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Food insecurity: A global challenge, in a multi-disciplinary framework

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Abstract
Food insecurity has many causes that are mutually extremely interrelated and rooted within a complex network of social, political, economic and cultural institutions. We framework the possible of a multidisciplinary approach for creating an innovative research cascade in the study of food insecurity, and examine existing gaps in food insecurity research and methodological problem in producing research that is available to researchers. New research needed rise above conventional boundaries between the natural and social sciences. This paper explains the part of applied research for growth and extension services through the multidisciplinary approach of enhancing food production and stopping losses. This paper arises with an explanation of numerous disciplinary approaches for understanding the micro- and macro-level reasons of food insecurity. We point out chances for cooperation among these approaches within a multidisciplinary framework. By explaining the research questions to be answered inside this specific collection, we boost other discipline researcher for emerging their own type of multidisciplinary food insecurity research.

Keywords: food insecurity, multidisciplinary, nutrition, development, policy, intervention, framework

Introduction
Human being is the most important element of the world. Food insecurity has been mainly related to hunger, poverty and growth of human life. Nutrition is an outstanding investment for the whole world and it empowers people and societies. If we improve the nutrition, it means that we improve income generation, reduction of poverty, and more speedy developments in the world**.** The global world wants to produce at least 50% more food to feed 9 billion people by 2050. Now, the all policies/ programs used to tackle food insecurity problems have failed to adopt an organized and comprehensible approach. As the global world goes forward, the food insecurity, given the future challenges more strongly and the world will face the growing complexity and uncertainty. The time has come to leave this conventional approach and systemically study of food insecurity and its complex nature. In this article, we will study increasingly food insecurity, how Food insecurity is a global and systemic challenge, and its relation to innovation, trade, health, wealth generation and geopolitical relations.

Food insecurity is a multidimensional concept and based on four key dimensions: the physical availability of food; physical and economic access to food; food utilization based on cultural and dietary requirements; and the stability of other three dimensions over the time [1]. Attaining global food insecurity will be one of the most life-threatening challenges in the coming years.

Objectives of the Study
The objectives of the study are:
1. To understand the historical view of the food insecurity problem at the global level.
2. To understand the challenge of food insecurity at international level.
3. To understand the threatening area about food insecurity at global level.
4. To understand the multidisciplinary research and its relation with food insecurity.
5. To understand, why the multidisciplinary research is voice of time

Methodology:
This article withdraws on several policy documents and presents research (secondary data) for its investigation and recommendations. Many studies have been accepted from a research perspective at global level. In this study, the following methodology has been adopted:
- A mixed approach is used in this article (qualitative and quantitative)
- Analysis of the present data ;(secondary analysis) including, analysis of the previous research policies and related official papers.
- Analysis of the result of several conferences leads from the government and private institutes.
- Review of the data with mention of the research objective, with a view to find main data gaps in answering the questions.

Evolution by definition
Food insecurity is a small word but it is very essential part in our daily life as water and air. Food is an important part of everyone's survives at globs. It provides us the energy and nutrients to breed and grow, be healthy and active, to move, work, play, think and learn. No one can imagine surviving at

globe without food from his beginning to end.
Food insecurity is a pliable idea as replicated in the several efforts at definition in study and policy practice. Even years ago, there were near (200) two hundred definitions in printed books [2]. This is because, despite the fact food insecurity is a *multi-dimensional conception*, we generally focus in speaking one facet of the greater food insecurity problem. Agricultural manufacture, food quality, fresh water, income, sanitation, trade, governance and political performance are all issues affecting one's food insecurity standing. It is valuable to step back from our own particular knowledge and observe the multi-dimensional environment of the food insecurity idea. Every time the conception is presented on the label of learning or its objectives, it is essential to appear carefully to create the clear or oblique definition [3].
The thought of food insecurity has grown meaningfully during the time. The definition of food insecurity used in this article is the one accepted at the 1996 World Food Summit take place in Rome. This definition, which has been officially recognized at the international level, delivers as follows

> *"Food insecurity exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life"* [4].

This definition is another time distinguished in The State of Food Insecurity 2001:

> *"Food insecurity is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life* [5].

