

## INFLUENCE OF SUBJECTIVE NORMS OF FAMILY MEMBERS ON STUDENTS' PERFORMANCE IN MATHEMATICS IN PUBLIC SECONDARY SCHOOLS IN MIGORI COUNTY, KENYA

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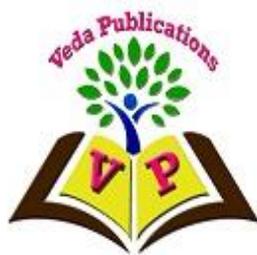
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### Abstract



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Performance in Mathematics has been poor at secondary level in Kenya despite initiatives like Strengthening Mathematics and Science Studies Education (SMASSE), providing text books and employing trained mathematics teachers by the Government. In view of the aforementioned problem; the purpose of the study was to investigate the influence of home based factors on students' performance in Mathematics in selected public secondary schools in Migori County, The objective of the study was to investigate the effect of subjective norms on students' performance in Mathematics in Public Secondary Schools. The study was guided by Ajzens theory of planned behavior. The study adopted mixed methods approach and its research design was descriptive survey. The targeted population was 17000 form IV students. Using simple random sampling, purposive sampling techniques and Glen's Israel formula of getting the sample size was used to get a sample size of 56 schools and 800 students. Data was collected using a questionnaire for selected students analyzed by descriptive statistics of mean, frequency, standard deviation, correlation coefficient and inferential statistics (ANOVA).SPSS Program version 23 was used in the analysis of data. The study has revealed that, subjective norms significantly predicts performance in mathematics among secondary school students,  $F(1, 690) = 436.580, p < .05$ .

**Keywords:** *Subjective Norms, Students' Performance, Public Secondary Schools*

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## Introduction

Mathematics is a compulsory subject in Kenyan secondary school curriculum. The importance of school Mathematics cannot be overemphasized. Mathematics is crucial for increased student's achievement in school, for producing informed citizens, success in careers, as well as in personal fulfillment. In today's technology driven society, greater demands have been placed on individuals to interpret and use Mathematics to make sense of information in complex situations. Mathematics is an essential tool in many fields, including natural science, engineering, medicine, and the social sciences. It is also used in day-to-day activities at home, in the market places and in offices (Mondoh 2005).

Eze (2009) found that, the prosperity of any nation depends largely on the volume and quality of mathematics offered in its school system. Researchers have undertaken studies on factors that influence poor performance of mathematics in secondary schools, they have looked at: teachers factor for example was researched on by Musasia, Nakhanu and Wekesa (2012) on syllabus coverage, Hanushek and Rivkin (2012) on the distribution of qualified teachers in institutions and lastly Tella (2007) on how a teacher motivates a class to influence good performance. Learners' factor was researched on by Manoah, Indoshi and Othuon (2011) and Wanjiru and Ching (1991) on the attitude of a learner towards Mathematics, while Ojaleye (2000) looked at students ability in learning Mathematics. School factor was researched on by Eraikhuemen (2003) who looked at school factors that influence good achievement in Mathematics and Markman (2008) who researched on why girls drop out of school. In the current study the researcher investigated Home-based factors that influence students' performance in Mathematics in public secondary schools in Migori County, Kenya.

A home is a place where one lives, especially as a member of a family or household. It is a place of residence (Gitau, 2014; Akeri, 2015). A home is not a mere transient shelter. Its essence lies in the Personalities of the people who live in it. Home Environment refers to the surroundings where one lives (Anene, 2005). Environment is the aggregate of all internal and external conditions affecting the existence, growth and welfare of an individual. It is an influence that an individual comes in contact with after one is born. Anene (2005) explained that environment can be divided into physical, social and abstract environments.

Physical environment is composed of the objects or materials found in the home, school or community. It also includes the people such as parents, siblings and peers (Anene, 2005). She also explained that the social environment includes all means that bring people together and share ideas for example societal meetings, worship, the social life, societal organizations and clubs that affect an individual. Abstract environment is made up of the reactions, feedback and the responses received on interactions with others. Environment can also be classified as urban or rural. Rural environments are characterized by agricultural activities like animal keeping, fishing and crop growing while an urban environment is characterized by business activities like: banking, wholesaling and Industrial activities.

