mathematics teachers. Mathematics teachers were used as means of narrowing the focus of students and for clarity. All administered instruments were retrieved without any loss indicating a 100 percent rate of return. The collected data were scored, coded, and prepared on a person-by-item matrix using a computer spreadsheet program (MS-Excel v2016). The null hypotheses were all tested at .05 alpha level using Pearson correlation matrix and multiple regression statistics. Pearson correlation matrix was used in assessing the inter-correlation among the independent and dependent variables of this study. Multiple regression on the other hand was used as a multivariate statistical technique to assess the relative and composite effect of all the independent variables on the dependent variable. All computations were aided using Minitab v18. The results from the analysis of data are presented in the following section.

3. RESULTS AND DISCUSSION

The results of this study are presented based on the hypothesis formulated.

3.1. Hypothesis One

This hypothesis stated that there is no significant inter-correlation among principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, effective communication, teachers' effectiveness, and students' academic performance. This hypothesis was tested at .05 level of significance using Pearson correlation matrix. The results of the analysis are presented in Table 2.

Table-2. Pearson correlation matrix showing the relationships among the variables of this study.

N=2,145

Variables	1	2	3	4	5	6	7	8	9	10
1 PLT	1	.292*	.161*	.276*	.237*	.132*	.321*	.212**	.625**	.431*
		.000	.000	.000	.000	.000	.000	.000	.000	.000
2 CMGT		1	.116*	.195*	.158*	.151*	.267*	.260**	.293**	.386*
			.000	.000	.000	.000	.000	.000	.000	.000
3 TMOT			1	.249*	.236*	.233*	.097*	.236**	.290**	.217*
				.000	.000	.000	.000	.000	.000	.000
4 TDIS				1	.364*	.192*	.249*	.277**	.546**	.423*
					.000	.000	.000	.000	.000	.000
5 SSUP					1	.389*	.350*	.446**	.522**	.609**
						.000	.000	.000	.000	.000
6 SRM						1	.197*	.396**	.264**	.424**
							.000	.000	.000	.000
7 SDIS							1	.369**	.480**	.654**
								.000	.000	.000
8 ECOMM								1	.414**	.630**
									.000	.000
9 TEFF									1	.686**
										.000
10 SAP										1

Note: **. Correlation is significant at the .01 level (2-tailed).

*. Correlation is significant at the .05 level (2-tailed).

TEFF = Teachers' effectiveness; SAP = students' academic performance; PLT= principals' leadership technique, CMGT =Conflict management; TMOT=Teachers' motivation; TDIS= Teachers' discipline; SSUP= School supervision; SRM=Students' records management; SDIS= Students' discipline; and ECOMM= Effective communication.

The results in Table 2 revealed that there is a moderate, positive, and significant relationship between principals' leadership techniques and teachers' effectiveness ($r=.625$, $p<.05$), as well as students' academic performance ($r=.431$, $p<.05$) in Cross River State. There is a weak positive and significant relationship between conflict management and teachers' effectiveness ($r=.293$, $p<.05$), as well as students' academic performance ($r=.386$, $p<.05$) in Cross River State. There is a weak positive and significant relationship between teachers' motivation and teachers' effectiveness ($r=.290$, $p<.05$), as well as students' academic performance ($r=.217$, $p<.05$). Teachers' discipline has a moderate positive and significant relationship with teachers' effectiveness ($r=.546$, $p<.05$), and students' academic performance ($r=.423$, $p<.05$). The results also showed that school supervision has a weak positive and significant relationship with teachers' effectiveness ($r=.522$, $p<.05$), and students' academic performance ($r=.609$, $p<.05$). There is a weak positive and significant relationship between students' records management and teachers' effectiveness ($r=.264$, $p<.05$), as well as a moderate positive and significant relationship with students' academic performance ($r=.424$, $p<.05$). Students' discipline has a moderate positive and significant correlation with teachers' effectiveness ($r=.480$, $p<.05$), and students' academic performance ($r=.654$, $p<.05$) in Mathematics. There is a moderate positive and significant relationship between students' discipline and teachers' effectiveness ($r=.480$, $p<.05$) as well as students' academic performance ($r=.654$, $p<.05$). Lastly, there is a moderate positive and significant correlation between teachers' effectiveness and students' academic performance ($r=.686$, $p<.05$) in Mathematics. Based on these results, generally, there was sufficient statistical evidence to reject the null hypothesis and consequently, retain the alternate hypothesis. The implication of these results was that there were significant positive correlations among principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, effective communication, teachers' effectiveness, and students' academic performance in mathematics.