World Summit of Food insecurity was held in 2009, in this summit this definition was verified and the notion was prolonged and detailed by adding that the

> *Four pillars of food insecurity are availability, access, utilization, and stability" and stated that "the nutritional dimension is integral to the concept* [6].

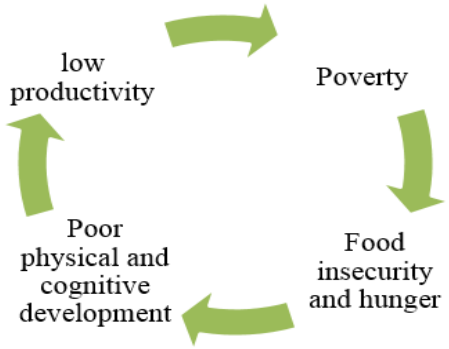
The expanded accepting of what created food insecurity controlled the treaty by the 2012 Committee for World Food insecurity that

> *"Food and nutrition security exists when all people at all times, have physical, social and economic access to food, which is safe and consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and is supported by an environment of adequate sanitation, health services and care, allowing for a healthy and active life* [7]*."*

1. Food Insecurity Is A Global Challenge?

1.1 Current short picture of globe

Food is very essential part of our life to survive at a globe, but when we see the statistics of global food insecurity, then we see, near one billion people have not sufficient to eat in the globe [8]. This statistic presents a very dark picture of the international world. This amount of the population is approximately a sixth part of the world's population. This population is agonized from chronic hunger. Now a very important question should be rise in our mind what we do for this situation.
It is a disaster with disturbing and far-reaching special effects. The effect of food insecurity, not only impresses the big and middle age people, but also our flower child of the globe, because the famine fails the immune systems and slows child development. The statistics about children's food insecurity has a very alarming situation. One out of six children and approximately (100) hundred million children in industrialized states are skin-and-bone [9]. The children are not only facing food insecurity, but poor-nutrition is also a big problem for children of the globe. Nearly half (45%) of all child deaths, losses in the developing countries are connected to poor - nutrition and total deaths are nearly 3.1 million children each year [10]. These calculations present very shameful scenario for us.



***Source*:** http://www.fao.org/docrep/013/al936e/al936e00.pdf

Fig 1: Food insecurity and poverty are deeply interrelated phenomena

Long-lasting hunger and food insecurity is mainly the outcome of poverty. People who are poor regularly simply cannot have enough money to purchase food. Poor people spend over half their salary to purchase the food they essential to live. The huge mainstream of 827 million hungry people living in developing states as an example where (14.3) % of the population are hungry [11].
On the other hand, the problem of food insecurity is not only problem of underdeveloped countries but also in developed countries. According to FAO nearly (805) eight hundred five million people, 11.3 % of the world population or about one (1) in every nine (9) people are incompetent to reach their primary nutritional necessities, approximately half of them existing in G20 countries. A rising number of developing nations, plus G20 members, have a dual problem of under and over-nutrition. Fatness amounts have approximately doubled since 1980 and the quantity of overweight people (around 1.4 billion adults, 500 million) in the globe are overweight/fat [12]. In developing countries 66 million school age children join the classes with hungry life [13]. According to WFP, US$ (3.2) three point two billion is required per year to touch all (66) sixty six million hungry school-age children [14]. Another statistics analysis, in the world one in four children is stunted but this ratio can be increased one in three in the developing countries [15]. But this situation is very critical in just 20

countries of world where 80 % stunted children live.

1.2 Africa: very danger picture in globe

The part of Africa presents a very dangerous picture compared to other areas. The Asia has the major figure (above 500 million people) of hungry people affected by food insecurity, but Sub-Saharan Africa has the biggest pervasiveness (24.8 % of people) [16].