The focus of this study is on the home based factors influencing academic performance of a student in mathematics. This therefore, entails the objects, materials, parents, siblings, peers and social life that exists in the home in which the student find himself/herself. All these variables in the home which affect a person's existence, behavior and performance constitute the home environmental factors. Academic Performance on the other hand is the outcome of education as it is the extent to which a student or an institution has achieved the educational goals.

**Akeri (2015) defines home based factors as the conditions inherent to the home environment that either limit or influence academic performance of students.** Academic achievement is commonly measured by examination or continuous assessment results. However, there is a general agreement on how it is best tested (Bossart, Doumen, Bugse & Verschuereen, 2011). The study investigated home based factors influencing students' performance in mathematics in public secondary schools in Migori County, Kenya.

## Literature Review

### Subjective norms and their influence on mathematics performance

A subjective norm refers to "the person's perception that most people who are important to a person especially family members think he/she should or should not perform the behavior in question" (Fishbein & Ajzen, 1975) and (Ajzen 2006). Subjective norms have been found to be more important prior to, or in the early stages of innovation and implementation when users have limited direct experience from which to develop attitudes (Hartwick & Barki, 2018; Taylor & Todd, 2005). Such influences on a learner may affect his/her attitudes toward mathematics in loving or to hating it leading to either passing or failing in the subject.

Chua (1980) suggests that the adopter's friends, family, and colleagues are groups that will potentially influence adoption of doing an activity. Leotti, Iyengar and Ochsner (2010), noted that when we are born, we are not born with a set of values and expectations, so we learn them from our parents or adults who raise us. We learn not only through these adults teaching us, we learn by example and by watching/observing. As we grow up and get to an age that we can understand what are "values" and "expectations". However, we also can reject or test those values and expectations as children and young adults for many reasons, knowing that we have done wrong, but want to see what it is like anyway. Since we spend most time with our families, they are the primary adults who influence our values and expectations for ourselves.

Expectancy-value theory and attribution theory are based on the notion of motivation and could explain differing parents' motivation to help their children learn mathematics in ways identified as meaningful in previous research (Cai, 2003). In expectancy-value theory, individuals' expectancies for success and the value placed on succeeding are important determinants of motivation to perform different tasks (Eccles & Wigfield, 2002). A learner who is highly

motivated by parents that he/she is capable of doing well in Mathematics is likely to do better in the subject.

The concept of *expectancy* represents the idea that most individuals will not choose to do a task or continue to engage in task where they expect to fail. The expectancy construct concerns the answer to the question “Can I handle Mathematics tasks successfully?” If the answer is ‘yes’, most people will choose to engage in the task. If the answer is ‘no’ or there are doubts about one’s capabilities to succeed, individuals are less likely to engage in the task (Pintrick & Schunk, 2002). The other half of the equation is the *value* component.

Value refers to the different beliefs students have about the reasons they might engage in a task. It concerns the answer to the question “Do I want to do this exercise and why?” Both components are important for predicting people’s future choice of behavior, engagement persistence and actual achievement (Pintrick & Schunk, 2002). All parental involvement in mathematical learning is likely to be influenced by parents’ perceived importance of (value) mathematics and an expectation of success (expectancy) that may result from their involvement (Hunt & Hu, 2011).

Attribution theory suggests that parental involvement in mathematics depends heavily on the controllable or uncontrollable factors involved in the task and the connected need for achievement (Weiner, 2018). Attributing an outcome to a stable cause such as ability or skill has a stronger influence on expectancies for future success than attributing an outcome to an unstable cause such as effort. This is an important point when considering parental roles and why certain parents become more involved than others. Weiner (2018) states that if individuals are high in achievement in mathematics their motivation will be the determinant outcome that is high effort producing success and low effort results in failure. This study would expand understanding of the nature of involvement in students’ mathematical learning by explaining the influences of mothers’ perceptions and beliefs toward mathematics through expectancy–value and attribution theories. Specifically, this research answers the following questions:

1. What are the parents’ expectations in learning of mathematics?
2. Why might their views, experiences and education level influence engagement of parents’ regarding their child’s mathematics learning?

