Determining senior secondary school teachers' job performance in mathematics: Affective factors as a panacea

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Abstract

Teachers' factors is one of the factors that influencing students' learning outcomes in mathematics at secondary school level observed. However, there is therefore needs for more research attention to be drawn to teachers' job performance using some affective factors among the factors. Hence, this study therefore to investigate the mathematics teacher's affective factors as a panacea for determining senior secondary school teachers' job performance in mathematics in Ogun state. A descriptive survey research design and 203 public Senior Secondary Schools in Ogun East Senatorial Zone (Ijebu and Remo Block) of Ogun state, Nigeria was adopted. A total of 571 public teachers teaching mathematics in SSS were selected which contained male teachers were 306 (53.42%) and female teachers were 266 (46.58%); the qualified teachers were 424 (74.26%) and less qualified teachers were 147 (25.74%) and the experienced teachers were 426 (74.61%) and less experienced teachers were 145 (25.39%). Four instruments were employed to collect data for this study. Linear Multiple Regression Analysis was adopted to test for four statement of hypotheses formulated at 0.05 level of significance. The result revealed that the contribution of teachers' stress management on senior secondary school mathematics teachers' job performance is little and significant (R² = 0.023; F = 13.572; P < 0.05); Teacher's stress management, Social abilities and teacher's Motivation when combined together has little contribution on mathematics teachers' job performance and significant ($R^2 = 0.039$; F = 7.602; P < 0.05). It is therefore concluded that there is a statistically significant contribution of teachers' stress management on senior secondary school mathematics teachers' job performance. One of the recommendations made is that Stakeholders should organize seminars and workshops and mandate mathematics teachers to attend at regular interval, to keep them abreast of modern trends in stress management healthy lifestyles and optimal performance.

Keyword: Teacher's Stress Management, Social Abilities, Teacher's Motivation, Mathematics Teachers', Job Performance

Introduction

Mathematics is a crucial tool in many domains, including natural science, engineering, medical, and social science, mathematics is used all across the world. Students must possess a thorough understanding of mathematics to comprehend the fundamental concepts of some disciplines and branches of science, including physics, chemistry, biology, astronomy, engineering, aeronautics, communication, and transportation. It is a queen of sciences and every country that wants to advance its science and technology needs to prioritize its mathematics education. It is one of the senior secondary school subjects that focus at equipping students with basic mathematical skills of life and prepare them for further career in education and future outings. As stated in Manfreda (2021), the following are the objectives for mathematics education at the senior secondary school level:

- a. To lay a strong foundation for the concepts of numeracy and scientific thinking;
- b. To provide students with opportunities to develop manipulative skills that will allow them to contribute to society to the best of their abilities;

- c. To equip students with the fundamentals necessary for further development as well as to get they ready for local trades and crafts.
- d. To expand on the primary level's basis so that students can advance professionally, economically, politically, and socially.
- e. To spark students' interest in mathematics and give them a strong basis for daily living.

Despite, the stated laudable objectives and impact of contributions of mathematics to the different levels of education for better outcomes, it has been observed that Mathematics is one of the subjects disliked and dreaded by many students and as a matter of fact, it is erroneously seen as a subject that can only be effectively learnt by either the gifted students or exceptional ones especially at senior secondary school level. In the same vein, the performance of candidates annually in mathematics is poor (Abiodun, et al., 2023).

Some researchers Azenda et al. (2023), Sam-Kayode and Akande (2022) and Ogumode (2020) have been raised concerning the poor performance in Mathematics and would naturally lead to questions about characteristics of the Mathematics teachers at Senior Secondary Schools since they are the ones tasked with the responsibilities of impacting the knowledge and skills of Mathematics on their students and also, prepare students for the future, the labour market and for the socio-economic development of every nation. Studies Goldhaber and Cowan (2021); Oguguo et al. (2020) had linked the poor performance of students to quality of Mathematics teachers in the classrooms. For example, the several challenges affecting the teaching and learning of Mathematics in schools identified in literature, the teacher's quality in term of job performance appear most prominent (Zorfass, & Gray, 2021). Honmane and Ajinubi (2023) and Ogunmode (2023) posited that the job performance of mathematics teachers had a huge impact on students' performance in Mathematics.