Table-3. The composite and relative influence of principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, and effective communication on teachers' effectiveness.

Source	DF	Adj. SS	Adj MS	F-value	p-value
Regression	8	1256.38	157.048	505.47	.000
Error	2136	663.65	0.311		
Total	2144	1920.03			
Term	Coef.	SE Coef.	t-value	p-value	VIF
Constant	-.591	.057	-10.39	.000	
PLT	.420	.014	29.40	.000	1.23
CMGT	.013	.014	0.98	.328	1.17
TMOT	.071	.014	5.26	.000	1.14
TDIS	.272	.014	18.98	.000	1.26
SSUP	.222	.016	13.98	.000	1.50
SRM	-.010	.015	-0.66	.511	1.29
SDIS	.167	.015	11.34	.000	1.32
ECOMM	.077	.016	4.87	.000	1.49
		SE	R-sq.	R-sq. (adj)	R-sq. (pred)
		0.557	65.44%	65.31%	65.06%

Durbin-Watson Statistic = 1.929

Note: Dependent variable: Teachers' effectiveness.

PLT= principals' leadership technique; CMGT =Conflict management; TMOT=Teachers' motivation; TDIS= Teachers' discipline; SSUP= School supervision; SRM=Students' records management; SDIS= Students' discipline; and ECOMM= Effective communication.

3.2. Hypothesis Two

This hypothesis stated that principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, and effective communication have no significant composite influence on teachers' effectiveness and students' academic

performance in Mathematics. This hypothesis was tested at the .05 alpha level using multiple regression. The results from the analysis are presented in Table 3, and 4 respectively for teachers' effectiveness and students' academic performance.

The result presented in Table 3 showed that the p-value of .000 was less than the .05 alpha level at 8 and 2136 degrees of freedom. Based on this result, it was concluded that there is a significant composite influence of principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, and effective communication on teachers' effectiveness ($F=505.47$, $p<.05$). The results also showed that the eight independent variables accounted for 65.44% of the total variance in teachers' effectiveness in secondary schools. By implication, the remaining 34.56% could be explained by other variables that were not included in the regression model (see equation 1).

In a cursory look at the relative contributions of the independent variables, it was indicated that principals' leadership techniques was the highest predictor of teachers' effectiveness ($t=29.40$, $r^2=42\%$, $p<.05$). This is followed by teachers' discipline ($t=18.98$, $r^2=27.2\%$, $p<.05$), school supervision ($t=13.34$, $r^2=22.2\%$, $p<.05$), students' discipline ($t=11.34$, $r^2=16.7\%$, $p<.05$), teachers' motivation ($t=5.26$, $r^2=7.1\%$, $p<.05$), and effective communication ($t=4.87$, $r^2=7.7\%$, $p<.05$). However, conflict management ($t=0.98$, $r^2=13\%$, $p>.05$), and students' records management ($t=-.66$, $r^2=-10\%$, $p>.05$) had no significant prediction on teachers' effectiveness as their respective p-values were all greater than .05 alpha.

The variance inflation factors (VIFs) were all greater than .05 indicating that all the variables had a significant relationship among themselves. The Durbin-Watson statistic value of $1.929 < 2.5$ indicated that the model has a positive autocorrelation which is normal. By implication, an improvement in all the independent variables, will lead to a significant improvement in the effectiveness of teachers, and when there is a decline in all the independent variables, teachers' effectiveness will also depreciate.

Table-4. The composite and relative influence of principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, and effective communication on students' academic performance in Mathematics.

