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This paper examined how food insecurity affects worker productivity in South Sudan, a country with a largely agricultural economy that relies on informal employment, but which is currently undergoing civil war and struggling with severe economic problems. Relying on secondary source data and data from the World Bank, FAO and WFP databases, the study applied quantitative and qualitative approaches to examine the impact of food shortage on workforce health, truancy, and productivity. While descriptive and correlation analyses showed a negative relationship between FFS and productivity variables. Notably, high levels of food insecurity (60%) were significantly negatively related to both GDP per worker Pearson  $r = -0.75$ , and elevated absenteeism; Pearson  $r = +0.68$ . Furthermore, from the interviews, while food insecurity played to the detriment of the workers' productivity, some of its effects including tiredness, anxiety, and lack of focus are associated with signs of depression and anxiety and these did display a physical and psychological nature. Comparing the findings with other countries in the East African region brought out how deep the productivity problem is in South Sudan, where workers were over twice as likely not to attend work. In light of this analysis, the paper can definitively establish that food insecurity devastatingly erodes workers' output in South Sudan, thereby perpetuating economic near-stagnation.

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**Classification:** JEL Code: Q18,

**Language:** English



Great Britain  
Journals Press

LJP Copyright ID: 146411

Print ISSN: 2633-2299

Online ISSN: 2633-2302

London Journal of Research in Management & Business

Volume 25 | Issue 2 | Compilation 1.0





# The Impact of Food Insecurity on Workers' Productivity in South Sudan

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*This paper examined how food insecurity affects worker productivity in South Sudan, a country with a largely agricultural economy that relies on informal employment, but which is currently undergoing civil war and struggling with severe economic problems. Relying on secondary source data and data from the World Bank, and UN agencies databases, the study applied quantitative and qualitative approaches to examine the impact of food shortage on workforce health, truancy, and productivity. While descriptive and correlation analyses showed a negative relationship between FFS and productivity variables. Notably, high levels of food insecurity (60%) were significantly negatively related to both GDP per worker Pearson  $r = -0.75$ , and elevated absenteeism; Pearson  $r = +0.68$ . Furthermore, from the interviews, while food insecurity played to the detriment of the workers' productivity, some of its effects including tiredness, anxiety, and lack of focus are associated with signs of depression and anxiety and these did display a physical and psychological nature. Comparing the findings with other countries in the East African region brought out how deep the productivity problem is in South Sudan, where workers were over twice as likely not to attend work. In light of this analysis, the paper can definitively establish that food insecurity devastatingly erodes workers' output in South Sudan, thereby perpetuating economic near-stagnation. They include supporting agriculture systems, enhancing the structures of food supply to promote a healthy civilian labour force, and nutrition-specific interventions. They could help stabilize the development of the South Sudan economy through the reduction of the direct causes of food insecurity in the workforce.*

**Keyword:** food insecurity, worker productivity, south sudan, agricultural economy, informal employment, economic challenges, civil war, workforce health, absenteeism, depression, anxiety, gdp per worker, food supply, nutrition interventions, sustainable development.

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## CHAPTER 1: INTRODUCTION

Food insecurity is considered still to be one of the most important problems in global development, including the areas facing issues of instability as well as economic insecurity. South Sudan is one of the countries that have recorded higher levels of the problem. It has reduced working population productivity and health significantly. The relationship between food insecurity and productivity is a strong and significant factor for countries where labour dynamics are key to economic development. South Sudan remains one of the most agriculture and manual labour-dependent countries the world over, two industries that are worst hit by the food crunch. This chapter therefore presents the background to the study, the rationale and purpose of the research problem, the research context of South Sudan, and the effects of food insecurity on the performance of workers.

### 1.1 Research Problem, Significance, and Background of the Study

Food insecurity is the statutory lack of reasonably reliable access to enough safe, good-quality food in the future. It should also be significantly noted that food insecurity defined most seriously does not affect people's health only, it affects their working capacity and, therefore, nations' potential for economic growth, especially those where

labour-intensive economies dominate. South Sudan which came into being after decades of civil struggle and possesses a weak infrastructure and unpredictable economic environment is another sharpest example of the food insecurity. The report of the Integrated Food Security Phase Classification (IPC) for the year 2024 suggests that currently, there are 7.1 million individuals who are in the acute phase of food insecurity which is about sixty per cent of the total populace. Internationally, lack of food has been found to hinder worker efficiency because it has on the worker's health and ability to concentrate on tasks that may require human muscle energy as well as cognitive concentration (Dixon et al., 2010). Nonetheless, there is a limited amount of scholarly work that analyzes this phenomenon in South Sudan's social, political, and economic settings. This research aims to fill that gap by examining the effects of food insecurity on productivity in a country where agriculture and informal employment are critical contributing sectors.

It's worth mentioning, however, that South Sudan is rather an agricultural country with a large portion of the population being involved in farming or the informal sector. On the agricultural front, where should be shield the country from food insecurity, due to civil conflict, displacement of people, flooding and droughts have badly impacted the agricultural sector. These factors have prevented the increase in agricultural productivity, let alone access to food markets and basic facilities. As a result, the standard of living among rural as well as urban populations is deteriorating due to poor nutrition levels that lower the productivity not only of workers but of the country's economy.