### **Studies conducted globally on Mathematics performance**

Ho and Willms (1996), Ho (2007) and Bill A., Forgasz and Nebres (2013) carried out a study in U.S.A, on the effects of parental involvement on eighth grade achievement and identified four dimensions of parental involvement and assessed the relationship of each dimension with parental background and academic achievement for a large representative sample of U.S. middle school students. The findings provided little support for the conjecture that parents with low socio-economic status are less involved in their children’s schooling than are parents with higher socio-economic status. The study, however, used primary data from students, principals

and PTA members collected by questionnaires and interview methods. This current study was conducted among secondary students and the target populations are: principals of the purposively sampled secondary schools, mathematics teachers and the form four students.

Dislike of mathematics found in both adults and students is associated with anxiety and fear. This anxiety and fear may elicit negative attitudes towards the subject among adults and these general unfavorable perceptions and attitudes about mathematics are passed on to children from adults. Society treats and views mathematics as an unknown territory made up of x “s and y”s. Society also views mathematics teachers as sarcastic and impatient, didactic and scornful (Mac nab & Cummine, 2016). These views are unconsciously picked by students and they come to mathematics classroom with an already distorted perception and attitudes towards learning of mathematics.

Ying et al (1991) did a study comparing 894 students from 26 schools in Hong Kong. They undertook a study to identify correlations between mathematics achievement and expectations from parents and of students themselves. After conducting multiple regression analyses, the research revealed that the parental expectation and students’ achievement in mathematics had a strong correlation. Whether societal and parental expectations influence attitudes formation amongst secondary school students was the contention of the study. This current study on the other hand examines the effects of home norms on the performance of secondary students in mathematics. Students’ attitude towards mathematics influences the efforts they put in understanding and practicing mathematical concepts and skills. Etshiano and Okello (2020) equally argued that frequent assessment reduces anxiety when sitting for exams and this leads to high achievement and improved performance in mathematics.

According to the National Research Council (2000) as cited in Akey (2006), Students’ beliefs about their competence and their expectations for success in school have been directly linked to their levels of engagement, as well as to emotional states that promote or interfere with their ability to be academically successful. Thus attitudes determine the effort a student is likely to put in his learning of the subject (mathematics). It is therefore necessary for mathematics teachers to strive and sustain positive attitudes towards mathematics for good performance in the upper classes (Benson,1999). Therefore when a learner has appositive attitude in mathematics he/she likely to put more efforts in reading the subject at home, likewise a student who is negative to the subject is likely not read mathematics at home. The result is likely to be low achievement in the subject.

It has been proven that children whose parents and families are engaged in their education are more successful in school and have higher academic goals. This involvement not only includes participating in your child’s school fundraiser or attending his or her performances and athletic events, but also means partnering with your child’s school to support learning at home (Michigan,2011). For the purposes of this study the phrase “parental engagement” will be used to indicate all activities that parents undertake to help their children succeed in school and life.

Family engagement is vital to student success and as one can see it has been recognized within state and federal legislation as well as in school and district policies. Therefore it is important to recognize that a partnership between schools and families can contribute significantly to a child's education and academic success, Monson, (2010).

Family involvement is a common term used to bring teachers and parents together in schools. Parents who are "involved" serve the school's agenda by doing what educators ask or expect them to do. The focus of family involvement is that the school/educator is driving the outcome. While Parental engagement involves personal contact, educational support at home, two-way communication between home and school, parents involved in school decision making, parents as volunteers working on student achievement, schools as parent resource sites, and schools as welcoming places.

