



Research Article

A Multi-Dimensional Analysis of Food Security Situation in Pakistan: The Way Forward

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Abstract | Human existence is primarily attributed to access to quality and nutritious food. Food Security is essential for wide ranging positive economic outcomes like economic growth, poverty reduction, trade opportunities, increased global security and stability, and improved health and health care. The current study is an attempt to analyze food security situation in Pakistan. Food security, being a multi-dimensional phenomenon comprises of Food Availability, Food Accessibility, Food Utilization and Food Stability is calculated through linear scaling technique. The study has developed two thresholds each one for overall developing countries and regional countries (South Asia). The food security situation of Pakistan is compared to both thresholds. The results show that Pakistan is comparatively a food insecure country. It lags behind in terms of food availability and utilization that makes the overall food security scores lower. The study suggests that food security situation in Pakistan could be enhanced by emphasizing on improvements in food availability and utilization, followed by food accessibility and stability. The study further recommends that food security needs the inclusive improvements in its all individual dimensions. In case of Pakistan, however, the food availability and food utilization are important to be addressed initially and then to focus on the other two dimensions.

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Introduction

This study primarily aims to analyze the food security situation in Pakistan and the way forward to make the country food secure. Attaining the food security is colossal challenge for all developing countries. Pakistan being the 5th most populace country in the world experiencing a high population growth rate and low economic growth rate as compare to other developing as well as regional countries. With all these, the country is also ranked 148th out of 187 countries in terms of Human Development Index (HDI). The Millennium Development Goals

(MDGs) included the goals of reducing poverty, hunger and food insecurity from developing countries, which were considered as pre-requisites for the human as well as economic development. Similarly, the Sustainable Development Goals (SDGs) also includes hunger eradication and achieving food security by 2030, (Sachs, 2012). Food insecurity negatively affects the human physical, social, emotional and cognitive development, which is associated to all SDGs of the United Nations. However, still about 800 million people cannot access enough food and more than two billion faces lack of micronutrients, while about 60% of individuals are food insecure in low-income coun-

tries, Pérez-Escamilla (2017). Therefore, food security is a development issue; having strong implications for economic growth and development. According to (Timmer, 2004), “food security and economic growth interact with each other in the process of economic development”. Food security is also vital component of human safety as well as the basic unit for the development of the nations. The human without proper nutrition cannot maintain their health requirements to be utilized for developing human resource, which leads the food security to become a global concern (Thomas, 2001).

Food security is a very complex and multidimensional phenomenon, which was officially for the first time defined in the Minutes of World Food Summit (WFS) held on 1974 as “Food is said to be secure, when the adequate amount of all basic food stuff supplies available at all times to maintain an incredible enlargement of food consumption and to overcome the effects of production and price fluctuations” (Panagariya, A., 2002). In the beginning, food security was entirely considered a supply side issue, where the sustained availability of food was emphasized. However, it was the starting point of this key issue in the world, where the issue got attention of the policy makers, researchers and international agencies to work out in a much better way. The FAO in 1983 supplemented the theme and redefined the food security as “along with the food supplies, the people physical and economic access to required food needs to be ensured”. This definition additionally emphasized on the demand side of the food security, where the people need to have plentiful economic and infrastructural resources to procure from the available food stuff rendering to their needs. Reutlingen, 1986 flourished the concept of access to food further and defined it as “the food should be accessed by people at all times to have a healthy and active life”. The sustainable access to food was introduced to augment the life characteristics of people. In this regard, the World Food Summit in 1996 redefined the food security and adopted a more complex definition as “the global food security is achieved when every time every person has physical and economic access to the adequate, nutritious and safe food to comprehend their dietary needs to live an active and healthy life”. This definition covers three broad dimensions of food security like stable availability, accessibility and utilization of food. The access dimension covers the economic and physical access but dimension was refreshed in the state of food se-

curity (2001) as “the existence of food security means a situation when all people at all times have physical, economic and social access to adequate safe and nutritious food to overcome the dietary energy deficiency and to provide food choices for an active and healthy life” (FAO, 2002). The access to food indicators are divided into three categories i.e. experience base, coping strategies and dietary diversity which captures only the quality and quantity indicators of food security. The experience based and individual dietary diversity indicators are recommended to assess the individual’s access to diet quality or micronutrient adequacy Leroy *et al.*, (2015). According to Peng and Berry (2018), food security is mainly attributed to four dimensions national availability, household access, individual utilization and stability of all these dimensions over time. The sustainability is also included by modern studies which is mainly a long term concept. Food security and insecurity are two reciprocal, dynamic and time dependent terms where different indicators may be applied at different levels of food security measurement and assessment.