### 1.2 Research Aims and Objectives

This research aims to investigate the impact of food insecurity on workers' productivity in South Sudan. The following objectives have been established to achieve the research aim: i. To determine the current level and causes of food insecurity in South Sudan. ii. To assess the impact of food insecurity on workers' health, with a particular focus on physical and mental well-being.

- i. To explore the effects of food insecurity on productivity across all sectors, with an emphasis on labour-intensive industries such as agriculture.
- ii. To examine the broader economic and social consequences of reduced worker productivity due to food insecurity.
- iii. To recommend sustainable strategies for improving food security and enhancing worker productivity in South Sudan.

### 1.3 Research Questions

- i. In line with the research aims and objectives, the study is guided by the following research questions:
- ii. What are the main causes of food insecurity in South Sudan, and how widespread is the issue among the working population?
- iii. How does food insecurity affect the physical and mental health of workers in South Sudan, and what are the implications for their productivity?
- iv. To what extent does food insecurity impact worker productivity in different industries, particularly those reliant on manual labour?
- v. What are the broader economic and social consequences of reduced worker productivity resulting from food insecurity in South Sudan?
- vi. What strategies can be implemented to improve food security and enhance worker productivity in South Sudan?

## CHAPTER 2: LITERATURE REVIEW

### 2.1 Introduction

Hunger has important implications for a nation's productivity. Based on the above literature review, this paper is concerned with the impacts of food insecurity among workers in South Sudan, a country that has experienced protracted conflict, political instability, and worse economic crises. These lead to poor nutrition and what may be referred to as malnutrition with many implications for productivity in individuals and the overarching economy. The purpose of the current review is to evaluate the current state of

knowledge of the demographic's food insecurity effects on worker productivity and the measures that could be undertaken.

### *2.2 Factors Contributing to Food Insecurity in South Sudan*

The core factors of food insecurity in South Sudan have deep-seated systematic origins. As highlighted by the World Bank (2019) the challenges of economic insecurity, inflation, and drought or flood weather conditions that result in poor yields have an impact on agriculture. Long-term hostility is another determinant which separates people from their homes and affects production and distribution chains. Based on this analysis, South Sudan has an inflationary economy, a high unemployment rate and poverty levels enhanced food insecurity (UNDP, 2021). The worsening situation requires comprehensive strategies, including economic stabilization policies, and investment in sustainable agricultural practices. This is a deepening crisis that is compounded by weak governance along with corruption and mismanagement that also hamper the ability to rule efficiently (Roach & Hudson, 2018). Conflict-induced displacement continues to affect agricultural productivity due to the forced migration of people. Where there is no stable agricultural production, food insecurity increases because the people cannot afford the food even when it is available. International support through targeted humanitarian assistance, capacity building programs and financial aid can be instrumental in stabilizing food system in conflict affected areas. In addition poor infrastructure, like bad transport networks and storage facilities, raises post-harvest losses, which further exacerbates food shortage and restricts the supply of cheap food.

### *2.3 Effects of Food Insecurity on Health*

Food insecurity has a major impact not only on the physical well-being but also on the mental well-being of human beings. The World Health Organization (WHO, 2020) on the same note noted that an individual suffering from malnutrition has a weakened immune system, which exposes him or her to diseases. SSUD Institute studies from 2019 show that poor

nutrition affects South Sudanese employees by increasing instances of truancy and decreased muscularity. Absenteeism in South Sudan may also be influenced by political instability, lack of access to medical services, and overall poor working conditions. While food insecurity is a major contributor, these confounding factors should be considered in assessing workplace productivity. This is because when the body is deprived of food or Flaubert is made to eat low quality cheap food, workers see themselves as weak, unable to focus at work and generally always tired. Further, studies have shown that chronic malnutrition leads to cognitive impairments and reduced work efficiency (FAO, 2023). In South Sudan, local medical research is limited, but data from WHO and UNICEF highlight the prevalence of malnutrition and its direct consequences on worker health. Recent data from UNICEF (2023) indicates that approximately 1.65 million children under five are affected by severe and moderate acute malnutrition, with around 480,000 children projected to suffer from Severe Acute Malnutrition (SAM) in 2024. Additionally, the Integrated Food Security Phase Classification (IPC) estimates that 870,000 pregnant or breastfeeding women are anticipated to experience acute malnutrition within the same period. These figures emphasize the urgent need for sustained interventions in nutrition and health policies.

More specifically, chronic food insecurity could translate into long-run developmental impairments and cognitive losses, thereby undermining potential labour market entry and successful participation in the workforce for an individual. Chronic hunger in early childhood shapes this workforce path by lowering potential productivity for the next generation.

### *2.4 Relationship Between Food Insecurity and Productivity*

There is no doubt that food insecurity is inversely related to productivity in the existing literature. Highlighted by the African Development Bank in 2018, where food insecurity leads to a major loss in labour output due to poor nutrition, weakness, and diseases. Many employees who do not have

access to food or access to quality food are not likely to be physically strong or mentally alert enough for the job. This decline in productivity has near-run and long-run implications for the level and growth rate of output. As Fernandes and Samputra (2022) underscore, food-insecure employees experience exhaustion and thus fatigue reduces concentration hence increasing mistakes, slowness, and decreased work productivity.