Family involvement in academics and learning remains important in the adolescent years (Spera, 2006). Educators recognize that schools alone cannot prepare students for academic success without the support of parents. They acknowledge that families play a critical role in helping youth succeed in high school and beyond. Unfortunately, parental involvement in education tends to decrease across middle and secondary school, due in part to adolescents' increasing desire for autonomy and in part to changes in school structure and organization. Yet family involvement in education remains a powerful predictor of various adolescent outcomes (Spera, 2006).

Zhan (2006) supports the importance of family involvement in the high school years; whereby, intervention evaluations increasingly demonstrate that parental involvement can be strengthened with positive results for youth and their school success. Such results can be achieved when there is a match among youth's developmental needs, parents' attitudes and practices, and schools' expectations and support of family involvement.

According to Hill, Castelino, Lansford, Nowlin, Dodge, Bates and Pettit, (2004), three family involvement processes for creating this match emerge from the outcome base: Parenting consists of the attitudes, values, and practices of parents in raising youth. These three family involvement processes are the same as those that are related to academic and social-emotional outcomes in the early childhood and elementary school years. Parenting, home-school relationships, and responsibility for learning outcomes need to become adhered to and involvement by the family. Parenting, home-school relationships, and responsibility for learning outcomes need to become more respectful of students' drive for independence, expanding cognitive abilities, and widening social networks.

Parenting refers to the family involvement process that consists of parental attitudes, values, and practices in raising their youth (Hill et al., 2004). The parenting styles used to engage youth, the quality of parent-youth relationships, and the ways parents monitor youth behavior collectively and uniquely influence youth achievements. Warm and responsive parenting in youth of school

going age is related to school success in students 'drive for independence, expanding cognitive abilities, and widening social network.

Policies like the Safe and Drug-Free Schools and Communities Act (SDFSC) or Title IV, Part A, of the Elementary and Secondary Education Act (ESEA) became law in 2002 to support drug and violence prevention programs in schools; this policy plays the role of parents. The SDFSC is also intended to support programs designed to prevent the illegal use of alcohol, tobacco, and drugs; and those that involve parents and communities in helping and controlling moral value of students at school and at home.

What you say to your child about using alcohol or drugs makes a big difference and matters a lot to children. Believe it or not, children do listen to their parents when they talk about these things—and in return children may say that their parents are a huge influence in their decision not to use alcohol or drugs. Parents should be a good role model for their children from taking part in any illegal, unhealthy or dangerous drug use practices and making parenting a priority. Make ground rules for your child and enforce the rules. Children say that they want rules from their parents—it shows them that you care about what happens to them. Adapt the rules as needed as your child gets older and more independent. Help your child learn what to say if offered alcohol or drugs (Michigan Department of Education, 2011).

It's easier to stand up to peer pressure with some practice saying no and being firm about it if parents had known their children better and had advised them on how to cope with situations. It is better to know your child's friend in order to give sound piece of advice to your child.

Know who your child's friends are and get to know the friends' parents or caregivers, too.

Watch for signs of stress in your child and help your child learn how to deal with stress. Teenagers on the other end also say stress is one of the reasons why they start using drugs without considering repercussions of the drugs and then they become drug addicts. Parents should educate their children on the effects of using drugs.

### **A study conducted in Kenya**

Jepketer, Kombo and Kyalo (2015), conducted a study in Nandi County, and identified the different types of drugs, their slang names, the signs of use, and their short- and long-term consequences. The purpose of their study was to investigate the teachers' capacity building strategies that influence students' performance in public secondary schools in Nandi County. The main objective of the study was to examine how teachers' capacity building strategies enhance students' performance in public secondary schools in Nandi County.

The study used descriptive survey design. Stratified and simple random sampling techniques were used for the study. The study populations comprised of the principals, teachers and students. The researcher used 30% as population sample size for the public secondary schools, 30% as population sample size for principals, 10% for teachers and 10% for the students. The target sample was (30) public secondary schools, (30) school principals, (85) teachers and (136) students. The findings of the study showed that Nandi County has qualified and well trained teachers. However, in some instances the findings showed teachers' needed refresher-training courses to improve on their teaching performance. The findings showed that students continue to perform poorly in mathematics in some public secondary schools in Nandi County. It was further found out that contribution of teacher capacity development influences students' performance to a greater extent.