Job performance has different meanings by researchers in different disciplines. Job performance can be defined according to Zaifada et al. (2023) as the total expected value to the organization of the discrete behavioural episodes that an individual carries out over a standard period of time that is, Job performance is an individual employee's output in terms of quality and quantity expected from every employee in a particular job. In another way, Haldimann et al. (2023); Capone and Petrillo (2020) described job performance as the capacity to skillfully combine appropriate behavior towards the accomplishment of organizational goals and objectives. Job performance has been described by Goldhaber and Cowan (2021) as the employee's ability to achieve their respective work aims, or meet their own expectations, benchmarks and achieving or accomplishing their organizational objectives. Conclusively, Job performance can be understood as the execution or the extent of the execution of the roles of an employee at the work place.

In the context of mathematics classroom teaching and learning. Mathematics teacher job performance is the implementation of teacher's assigned responsibilities in the school. Teacher job performance is the extent to which the teachers are carrying out their official responsibilities in the schools (Ogunode 2023a). Mathematics teacher job performance refer to the level by which the teachers accomplished their given functions and assignment in the schools and the execution of instructor's responsibilities and tasks in the educational institutions (Ogumnode, 2023). Mathematics teachers' job performance according to Zaifada, et al. (2023) is defined as the degree to which mathematics teachers execute their official responsibilities in the classroom settings. In another words, mathematics teachers' job performance is the ability to effectively inculcate the three educational behavioural domains such as cognitive, psychomotor and affective in the students. In the same vein, mathematics teachers' job performance covers the roles of the teachers substitute for the parent's roles in the class. A mathematics teacher's job performance is the duties performed by a teacher in a particular period in the classroom settings in achieving organizational objectives (Obilade as cited in Selamat & Tautig, 2013). Mathematics teachers' job performance could be measured through teachers' job satisfaction and job attitudes such as job commitment, feelings of job challenge, job meaningfulness and job responsibility. (Ogunode 2023a) noted that mathematics teacher job performance can either be high or low in the class. Mathematics teacher job performance is high when the teachers carried out their responsibilities as assigned and the result manifest on students' academic performance in the class while mathematics teacher job performance can be regarded as low when the teacher's fails to execute their functions as assigned and the performance of the students is poor.

However, as above review of literature revealed that there has been few little nor no work directly examining the relationship between these background factors and teacher' job performance in mathematics. Hence, therefore, this researcher found it imperative to further probe into the mathematics teacher's affective factors as a panacea for determining senior secondary school teachers' job performance in mathematics. The affective factors considered in this study include teacher's stress management, Social abilities and teacher's Motivation.

Stress management is the process of identifying, understanding, and taking action to manage stress to increase well-being. It includes activities such as analyzing stressors and learning to recognize signs of stress, developing coping strategies, and setting and achieving goals. Stress management can help people learn to reduce the physical and emotional symptoms of stress and improve overall life satisfaction. It is a critical component of successful teaching in today's complex educational environment. Stress management is the ability to cope effectively with the day to day schedule of the office. It entails the ability for an individual to work with wisdom in order to accomplish the innumerable task assigned by the office. Stress management deals with the ability to effective utilise time management, to reduce workload and to competently manage students-teacher ratio while performing the daily routine (Bassey, et al., 2021). According to Frederick-Jonah (2021), stress management therefore is the skill of dealing in a successful way with the pressure or worry caused by the problems in somebody's life. The responsibility of imparting knowledge to the learner at the secondary school level is the duty of the teachers at the same level. To help learners master more challenging contents, teachers must go far beyond dispensing information, giving test, and giving grades. Hence, studies Bassey et al. (2021) and Oluyinka et al. (2021) have shown that teachers work stress reduced job performance and lower levels of effectiveness. In another studies Ogbeide and Enabunene (2023) and Frederick-Jonah (2021), teachers' stress have impact on job performance, effectiveness performance of teachers as well students' performance.

Another crucial and prominent factor in job performance is teacher social ability, defined by different researchers in different forms but the most common and relevant definition is the set of behaviours that express the feelings, attitudes, desires, opinions, or rights of an individual in an interpersonal context but respecting the behaviours of other individuals solving current problems and reducing future difficulties (Ukaigwe, 2020) In another words, it is the abilities and behaviours of an individual with respect to another and not a personality trait. In the same vein, Joel (2018) described social ability as the ability to interact with others in a given social context, in a stipulated manner, well accepted or valued socially, and being also beneficial to others. Furthermore, it has been reported that social ability has an impact on teaching and learning, interpersonal relations, coexistence, mental health and the collaboration of students and teachers as well as in teacher's job performance (Matsi, 2024).