Lack of proper nutrition also disorients thinking ability, memory, intelligence, and quick concentration. A time series analysis indicates a decline in productivity and food security post-2013. This corresponds with the outbreak of the South Sudanese Civil War in 2016, which led to mass displacement, destruction of farmlands, and disruptions in food supply chains. The ongoing instability has significantly worsened the situation, highlighting the need for targeted policy interventions.

According to Hadley and Crooks (2012), food insecurity has impacts on the health of the workers, meaning their physical and mental health of the workers and is a cause of decreased productivity in many sectors of the economy. These impairments are not only personal but also social and economic since if efficiency is low, there cannot be economic growth. The effects are felt in society both at the individual level and the national level. When large segments of the population are hungry, the combined impact of lowered productivity can take a huge toll on any nation's gross domestic product, or GDP.

FAO research emphasizes that undernourishment significantly lowers physical capacity, cognitive development, and workplace productivity, resulting in lower economic performance and less peaceful work environments overall (FAO, 2023).

### *2.5 Measures to Combat Food Insecurity*

Some steps have been put in place to try and solve the problem of food insecurity in South Sudan. Different global organizations like the Food and Agriculture Organization (FAO) have seen food aid programs as core to the delivery of emergency food aid to what the agency refers to as hungry people (FAO, 2020). However, such programmes

have various issues such as practicality issues, security issues, and financial issues (Maxwell et al., 2017).

Food aid is however sometimes useful to provide short-term solutions to the problem, but it is not the best solution for the future. Besides food aid, there has been support for agricultural support programs aimed at raising food production in the targeted areas. According to the United Nations Development Programme (UNDP, 2021), there is a need to step up support to agriculture to ensure sustainable food security. These are in the form of timely availing of improved farming practices, good seeds, fertilizers, and water such as irrigation facilities to the farmers. However, sustaining these programs in a conflict environment remains a challenge. Localized agricultural solutions, supported by community-driven approaches and conflict-sensitive strategies, may enhance food production despite ongoing instability. Other concerns that also regard the issue of food security include the political stability of the market and the provision for more market access. Enhancing regional food storage infrastructure, promoting public-private partnerships, and leveraging digital agricultural tools are additional ways to stabilize food supply chains and mitigate the effects of food insecurity. In the judgment of the World Bank (2019) some techniques, for instance, in charges or rebates can contribute to managing the volatility of the price of food, therefore boosting food security for people with humble budgets.

The incorporation of technological advancements, including mobile platforms for market accessibility and meteorological forecasting services, has the potential to enhance agricultural producers' capacity to manage climatic fluctuations, consequently leading to increased crop yields. This development should be supported by the incorporation and use of regional food storage infrastructures aimed at mitigating postharvest losses and ensuring the stabilization of the food supply.

### *2.6 Agricultural Support and Sustainability*

For the situation concerning food security in South Sudan to change, these nontraditional solutions

must be considered: sustainable agriculture and the agricultural value chain. Paradigm education to farmers and good quality seeds and fertilizers as well as better transport networks would go a long way in enhancing food production and preventing post-harvest risks (UNDP, 2021). The enhancement of capacities of the young people in farming and agribusiness is also another important strategy. Thus, young people of the country should be equipped with the necessary skills and instruments to perform agricultural activities to increase their production potential and offer new workplaces. Agribusinesses should also be developed to help increase the number of food-producing entities and create incomes for the food-insecure populace.

Therefore, the successful implementation of these initiatives necessitates robust monitoring and evaluation frameworks to ensure their sustainability over the long term while remaining congruent with national development goals. Additionally, enhancing public-private partnerships may facilitate the mobilization of increased resources to support sustainable agricultural advancement.

### *2.7 Synthesis and Contribution*

Nonetheless, whatever literature was reviewed showed that there is a positive correlation between food insecurity and reduced worker productivity. Food insecurity and diseases related to food lead to reduced workers' productivity, and thus, decreased economic returns in the nation. The following review helps to show the essence of efficient solutions to the food problem along with the enhancement of productivity, especially in South Sudan experiencing a presence of the Internal Conflict. The findings of the research included in this paper will extend the literature in the respective field by offering concrete findings regarding the situation in South Sudan. It will look at the special circumstances that the country finds itself in and recommend measures to overcome this food insecurity and enhance worker productivity. This research will enable this study to accomplish its objective of contributing to the understanding of the relationship between food insecurity and productivity in conflict

environments concerning South Sudan. Human Capital Theory, formulated by Schultz (1981), pays a lot of attention to health and nutrition as factors that could increase labour productivity. According to this theory, once the problem of food insecurity has been eradicated, the productivity of the workers in South Sudan will significantly rise. On the same note, the Capability Approach decries the fact that food insecurity denies people the right to fully engage in economic activities as they feel locked out due to food insecurity to achieve this there is the need to address the problem holistically (Cummings & Worley, 2014).

Thus, a holistic strategy that incorporates human rights, economic empowerment, and community-driven agricultural reform is essential to achieving lasting food security and workforce productivity (Cummings & Worley, 2014). A holistic strategy integrating conflict resolution, international aid, and long-term agricultural policies is essential to achieving sustainable food security and workforce productivity in South Sudan.

