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Global Food Security

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Abstract- *Food security refers not only to an adequate aggregate supply of food, but also means that "all people at all times have both physical and economic access to basic food". Population Growth is probably the single most important global factor influencing food security because of its rapid rate of increase. This paper aims to review the concept of global food security and investigate its relationship among different factors that must be taken into consideration for a nation to be food secure. The theoretical foundation of this paper was formed by conducting a comprehensive literature review on global food security. A new model is presented to illustrate the relationship between global food security and four specific factors. The model shows that food availability, population growth, food affordability, and climate change are the four main factors that are essential to for a nations to attain the level of global food security. The proposed model clearly shows how government and individuals must collaborate to attain the level of food security desired taking into consideration the many factors discussed. This paper demonstrates that global food security is a unique and complicated concept, which requires the utilization of a specialized cross-functional team to tackle the various obstacles along the way.*

Keywords- *Population Growth; Climate Change; Food Affordability; Food Availability*

1. INTRODUCTION

There are growing literatures pertaining to global food security [1-21]. Global food security is a complex and difficult concept. However, food security is defined as access to adequate and safe food by all people at all times for maintaining an active and healthy life [22]. Food security remains a concern for numerous cases, but at the cross-national level developing countries have benefitted from improving food security trends between 1970 and 1990. Food security according to WHO, therefore, implies the provision of safe, nutritious, and quantitatively and qualitatively adequate food, as well as access to it by all people. Food security refers not only to an adequate aggregate supply of food, but also means that "all people at all times have both physical and economic access to basic food" [12].

However, food security has slowly, but significantly, improved during the past year but population pressure shall remain a concern and new ways of addressing it will demand attention [23]. Population Growth is probably the single most important global factor influencing food security. Africa remains the world's fastest growing region, at an estimated 2.4 percent per annum. Hence, structural characteristics of the world's population are changing in ways that affect food security. At present, over 800 million people are chronically undernourished because of lack of food. At the present moment more than 841 million people throughout the world, concentrated mainly in lesser-industrialized societies, do not meet basic nutritional needs [24]. Food security, most commentators would agree, is threatened when population growth outstrips food supply; it is exacerbated by the unequal nature of global economic development [10].

According to Laki (1994), he discussed that the problem of food security could be short term (transitory) or long term (chronic); the short-term crises are characterized by the sudden appearances of large numbers of starving people weakened by under-nutrition who may die of exposure to diseases. The root causes of food crises could be drought, wars, floods, political factors, and diseases. Examples of the transitory crises are the 1983-1985 drought in Western Sudan and the ongoing civil war. Chronic food crises are less dramatic and less obvious to the casual observer. Gradual changes in economic and ecological trends occur leading to the depletion of reserves in the food system. Examples of chronic crises include decreasing food production, increasing foreign debt and increased importation of staple food [25]. Nevertheless, improvement is evident across the globe particularly in developing countries which generally started with more food-insecure environments.

2. METHODOLOGY

The research method applied here is review-centric approach [26, 27]. Also case studies are used and combined with the review-centric approach [26, 28, 29]. This is a timely topic as global food security is a major

concern today. Recently combining research methods [29] became increasingly important in particular when pursuing the goal of gaining "rich theoretical insights [28]." One form for "developing new theoretical insights" [27] is the review centric research approach in which a researcher reviews "existing theory and research" [27], but the argument can be made that we also can include case study research findings that are based on the real world observation of practitioners and organizations e.g. [26], [28]. In the research presented here the focus is on combining the most important "previously established studies and concepts" that I have identified in the academic literature based on which I provide a synthesis that "advances our understanding" [27]". In this study I identify the most important factors that influence the global food security situation to build a nation that is food secured. My research approach incorporates the "interpretive paradigm" in which a rich description of each factor is established [28].