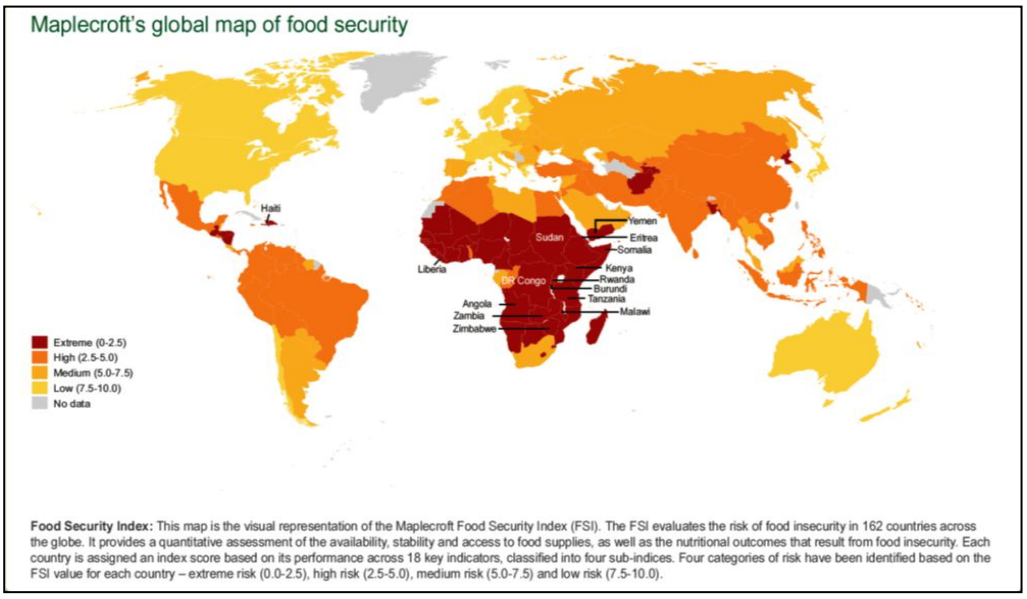


Fig 2

The achievement of food insecurity in the region of Africa is a great challenge for all stakeholders. Approximately (240) two hundred forty million individuals in sub-Saharan Africa (one person in every four) are suffering of shortage suitable food for a healthy and active life. While on the other hand, higher food prices and famine are shoving other people into poverty and hunger [17]. If analyze the statistics of *Maplecroft's FSI* about African region, we see the problem of food insecurity is at extreme levels.

Table 1: Highest Risk Countries by FSI score food insecurity index

Rank	Country	Score
1	Zimbabwe	0.80
2	Burundi	0.85
3	DR Congo	0.90
4	Eritrea	0.92
5	Yemen	0.94
6	Malawi	0.95
7	Somalia	0.96
8	Haiti	0.98
9	Liberia	1.03
10	Angola	1.20
11	Kenya	1.22
12	Sudan	1.27
13	Rwanda	1.29
14	Tanzania	1.30
15	Zambia	1.30

All these countries are located mostly in sub-Saharan's African region. For better picture, many researchers divided the Africa in four sub regions like East and central Africa, West Africa, Southern Africa and North Africa. The problem of food insecurity is different sub regions in East and central Africa, Ethiopia, Somalia, Uganda, and Tanzania suffering with food insecurity problem but in Congo the intensification of food insecurity is very high.

In 2010, MICS survey was held in Congo. According the statics of MICS survey the situation in Congo is very crucial. Now, this survey is available on the internet. The region of West Africa is also captured by food insecurity problem, especially Burkina Faso, Mali, Niger, and Senegal. As other regions, in southern Africa, mainly Malawi, Zimbabwe, Mozambique is facing food insecurity problem. As global scenario, in Africa, the flower child, is affected by food insecurity. The total count of underweight children is 30 million. This ratio of children is one in five in sub-Saharan Africa [18]. 23 million school children join classes hungry across the Africa while total hungry school children are 66 million in the world [19].

1.3 Yes: food insecurity a global challenge.

If we deeply study the food insecurity problem, the global food insecurity stands a challenge. The challenge is of the two types. The first challenge is about the present food insecurity scenario, the second challenge about future food insecurity. The present food insecurity challenge is detailed discuss in upper article. Now I am discussing a short picture about future food insecurity problem. The future picture is very critical as present picture of global food insecurity. The main future challenge is making sure fair access to a safe, enough and healthful food will increase as the global population growths to around 9bn over the next 35 years (according FAQ). This is a question that disturbs us all:

As the global world goes forward, make sure the global food insecurity will only develop extra challenging in the future because the demand for food is expected to grow by 50 percent over the next 20 years. And this demand will be

doubled in 2050. Increasing the food insecurity demand will originate mostly from population and income growth in developing countries. Due to many factors (climate change, water, energy resources, urbanization and industry, etc.) the growth in agricultural output is facing increasing threats and agriculture output now lagging globally. Because of all the above factors, it is expected to decrease more than 25 percent in most of the world's poorest countries. As an effect, an extra 24 million children could agonize from under-nourishment.