The findings of the study reinforces the existing studies that have shown that quality of education depend on effective teaching skills, knowledge and attitudes acquired by teachers' through continuous in-service education and training and for which teachers employ at a given time leading to improved students' performance. Similarly, teachers' capacity development should be strengthened in order to enhance teacher professional growth and to realize quality students' outcome in academic achievement. School principals should ensure that teachers' are held accountable for student learning by putting in place measures that ensures education offered to learners is of high quality. However, students who are not endowed in academics should be guided to discover their talents early enough, nurture and pursue careers of their choice. Further research on the best approach of addressing poor students' performance in academic achievement in secondary schools need to be undertaken. But the current study is exploring home based factors on influencing performance in mathematics in public secondary schools in Migori County Kenya.

### **Methodology**

A survey design was used for the study and adopted mixed method approach for data collection from the target population by getting opinions through questionnaires for the students who were selected, the same applied to sampled mathematics teachers while an interview schedule was utilized for sampled principals. These features are those of a mixed method survey design.

A survey research design was used to find answers to questions through the analysis of variables relationship. A descriptive research design was used to evaluate the influence of attitude on studying mathematics at home and the influence it has on mathematics achievement in public secondary schools in Migori County. Descriptive research was used because, descriptive research is a study designed to depict the participants in an accurate way. It is all about describing people who take part in a study (Hale, 2011).

Survey research design in this case helped the researcher to get the primary data required to determine the effects of attitude on influencing performance in mathematics , subjective norms

on influencing performance in mathematics, and perceived behavior control on influencing achievement in mathematics. Influence of all the three that is, attitude, subjective norms and perceived behavior control on influencing performance in mathematics. The design provided a guide in the collection, analysis and interpretation of the observations faster.

This design was used because it helped the researcher to get the primary data required to determine the influence of home based factors on influencing mathematics performance among secondary students at form four levels (KCSE).” The design provided a guide in the collection, analysis and interpretation of the observations faster.

## **FINDINGS AND DISCUSSIONS**

### **The Level of Subjective Norms among Secondary School Students**

The level of subjective norms among the students’ in public secondary schools was assessed through the use of a questionnaire, which helped the respondents to rate the indicators of subjective norms. The rating was a five point Likert rating ranging from strongly disagree (1) to strongly agree (5). For easy interpretation and applicability in inferential statistics analysis, the responses were converted into continuous scale ranging from 1 to 5, where higher scores represented high level of subjective norms vice versa. The views of the student respondents were summarized into frequencies, percentages, means and standard deviation, as shown in Table 4.9.

**Table 4.9: Response on Students' Subjective Norm**

Indicators of subjective norms	SD	D	U	A	SA	Mean	tD
I rarely study mathematics at home.	248 (35.8%)	195 (28.2%)	106 (15.3%)	66 (9.5%)	77 (11.1%)	2.23	1.26
Pupils who study mathematics at home are good examples to me.	121 (17.5%)	164 (23.7%)	285 (41.2%)	25 (3.8%)	96 (13.9%)	2.73	1.21
My friends feel that I should study mathematics at home.	34 (4.9%)	63 (9.1%)	276 (39.9%)	29 (4.2%)	290 (41.9%)	3.69	1.24
My parents/guardians think that I should study mathematics at home.	51(7.4%) )	109 (15.8%)	301 (43.5%)	39 (5.6%)	192 (27.7%)	3.31	1.24
Most of my classmates find it advisable for pupils to study mathematics at home. I'm also influenced to do that.	47 (6.8%)	60 (8.7%)	234 (33.8%)	27 (3.9%)	324 (46.8%)	3.75	1.31
Most students in my school do not study mathematics at home. I'm also affected.	63 (9.1%)	107 (15.5%)	286 (41.3%)	36 (5.2%)	200 (28.9%)	3.29	1.28
Most of my classmates have influenced me not to read mathematics at home.	248 (35.8%)	195 (28.2%)	122 (17.6%)	50 (7.2%)	77 (11.1%)	2.23	1.26
Mean Rating of Students' Subjective Norm						3.03	1.26

Key: SD-Strongly Disagree; D-Disagree; U-Undecided; A-Agree; SA-Strongly Agree and StD-Standard Deviation.