Considering the above definitions of food security, the dimensional status need to be evaluated for a better assessment and highlighting those improvement dimensions which can add in the food security outcomes. In Nigeria, the multidimensional assessment of food security framework is helpful in providing a good picture of the depth and breadth of food insecurity for the government and the policy makers for interventions, Ike *et al.* (2017). In Pakistan, the adequate food production for fast growing population with the rapid climatic change is a big challenge. Nevertheless, opportunities for increasing the food production still exist as the average yield per hectare is still far lower along with big geographic disparities. The extreme poverty along-with lower ranks of HDI, inadequate employment opportunities for growing population, low labor force participation rate and rising food prices are the main hurdles in economic access to the food, whereas the physical access is also abandoned by the lack of infrastructure. Lack of education is also a big hurdle to food security and nutrition. The lower literacy rate, lack of safe drinking water, poor drainage and sewerage conditions, insufficient health care services is limiting the utilization of the food. The vulnerability and stability of food remained one of the prime factors responsible for food insecurity (Ur Rahman *et al.*, 2020).

Being a lower-middle income country Pakistan has a slight decrease in undernourishment since last two decades but it is still moderately high. However, Pakistan is a food surplus country because of a series of good harvests, despite that 60% people are still food insecure and they cannot afford to an adequate diet, Sleet (2019). Pakistan is almost food self-sufficient country if only 30% of its potential is utilized, 35% of all available food is un-accessed. Despite of the potential the food gap still exist because there is inefficient food procurement as well as distribution system, low purchasing power of the people, poor marketing, illegal food movements and natural disasters (Hussain and Routray, 2012). Ensuring the food security in Pakistan requires an understanding of the food security dimensions to explore the future challenges and achievement for a brilliant food security profile. Pakistan is a low income country and have increasing population growth rate, while the main source of food security and nutrition requirements is agriculture sector. With current population growth rate the population will become double in 2050, while the growth rate of cultivated land is comparatively very low and the urban population is increasing, which results in pressure on cultivated land. The main staple food is wheat which is still imported in very huge amount. Given all the facts the country needs to reduce the population growth rate and enhance the field technology to grow more domestically, will narrow down the food demand and supply gap (Ahmad and Farooq, 2010).

There are many studies over the subject but no study has been found particularly, on the analysis of the various dimension of food security in Pakistan. It is important to know that what dimension is making the overall food security situation worst because it will help the governments and policy makers to adopt of curing strategy the most vulnerable dimension first and then to focus on the other dimensions. This paper is constructing a multidimensional food security index and comparing the dimensional situation of food security in Pakistan with the regional as well as developing countries threshold to address the challenges faced by the food security in the country. Based on comparison of different dimensions with thresholds, the paper suggested that in what particular dimension the Pakistan food security profile is good and in what particular dimension it is below the regional or developing world threshold. The study in hand is first of its kind in the literature. The same studies could be

conducted for other countries or regions as well.

Materials and Methods

The indicators used for constructing the various dimensions of the phenomenon and their sources are also discussed in this section.

