CHAPTER – II
REVIEW OF LITERATURE

This chapter covers the review of literature by classifying the studies into the different sections in terms of general studies on Processed Food Industry, strength and weakness of the Industry, opportunities and challenges in the Processed Food Industry, studies relating to the international marketing, competitiveness as a concept and competitiveness of Processed Food Industry. In all 97 studies have been reviewed for the purpose spreading from the year 1966 to 2016.

2.1 General studies on Processed Food Industry

Vimal (1976) pointed that only 0.5 percent of the total production of fruit in India is utilized by the processing industry. For the economic viability of the industry reducing the cost of production is required which is on the higher side in our country. On an average more than 50 percent of the fruit and vegetable are wasted during processing. Study further stated that reducing wastages would yield valuable end products, lower the cost of production and minimize pollution problem which is aggravated with the unhygienic disposal of these perishable wastes. Hence efforts should be made to utilize at least a part of this waste otherwise, it would be very difficult for the industry to achieve the viable of growth.

Singh et al. (1977) stated that processing of fruit into various fruit products is very necessary, to check wide fluctuations in fruit prices, to proper utilize the produce and to provide variety to the consumers. India’s resource base endowment in terms of various horticultural crops, which constitute the supply base for items like processed fruits and vegetables, is rich and varied.

Arora et al. (1978) suggested that to protect the farmer against the exploitation at the hands of traders and to ensure him a fair and competitive price for his produce rationalization of prevailing marketing practices is necessary. This can be achieved to an extent by forming marketing societies
**Rana (1986)** stated that the HPMC (Himachal Pradesh Horticulture produce marketing and processing corporation) is the premier fruit marketing organization in the state. It is involved in the post harvest handling of fruits and vegetables in a scientific manner and making all efforts to bring world class horticulture technology. Since its formation, it is engaged in the modernization of marketing and processing of fruits and vegetables grown all over the Himachal Pradesh. To realize these objectives, it has set up a chain of packing houses, cold storages and food processing plants besides a network of sale officers in the terminal markets. This has resulted in witnessing a manifold increases in product quality as well as quantity.

**Shewfelt (1987)** conducted a study on quality of minimally processed Fruit and Vegetables. He stated that consumers demand for fresh fruit and vegetables coupled with a demand for convenience is fueling an interest in minimally processed products. Advances in packaging technology provide a potential for improved quality and extended shelf-life of these products but little is known about the physiological, microbiological and nutritional consequences of minimal processing. It was concluded that post-harvest handling of fresh produce is still in a developmental stage.

**Singh (1988)** found that processing is one of the main pillars of the horticulture industry on which balanced development depends. The study further mentioned that twenty five percent of perishable fruit, which go waste, can be utilized by increasing the processing capacity.

**Ramkali (1999)** suggested that to compete in the world market, Indian manufacturers must adopt appropriate technologies to meet product quality requirement. Indian food processors must have latest machineries and technical expertise to compete the world market. Government should take initiative to promote food processors so that they can become competitive.

**Vranic et al. (2002)** depicted that the HACCP system is a complementary system in the food industry for quality & safety. HACCP system and driving forces are necessary for quality of foodstuffs especially at this moment when
the image of the industry is somewhat disturbed by excessive happenings over the past few years.

Goyal (2010) found that India is a net agricultural trade exporter but suffers from food insecurity means availability of food is less than the requirement. The amount of food available is much inferior to food required so the difference between food produced and food available amounts to food shortage. This food shortage is absorbed in the poor distribution and inefficient channels of FCI. Furthermore, it is contended that policies today need to take into account the rapidly changing urban food consumption scenario. This is important because once this is recognized, policies need to be aptly designed and redesigned to suit the needs and demands of the industry. This industry acts as a valuable fill-in component in the gap of food produced and food available, owing to its efficient retail and distribution chains, long perish-period, extended catering to varied class of population and affordable range (due to economies of scale). Therefore, to synchronies policy steps towards achieving food security in India, the principle should be (a) to improve state of parastatal agencies and (b) to take due cognizance and implement favourable policies in transforming modern food retail chains. Apart from recognizing the potential of food processing, policy steps need to ensure greater impetus on changing the structure and functional methodology of the FCI The strongest way to observe both is to increase private participation in food policy sector.

2.2. Strengths and weaknesses of Processed Food Industry

This part explores the work done related to the competencies enjoyed by the processed food industry and bottlenecks that retarding the industry.

Kachi (1970) found that numerous malpractices are prevalent in the marketing of fruits. The growers are not getting the real value of their produce. Study suggested that marketing societies should be framed to minimize their malpractices. Although production of fruits, predominantly apple has multiplied four times since 1974, yet unmarketable surplus of fruit has not come down. It has a low quality and varies between 10 to 50 percent of total
produce. The state should come forward to set up fruit processing units on a large scale.