Source: Survey Data (2018)

The results of the survey established that there is generally low rating of subjective norm among the students in Migori County, as interpreted by average of 3.03 (SD=1.26) with the items ranging from a low of 2.23 to a high of 3.75 on the scale of 1 to 5. The low rating indicates that most of the students have low social pressure to engage in reading mathematics. For example, more than one out of five 143 (20.6%) of the students who took part in the survey agreed that they rarely study mathematics at home, translating to a mean subjective norm of 2.23 though

with fairly big variability ( $SD=1.26$ ) in opinion among the respondents. Equally, more than a third 236 (34.1%) of the respondents accepted that because most students in their school do not study mathematics at home, they are also affected reflecting a mean normative norm of 3.29. Likewise, 127 (18.2%) of the students indicated that most of their classmates have influenced them not to read mathematics at home.

On the contrary, the results of the survey also revealed that some students are propelled to study mathematics as a result of the motivation to positively comply. For instance, 121 (17.7%) of the respondents alluded that students who study mathematics at home are good examples to them and they always tend to copy them. In addition, 319 (46.1%) of the students who were surveyed were in agreement that their friends feel that they should study mathematics at home, translating to norm objective of 3.69 ( $SD=1.24$ ). Equally, they believe that their parents/guardians think that they should study mathematics at home. In fact, about one out of every two 351 (50.7%) of the students who took part in the study believed that most of their classmates find it advisable for students to study mathematics at home and as such they feel influenced to do that.

### **The influence of Subjective Norms on Students' Performance in Mathematics in public Secondary Schools.**

**H<sub>01</sub>:** *There is no statistically significant influence of subjective norms on students' performance in mathematics in public secondary schools*

To investigate the influence of subjective norms on performance in mathematics among public secondary school students, the null hypothesis was tested. A parametric test, simple linear regression analysis was conducted to estimate the level of influence, with scores on subjective norms as the independent variable and student performance in mathematics as the dependent variable. The independent variable was computed from frequency of responses and converted into continuous scale, where high scale ratings implied high perceived level of subjective norms among the students and vice-versa. The significant level (p-value) was set at .05 such that if the p-value was less than 0.05, the null hypothesis would be rejected and conclusion reached that a significant difference does exist. If the p-value was larger than 0.05, it would be concluded that a significant difference does not exist. Table 4.10 shows the regression analysis results in SPSS output.

### **Regression Results - Influence of Subjective Norms on Students' Performance in Mathematics**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.623 <sup>a</sup>	.388	.387	.54688

Predictors: (Constant), Subjective Norms

Dependent Variable: Students' Performance in Mathematics

It is evident from Table 4.10 that there is a significant positive correlation ( $R=.623$ ) between that of subjective norms and performance in mathematics among public secondary school students, with high subjective norms associated to better performance in mathematics and vice-versa. The same position was held by both mathematics teachers and principals. The results further reveals that subjective norms accounted for 38.8%, as signified by coefficient of  $R^2=.388$ , of the variation in performance in mathematics among public secondary school students. This is fairly large influence on a dependent variable by one predictor; hence, it reveals the importance of subjective norms in relations to performance in mathematics among public secondary school students.

Further, to determine whether subjective norms were significant predictor of performance in mathematics among public secondary school students, Analysis of Variance (ANOVA) was computed in line with the recommendation by Tabachnick and Fidell (2001).

#### ANOVA –Influence of Subjective Norms on Students’ Performance in Mathematics

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	130.573	1	130.573	436.580	.000 <sup>b</sup>
	Residual	206.365	690	.299		
	Total	336.938	691			

Dependent Variable: Students' Performance in Mathematics.

