

# Evaluate the effectiveness of food security strategies used to enhance academic competencies of ECD children in Mutomo, Kitui County, Kenya

<sup>1</sup>Khadija Namasaya, <sup>2</sup>Dr. Ruth Simiyu and <sup>3</sup>Dr. Ferdinand Nabiswa

<sup>1</sup>Department of Emergency Management Studies, Masinde Muliro University of Science and Technology

<sup>2</sup>Department of Peace and Studies, Masinde Muliro University of Science and Technology

<sup>3</sup>Department of Emergency Management Studies, Masinde Muliro University of Science and Technology

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**Abstract-** Despite the extensive efforts made by the United Nations and other agencies to achieve a food secure world, food insecurity remains a major issue in poor countries. Developing countries around the world are still suffering from hunger, forcing their governments to seek outside assistance, but the relief has only been transitory in the best-case scenarios. Kitui County is one of Kenya's worst-affected regions in this regard, and the situation could have a variety of consequences for ECD students. The objective of the study was to evaluate the effectiveness of food security strategies used to enhance academic competencies of ECD children in Mutomo, Kitui County. Maslow's theory of wants and the cause and effect theory of attention drove the research. The study adopted the descriptive survey research design. The study population comprised ECDE teachers, ECDE pupils, Sub-county Education Officers, Nutritionists, Agricultural Officers, Social Workers, Children Officers, and ECDE parents in the sub county. According to the findings, there has been an overall improvement in performance, with a jump from 68 percent to 75 percent since the implementation of food security initiatives in 2008. As a result, the techniques have a stronger impact on ECD students' educational outcomes. To improve the skills of ECDE children in Mutomo Sub County, Kitui County, the study advises that all stakeholders be included in establishing sustainable food security policies.

**Index Terms-** Food security, academic performance, effectiveness, ECD children

## I. BACKGROUND

In her research, Alison (2013) states that South America "has a demonstrated track record of growth and innovation, and could be a significant contribution to solving the expanding world food needs." "Under the fear of starvation, the populations living in the deep south of Madagascar are adopting survival methods, such as consuming seeds to be grown for the following harvests, lowering the possibility of any meaningful crops," according to a similar report by WHO (2017). According to the World Food Programme, 720,000 people in this distant portion of the country, which has been neglected by both official authorities and development institutions and has been struck by a severe drought since 2008, are starving.

Furthermore, one of the Big Four Agendas that supports the Kenyan government's Sustainable Development Goals (SDG) is to eliminate hunger (GoK, 2011). "However, progress has been gradual in recent years, with the number of hungry people in developing nations rising from 799 million in 1998-2000 to 815 million between 2000 and 2002 (Pierre, 2006)".

Kenya's agricultural sector, despite being the ninth largest in Africa in terms of output, has failed to keep up with demand since the late 1990s (The Standard, 2017). Because poverty and hunger are so closely linked, the poor in both rural and urban regions are disproportionately affected by food insecurity".

According to Nyandiko et al. (2015), there is fluctuation in rainfall in Lower Eastern Kenya due to rising temperatures, which tend to increase evapotranspiration, which has a negative influence on food production and so reduces food security. The ramifications of the extremely dry climate have had a significant impact on residents, undermining the efforts of households, organizations, and governments reducing the risk of food insecurity in the regions.

Kitui County is one of the counties in Kenya's Lower Eastern area that has suffered from food insecurity due to erratic rainfall patterns throughout the years (Nation, 2018). Machakos, Makueni, and Mwingi Counties, among others, have had low food production as a result of difficult climatic conditions. Kitui County ranks high among the counties that have experienced low food production as a result of the harsh climatic conditions (Nyandiko et al., 2015). Mutomo sub County is one of Kitui County's worst-affected sub counties due to the ongoing drought and food shortages. The situation is critical, as the area has experienced shifting climatic shifts for the past five years, with unexpected weather patterns throughout any given year (The standard, 2016). Scholars have shown a link between food insecurity and poor academic performance in pre-school children (FSA, 2012). However, no previous study has looked into the academic abilities of ECDE students in relation to their food security status. This study was motivated by a desire to learn more about the efficiency of various food security solutions in terms of academic competencies for early childhood development of schoolchildren in Mutomo Sub County.