Figure 1: Global Food Security Model

3. DISSUSION

The research that has been done regarding global food security is quite detailed and informative. It is clearly evident that a number of factors must be taken into consideration to ultimately attain a state of food security globally. I agree that among those factors, environmental factors have a major bearing on food security and sustainable development. It has been proven that global food security has more to do with non-economic aspects as some of the African country experiences shows [30, 31]. Poverty is the major cause of food insecurity [32]. I also that agree food security is threatened when population growth outstrips food supply; it is exacerbated by the unequal nature of global economic development [1, 10]. Finally, climate variability and climate change now loom as growing threats to the level and variability of global crop production while the abundance and multiple sources of information can be both a help and a hindrance to global food security [33].

3.1 Population Growth

Population Growth is a very critical factor in global food security. As discussed by Laki (1994), the total population is estimated at 26 million at the rate of 2.8 percent per annum and urban growth is 6 percent per annum. The population pressure increases cultivation of marginal areas, soil destruction, and puts a downward pressure on real wages and poverty. This has led to unemployment, underemployment, and a high demand for staple foods. The rapid growth of the population and labor force in urban areas without any significant growth in industrial growth has made it hard to find good jobs; urban wages have been forced down, and access to food reduced [25].

Table 1: Pre-factors for Population Growth

Unemployment	High Birth rate
Poverty	Immigration
Underemployment	Urbanization

3.2 Climate Change

Climate change is a major threat to global food security. Some rapid changes to the climate have been predicted over the next few years. There is little evidence or research to provide a reliable basis for gender-sensitive approaches to agricultural adaptation to climate change [34]. A country's vulnerability to climate change is decided by the presence of appropriate mitigation and adaptation options[35]. While the rate of future atmospheric CO2 increases is uncertain, CO2 is currently increasing and if this trend continues, as some predict, it portends dramatic changes in climatic conditions beyond any observed in historical times. The implications of CO2-induced climate changes are complex, occurring on a truly global scale with potential effects on virtually all ecosystem [36, 37].However, changes in the concentration of CO2 may have positive effects on crop yield and increase water use efficiency but there remain questions about how continuous exposure in the open environment will be reflected in harvestable yield and yield quality[17].

Table 2: Pre-factors for Climate Change

Drought	Increased CO2	Crop Yield
Flooding	Increased Insect activity	Pollution

3.3 Food Availability

Adequate food must be available for the growing population to meet their demands. Despite a global food surplus, almost half of the world's less developed countries suffer significant problems concerning food. Most social science and policy discussions of food security make the "food availability" assumption that increased food supply is the key to reducing hunger. Critics argue, however, that increased food supply has little impact on hunger and that the primary culprits are entrenched inequality and militarism [12].

3.4 Food Affordability

The research that has been done on food affordability is focusing on making food cheap for the poor. We know that food can be available and not affordable and this will contribute to food insecurity. I agree that making food cheap and affordable is not easy to do. So, providing the vulnerable with a stable income and employment possibilities as well as good pricing policies and inflation rates will make food security attainable [38-40].

3.5 Political Stability

The government needs to confront the basic structural and management problems that have led to food insecurity. The measures have to include: halting the desert creep, improvements in public management, formulation of sound development plans, resolution of the war, improvements in infrastructure (research, education, roads, irrigation), and macroeconomic policy reforms such as exchange rates, prices, marketing, taxation, and subsidization [14].

Specific measures include:

1) promotion of agricultural growth;
2) improvement of infrastructure;
3) provision of basic health and sanitation services; and
4) education.

General policies for poverty reduction include:

1) productivity enhancement;
2) employment generation;
3) income and consumption maintenance;
4) market stabilization; and
5) health support.