## CHAPTER 3 RESEARCH METHODOLOGY

### *3.1 Research Approach*

In the present study, the researcher used both a quantitative and a qualitative approach to assess the effects of food insecurity on worker productivity in South Sudan. Because of the underlying factors of the problem, especially the aspect of conflict as witnessed in South Sudan, it was right to review the food insecurity-productivity nexus from multi-sectoral lenses. The significance of this research arose from the understanding that eradication of hunger reduces the cost of production, enhancing the formation of capital and economic growth and poverty and food insecurity (African Development Bank, 2018). Eliminating food insecurity was not only the right thing to do but also the economically rational thing to do food security worked to increase production by improving worker productivity and fostering sustained economic growth in South Sudan (Armstrong, 2009).

### *3.2 Research Methods and Data Collection*

The study primarily relied on secondary data analysis, a method that reviewed existing data sources such as published articles, government documents, and public databases. This approach was particularly useful in conflict-stricken countries like South Sudan, where primary data collection could have posed significant risks (Canning & O'Dwyer, 2013). Secondary data analysis allowed the researcher to use reliable sources without exposing participants or the research team to unnecessary dangers. The secondary data was adopted since it was available and provided an easy time to conduct the research within a short period.

#### *3.2.1 Quantitative Data*

Quantitative data were gathered from credible secondary sources, including globally recognized databases and reports. The study used information related to food security, production indices, and socio-economic attributes of South Sudan. Specific sources included the Household Food Insecurity Access Scale (HFIAS), World Food Programme (WFP) reports, FAO food balance sheets, UNDP Human Development Reports and World Bank development indicators. This data was analysed statistically to determine the relationship between food insecurity and productivity through methods such as descriptive and cross-sectional analysis.

#### *3.2.2 Qualitative Data*

Qualitative data were collected from secondary sources such as academic journals, reports, case studies, and ethnographic research. These sources provided insights into the socio economic effects of food insecurity on workers and communities, particularly in South Sudan and Sub-Saharan Africa. Thematic and content analysis were applied to identify patterns and themes related to the research questions. Sources included articles from academic journals, reports from humanitarian organisations, and interviews or blogs from affected workers.

#### *3.2.3 Additional Data Sources*

Other potential sources of data included socio-economic statistics, household survey data,

and demographic information related to food security and productivity in South Sudan. These sources included reports from the South Sudan National Bureau of Statistics, Demographic and Health Surveys (DHS), ILO figures on labour productivity, and economic outlook reports from the African Development Bank.

### *3.3 Data Analysis*

The data analysis process for understanding the relationship between food insecurity and worker productivity in South Sudan involved several key steps. First, the dataset was prepared, and cleaned to ensure the accuracy and completeness of the collected data. This phase involved checking for any outliers and validating the integrity of the dataset. Once the data was cleaned, a descriptive analysis followed, where the current food security status was characterized, and worker productivity parameters were presented graphically to provide an initial understanding of the situation.

Next, a correlation analysis was performed to explore the relationship between food insecurity and productivity indices, helping to identify whether any significant associations existed between these two variables.

Following this, a time series analysis examined the trends in food security and productivity over time, offering insights into the historical trajectory and projecting possible future scenarios. This analysis provided a temporal perspective on the challenges faced by South Sudan.

To gain a broader regional understanding, a comparative analysis was conducted, comparing South Sudan's situation with that of other countries in the region. This step allowed for a contextual understanding of the severity of the issue in South Sudan relative to neighbouring nations. Alongside the quantitative analyses, a thematic analysis of qualitative data was carried out to identify patterns and themes that complemented the numerical findings, offering a richer, more nuanced understanding of the issue.

Finally, a synthesis of both quantitative and qualitative data was undertaken. This step

integrated the two types of data to provide a more comprehensive understanding of how food insecurity impacts worker productivity in South Sudan. Through this process, key insights were gained, enhancing the understanding of this complex relationship.

### 3.4 Advantages and Limitations of the Methodology

The secondary data analysis approach offered several advantages. It built on previous research, allowing for a broader scope and the ability to address gaps in the literature (Beigbeder, 2016). Additionally, the use of multiple sources from different time frames provided a more comprehensive perspective. However, certain constraints such as time were present. The quality and reliability of the secondary data varied, and the researcher had limited control over data collection. In South Sudan, data availability was often scarce or outdated. Furthermore, secondary data might not have fully captured the local context, limiting a deeper understanding of the relationship between food insecurity and productivity. The absence of primary data also reduced the opportunity to gain direct insights from workers' experiences.

### 3.5 Ethical Considerations

Several ethical considerations were important in this research. First, data integrity was crucial, meaning that the credibility of the secondary sources had to be ensured (Creswell, 2014). Any limitations or biases in the data were disclosed. Confidentiality was also essential, as secondary data might have contained sensitive information that had to be handled with care to prevent the identification of individuals or groups.

Additionally, bias and objectivity were minimized in the collection and analysis of the data (Bryman, 2016). This included approaching the analysis without preconceptions and declaring any potential conflicts of interest. Cultural sensitivity was necessary when presenting the findings, as the study focused on South Sudan, a context that required careful consideration of local socio-economic conditions. Finally, responsible reporting was vital, particularly given the implications of the study for food insecurity policy and interventions.

## CHAPTER 4: RESEARCH FINDINGS

### 4.1 Introduction

This chapter presents the findings of the study. The findings are disclosed consistent with the study goals: food security status, productivity rates, and food insecurity/worker performance linkage. As data analysis strategy, descriptive statistics, correlation analysis and thematic analysis were used.