## II. THEORETICAL FRAMEWORK

Abraham Maslow's, (1943) hierarchy of needs classifies human needs from elementary to erudite levels. From the increasing importance, the clusters of needs included in Maslow's hierarchy are physiological needs, safety needs and belongingness and love needs, esteem needs, and the need for self-actualization. In the process of self-actualization, one is judged against a personal ideal of the highest potential that one is capable of realizing. Maslow's hierarchy of wants gives a framework for comprehending a basic link between eating and psychological well-being.

Humans who have not reached their fundamental nutritional demands are unable to meet their higher nutritional needs. Maslow developed a five-stage model of hierarchy of needs. These included; biological and physiological needs (air, food, drink, shelter, warmth, sex, sleep), safety needs (protection from elements, security, law, order, stability, freedom from fear), love and belongingness needs (friendship, intimacy, trust and acceptance), esteem needs and lastly self-actualization needs including self-fulfillment, seeking personal growth and realizing personal potential (Maslow, 1987).

According to power personal construct theory, people filter observations of events through a basic belief that causes have the power to generate or prevent their effect, thereby interfering with specific cause-effect relations (Navon, 1979). There is no way to identify attention independent of some theory of attention, and we argue that theories of attention are structured largely by conceptual metaphors. These metaphors provide the logic for our thinking and reasoning about the nature, structure, and processes of attention, and we cannot do without some set of metaphors, either in commonsense or in scientific models of the mind (Shiffrin, 1988). According to cognitive theorists such as Broadbent (1958) and Kahneman (1973), selective attention to one stimulus over others frees people to orient their energies in certain directions, even in the face of stimuli that are more salient than the selected ones.

## III. METHODOLOGY AND DESIGN

The study employed descriptive survey research design. Borg and Gall, as acted in Orodho (2005) note that description

survey research is intended to yield statistical data about strategies of food security and challenges of implementing them. The descriptive facet of a study presents the actual facts on the ground as obtained. The study used both qualitative and quantitative data to supplement each other. The study was conducted in Mutomo, Kitui County. The study targeted 61 schools, which have ECD section. This study targeted a total of 2000 respondents, as they form the entirety of the characteristics of interest in this study. According to Kerlinger (2003), a sample is said to be sufficient to represent the target population if it comprises of at least 10% of the subjects in the target population. Basing on this assertion, 259 respondents were selected from the study population, which is the 10% recommended by Kerlinger (2003).

Questionnaires, Focus discussion groups and interviews were employed in the primary data collection while relevant literature also were reviewed. The raw data was coded in SPSS version 23.0, and analyzed descriptively to generate frequencies and percentages To facilitate analysis, positively worded statements in the questionnaires was scored in descending order such as Strongly Agree = 5, Agree = 4, Undecided = 3, Disagree = 2 and Strongly Disagree = 1. Negatively worded statements on the other hand was scored in the reverse order such as Strongly Agree = 1, Agree = 2, Undecided = 3, Disagree = 4 and Strongly Disagree = 5. The number of sampled respondents who were in agreement with the way a question was posed were then be computed as a frequency, then converted to percentages to facilitate interpretation of the data after all respondents are interviewed, so as to obtain the answer to each research question.

## IV. FINDINGS AND DISCUSSIONS

The study objective was to evaluate the effectiveness of food security strategies used to enhance academic competencies of ECD children in Mutomo, Kitui County, Kenya. The study sampled a total of 259 respondents. Table 1 shows the effectiveness of food programme on the performance of pupils.

**Table 1: Effectiveness of food programme on the performance of pupils in Mutomo**

<b>Extent you agree that school feeding programme enhance performance of pupils</b>				
Very large extent	25	25.0	25.0	25.0
Large Extent	34	34.0	34.0	59.0
Very small extent	41	41.0	41.0	100.0
Total	100	100	100.0	

**Source: Research data (2019)**

Table 1 reveals that 25 (25 percent) agreed that feeding programs increase performance to a very large extent, 34 (34 percent) agreed to a moderate extent, and 41 (41 percent) agreed to a very small extent. This data suggests that 59 percent of respondents thought that feeding programs improve student achievement, resulting in child retention in school. As a result, the

feeding program is likely to have had a significant impact on pupil competencies and increased food security, resulting in a higher attention rate than those who have not yet received food. The study sought from ECD pupils to find out the various types of food offered in the schools under study. The results are presented in Table 2 shows type of foods offered to ECD pupils.