Table 3: Pre-factors affecting Political Stability

Promotion of agricultural growth	Education	Health support
Infrastructure	Employment	Market Stability
Health services	Income	Consumption Maintenance

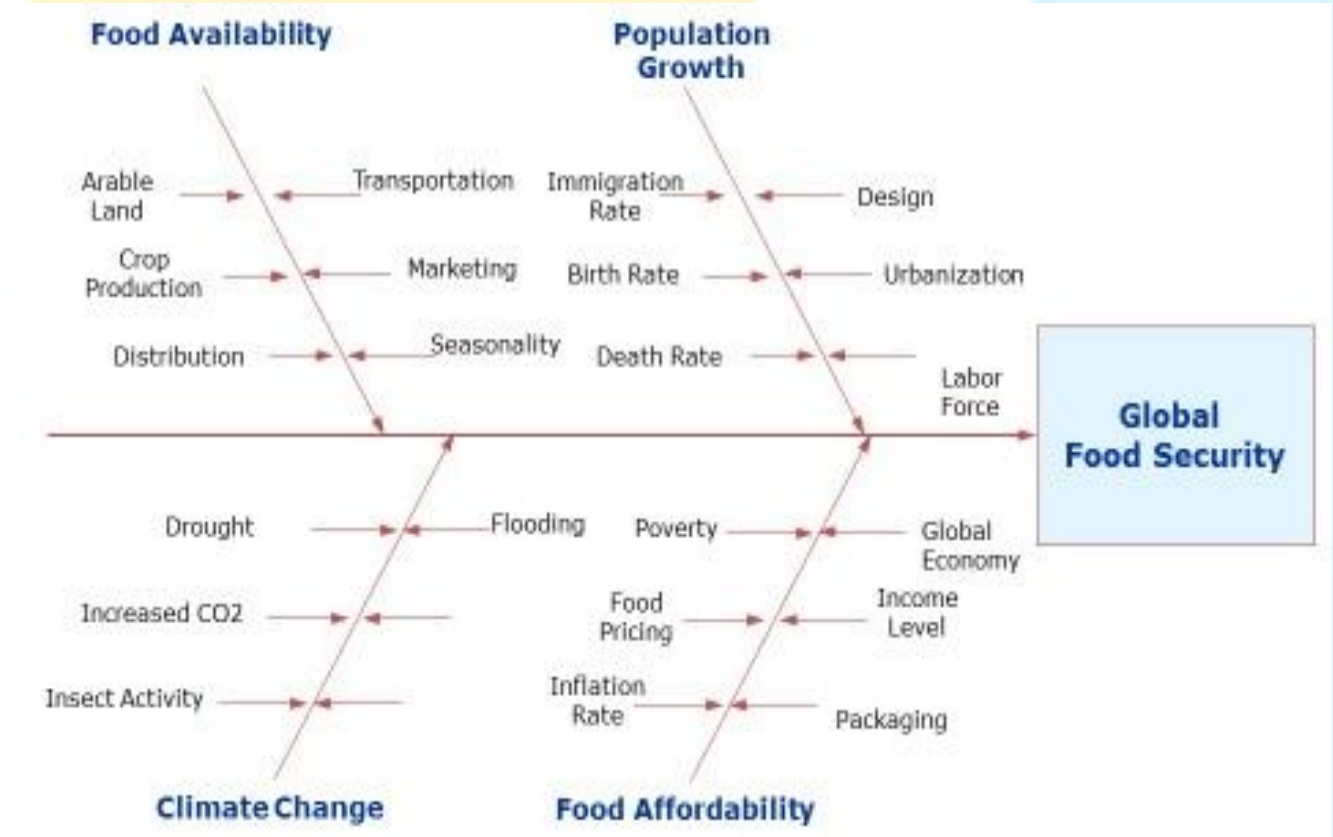

Figure 2: Global Food Security and its relation with other factors

4. CONCLUSION

Global food security has been studied in different directions varying from measurement to its relationship with other factors affecting the global economy. Food security is a very complex concept influenced by a great number of factors in many nations of the world. Population growth as a major factor influences the level of food available for consumption. Over the years, the rapid increase in population growth without a corresponding increase the amount of food produced has made it difficult for most developing countries to be food secured. Also, food accessibility, availability and affordability are major three parameters for attaining food security. For a nation to

be food secured, food must be readily available, access to food must be granted and the price should be reasonable. However, there must be effective food or agricultural policies for production and selling to ensure a nation is food secure. Global food security is also gender sensitive because women are involved at every stage of food value chain which makes them responsible for food quality. Thus, all these factors must be considered to attain a level of food security.

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