The new factors for global Food insecurity
1. Falling world food stocks
2. Price instability in the food markets
3. Demographic growth
4. Changing food habits
5. Urban growth
6. The boom in biofuels
7. Climate changes that affect production
8. Above all, the links between the financial markets and speculation within agricultural futures markets.

2 Multidisciplinary Research

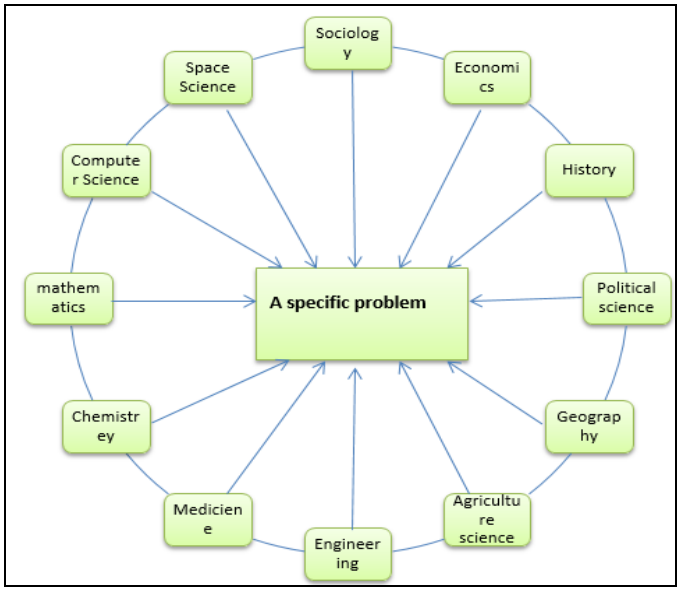
2.1 Introduction

In the 21 century, the expansion of knowledge in the world has taken away of multiplication specialization. We are dividing the disciplines and sub disciplines into smaller and smaller particles for judgment in our world. To use that approach, we can able to forecast the behavior of individuals, society and the change in nature. But with the passage of time for multidisciplinary researches are more influential drivers for seeking all types of knowledge.

Multidisciplinary research, the researchers make easy teamwork and unite data, methodologies, different angles, and thoughts from multiple disciplines for resolving existent world problems. Multidisciplinary researchers gather and make a common language and framework for discovery and innovation.

2.2 What is Multidisciplinary research?

Within research Multidisciplinary is considered as the form of integrated research. It is perhaps the maximum achievable research for goal. Multidisciplinary research is topographies of many academic disciplines in a conceptually built inquiry with several objectives [20]. Although scholar's main aim is to know evidences and match result from the research or build original combining understanding [21]. Every member is capable to pay a specialized perception on the specific problem [22]. When we use multidisciplinary research method, the main benefit of this method is that, the different angles on the problem can be collected into one paper for evaluation [23]. Some researchers argue that the Multidisciplinary research is coordinated and integrated and other research recommends that multidisciplinary research is coordinated, but not integrated [24]. One more capacity of modification in the evaluation of multidisciplinary research treats the scope to which the approach is focuses on explicit problem resolving. Commonly, multidisciplinary is understood as hypothetically planned rather than problem focused on, but some say that the research would generally be oriented a joint problem [25].



Multidisciplinary approach

2.3 Disciplinary viewpoints

Foremost, we intricate on their separate position, then we can show how researchers within these disciplines participate in the new multidisciplinary work. We cannot dismiss the significant factors that signify the viewpoints of all researchers working within these disciplinary fields. But important factors that finding individuals about food insecurity we can discuss under the umbrella of multidisciplinary approaches.