**Table 2: Types of food offered to ECD Pupils in Mutomo Sub-county**

Type of food	Frequency	Percent	Valid Percent	Cumulative Percent
<i>Githeri/Muthokoi</i>	56	56.0	57.1	57.1
Maize	19	19.0	19.4	76.5
Ugali	18	18.0	18.4	94.9
Mukimo	2	2.0	2.0	96.9
Rice	3	3.0	3.1	100.0
Total	100	100	100.0	
Total	100	100.0		

Source: Researcher (2019)

The study found out that 56(56.0%) of ECD pupils indicated that they feed on *gather/muthokoi*. Findings reveal that, 19(19.0%) of ECD pupils were given maize, 18(18.0%) used ugali while

2(2.0%) used *mokimo*. Table 3 shows the frequency of taking meals in schools per day.

**Table 3: Frequency of taking meals in schools per day**

	Frequency	Percent
Once	3	15.0
Twice	15	75.0
Thrice	2	10.0
Total	20	100.0
Total	20	100.0

Source: Researcher (2019)

The study reveal that, 2(10%) of ECD schools offered meals once a day, 15(75%) offered meals twice while 2(10%) offered meals thrice in a day. This suggests that most schools in Mutomo sub-county have feeding programs, which has increased ECD students' skills. In terms of child performance, the data from the

interviews with head teachers revealed an upward trend in performance, with many ECD students being attentive in class. Table 4 present results on correlation between type of food and performance.

**Table 4: Correlation between type of food offered and the performance**

Correlations <sup>b</sup>		Type of food	Do school meals help you study better
Type of food	Pearson Correlation	1	.0879
	Sig. (2-tailed)		.001
Do school meals help you study better	Pearson Correlation	.0879	1
	Sig. (2-tailed)	.001	

\*. Correlation is significant at the 0.01 level (2-tailed).

b. Listwise N=98

Source: Researcher (2019)

The study conducted a correlation between the type of food offered in the schools under study and the mean performance of the learners at 0.01 level of significance. The Pearson Correlation co-efficient was 0.879 which showed existence of a strong significance relationship between the type of food offered and learners' performance;

“The feeding program had a positive impact on performance, according to the key informant interview with

teachers. This was further confirmed by the fact that children's involvement in activities before meals was slow and they had poor attention, in contrast to engagement after meals, when they had strong concentration and were merry. The children's favourite food was ugali and porridge” (Interview with teachers, 30/3/2019).

The teachers further opined that:

“During the interviews, teachers stated that their job in relation to food security initiatives is to ensure that children are properly cared for, as this has an impact on their classwork. They also serve as liaisons between the youngsters and the teachers. The teachers also mention that they recommend which meals should be served to youngsters and that they monitor the cooks' quality of service. The children's performance has improved, according to the responders, owing to the children's comfort.” (Interview with teachers, 30/3/2019).

As a result of the data, it can be concluded that improving food security initiatives increases school enrollment. Zachary (2014) confirmed similar data, concluding that food security boosts enrolment to a greater extent. Enrollment grew by 14% as a result of improved food security. In 2010, WFP conducted a similar survey in the same location, which revealed that enrolment had increased to 20%. Table 5 shows descriptive statistics for overall performance.

**Table 5: Descriptive statistics for overall performance**

N	Minimum	maximum	mean	Std.deviation
Overall performance	70	95	84.2778	6.86685
Valid Listwise 100				

Source: Researcher (2019)

The results show that in all of the sampled schools, the maximum score for pre-school learners' performance was 95 percent, the minimum score was 70 percent, and the mean was 84.2778 percent. 6.867 was found to be the standard deviation. This research shows that school feeding programs have a stronger influence on ECD students' academic achievement than schools

that do not provide feeding programs. Learner performance in Mutomo Schools has improved, according to the findings. Results in Table 6 shows correlation between amount of food offered and performance.

**Table 6: Correlation between amount food offered and the performance**

Correlations <sup>a</sup>		Amount of foodDo school meals help you study better offered	
Amount of food offered	Pearson Correlation	1	-.802
	Sig. (2-tailed)		.006
Do school meals help you study better	Pearson Correlation	-.802	1
	Sig. (2-tailed)	.006	

a. Listwise N=90

\*\* Correlation is significant at the 0.01 level (2-tailed).