Construction of food security index and it various dimensions

According to Nardo *et al.* (2005), the construction of a multi-dimensional index follows a set of procedures, starting from adopting a theoretical frame work of the phenomenon; strong theoretical bases to be provided for selecting the indicators that are to be used in each dimension, imputation of missing data; if any, normalization of the data, weighting and aggregation of the indicators as well as the dimension. Food Security is a versatile phenomenon, which could be measured through indirectly observed indicators, which describe different aspects of the phenomenon (Napoli *et al.*, 2010). The above stated definition could be divided into four broad dimensions like food availability, accessibility, utilization and stability, where each dimension accommodates different suits of indicators shown in Table 1. The indicators, used in this study are taken from the various issues of FAO on the state of food insecurity in the world, and Napoli (2010). Each indicator selected in its respective dimension is based on some theoretical importance (Ur Rahman *et al.*, 2020).

Data collection and its Sources

The data has been taken from the food and agriculture organization statistics (FAOSTAT) website, FAO food security indicators, world development indicators (WDI) and UN statistical data base. The data sources given in Table 2 has been taken for the period of 29 years (1991 to 2019) from 20 developing countries from all the 10 regions classified by the World Bank, including six countries from South Asia.

The data has been normalized; which is a linear transformation of the data and is necessary because the indicators have diverse measurement units and the aggregation is meaningful only when the indicators are comparable. For this purpose, the Minimum-Maximum approach has been used, which is preferred over z-score transformation because the z-score transformation does not remain stable when the data for a new time point become available, (Nardo *et al.*, 2005).

Table 1: Set of indicators in various food security dimensions.

| Dimensions | Indicators |
|--------------------------|--|
| Food Availability (FAV) | 1 Arable land as percentage of total land area (ARL) 2 Average dietary energy supply adequacy (ADA) 3 Share of dietary energy supply derived from cereals, tubers and roots (DEC) 4 Average protein supply (APS) 5 Food production index (FPI) |
| Food Accessibility (FAC) | 1 Paved roads as percentage of total roads (PRD) 2 GDP per capita (GDPP) 3 Consumer price index (CPI) 4 Domestic food price index (DFP) 5 Rural population as percentage of total population (RPN) |
| Food Utilization (FUT) | 1 Prevalence of malnutrition (MLN) 2 Prevalence of undernourishment (UNT) 3 Access to improved water sources (WIP) 4 Access to improved sanitation facilities (SIP) |
| Food Stability (FST) | 1 Percentage of arable land equipped for irrigation (AIL) 2 Volatility of food production index (VFP) 3 Variability of consumer price index (VCPI) 4 Cereal import dependency ratio (CMDR) |

Table 2: Data sources.

| Variables | Data sources |
|---|--|
| Average Dietary energy supply adequacy (ADA), Dietary energy supply derived from cereals, roots and tubers (DEC), Average protein supply (APS), Paved roads (PRD), Gross domestic product per capita (GDPPC), Access to improved water Sources (WIP), Access to Improved sanitation facilities (SIP), Cereal import dependency ratio (CMPD) | FAOSTATS and FAO food security indicators. |
| Arable Land (ARL), Food Production index (FPI), Rural population (RPN), Undernourishment (UNT), Domestic Food Price Index, Prevalence of Malnutrition (MLN), | WDI |
| Consumer Price Index (CPI), Agricultural irrigated land area (AIL) | WDI and UN Statistical database |
| Variability of consumer price index (VCPI), Variability of food production index (VFPI) | Author's Calculation |

The indicators once transformed have been rescaled from 0 to 1 range, to standardize the indicators (Napol, 2010).

The min-max alteration has two alternative expressions. For each indicator Y the country i in time t , is transformed by;

$$Nit = \frac{Yit - \min(Yit)}{\max(Yit) - \min(Yit)} \dots (1)$$

Where “ N_{it} ” is normalized indicator in time t for country i and “ Y_{it} ” is the observation in given time period t for the country i . where, the minimum observation in the series is subtracted from the observation in time and divided by the range. The second expression in this regard, considers the evolution of indicators;

$$Nit = \frac{Yit - (\min_{t \in T} Yit)}{(\max_{t \in T} Yit) - (\min_{t \in T} Yit)} \dots (2)$$

The expression (1) is mostly used in time dependent studies, when the $Y_{it} > \max_{it}$ the observation will become greater than 1. The second expression remains unstable when the new data comes as it uses a limited time period and the composite indicators index need to be recalculated (Organisation for Economic Co-operation and Development, 2008).