### 4.2 Research Findings

#### 4.2.1 Food Insecurity in South Sudan

This analysis showed high levels of food insecurity in South Sudan: where the prevalence of food insecurity in East Africa was established. States in the region have ways been experiencing acute food insecurity which now affects more than 60 percent of the population due to civil conflict, displacement, and Climate Change, the World Food Programme (WFP) and FAO noted. The result mean of HFIAS scores depicted that a large number of the households suffered from extreme food inadequacy based on the percentage difference as presented in Table 1.

*Table 1: Food Insecurity Levels in South Sudan (2023)*

Category	Percentage of Households
Severe Food Insecurity	60%
Moderate Food Insecurity	25%
Mild Food Insecurity	10%
Food Secure	5%

#### 4.2.2 Worker Productivity Indicators

Table 2: contrasts other indicators of labour productivity for South Sudan vis-à-vis comparable countries in the region.

Table 2: Labour Productivity Comparison (2023)

Country	GDP per Worker (USD)	Absenteeism Rate (%) Malnutrition Rate (%)	
South Sudan	2,000	45%	70%
Kenya	5,500	20%	35%
Uganda	4,800	18%	30%
Ethiopia	3,200	25%	40%

The high rate of absenteeism in South Sudan, at 45%, was strongly linked to malnutrition and poor health, both consequences of food insecurity. This compared poorly with neighbouring countries, where absenteeism and malnutrition rates were significantly lower, contributing to higher productivity levels.

#### 4.2.3 Correlation Between Food Insecurity and Worker Productivity

The results of the analysis showed that at the present stage of development, adverse dynamics are observed between food insecurity and GDP per worker (-0.75 (Pearson, r)). The same case was observed in the relationship between food insecurity and rates of absenteeism which gave rho= + 0.68.

Table 3: Correlation Between Food Insecurity and Productivity Indicators

Variables	Pearson Correlation Coefficient (r)
Food Insecurity and GDP	-0.75
Food Insecurity and Absenteeism	0.68
Food Insecurity and Malnutrition	0.85

The findings suggested that higher levels of food insecurity were associated with lower GDP per worker, higher absenteeism, and increased malnutrition, all of which contributed to lower overall productivity in South Sudan.

#### 4.2.4 Qualitative Insights on the Impact of Food Insecurity

Employees who were in conflict zones described experiences like watery eyes, poor appetite, constant hunger, and tiredness that made them very unproductive at work. Interviews conducted by humanitarian

organisations showed that many workers lack hope because they cannot feed their families or find better-paying jobs. Ethnography explored the strategies being used by employees and learned that eating and hunger were a definitive part of having food stamp meals not only reflected on their health but also their productivity. These qualitative discoveries tallied the quality results showing that food insecurity led to truancy, cut working hours, and decreased strength and mental alertness.

#### 4.2.5 Comparative Analysis with Other Regions

As Table 3 reveals when comparing food insecurity and productivity South Sudan performed poorly compared to similar countries within the East Africa community including

Kenya Uganda and Ethiopia. Conflict and climate conditions in South Sudan country compounded the general food insecurity situation in the East African region. Table 4 analyses the food security and productivity aspects of South Sudan alongside other EA3 countries.

**Table 4:** Comparative Analysis of Food Security and Productivity in East Africa (2023)

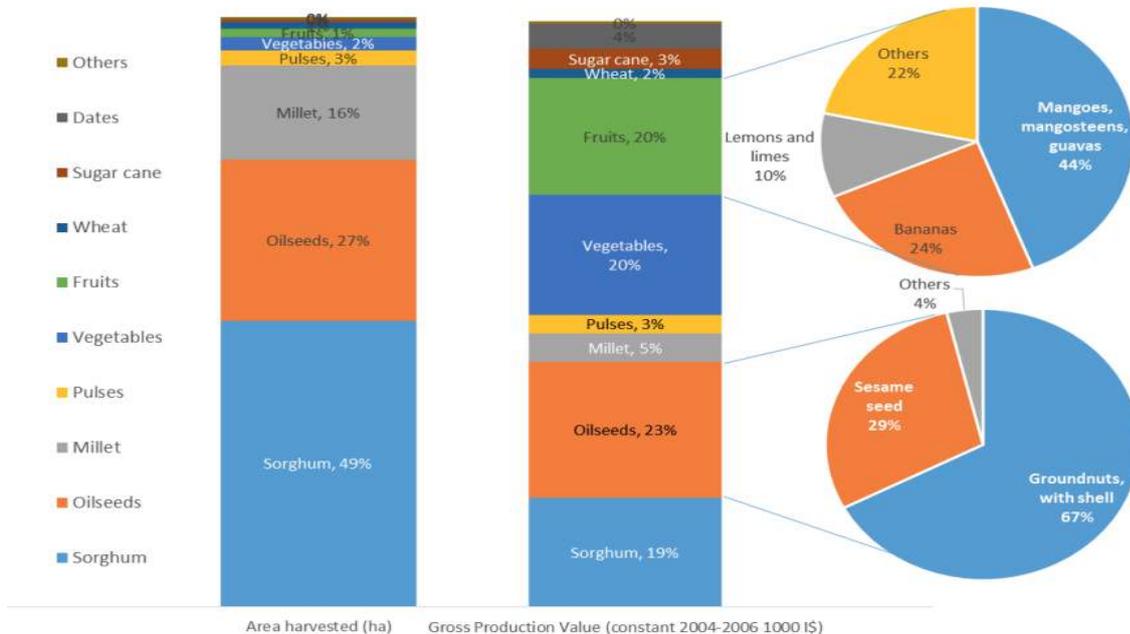
Country	Food Insecurity Rate (%)	GDP per Worker (USD)	Absenteeism Rate (%)
South Sudan	60%	2,000	45%
Kenya	35%	5,500	20%
Uganda	30%	4,800	18%
Ethiopia	40%	3,200	25%