Source: Researcher (2019)

The study found a significant link between the amount of food provided and the mean performance of the students in the studied pre-schools. The Pearson Correlation Coefficient was -0.802, indicating a strong negative relationship between the types of food provided and pre-school students' performance. This

means that when the amount of food available decreases, so does the performance. Findings in Table 7 shows correlation between frequency of food offered and performance.

**Table 7: Correlation between frequency of food offered and the performance**

Correlations <sup>a</sup>		Times of takingDo school meals help you study better meal	
Times of taking a meal	Pearson Correlation	1	0.889
	Sig. (2-tailed)		.002
Do school meals help you study better	Pearson Correlation	0.889	1
	Sig. (2-tailed)	.002	

a. Listwise N=90

\*\* Correlation is significant at the 0.01 level (2-tailed).

Source: Researcher (2019)

The study looked at the relationship between the frequency of the feeding program and the average performance of the students in the pre-schools that were sampled. The co-efficient was 0.889, indicating that there is a strong positive relationship

between the frequency of the feeding program and the pre-school students' performance. Results in Table 8 reveals extent of food provision enhance pupil enrolment of ECD pupils.

**Table 8: Extent food provision enhance pupil enrolment of ECD Pupils**

	Frequency	Percent	Valid Percent	Cumulative Percent
Very large extent	25	25.0	25.0	25.0
Large Extent	34	34.0	34.0	59.0
Very small extent	41	41.0	41.0	100.0
Total	100	100	100.0	

**Source: Research data (2019)**

The study findings, show that 25(25%) agreed that food provision increases enrolment to a very big amount, 34(34%) agreed to a large extent, and 41(41%) agreed to a very small extent. This results reveals that 59 percent of respondents agreed that input improves pupil enrolment and, as a result, child retention in school. As a result, these subsidies are likely to have had a

significant impact on students' abilities and food security, resulting in a higher enrolment rate than those who have not yet received subsidies. Findings in Table 9 shows extent food security strategies promote enrolment of ECD pupils.

**Table 9: Extent food security strategies promote enrolment of ECD pupils**

	Frequency	Percent	Valid Percent	Cumulative Percent
Large Extent	25	25.0	25.3	25.3
Small extent	36	36.0	36.4	61.6
Very small extent	34	34.0	34.3	96.0
I dont know	4	4.0	4.0	100.0
Total	100	100.0		

**Source: Researcher (2019)**

Table 9 reveals that 36 (36.4%) responded small extent, 25 (25.3%) said large extent, 34 (34.3%) said very small extent, and 4 (4.0%) said I don't know. This demonstrates that the food security programs have not benefited the bulk of the community members. As a result of the study, it can be stated that food security initiatives have not gone deeply into the local community. Those who replied yes to a substantial extent can be attributed to the fact that they have benefited from the program and implemented food security techniques, resulting in a bigger impact on their children's school enrollment. Food availability boosts the chances of development, growth, energy, and focus, so children are less likely to be disrupted by food concerns and are more likely to attend school frequently.

*"The Mutomo Education Director confirmed to the fact that, among other things, competent leadership, infrastructure, and dedicated instructors, she believes that school feeding has the ability to boost cognitive growth and hence increase the school's pass rate. The Director went on to say that before 2008, the average school performance was roughly 38%. Following the implementation of the food security initiatives in 2008, the performance increased to between 68 and 75 percent."* (Interview with head teacher, 3/04/2019)

Between 2008 and 2013, Mutomo Schools had a normal proportion, according to the statistics. However, as Bowden (2002: 406 in Desai and Potter) and Mertaugh et al (2009)

cautioned, focusing solely on this aspect of schooling might readily obscure other problems. High school enrolment numbers do not necessarily imply that many of those children will remain in school, for example, highlighting the significance of examining other elements of education and identifying the source of all problems. An interview with Joy happy school head teacher claimed that:

*"There are occasions when some children do not attend school — some children who live further away, for example, do not attend school when it is raining heavily or when it is really hot. Some children's attendance is unreliable; they will come when there are no other distractions at home...for example, if they are required at home, they may not come to school."* (Interview with head teacher, 3/04/2019)