This study used expression (1), where the range is calculated in 0 to 1 through this method but it is difficult to interpret because of very small numerals. Therefore, the outcome is multiplied by 100 to convert it to 1-100 ranges for the ease of analysis by using the following formula (3).

$$Nit = 100 * \left[\frac{(\text{actual value} - \text{Minimum value})}{(\text{Maximum value} - \text{Minimum value})} \right] \dots (3)$$

The indicators are being classified “bad” or “good” in their relation to the phenomenon. The indicators

classified as bad are inversed (Napoli *et al.*, 2011). The variables classified “bad” are subtracted from 100 to make them inversed, expressed in equation (4).

$$IN_{it} = 100 - \frac{Y_{itn} - \text{MIN}(Y_{it})}{\text{Max}(Y_{it}) - \text{Min}(Y_{it})} \times 100 \dots (4)$$

Aggregation of the indicators and Dimensions

Linear aggregation is done by simple arithmetic mean. This study involves two-step aggregation in which the individual dimensions are gathered separately and then again, they are combined in one composite index of food security by following (Napoli, 2010) techniques. Dimensions are being aggregated for each country and period. The formula to compute the food security multi-dimensional index (FSMI), for i^{th} country, in each time (t) is shown in equation (5):

$$FSMI_{it} = \{1/4(FAV_{it} + FAC_{it} + FUT_{it} + FST_{it})\} \dots (5)$$

Some studies suggested that the geometric mean is suitable to aggregate the dimensions, like (Nardo *et al.*, 2005) argued that in deprivation index the geometric aggregation solves the problem of big differences of the values in sub dimensions. The Human development report also employed the geometric average following Anand and Sen (2000). On the other hand, Neumayer *et al.* (2010) assessed human development and sustainability and they used the simple arithmetic average for developing HDI. Accordingly, the individual items are added up to compensate one indicator higher position and another's lower position will arrive finally at overall outcome. (Sagar and Najam, 1998) and (Desai, 1991) also concluded that in multiple dimensional index we are discussing the overall phenomenon. Therefore, we could allow one indicator to compensate the other.

Results and Discussion

To analyze the food security and its dimensions situation in Pakistan, this study used two standards. First, the average of the developing countries has been calculated and compared the Pakistan's figures with it and secondly, a regional (South Asia) threshold is calculated and compared with the Pakistan's situation.

The results given in Table 3 show the ranking and respective scores of the developing countries along with Pakistan. These results tell us about the Pakistan's food security dimensional situation. The dimensional

situation in comparison to other developing countries and neighboring regional countries tells us about the comparative situation in Pakistan. This comparison enables us to point out the area which needed to be improved in the first time and suggests the set of actions to be taken for the development of food security situation in Pakistan.

The average value of each individual dimension and overall food security shows the developing countries threshold with which Pakistan's situation is compared. The countries above the threshold level are considered best in terms of the respective dimension, while the countries below are considered deprived in terms of respective dimension.

As far as Pakistan's situation is concerned, it stands on 19th, 16th, 18th, 1st, and 17th in terms of food availability, accessibility, utilization, stability and overall food security, respectively. In terms of food availability, Pakistan is 10 times (5.01 points) below the average value, six times (4.5 points) below the average value in terms of food accessibility, four places (14.77 points) below the average food utilization and 10 places (9.56 points) above the average value of food stability. However, in terms of overall food security Pakistan is eight places (3.60 points) below the average food security of developing countries.