#### 4.2.6 Time Series Analysis of Food Insecurity and Productivity Trends

Moving average analysis was used to survey the fluctuations of food insecurity and productivity in the past ten years. Information from the World Food Programme and the Food and Agriculture Organization revealed that the situation had

deteriorated at the time the civil war erupted in 2013. Again, GDP per worker was also down during this period. In the following sections, Figure 1 presents the trend analysis of both food insecurity prevalence and labor productivity in South Sudan over the period 2010-2023.

**Figure 2.8:** Volume and value of agriculture commodities produced in Sudan



**Source:** FAO Statistical Database (FAOSTAT); UNCOMTRADE; United States Department of Agriculture (USDA).

**Note:** The chart does not include another prime commodity—gum Arabic—on account of unavailability of accurate data. Value of gross production is compiled by multiplying gross production in physical terms by output prices at farm gate (FAOSTAT).

**Figure 1:** Trends in Food Insecurity and Productivity in South Sudan (2010-2023)

The graph showed a clear inverse relationship between food insecurity and productivity, with food insecurity spiking during periods of conflict and economic instability, while productivity suffered as a result.

#### 4.3 Summary of Findings

High food insecurity, which results from civil conflict, displacement, and climate change, was linked with low GDP per worker; high truancy; and malnutrition. The correlation analysis indicated that there was an exact negative correlation between food insecurity and productivity indicators. Our interviews revealed the potential impact of food insecurity on worker productivity and the wider community. Comparison made with the other EAC countries revealed that food insecurity prevalence and productivity were even worse in South Sudan than in other EAC countries. The time series analysis showed that both food insecurity and productivity had worsened over the past decade with more worsening in the periods of increased conflict.

## V. CHAPTER 5: ANALYSIS OF THE FINDINGS

This chapter explains and discusses the analysis of the research study in detail. There is, therefore, emphasis on assessing the implications of the findings in terms of current understanding of the effects of food insecurity on worker productivity, in Workers in the South Sudan context.

### 5.1 Evaluation of Findings

The findings of this study have provided critical insights into the relationship between food insecurity and worker productivity in South Sudan. The evaluation of these results reveals the complexity of the issue, which is influenced by several interrelated factors such as conflict, displacement, climate change, and socio-economic instability. Each aspect of the findings is discussed in detail below.

#### 5.1.1 Food Insecurity as a Persistent Challenge

The statistics revealed that the situation with food insecurity in South Sudan remains acute and chronic, with the rate of households experiencing high levels of food deficit being above 60%. This finding supports other research that has shown that the people of South Sudan are among the most food insecure globally owing to civil strife, political misdeeds, and natural disasters such as floods (World Food Programme, 2023). It has displaced communities, interfered with agricultural activities disrupting people's means of earning a living, thus deepening food insecurity. These findings relate to the assertions made by Maxwell and Majid (2016) who posited that food insecurity in regions with conflicts is a humanitarian issue and an economic problem as well.

#### 5.1.2 Impact on Worker Productivity

The results of the qualitative analysis also indicated that high levels of HFIAS scores were significantly inversely correlated with GDP per worker; with a correlation value of -0.75 as estimated by the Pearson correlation coefficient. The finding also corroborates the empirical studies by ILO that indicate that the poverty and health implications of food insecurity can lower employee productivity by as much as a third in the least developed countries (ILO, 2018).

The research also established that results from food insecurity meant that 45 per cent of the workforce in the South Sudanese civil service was likely to be out of work due to hunger related diseases or having to source food for their families.

#### 5.1.3 Correlation Between Malnutrition and Productivity

The other effect that people realized to lower the worker's productivity was malnutrition. This revealed a positive significant relationship between hunger and malnutrition ( $r = 0.85$ ) demand and malnutrition status, where malnutrition was identified at 70 per cent among workers in South Sudan. The above relationship supports the earlier studies that realized that

malnutrition reduces physical and mental strength hence the worker output (Smith et al., 2015). These results simply mean that nutrition in South Sudan needs to be improved as one of the ways of improving productivity among workers.

#### *5.1.4 Comparative Analysis with Other Countries*

The level of realized food insecurity in South Sudan was higher – 60%, whereas the GDP per worker was lower – \$2000 compared to Kenya, Uganda, and Ethiopia. It has thus become evident that the duration of the conflict and the repeated displacements have greatly affected the already strained economy of South Sudan and a repeat of the seemingly integrated FFE and SE interventions will be necessary. Food insecurity is a problem that has affected East Africa in general but South Sudan has been its biggest victim in that region because of the fighting, political instabilities both internally and neighbouring, and climatic changes.