The research of food insecurity can be studied at the macro-level through an attention to the global governance of food insecurity, defined as recognized and unrecognized institutions, standards and procedures which govern or right affect global food insecurity policy and results. If we conduct this kind of research, attention is funded to the key actors on the international level as well as multilateral agencies like World Food Organization

To use the Business studies, we can take a leading role in research on food insecurity. MNCs of food are mostly very effective in the delivery of safe and satisfactory price and go on deliveries of food to people. We use qualitative methods in Business studies on food insecurity research.

From avoiding the shortage and overflow of food insecurity, the Economic history can play a primary part in understanding the alteration of food insecurity. Economic history can also support in the identification of the lateral and immediate comparisons of this change.

Epidemiology not only estimates food insecurity and characterizes it in pragmatic terms, but also acknowledges the potency of food insecurity across populations and exposing threat related to its occurrence. The problem of food insecurity is rooted with the discipline of geography. An anthropological research on food insecurity can explain forms of habitual action and their norms that may dispose populations to the advent of food insecurity.

3. Multidisciplinary research and food insecurity

Food insecurity is a complex phenomenon. To speak the

challenges about food insecurity is so different and widespread, it is unacceptable for anyone researcher, anyone organization and even one nation. The complexity of food insecurity wants a multi-disciplinary approach to its study [26]. Statistical analysis explains that, the complex phenomenon of food insecurity is increasing day by day at global level. Especially last two decades, many scholars work and struggle against them. But statistics situation is very harmful now, because if one side shows the increasing of the food insecurity problem and other side of statistics shows, we are adding above 200,000 new babies to this globe every day and 140 new babies every minute.

In this article we firstly has discussed about the complexity of the food insecurity problem at the planetary stage. And secondly, we have discussed how we resolve this problem at the global level. Every researcher has managed his work only one or two aspects of solving the food insecurity problem. For example, social science has many subjects, but one subject is economics. Economist talks about the food insecurity problem only economic aspects like demand and provision. The economics can importantly contribute to the study of the nature of food insecurity and pay greater role for development of policies towards its reduction [27]. Another example, in natural science biologist discusses only bio aspect of food insecurity. If we dissect the food insecurity problem only one view, we cannot solve this trouble. Because Multi-scale and multi-level approaches were required for the study of any phenomenon, where scale is the dimensional, time-based, quantitative and analytical based and level is the units of investigation that are placed at different places on a scale [28]. These changes bring the multiple aspects of food insecurity and feel the need for interdisciplinary, even trans-disciplinary approaches is now well accepted [29]. Definitely, food insecurity research is in circumstance a very good example of the need for much improved interdisciplinary research with social science, economics and the humanities all playing vital roles [30]. A complete understanding of food and agriculture security is the best way through multidisciplinary investigation. Absolutely, multiple academic disciplines give lenses through which the multiple dimensions of food and agriculture security can be completely studied [31]. In 2013 (29 September to 2 October), the first International Conference on Global Food Security was taken place in the Netherlands. During the conference, the researchers emphasized the need of interdisciplinary research for the protection the global food insecurity [32]. Attaining global food security for an increasing international population, even as integration demands on the environment is a countless challenge to human beings [33]. The time is coming now we discuss and solve the problem of food insecurity at a multidisciplinary level, then we better understand the all dimensions of food insecurity. Food insecurity is a multidisciplinary theory and that theory based on political, economic, social, demographic, cultural, eating habits and technical views. Increasing food insecurity is a big reality; therefore it is suggested to take into reflection the role of non-food factors [34]. The researcher should come from different subjects of social sciences and natural sciences and do their research on food insecurity, and then complex phenomena understand the world bitterly.

Conclusion

This article has existed a framework for understanding the multidisciplinary research in food insecurity. Multidisciplinary research is challenging, but very essential to the cognizance of food insecurity and its mechanism. Food insecurity remains to gather greater media attention, typically in relative to the publication of new studies assumed by single disciplines, which may look to clash with conclusions on food insecurity from other fields. That researchers in these arenas should organize their struggles is clear, and here we have offered an international approach for responsibility so. We identify those actual approaches to deal with food insecurity essential, integrate research from anthropological, sociological and historical angles in concert with medical, political, and economic ones. Lacking this additional complete multidisciplinary view, well-meaning food insecurity creativities are expected to endure to fall flat.

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