As a result of the data, it can be concluded that improving food security initiatives increases school enrollment. Zachary (2014) confirmed similar data, concluding that food security increases enrolment to a greater extent. According to Ouko (2012), the implementation of school feeding programs enhanced enrolment patterns. According to a research conducted by Gilligan in Bangladesh in 2009, greater food security increased enrolment by 14%. In 2010, WFP conducted a similar survey in the same location, which revealed that enrolment had increased to 20%. Results in Table 10 shows extent food security strategies enhance school attendance of ECD pupils



“The Director of Education acknowledged that enrolment in Mutomo Sub-County has never reached the required level, which he attributes to the area's high poverty level. Although other obstacles such as a lack of uniform, tuition fees, or parents forcing youngsters to care for younger siblings may prevent children from enrolling in school, hunger remains a prominent problem. The

inclusion of SFP in all pre-schools in the vicinity has the potential to increase enrollment. Most parents look for vacancies at pre-schools that guarantee food security at the start of the year, according to the director of education”. (Interview with Director of Education, 3/04/2019)

**Table 10: Extent food security strategies enhance school attendance of ECD pupils**

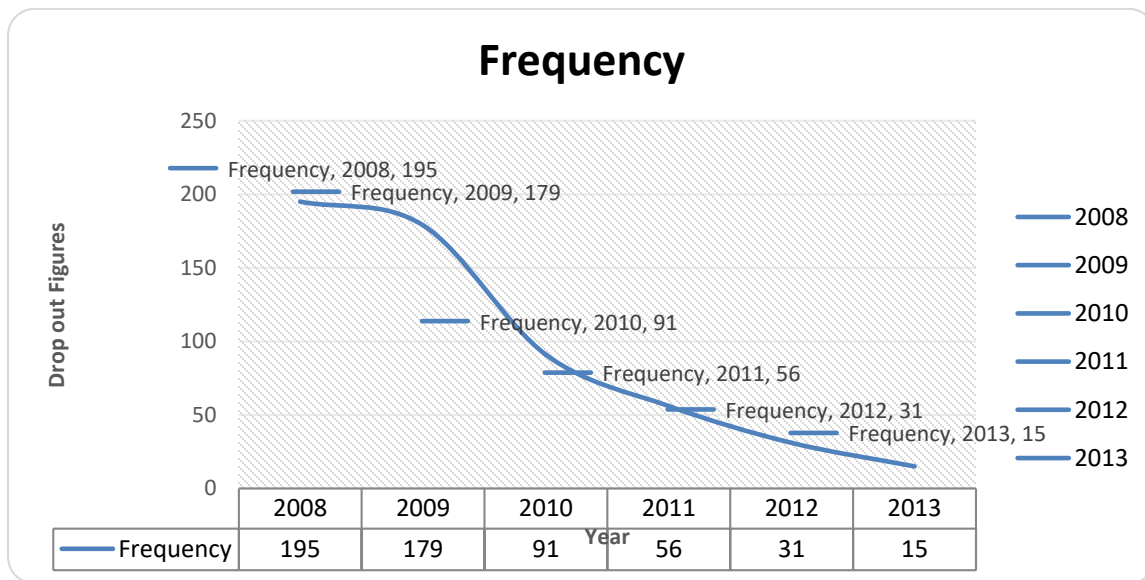
	Frequency	Percent	Valid Percent	Cumulative Percent
Very large extent	19	19.0	19.0	19.0
Large Extent	24	24.0	24.0	43.0
Valid Small extent	45	45.0	45.0	88.0
I dont know	12	12.0	12.0	100.0
Total	100	100.0	100.0	

Source: Researcher (2019)

Table 10 shows that 19(19%) replied very large extent, 24(24%) said large extent, 45(45%) said modest extent, and only 12(12%) said I don't know. This indicates that the vast majority of respondents (88%) agree that food security policies promote school attendance. According to these researchers, school nutrition programs can theoretically increase IQ by 4-6 points and school engagement by 10%. Marinda et al. (2007) highlights food as a crucial motivating element in school attendance, confirming the benefits of school nutrition programs. This backs up Maslow's (1970:3) hierarchy of needs hypothesis of human motivation. The physiological demand, which includes hunger and thirst, is at the

bottom of the hierarchy and must be met. As a result, nutrition, which is a basic human need, is critical to human development and learning. “Adequate nutrition is a basic human right and is very instrumental for the development of an individual's full physical and intellectual potential,” according to the South African Medical Research Council (2008:25).