Overall, Pakistan is not a food secure country. It needs to improve the food security to meet the developing countries threshold. In terms of all the four pillars of food security, Pakistan needs to prioritize the food availability and utilization in first place and then food accessibility to become a food secure country. Pakistan has deficient food production because of lack of resources, which makes the country lowered position in terms of food supply. Moreover, the quality of available food is not good, as the average dietary energy supply is not adequate to comply with undernourishment challenges. To improve the food availability, Pakistan needs to improve the availability of utensils for food production including arable land, high-yielding seeds, fertilizers, pesticides and high technology mechanical tools used in farming. Additionally, the food nutrient value could also be improved by improving the average dietary energy supply and the sources of dietary energy to be shifted to fruits, livestock products, vegetables and vegetable oils etc. against the tuber and roots sources. The strategy to improve food availability includes diversification of income nutrition, agriculture inputs like seeds,

Table 3: *Ranking and scores of selected developing countries in term of food security and it dimensions.*

| Ranks | Food Availability | | Food Accessibility | | Food Utilization | | Food Stability | | Food Security | |
|---------|-------------------|-------|--------------------|-------|------------------|-------|----------------|-------|---------------|-------|
| | Country | Score | Country | Score | Country | Score | Country | Score | Country | Score |
| 1 | Turkey | 72.43 | Kuwait | 65.11 | Chile | 89.60 | Pakistan | 89.77 | Kuwait | 74.04 |
| 2 | Mauritius | 64.09 | Turkey | 52.41 | Kuwait | 88.25 | Egypt | 88.63 | Turkey | 72.36 |
| 3 | Tunisia | 62.14 | Mongolia | 50.65 | Mongolia | 87.89 | Chile | 86.12 | Mongolia | 70.06 |
| 4 | Kuwait | 61.15 | Mexico | 45.86 | Malaysia | 86.37 | Georgia | 84.32 | Chile | 68.08 |
| 5 | Egypt | 59.60 | Kazakhstan | 45.29 | Tunisia | 85.74 | Mongolia | 84.17 | Egypt | 67.46 |
| 6 | Kazakhstan | 59.06 | Chile | 44.50 | Turkey | 85.18 | China | 83.59 | Tunisia | 66.92 |
| 7 | Mexico | 57.83 | Tunisia | 44.19 | Mexico | 84.03 | Bangladesh | 83.34 | Mexico | 66.71 |
| 8 | Mongolia | 57.51 | South Africa | 42.03 | Fiji | 84.01 | India | 82.18 | Kazakhstan | 66.19 |
| 9 | India | 56.90 | St. V&G | 41.98 | Kazakhstan | 83.69 | Thailand | 82.16 | Mauritius | 65.25 |
| 10 | Bangladesh | 55.30 | Jamaica | 41.81 | Jamaica | 83.62 | Kuwait | 81.63 | Georgia | 64.12 |
| 11 | China | 54.17 | Georgia | 41.29 | Egypt | 83.37 | Turkey | 79.41 | Jamaica | 63.82 |
| 12 | St. V&G | 53.88 | Fiji | 40.62 | Thailand | 83.33 | Mexico | 79.13 | Malaysia | 63.73 |
| 13 | Jamaica | 53.71 | Mauritius | 39.65 | Georgia | 82.45 | Malaysia | 77.78 | South Africa | 63.41 |
| 14 | South Africa | 53.68 | Malaysia | 39.13 | China | 81.52 | Kazakhstan | 76.72 | Fiji | 62.43 |
| 15 | Fiji | 52.42 | Egypt | 38.23 | South Africa | 81.30 | South Africa | 76.65 | Thailand | 62.27 |
| 16 | Thailand | 52.37 | Pakistan | 37.03 | St. V&G | 81.07 | Mauritius | 76.59 | China | 61.96 |
| 17 | Chile | 52.08 | Bangladesh | 31.23 | Mauritius | 80.66 | Jamaica | 76.15 | Pakistan | 61.20 |
| 18 | Malaysia | 51.65 | Thailand | 31.21 | Pakistan | 66.51 | Tunisia | 75.60 | St. V&G | 61.11 |
| 19 | Pakistan | 51.48 | India | 29.84 | India | 63.57 | Fiji | 72.67 | Bangladesh | 58.33 |
| 20 | Georgia | 48.41 | China | 28.58 | Bangladesh | 63.43 | St. V&G | 67.53 | India | 58.12 |
| Average | | 56.49 | | 41.53 | | 81.28 | | 80.21 | | 64.88 |