However, teacher's motivation is very important because it could influence the improvement of teacher job performance which will affect students' achievement. According to Josiah et al. (2023) teacher's motivation is the power, urge, or need, passion, pressure or psychological mechanism that encourages individuals to achieve specific targets. That is, it could be seen as a drive to accomplish a task or achieve a desired height. Studies conducted by Ogunmode et al (2023); Uzhurt et al. (2023); Sumaiti (2021) revealed that there was a statistically significant relationship between teachers' motivation and job performance. In contradictory, the findings of study of Hasan, et al. (2023); Nurasniar (2022); Sari (2022); Arilaha et al. (2020) found that there was no significant relationship between motivational factors and teachers' job performance due to the factors used in the study.

Statement of the Problem

Despite the important role of mathematics to students' academic social and economic developments, students' performance in mathematics at both internal and external examinations are still not encouraged as reported. Several efforts have been made by stakeholders in education and philanthropies to improve students' attitude and academic performance in mathematics at secondary school level but not satisfactory. It has been observed that teacher's factors is among factors that influencing students' learning outcomes in mathematics at

secondary school level. However, there is therefore need for more research attention to be drawn to teachers' job performance using some affective factors among the factors. Hence, this study therefore to investigate the mathematics teacher's affective factors as a panacea for determining senior secondary school teachers' job performance in mathematics in Ogun state.

Statement of the Hypotheses

To achieve stated objectives, the following statement of hypotheses were formulated and tested:

- a. Teacher's stress management does not significantly contribute to senior secondary school mathematics teachers' job performance.
- b. Social abilities does not significantly contribute to the effectiveness of senior secondary school mathematics teachers' job performance.
- c. Teacher's Motivation does not significantly contribute to senior secondary school mathematics teachers' job performance.
- d. Teacher's stress management, Social abilities and teacher's Motivation do not jointly significantly contribute to senior secondary school mathematics teachers' job performance.

Method

The study adopted a descriptive survey research design. The population comprised all teachers at Senior Secondary Schools (SSS) teaching mathematics as a school subject in the Ogun East Senatorial Zone (Ijebu and Remo Bloc) of Ogun state, Nigeria. A simple random sampling technique was implemented to select teachers teaching mathematics from Senior Secondary I to III in 203 public SSS within the zone. A total of 571 public teachers teaching mathematics in SSS were selected which contained male teachers were 306 (53.42%) and female teachers were 266 (46.58%); the qualified teachers were 424 (74.26%) and less qualified teachers were 147 (25.74%) and the experienced teachers were 426 (74.61%) and less experienced teachers were 145 (25.39%).

Four instruments were employed to collect data for this study. These instruments were under listed: Teachers' Job Performance scale; Teachers' Stress Management Questionnaire; Teachers' Social Abilities Scale; and Teachers' Motivation Scale.

- i. Teachers' Job Performance Scale (TJPS): This was designed to measure teachers perceived on Job performance in the senior secondary school Mathematics. It was developed by Hanif and Pervez and cited in Aina (2023) with the Coefficient of reliability of 0.859 as reported. The scale had two sections. Section A contained demographic information of mathematics teachers such as Name of school, highest qualification, Area of degree specialization, and number of years of teaching experience. Section B comprised of 25 items with four-point rating scale of Always; Very Often; Sometimes and Never. The items were categories into four subscale categories of mathematics teacher's job performance (Teaching Skills; Management skills; Discipline and Regularity and Interpersonal skills. The scale was re-validated and coefficient reliability was determined to be 0.912 using Cronbach Alpha formula.
- ii. Teachers' Stress Management Questionnaire: This questionnaire was designed to measure Mathematics teacher's perception on stress management. The questionnaire was adapted from Aina (2023) which was developed by Cooper and Cartwright (1997). He reported the coefficient of reliability to be 0.786. the questionnaire contained two sections, Section A was designed for teacher's demographic data while section B had 25 items on four-point scale ranging from Always; Very Often; Sometimes and Never. These items were in five sub headings of recreation, self-care, social support, rational of cognitive coping and psychological. The questionnaire was re-validated and coefficient reliability was computer to be 0.89 using Cronbach Alpha form.
- iii. Teachers' Social Abilities Scale: The scale was designed to measure the social abilities of mathematics teachers in senior secondary schools. The scale was adapted from Aina (2023) of reliability coefficient of 0.725. It was divided into two sections A and B. Section A contained demographic information which included Name

of school, highest qualification, Area of degree specialization, and number of years of teaching experience. Section B contained 15 items rated on a four point likert type scale of Never; Sometimes; Very often and Always. The instrument was re-validated using Cronbach Alpha formula to obtain the reliability coefficient to be 0.876.

iv. Teachers' Motivation Scale. The scale was designed to measure teachers attributes on motivation. It was adapted from Serrat's Model (2009) with reliability coefficient of 0.813. It was divided into two sections A and B. Section A contained demographic information which included Name of school, highest qualification, Area of degree specialization, and number of years of teaching experience. Section B contained four subsections (Achievement drive; Commitment; Initiative and Optimim). It also consisted of four items each of four point likert type scale (Always; Sometimes; Never and Very often).