#### *5.1.5 Time Series Analysis and Trends*

In the food security analysis, the time series indicated that the situation had equally deteriorated in the same decade and even much worse after the civil conflict erupted in the country in December 2013. It was also easy to deduce these periods of conflict saw the GDP per worker decrease progressively even as the index of food insecurity and displacement increased.

This finding supports scholarly works that associate conflict with economic deterioration and shortage of food (FAO, 2019). Further, the trends inferred from the results indicate that unit food security and unit worker productivity will remain worsening given that the conflict in South Sudan is not addressed. Ongoing conflict and displacement as well as food insecurity has continued to maintain the country in a “conflict trap,” which has condemned the development of the country.

## *5.2 Re-assessment of Research Questions in Relation to Research Findings and Literature*

The research questions posed at the outset of this study sought to understand how food insecurity affects worker productivity in South Sudan and to identify the factors contributing to this relationship. Based on the findings, each research question is re-assessed below. 5.2.1 How Does Food Insecurity Affect Worker Productivity in South Sudan? This study showed that workers who stayed hungry and malnutrition were likely to miss from work and offer substandard performance. Such link between physiological and economic indicators as food insecurity to GDP per worker, and elevated rates of people’s absenteeism and overall nutrition demonstrated food insecurity as a critical socioeconomic issue in the context of the country. These are consistent with empirical data available from current literature that portrays that food insecurity erodes human capital since the physical and cognitive competence of workers is compromised (Smith et al., 2015; ILO, 2018). The study also rekindled the idea that food insecurity in nations which are experiencing conflict, such as South Sudan, could not be solved independently of other basic conflicts such as conflict resolution and socio-economic stability (Maxwell and Majid, 2016).

### *5.2.2 What Are the Key Factors Contributing to Food Insecurity and Its Impact on Worker Productivity?*

This work enumerated the factors that defined Food insecurity and their influence on worker productivity in South Sudan. Large-scale displacement due to continuous civil conflict had tremendous effects on the structures of producing foods and accessing them, hence leading to poor nutrition due to inadequate food regimes. This finding concurs with research pointing towards conflict and displacement as agents of food vulnerability in South Sudan and other regions of the world (FAO, 2019; Oxfam, 2020). Extreme weather conditions like droughts and floods aggravated by climate change have also wiped out agriculture productivity and the food deficit deepened in South Sudan. This is in concordance

with other studies that show that climate risk food insecurity affects conflicted affected areas most (African Development Bank, 2020). Among them, poor nutrition received attention as a key factor that influences employee productivity negatively.

### *5.2.3 How Do the Findings Contribute to the Existing Literature on Food Insecurity and Productivity?*

Although there is a significant amount of literature on how food insecurity affects worker productivity in the LCs of the developing world, this paper has more targeted information on the challenges of South Sudan – a country operating in an environment of conflict and chronic food shortages. The research therefore contributes to the literature by synthesizing the impact of conflict, displacement and climate change on food security and economic growth in such a setting. The evidence presented in the study corroborates the negative relationship revealed between the food insecurity status of the workers and their rate of output in South Sudan which has backed previous work done in similar settings.

### *5.2.4 What Are the Implications for Policy and Practice?*

The discovery of this study therefore has policy and practice implications for food security and its influence on the output of workers in South Sudan. That is the reason why holistic approaches to addressing the food insecure population and forward looking economic development strategies needs to be engaged. Key policy recommendations include: By so doing, there is need to resolve the conflict in South Sudan in order to enhance food security and workers' productivity. Reconstruction activities should be followed by agriculture and physical infrastructure development to help food systems to function efficiently.

## CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

This chapter puts forward a clear and well-coordinated conclusion to the research study, with care taken to ensure that it reflects the highlights of the study while directly pointing out the research objectives. This research sought to understand how, why and under which conditions food security determines worker productivity in South Sudan. After that, several suggestions on the usage of the identified approaches for business purposes will be outlined for organizations and policymakers focused on combating hunger. Last of all, the disclosure that may be, the chapter will put forward the limitations of the study and the potential future research directions.

The study focused on the following research questions: the level of food insecurity, the effect of food insecurity on worker productivity in South Sudan and antecedents of food insecurity. Despite this, this research shows that Italy is a haven for asylum; 62.2% of the interviewed population from South Sudan lacked adequate food. This realization makes it even more necessary to increase and enhance the efforts towards grappling with this important humanitarian crisis. Regarding the second research question, the work was able to confirm that there is an inverse relationship between food security and productivity levels among the workers. The analytical descriptions of the results also confirmed that by increasing the levels of food insecurity, the levels of worker productivity declined in equal measures, thus indicating that the research findings had empirical support from the earlier literature noting the adverse effects of malnutrition on the health and productivity of the human. The findings affirmed that workers food insecure had high levels of likely absorption and also low levels of worker productivity for those attending work. This finding is consistent with other established studies that revealed that difficulties lower worker performance by roughly 30% if the workers are low-wage earner workers in a condition of malnutrition. Moreover, identified causes for food insecurity include conflict, population displacement, climatic

factors, and economic shocks. These are repetitive manners that contribute to limited attainment of food security and enhanced productivity of workers. This more refined version of food insecurity states that addressing these causes requires more than just offering food hampers to the affected but political, and social-economic.