Source: *Author's calculations.*

fertilizers, pesticides and improvements in credit market, land and water resources management, live-stock, fisheries, poultry and reducing food losses and wastages to improve the food availability in the country (GoP, 2017). In the same line, the food and nutrition security could be achieved through food availability and that could be attained by food production. To improve the food availability, there is a dire need for employing such technology that have very little ecological harm and to ensure the green revolution and sustainable food and nutrition security (Swaminathan and Bhavani, 2013). The improved food availability could also be achieved through food aid and safety net programs. Additionally, capitalization of the farmers, productivity stabilization and changing the irrigation from rainfall to other modes are also required in this regard (Devereux, 2000). The rising food production can only ensure the food security in Ethiopia. The objective could be achieved among other through improving the technical efficiency of crops growers and investing in their socio economic conditions (Khairo *et al.*, 2005).

Food utilization or food absorption is the other dimension where Pakistan needs lot of improvement to enhance national food security. The food utilization or absorption capacity is very low as compare to development countries threshold, which stops the nutritional wellbeing that could be achieved through food consumption. The lack of clean drinking water, safe sanitation facilities and hygienic food preparation and storing techniques leads to malnutrition, undernourishment, stunted growth and various diseases prevalence. The food utilization could be improved by adopting basic strategies that decreases the irrational use of fertilizers and pesticides, wastage improper disposal, and sewerage and industrial water that polluting food production system as well as environment. The strategic actions may also include treating the sewerage and industrial water through bio-remediation and adopting preventive approach of food safety throughout supply chain of food products instead of corrective approach (GoP, 2017).

Comparing with the developing countries threshold, Pakistan is far below in all the dimensions except for

Table 4: Food security situation at regional level and regional threshold.

| Region | Food Availability | Food Accessibility | Food Utilization | Food Stability | Food Security |
|---------------------------|-------------------|--------------------|------------------|----------------|---------------|
| Northern Africa | 60.87 | 41.21 | 84.56 | 82.12 | 67.19 |
| Sub-Saharan Africa | 58.88 | 40.84 | 80.98 | 76.62 | 64.33 |
| Caucasus and Central Asia | 53.74 | 43.29 | 83.07 | 80.52 | 65.15 |
| Eastern Asia | 55.84 | 39.61 | 84.71 | 83.88 | 66.01 |
| Southern Asia | 56.10 | 30.53 | 63.50 | 82.76 | 58.22 |
| South-Eastern Asia | 52.01 | 35.17 | 84.85 | 79.97 | 63.00 |
| Western Asia | 66.79 | 58.76 | 86.72 | 80.52 | 73.20 |
| Caribbean | 53.79 | 41.89 | 82.34 | 71.84 | 62.47 |
| Latin America | 54.95 | 45.18 | 86.82 | 82.63 | 67.39 |
| Oceania | 56.90 | 41.97 | 81.89 | 79.77 | 65.13 |
| Regional Averages | 56.99 | 41.85 | 81.94 | 80.06 | 65.21 |
| Pakistan | 51.48 | 37.03 | 66.51 | 89.77 | 61.20 |

Source: Author's calculations.

Table 5: Intra region (South Asia) food security situation.

| Ran King | Food Availability | | Food Accessibility | | Food Utilization | | Food Stability | | Food Security | |
|------------------|-------------------|-------|--------------------|-------|------------------|-------|----------------|-------|---------------|-------|
| | Country | Score | Country | Score | Country | Score | Country | Score | Country | Score |
| 1 | India | 56.90 | Iran | 44.82 | Iran | 82.91 | Pakistan | 89.77 | Iran | 66.26 |
| 2 | Bangladesh | 55.30 | Pakistan | 37.03 | Sri Lanka | 72.84 | Nepal | 83.63 | Pakistan | 61.20 |
| 3 | Iran | 55.28 | Sri Lanka | 33.67 | Pakistan | 66.51 | Sri Lanka | 83.51 | Sri Lanka | 58.96 |
| 4 | Pakistan | 51.48 | Bangladesh | 31.23 | Nepal | 63.87 | Bangladesh | 83.34 | Bangladesh | 58.33 |
| 5 | Nepal | 47.19 | India | 29.84 | India | 63.57 | India | 82.18 | India | 58.12 |
| 6 | Sri Lanka | 45.80 | Nepal | 25.86 | Bangladesh | 63.43 | Iran | 82.02 | Nepal | 55.14 |
| Regional Average | | 51.99 | | 33.74 | | 68.86 | | 84.08 | | 59.67 |