Source	DF	Adj SS	Adj. MS	F-value	p-value
Regression	8	1392.23	174.029	728.16	.000
Error	2136	510.50	0.239		
Total	2144	1902.74			
Term	Coef.	SE Coef.	t-value	p-value	VIF
Constant	-0.762	0.050	-15.27	.000	
PLT	0.133	0.013	10.61	.000	1.23
CMGT	0.110	0.012	9.22	.000	1.17
TMOT	-0.022	0.012	-1.81	.071	1.14
TDIS	0.098	0.012	7.82	.000	1.26
SSUP	0.247	0.014	17.73	.000	1.50
SRM	0.105	0.013	8.21	.000	1.29
SDIS	0.354	0.013	27.44	.000	1.32
ECOMM	0.273	0.014	19.78	.000	1.49
		SE	R-sq.	R-sq. (adj)	R-sq. (pred.)
		0.489	73.17%	73.07%	72.86%

Durbin-Watson Statistic = 2.088

Note: Dependent variable: Students' academic performance.

The results of the analysis presented in Table 4 indicated that the p-value of .000 is less than the p-value at 8 and 2136 degrees of freedom. Given this result, it was concluded that principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, and effective communication have a significant composite influence ($F=728.16$, $p<.05$) on students'

academic performance in Mathematics. The eight independent variables jointly contributed 73.17% to the total variance in students' academic performance in Mathematics, with the remaining 26.83% explained by other variables that were not included in the model (see equation 2).

Relatively, all the independent variables were statistically significant in predicting students' academic performance in Mathematics in secondary schools except teachers' motivation. Although seven variables were significant, students' discipline was the highest predictor ($t=27.44$, $r^2=35.4\%$, $p<.05$), followed by effective communication of teachers ($t=19.78$, $r^2=27.3\%$, $p<.05$), school supervision ($t=17.73$, $r^2=24.7\%$, $p<.05$), principals' leadership techniques ($t=10.61$, $r^2=13.3\%$, $p<.05$), conflict management ($t=9.22$, $r^2=11.0\%$, $p<.05$), students' records management ($t=8.21$, $r^2=10.5\%$, $p<.05$), and teachers' discipline. Teachers motivation was not significant in predicting students' academic performance in Mathematics ($t= -1.81$, $r^2= -2\%$ $p>.05$).

The Variance Inflation Factors for all the independent variables were all greater than one indicating that there is a significant covariance between all the independent variables in the model. The Durbin-Watson statistic value of 2.088 was less than 2.5 indicating that the regression model had a positive auto-correlation and was an acceptable model. The implication of auto-correlation and normality of the model suggests that when principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, and effective communication are scaled up, the academic performance of students will improve, and vice versa.

Generally, the results in Table 3 and 4 respectively, showed that the composite p-values in both tables are less than .05 alpha level at 2 and 2136 degrees of freedom. On this basis, the null hypothesis was rejected, implying that principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, and effective communication have a significant composite influence on teachers' effectiveness and students' academic performance in Mathematics respectively. The regression equations of this study are presented below:

$$\text{TEFF} = -.595 + .420 \text{ PLT} + .013 \text{ CMGT} + .071 \text{ TMOT} + .272 \text{ TDIS} + .222 \text{ SSUP} - .010 \text{ SRM} + .167 \text{ SDIS} + .077 \text{ ECOMM} \quad (1)$$

$$\text{SAP} = -.762 + .133 \text{ PLT} + .110 \text{ CMGT} - .022 \text{ TOT} + .098 \text{ TDIS} + .247 \text{ SSUP} + .105 \text{ SRM} + .354 \text{ SDIS} + .273 \text{ ECOMM} \quad (2)$$

Where

TEFF = Teachers' Effectiveness.

SAP = Students' Academic Performance.

PLT = Principals' Leadership Techniques.

CMGT = Conflict Management.

TMOT = Teachers' Motivation.

TDIS = Teachers' Discipline.

SSUP = School Supervision.

SRM = Students' Records Management.

SDIS = Students' Discipline.

ECOMM = Effective communication.

4. DISCUSSION OF FINDINGS

The first finding of this study discovered that there is a significant correlation between principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, effective communication, teachers' effectiveness, and students' academic performance in Mathematics. This finding was consistent with the finding of other studies (Arop et al., 2018c; Offem et al., 2019; Owan et al., 2018) which showed that disciplinary control, classroom management, and teachers'

motivation, utilization of conflict management strategies and discipline are significantly related to teachers work performance and students' academic performance. Principals' supervisory, leadership and communication competencies are significantly related to teachers' work performance (Owan & Agunwa, 2019).