The data were collected through some student-teachers posted to senior secondary schools from Olabisi Onabanjo University, Ago-Iwoye on Teaching Practice Exercise for six weeks duration between 16th September, and 25th October, 2024 within the Zone. Linear Multiple Regression Analysis was adopted to test for statement of hypotheses formulated at 0.05 level of significance.

Results and Discussion

To test for Hypotheses

Hypothesis 1: There is no significant correlation between teachers' stress management, teachers' social abilities, teachers' motivation, and job performance.

				,
	Teachers' Job	Teachers' Stress	Teachers'	Teachers'
	Performance	Management	Social	Motivation
			Abilities	
Teachers' Job	1			
Performance				
Teachers' Stress	153 ^{**}	1		
Management				
Teachers' Social Abilities	.087*	.087*	1	
Teachers' Motivation	056	.083*	.259**	1
Joint	003	.445**	.688**	.718**

Table 1: Zero order correlation of the variables in the study

From the analysis, Table 1 indicates that teachers' stress management contributes to teachers' job performance. The table reveals a negative relationship between teachers' stress management and job performance with a correlation value of $(r = -0.153^{**})$, indicating a significant but small inverse association. This suggests that higher stress management, then, the lower job performance.

Additionally, the table shows that teachers' social abilities have a weak positive correlation with job performance ($r = 0.087^*$), implying that teachers with better social abilities may experience slightly improved job performance. Teachers' motivation, however, has a negative but non-significant relationship with job performance (r = 0.056), suggesting that motivation alone does not strongly influence job performance. Furthermore, teachers' stress management has a weak positive correlation with teachers' social abilities ($r = 0.087^*$) and teachers' motivation ($r = 0.083^*$), indicating a minor relationship between these variables. Teachers' social abilities and motivation show a moderate and significant positive correlation ($r = 0.259^{**}$), suggesting that teachers with strong social skills are likely to be more motivated.

Hypothesis 2: Social abilities does not significantly contribute to the effectiveness of senior secondary school mathematics teachers' job performance

Table 2. A regression showing the independent effect of teachers' stress, social abilities and motivation on job performance.

	Unstandardized Coefficients		Standardized	t	Sig.
			Coefficients		
	В	Std. Error	Beta		
(Constant)	78.429	3.689		21.258	.000
Teachers' Stress	190	.050	157	-3.789	.000
Management					
Teachers' Social Abilities	.198	.070	.120	2.817	.005
Teachers' Motivation	110	.063	074	-1.742	.082

The R² for Table 2 is .039, which suggest the variance contributed b these variables to teachers' job performance is 3.9 percent.

From the analysis, Table 2 indicates the contributions of teachers' stress management, social abilities, and motivation to teachers' job performance. The table reveals that the constant value (B = 78.429), (t = 21.258), (p \leq 0.05) suggests that in the absence of the predictor variables, teachers' job performance is estimated at 78.43 units. The table also shows that teachers' stress management has a significant negative contribution to job performance (B = -0.190), (t = -3.79), (p = 0.000). The standardized beta coefficient (beta = -0.157) indicates that for every unit increase in stress management, job performance decreases slightly, confirming an inverse relationship.

Furthermore, teachers' social abilities significantly contribute to job performance (B = 0.198), (t = 2.817), (p = 0.005). The standardized beta coefficient (beta = 0.120) suggests that an increase in teachers' social abilities is associated with a slight improvement in job performance. Teachers' motivation, however, does not significantly contribute to job performance (B = -0.110), (t = -1.742), (p = 0.082), as its p-value is greater than 0.05. The standardized beta coefficient (beta = -0.074) indicates a weak negative relationship, suggesting that motivation alone does not strongly predict teachers' job performance.

Hypothesis 3: Teacher's Motivation does not significantly contribute to senior secondary school mathematics teachers' job performance.

Hypothesis 3: Teacher's stress management, Social abilities and teacher's Motivation do not jointly significantly contribute to senior secondary school mathematics teachers' job performance.

Table 3: showing the joint effect of teachers' stress, social abilities and motivation on job performance.