Source: Author's Calculations.

the food stability. The good thing is that Pakistan food profile is very stable, which means how much food is available, accessible and utilized is shocks friendly. The shocks are not that much affective in terms of Pakistan food security. Pakistan is 5.01 points lower than the threshold in terms of food availability, 4.5 points lower than the accessibility threshold, 14.77 points below the utilization threshold, 9.56 points above the stability threshold and in terms of overall food security it is 3.68 points below the threshold. The results shown in Table 4 present the situation from another angle that is to compare it with the regional situation and regional threshold.

Pakistan's situation is identical in terms of regional threshold to that of developing countries threshold, as shown in table 4.2. Pakistan is 5.5, 4.82, 15.43 and 4 points below the regional threshold in terms of food availability, accessibility, utilization and overall food security, respectively. However, it is above the threshold level in terms of food stability. Here the Food

Utilization is again the most deficient dimension followed by the food availability, which makes Pakistan lower in terms of overall food security.

Now, the most important comparison is within the region because the region shares identical environment, geography, seasons, social and cultural attributes, economic conditions and infrastructure facilities. Looking into the Table 5 which shows the intra-regional situation where Pakistan's condition is somehow better in relation to other countries in the region. To determine the optimum levels the regional average value serve as a threshold. Food utilization and availability are again the sector where Pakistan substantially lags behind the others. Pakistan stands on 4th rank out of 6 regional countries in terms of food availability and 3rd in terms of food utilization as well as below the average values of the region.

Looking on the above scenario, we need to focus on the food utilization and food availability in the first

time to improve the overall food security situation. Malnutrition and unsafe water and sanitation facilities are the big hurdles in the front of achieving the best utilization profile.

Conclusions and Recommendations

This paper is an attempt to find a strategy for enhancing the food security situation in Pakistan. Actually, food security is a multi-dimensional phenomenon and could be described by different dimensions and a suit of indicators. This paper is different from other researches and employs a different approach for improvements in food security situations. Keeping in view the various dimensions of food security, each dimension is determined by different factors so every dimension is analyzed separately. This research paper developed a food security index for the study period and then made various thresholds by taking the averages of each dimension as well as composite index values and compared Pakistan situation in respective dimension as well as over all food security. The various thresholds consist of inter developing countries; inter regional (developing world regions) and intra-regional (South Asia). Any value above the respective threshold is considered as good condition and below is considered as to be improved. Given the discussion in the paper under results and discussions section, Pakistan's situation is better in case of food stability followed by the food accessibility and the food availability as well as utilization are not that good and well below the thresholds. The country needs to improve the availability and utilization in the first time and the accessibility could be improved and the country will become food secure. This analysis is important because it gives a practical way forward and helps in managing financial and physical efforts to come out of the issue step by step. The future researcher may add further dimensions of food security in their analysis as the concept is evolving with time and new dimensions are including in the phenomenon.

Novelty Statement

This research study is the first in its context which adds into the ongoing empirical literature over the subject of the food security strategy in Pakistan. While considering the Multi dimensionality of Food Security, the study first develops the multi-dimensional food security index through linear scaling technique and then analyze it for Pakistan by comparing the scores

of Pakistan in each dimension with its regional counterparts as well as with other developing countries to come up with a proper strategy for prioritizing the dimensions which are not better in Pakistan. This study helps the policy makers to ensure the food security in the country efficiently while using fewer resources.

Author's Contribution

Inam Ur Rahman: Idea, write-up, data collection, estimations, analysis and incorporation of all the reviews.

Sanam Wagma Khattak: Proof reading, grammatical corrections and correspondence

Muhammad Israr and Saima Hashim: Proofread the final article.

Conflict of interest

The authors have declared no conflict of interest.

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