**Dhar et.al (1977)** found in their study that there is lack of contact between the production and consumers, leading to inadequate knowledge of markets and marketing channels, lack of transportation and cold storage facility and lack of competitiveness on the part of co-operative marketing societies, private intermediaries make handsome profit through marketing of apples. Many of the problems can be overcome with the use of scientific packaging, setting up of fruit processing units and by constructing cold storage at different points.

**Connor et al. (1985)** found that demand for Fruit & Vegetable products occurs due to changes in the distribution and sources of income, the demographic composition of the population, preferences, prices and foreign trade. The paper defined that the processing sector purchases inputs of raw food products and with the assistance of labour, capital and other inputs transforms them into processed products. The authors stressed that the significant share of processed products reflects the importance of this sector for India's growth as a global economy. Increasing trade in processed products indicates not only opportunity for growth in fruit and vegetables processing but also greater acceptance and demand for processed products from India in overseas markets.

**Boruse (1992)** in his study stated that the prices of mangoes were affected by demand supply factor in the season; to give a reasonable return to the growers the study recommends that the mango should be processed for a value addition and be converted into different products. International food Policy research Institute (1994) noted that the Indian horticulture products are facing challenges mainly on two counts price and quality. To an extent reducing the transportation cost, with constitute a significant part of the total cost can help in bringing down the price and preservation of raw material can improve quality. In later case it can be achieved by extension services at farmer's level and at the processing levels.
Naik (1993) studied that diverse agro climatic conditions prevalent in the country are suitable for growing all types of fruit and vegetables. But these are perishable in nature. The fruit and vegetables processing industries can help avoid post harvest wastage of these products. The author highlighted in his papers the constraints and suggestions for the growth of processed food industries. Major constraints include lack of research and development efforts, harassment under food laws, market promotion, single window clearance. These constraints should be removed to capture the potential of FPI. Suggestions include leasing of land to entrepreneurs for captive cultivation, reduction of post harvest losses on fruit and vegetables through proper management, improving the productivity of land and duty free imports.

Kumar et al. (1998) analyzed that existing constraints in the exports of horticultural products from India. They viewed that despite being the second largest producer of fruits and vegetables in the world, India had not in general done well in the exports of processed fruits and vegetables. One of the important reason for this was the commercial processing of these commodities was highly costly and limited. The absence of exportable varieties of many of the potential products was the reason. The country had concentrated on the export of traditional products like pickles and juices, which were in great demand in international market.

Scheuplein (1999) depicted that processed food industry in India is not getting the required kind of raw material for the production of quality food products. The problem can be solved by giving due attention and attention to the farmers. Raw material available was not up to mark in terms of quality.

Singh (1999) studied the problems faced by the food processing industry. He identified that freight structure, credit structure, quality of fruits and vegetables and sanitary conditions prevailing at the time of packing and storing are the main problems faced by the industry.

Mathur (2000) depicted that for the Indian Dairy Industry, efforts need to be directed to accelerating the pace of application and adoption of modern technologies to improving productivity, and to reducing costs of operations.
and ensure greater availability of milk and milk products. To attain this, national development programs need to be dovetailed with state Government programmers on animal husbandry and dairying, poverty alleviation programmers, research & development strategies, Agricultural Universities and other developmental agencies. Infrastructure needs to be strengthened for the improvement of milch breeds of cattle and buffaloes in context with the 14 agro-climatic zones of the country. Intensive financial and scientific inputs are needed to mechanise the processes for the manufacture of indigenous milk products. Scope is also indicated for the development of a new range of dairy products to meet the needs of the urban consumer for health, safety, convenience and shelf-life.

Dev et al. (2004) depicted that there are some advantage like high production of raw materials, cheap labour, manpower etc, for food processing industry in the country. However, many problems hinder the growth of this industry and it needs government support. There has been some change since the last few years and especially after 1991, the central government has taken some steps to deregulate and encourage the sector. However, the role of states is vital in the growth of processed food industry, so for the growth of processed food industry the government of Andhara Pradesh released a policy in November 2003. There are no major initiatives in the policy still it can called a good beginning. The study examined the opportunities and challenges in processing of paddy, mango, vegetables, oilseeds and livestock products. There is a good scope to process paddy and mango into different products by encouraging processing units into in the centres of production. Groundnut should be processed be into different products like peanut butter etc to sustain the small and marginai farmer's cultivation the crop.' The identified potential under oil palm can be achieved if the problems facing the industry are solved. There is a scope to export fish, meat, poultry, production and dairy products in that order.