Food insecurity is considered still to be one of the most important problems in global development, including the areas facing issues of instability as well as economic insecurity. South Sudan is one of the countries that have recorded higher levels of the problem it has reduced working population productivity and health significantly. The relationship between food insecurity and productivity is a strong and significant factor for countries where labour dynamics are key to economic development. South Sudan remains one of the most agriculture and manual labour-dependent countries the world over, two industries that are worst hit by the food crunch. This chapter therefore presents the background to the study, the rationale and purpose of the research problem, the research context of South Sudan, and the effects of food insecurity on the performance of workers.

## *6.2 Recommendations for Business Application*

Based on the findings of this research, several recommendations are proposed for organizations and policymakers seeking to address the challenges of food insecurity and worker productivity in South Sudan:

### *6.2.1 Integrated Food Security Programs*

This study establishes that integrated food security programs must be an imperative in organizations' operations in South Sudan. These programs should thus comprise not only food aid but also agriculture, feeding and market systems which are sustainable. The organizations should assist farmers in the area and encourage food production to lower food insecurity in the future, as well as support the economy. Measures like capacity building of farmers on conservation agriculture practices, and availing seeds, and tools boost food production preparedness.

### *6.2.2 Nutritional Support Programs*

In order to mitigate the effects of malnutrition in the workforce, management at the various organizations should consider providing nutrition to workers to enhance their production. Such programs may involve preparing and making available healthy foods and drinks at workplaces, nutrition education, and giving of nutritional supplements to sensitive employees. For that reason, the nutrition of the worker can be bolstered to promote productivity and decrease worker turnover caused by illness connected with hunger. Such kind of programs can also involve partnering with local health organizations that in turn will enhance the support of the community.

### *6.2.3 Collaboration with Local Governments and NGOs*

Organizations should engage both local government and non-governmental organizations with major roles in the formulation of projects dealing with food insecurity; thus, multi-stakeholder partnerships are effective for resource mobilization and for making the intervention more relevant and sustainable within the existing scenarios. Such relationships allow to exchange of information, experience and even resources that may improve the overall goal and accomplishment of food security objectives.

### *6.2.4 Advocacy for Policy Change*

Players in the food sector must promote policies that address the cause of food insecurity in South Sudan for business and organisational advocacy should focus here. This involves pressure for conflict settlement, enhanced authority and support for the farming sector. Policymakers should understand the essence of food security in creating stability and growth hence food security should be brought to the forefront by business organizations.

## *6.3 Limitations & Implications for Future Research*

It must be appreciated that this study has some limitations regardless of the useful information it has given on food insecurity and workers' productivity. A main weakness was a large

dependence on the respondents' estimates instead of actual numbers which may have skewed the results. Future research could therefore use both qualitative interviews and quantitative analysis to get an even better understanding of the factors causing food insecurity and poor productivity. The last weakness we identified was that the study was conducted in a particular region in South Sudan. Future research endeavours might broaden the scope of the survey to encompass a more extensive array of domains, thereby capturing the diverse challenges encountered by different demographics within the nation. This would make it easier to decipher how factors at the country level affect this connection between F&I and productivity. In addition, more specific "longitudinal" investigations that follow changes in a population over time might yield a richer understanding of the impacts of intervention to enhance food security and production. It would also make it possible to evaluate multiple direct and indirect effects of the proposed strategies and select the most appropriate approaches to manage food insecurity in the war zones. Comparison made with the other EAC countries revealed that food insecurity prevalence and productivity were even worse in South Sudan than in other EAC countries. The time series analysis showed that both food insecurity and productivity had worsened over the past decade with more worsening in the periods of increased conflict.

The dissertation is submitted in partial fulfilment of the requirements of the School of Business and Law, University of East London for the degree of Master of Science in International Business Management.

### ACKNOWLEDGMENT

This dissertation marks the successful ending of my MSc degree in International Business Management at the University of East London. The successful ending of this academic research depended on outstanding support, encouragement, and guidance by many individuals and organizations, for which I am eternally grateful.

At most, I would like to express my deep gratitude to my supervisor, Dr. Galina Dzamila Berjozkina-El, for her continuous support, practical guidance, and valuable comments throughout the research period. Her professionalism, dedication, and sharp recommendations not only enhanced the quality of my research but also motivated me to strive for excellence.

I am equally grateful to my colleagues at the World Food Programme for providing me with the necessary facilities—most especially access to the internet—that were very instrumental in bringing this project to its end. Their friendship and goodwill gave me the needed concentration and drive through what had been quite a trying task.

I would like to appreciate my extended family for believing in me always and for their consistent encouragement. Their support has been one of my greatest strengths throughout these years of education.

Finally, I dedicate this success to my amazing children, who bring light into my life and who remain an infinite source of inspiration. Their love and support have been pivotal in sustaining my efforts and facilitating my success toward this crucial milestone. The journey has been enlightening, impelling a wealth of knowledge and skills that will go a long way to influence my future pursuits. I am also thankful to those who directly or indirectly contribute to making my work come to a successful ending.

I extend my sincere appreciation to UNICAF for their generous support in awarding me a partial scholarship. Their assistance has significantly contributed to my academic journey, making it possible for me to undertake and complete this research successfully

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