Coefficients								
Model B		Unstandardized Coefficients		Standardized Coefficients	t	Sig.		
		Std. Error	Beta					
1	(Constant)	70.773	1.368		51.726	.000		
	joint	-1.118E-006	.000	003	061	.952		
a. D	a. Dependent Variable: TEACHERS' JOB PERFORMANCE							

Table 3 shows the joint contribution of teachers' stress management, social abilities, and motivation to

teachers' job performance. The table reveals that the constant value (B = 70.773, t = 51.73, p < 0.05) suggests that in the absence of the predictor variables, teachers' job performance is estimated at 70.773 units. The table also shows that the joint contribution of teachers' stress management, social abilities, and motivation to job performance is not significant (B= 1.118×1.006 , t = 1.0.061, p = 0.952). The standardized beta coefficient (1.0.003) indicates that the combined effect of these variables has a near-zero impact on teachers' job performance. It could be implied from the table 3 that although individual predictor variables may show some level of association with job performance, their combined contribution does not significantly predict job performance in this model. It can be therefore concluded that the Teacher's stress management, Social abilities and teacher's Motivation combined together has little contribution on mathematics teachers' job performance and significant.

Discussion

This study examined three factors of the teachers' affective factors as a panacea for determining senior secondary school teachers' job performance in mathematics and the extent to which the factors predict their job performance in senior secondary mathematics. The major findings of the study are:

The findings of the study revealed that the contribution of teachers' stress management on senior secondary school mathematics teachers' job performance is little and significant. This outcome is line with the assertion of Frederick-Jonah, (2021) and Chika (2011) that poor stress management among secondary school teachers could be a barrier to the attainment of educational excellence in that level. When a teacher is under stress, he is faced with disrupted emotional, cognitive and psychological functioning. For an effective and efficient performance in the classroom, stress reduction among teachers becomes imperative. It is in support of result of the finding Bassey, et al. (2021) claimed that stress arising from reduced workload does significantly relate with job productivity of teachers. When teachers are saddled with too much responsibility, there is bound to affect them negatively hence effectiveness will be reduced. This corroborated the finding of Ogbeide and Enabunene (2023) reported that stress management has a direct relationship with teachers' productivity that invariably affects students' academic performance. In addition, Zaifada, et al. (2023) submitted that management's inability to manage teachers' stress has a significant impact on teachers' performance in public secondary schools.

Secondly, this study found that the teachers' social abilities has little contribution on mathematics teachers' job performance but not significant. The outcome of result is contradicted the study of Manrique (2016) revealed that social abilities and teaching performance had a strong and direct significant relationship. In a similar study, Pa-alisho (2017) reported that teachers' abilities and job performance (based on learning and innovation, information, media and technology) had significantly relationship.

Thirdly, the findings of the study revealed that teacher's motivation has little contribution on mathematics teachers' job performance but not significant. The result of this study is support of * concluded that the importance of motivation in the day-to-day performance of teachers cannot be over-emphasized especially when it comes to being rewarded for a job done and being happy on the job. The study is in line with the study of Hasan, et al. (2023) that there was no statistically significant relationship between motivational factors and teachers' job performance due to the variable used in the studies. But the outcome of the findings is in contradictory with the study of Josiah et al. (2023) reported that a significant positive relationship between teachers' job performance and motivation in ensuring quality education in secondary schools. In the same vein, the result of findings of the Ogunmode et al (2023) revealed that there is a significant impact of incentives on job performance among teachers.

Lastly, the outcome of the findings indicated that teacher's stress management, social abilities and motivation when combined together has little contribution on mathematics teachers' job performance and significant.

Conclusion and Recommendations

Based on the empirical data and evidence of the result, it is therefore concluded that there is a statistically

significant contribution of teachers' stress management on senior secondary school mathematics teachers' job performance. The study also revealed that teacher's stress management, social abilities and motivation when combined together has little contribution on mathematics teachers' job performance and significant.

Drawing from the conclusion of the study, the following recommendations were made:

- 1. Teachers assigned to teach mathematics as a school subject should find their optimal stress level and effectively manage it by adopting effective stress management strategies.
- 2. Mathematics teachers should avoid engaging in life activities that will generate negative stress because prevention, they say, is better than cure.
- 3. Stakeholders should organize seminars and workshops and mandate mathematics teachers to attend at regular interval, to keep them abreast of modern trends in stress management healthy lifestyles and optimal performance.
- 4. Mathematics teachers should also be motivated by giving them more incentives and making their work environment comfortable so that it have a free stress management on their job performance.

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