Predictors (Constant): Subjective norms

Table 4.11 is ANOVA results output which reveals that, subjective norms significantly predict performance in mathematics among public secondary school students,  $F(1, 690) = 436.580$ ,  $p < .05$ . This signifies that the null hypothesis that: “*subjective norms have no statistical significance influence on performance in mathematics among public secondary school students*”, was rejected. It was therefore concluded that subjective norms have statistically significant influence on performance in mathematics among public secondary school students, with high subjective norms associated to better performance in mathematics among public secondary school students and vice-versa.

Table 4.12 shows the coefficients values of the regression model.

### Regression Coefficients: Influence of Subjective Norms on Students' Performance in mathematics

$Y = \alpha + \beta X_1 + \epsilon$ , where Y= Students' Performance in Mathematics;  $X_1$ = Subjective Norms and  $\epsilon$  is the error term

$$Y = 3.874 + .820X_1 + \epsilon.$$

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error				Lower Bound	Upper Bound
1 (Constant)	3.874	.121		32.128	.000	3.637	4.111
Subjective Norms	.820	.039	.623	20.895	.000	.743	.897

#### a. Dependent Variable: Students' Performance in Mathematics

From the analysis, there is a significant positive unstandardized co-efficient of .820 within a 95% C.I (.743, .897) as indicated by the co-efficient matrix. Given that there is a significant p-value ( $t = 20.895$ ;  $p < .05$ ) of the unstandardized co-efficient value, there is sufficient evidence to reject the null hypothesis ( $\beta_1 = 0$ ) and accept the alternative ( $\beta_1 \neq 0$ ). Hence, this further confirms that subjective norms have statistically significant influence on performance in mathematics among public secondary school students. It is evident that a positive improvement in the level of student subjective norm by one unit results to .820 units of improvement in the student performance in mathematics. On the same note, a positive improvement in student subjective norm by one standard deviation results into an improvement in mathematics performance among public secondary school students by .623 standard deviations, as reflected by Beta value of 0.623.

The findings are in agreement with Utami (2017) research outcome that showed that Subjective Norms had a positive and significant influence on intention to entrepreneurship in Indonesia. This finding are in line with the earlier findings of Cruz et al (2015) who had researched on the effect of the application of planned behavior on entrepreneurship among students of economic faculty in Indonesia. In Tanzania, Adewale (2019) found that there was a strong relationship between Subjective Norms and intention to open access to journals. All these findings are in line with the findings in the current study.

## Conclusions

The study concluded that subjective norms have statistical significant influence on performance in mathematics among public secondary school students.

**Recommendations:** From the conclusions of the study, policy recommendations were made to a number of stakeholders namely: the government of Kenya and the ministry of education, Teachers, NGO's, and Community Based Organizations.

The study made a number of recommendations to the following stakeholders:

### a) Ministry of Education

The government through, the ministry of education, should create awareness among parents that they have a role to cultivate mathematics achievement among students at home through encouragement and providing more conducive home study environment to the students. This will encourage their students to do mathematics at home leading to higher achievement in mathematics at school. Mathematics is the key to entering technological careers and the brain engine of Kenyan economy.

### b) Non-Governmental Organizations (NGOs')

Non-governmental organizations are organizations which try to provide additional services to the community that supplement on their income and ability to educate learners. They should create awareness among parents they support in Kenya that they have a crucial role to facilitate students' learning by encouraging their children to study and provide a more appealing environment to study at home.

### c) Community Based Organizations (CBOS')

These are local organizations comprising of the villagers who team up to strengthen themselves economically. They should encourage fellow members to ensure that their children take learning seriously by creating conducive learning environment in the homes of their members. They should also encourage members to purchase pens, books and even source of lights such as solar panels for studying at home. Members should also be educated on the significance of children education at home. They should be encouraged to think beyond burial donations.

### d) Recommendations for Further Research on:

Influence of school philosophy on achievement in mathematics in secondary schools in migori County

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