The second finding of this study disclosed that principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, and effective communication have a significant composite influence on teachers' effectiveness and students' academic performance in Mathematics respectively. This finding corroborated the study of Owan et al. (2019) which revealed that supervisory management and records management practices have a significant joint contribution to students' academic performance by 66.4%, teachers' job effectiveness by 71%, and principals' administrative effectiveness by 86.8%. The finding also supports the study of Arop et al. (2018b) and Owan and Agunwa (2019) which showed that the utilization of conflict management strategies (arbitration, dialogue, and effective communication) had a joint significant influence on secondary school teachers' job effectiveness; and that principals' supervisory, leadership and communication competencies are significantly related to teachers' work performance.

The findings of this study do not come as any surprise when it revealed the significant relationships between the variables of this study. The findings suggest that the leadership techniques of principals' will determine the extent to which teachers will discharge their duties and have a direct positive association with the performance of students. Thus, schools where appropriate leadership techniques are used, conflicts are managed, teachers are motivated and disciplined (when they err), staff and students are supervised, students' records are managed, students are disciplined, and where there is effective communication of policies, plans, and prospects on a consistent basis, will witness a stable level of effectiveness in the job performance of teachers, and sustained students' academic performance in Mathematics. Because you cannot do the same thing repeatedly using the same approach and expect a different result. It follows therefore, from the foregoing that school management practices improve teachers' effectiveness and students' academic performance in Mathematics.

5. CONCLUSION

The conclusion reached in this study is that school management practices have a significant relationship and influence on teachers' effectiveness and the students' academic performance in Mathematics respectively. The level of students' performance in Mathematics in Cross River State is generally low due to the dwindling and inconsistent school management practices. Students' academic performance in Mathematics vis-à-vis school management practices is highly mediated through the effectiveness level of teachers. As school management practices are scaled-up, teachers' level of effectiveness will increase, leading also to an increase in the academic performance of students. Thus, when such school management practices such as principals' leadership techniques, conflict management, teachers' motivation, teachers' discipline, school supervision, students' records management, students' discipline, and effective communication, are improved (scaled-up) and maintained on a consistent basis, teachers' effectiveness will be consistent, and the students' academic performance in Mathematics will also be guaranteed.

6. RECOMMENDATIONS

Based on the findings of this study, it is recommended that:

- i. Secondary school principals should ensure that they adopt leadership styles based on the contingency approach to be able to address conflicts in the organisation and relate effectively both staff and students for improved job effectiveness and academic performance in Mathematics.
- ii. Dialogue and smoothing conflict management techniques are highly recommended for secondary school principals' utilization to resolve amicably, conflicts among personnel in the school.

- iii. The government at all levels should ensure that secondary school teachers generally, and Mathematics teachers specifically, are adequately and consistently motivated through payment of salaries, promotion, development opportunities, and sound work-life policies.
- iv. Teachers with a track record of truancy and nonchalant behaviours should be disciplined by every secondary school principal using techniques beginning from verbal warnings, written queries, fines, suspension, to withdrawal. This will create effectiveness in teachers and serve as a deterrent to other teachers.
- v. Secondary school principals should ensure that there is frequent classroom visitation, inspection of teachers' notes of lesson as well as instructional delivery. This will enable school managers to sort out effective teachers from ineffective ones for disciplinary or corrective purposes.
- vi. Students' academic and co-curricular activities should be properly monitored by secondary school teachers to ensure that students live up to expectations.
- vii. Students records such as attendance register, admission register, continuous assessments, and financial records should be kept up to date by teachers and principals for effective performance appraisal, placement, or information purposes.
- viii. Communication in the school should flow in all dimensions (vertical, horizontal, diagonal, and lateral) from super-ordinates to subordinates, from teachers to students and vice versa, with appropriate feedback where necessary. This will help build cohesion among staff, students, and between staff and students.
- ix. Secondary school principals should perform their routine duties of school management regularly and consistently to boost teachers' effectiveness and improve students' academic performance in Mathematics and other subjects.
- x. Secondary school teachers should ensure that there is an effective discharge of academic and co-curricular duties, to communicate appropriate information to students for improved cognitive, affective, and psychomotor domains.

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