The study further investigated the rate of school drop outs of pupils from the time school feeding programme was introduced to 2013. Figure 1 show decline in dropout rates when the food programme was launched.



**Figure 1 Child drop out in Mutomo Sub-county**

Source: Researcher (2019)

The findings reveal that enhanced food security initiatives resulted in a considerable reduction in ECD student dropout. This demonstrates that providing a healthy food and encouraging a child's sense motivation are important components of pupils' growth, retention, and brain organization.

Poor cognitive development, according to Bruhn (2004), is caused by hunger, which causes youngsters to miss school or

possibly quit out. Duggan, Watkins, and Walter (2008) found a correlation between increased attendance and punctuality. Yendaw and Dayour (2015) found a 36 percent increase in attendance after evaluating food security methods and academic competencies. It's worth noting that within schools, there are no significant disparities in the numbers of boys and girls who dropped out, which contradicts literature (Michaelowa, 2001; Handa, 1999) that implies girls are more vulnerable to dropping out than boys.

*“The Director of Education determined that students in Mutomo Sub-County miss school owing to a variety of issues including a lack of tuition, uniforms, poor performance, a lack of food at home, and family obligations. However, the lack of SFP in certain pre-schools has exacerbated the problem. Furthermore, because to inconsistencies in providing SFP, the director of education determines that attendance remains moderate in certain schools that give it. When children miss school, it implies that they may not progress to other levels of learning (Interview May, 2019)”.*

Locally, Munyiri (2010) said that enhanced food security methods increased enrolment and attendance in Kenya's Kikuyu area considerably, and that children looked better and were healthier in schools as a result of the program. The study found a link between food security initiatives and learning outcomes in the district, and that children were attending school on a regular basis. McEwan (2012) showed that the Chilean school Feeding has impacted the pupils performance since its inception.

The provision of school meals lays the groundwork for closing the gender gap in school enrollment (World Food Programme, 2005). When girls are marginalized, they become empowered, helping them to attain their independence and break out from poverty. Furthermore, education has a direct and demonstrable impact on the aims of child and reproductive health, as well as environmental sustainability, particularly for girls (Bastia, 2007:31).

According to Aregawi (2012), food security policies had a favorable and significant impact on student enrollment, resulting in an increase in enrollment. However, the outcomes of the study revealed that food availability had no significant impact on student dropout rates. According to the findings of Khatete, Pendo, and Oyabi (2013), food security policies improve school participation.

## V. CONCLUSION

The objective of the study which was to evaluate the effectiveness of food security strategies used to enhance academic competencies of ECD children in Mutomo, established that overall performance of the pupils with regard to the application of the food security strategies, findings indicate that before 2008 the average performance of schools was around 38%. The performance indicates an upward increase from 68% to 75% upon establishment of the food security strategies in 2008. This findings show that the strategies have a greater influence on the academic performance of ECD pupils.

There is an overall increase in performance of the pupils with regard to the application of the food security strategies. Findings indicate that before 2008 the average performance of schools was around 38%. The performance indicates an upward increase from 68% to 75% after the introduction of the food security strategies in 2008. Therefore, the strategies have a greater influence on the academic performance of ECD pupils.

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## AUTHORS

**Firs Author;** Khadija Namasaya Khaemba-Department of Emergency Management Studies, Masinde Muliro University of Science and Technology, [khaemba92@gmail.com](mailto:khaemba92@gmail.com)

**Second Author;** Dr. Ferdinand Nabiswa-Department of Emergency Management Studies, Masinde Muliro University of Science and Technology, [fnabiswa@mmust.ac.ke](mailto:fnabiswa@mmust.ac.ke)

**Third Author;** Dr. Ruth. N. Simiyu-Department of Peace and Studies, Masinde Muliro University of Science and Technology, [rsimiyu@mmust.ac.ke](mailto:rsimiyu@mmust.ac.ke)

**Correspondent Author;** Khadija Namasaya Khaemba-Department of Emergency Management Studies, Masinde Muliro University of Science and Technology, [khaemba92@gmail.com](mailto:khaemba92@gmail.com)