Sidhu (2005) conducted a study on the FRUIT AND VEGETABLES processing in India. He found that with the establishment of the Pepsi unit at Zahura (Hoshiarpur district) in Punjab during the year 1989, there was a quantum jump in the area under cultivation. It was concluded that contract
farming introduced in the state by Pepsi unit has proved quite useful for Punjab agriculture. This unit provided new technology to tomato growers under the contract system. The processing units working in other states may also learn a lesson from the Punjab experience and contract farming may be introduced particularly for FRUIT AND VEGETABLES crops.

Desilva et al. (2005) found that the barriers restricting innovations in Sri Lankan food processing firms. The analysis of product, firm and external environment characteristics has helped to shed light in the significance and the nature of innovation barriers. The results have revealed that the innovative efforts of the majority of food processors have been bottlenecked with various operational constraints that in most cases have derived from their negative cultural assumptions, values and norms. They analyses that the limited internal resource base, institutional deficiencies and a culture unfavourable to innovation of the majority food processors. In order to overcome most of the innovation barriers, an attitudinal and behavioural change will be required. With top management understanding, a more open system focus, a more proactive and novel approach a commitment to customers and solutions, a greater allowance for risk and more optimistic assumptions towards human skills and competencies in a flexible entrepreneurial atmosphere, the necessary organization culture to support innovation will be provided. Better management education and training and socialization of the risks associated with innovation would lead the organizations to change their culture and consequently to overcome their attitudinal and behavioural weaknesses.

Viswanadham (2006) analyzed that India is all set to become, the food supplier of the world. It has the cultivable land, all the seasons for production of all variety of fruits and vegetables, well developed agribusiness system that works in its own way. The business system is tuned to food habits and convenience of rural and urban folks of the previous generation. Factors such rapid growth in the economy, the technological innovations in home appliances such as refrigerators microwave ovens, rise of families with dual incomes and changing food habits of the population all point to the increasing need for healthy processed food. The supply chain sector is very weak with no
process owner this can spell disaster. The food supply chain needs the attention of the academics, the industry and government.

Zugarramurdi et al. (2007) analyses the effectiveness of the HACCP based system implemented in food processing plants, a mathematical quality cost model is proposed. The model consists of two controllable costs and resulting cost sub models. The model assumes that quality can be calculated from eleven different components. Each component of controllable costs is affected by coefficients that depend on the quality level and on quality, market and production parameters. Failure costs were estimated as direct company losses. The model was applied to fish processing plants and compared with experimental values obtained from real plants. A very good regression coefficient for total quality costs was obtained, showing that the model explains the 90.3% of the experimental values from actual fish freezing processing plants.

Vangjeli et al. (2010) in his study found that the farmers have adequate productive capacities but untapped. Farmers can tap this capacity if technical and financial support provided by central govt. They analyses that the development of a competitive agro-refinement industry is essential for rural and urban growth, without it agricultural growth will be limited in accomplishing local, demands and in fresh products sale. The agro refinement industry will be the main and lasting instrument for agricultural production which in turn will offer many opportunities for increasing employment in rural and urban areas, increasing the infield surface, impacting poverty and migration reduction of the people living in these areas. They analyses that the development of agro- refinement capacities is hampered from the primitive technology used in the factories, lack of investments for new settings, lack of technique and managing expertise, high cost of goods accumulation in case of small farmers and infrastructure.

Dave et al. (2013) concluded that India has a strong agricultural production base with diverse agro-climatic conditions and arable land of 184 million hectares. It is one of the major food producers in the world and has abundant availability of wide variety of crops, fruits, vegetables, flowers, live-stock and
seafood. As per the available information, it produces annually 90 million tons of milk (highest in the world); 150 million tons of fruits and vegetables (second largest); 485 million livestock (largest); 204 million tons of food grains (third largest); 6.3 million tons of fish (third largest); 489 million poultry and 45,200 million eggs. As a result, Indian food processing industry has become an attractive destination for investors the world over. Processed food exports also increased from 2010-11. Dairy Industry too have become an important aspect. Dairy Industry is also growing. Government has implemented various schemes to promote at the same time favorable Exim policy is also benefiting equally. Further efforts should be made to channelize it and there is huge export potentials. Concentrated efforts would definitely give more fruits.

Singh et al. (2013) stated that Punjab is agriculture dominating state and has very bright scope for setting food processing industry to uplift the agri-business system which will ultimately boost all other components of agri-business system to complete the process. Economic liberalization, globalization, entry of MNC’s in processed food segment has tremendously increased the opportunities as well as competition in the market with added advantage to customers. Likely modernization and commercialization of agriculture in post GATT era with emphasis on value added agro based products for domestic as well as international market, spell a very bright future of Punjab food industry and this study laid emphasis on domestic market, keeping in view the fast changing tastes of consumers and their preference towards processed food products.

Kumar (2013) analysed that India’s relatively in expensive but skilled workforce can be effectively utilised to set up large low cost production bases for domestic and export markets. The second biggest bottleneck in expanding the food processing sector, in terms of both investment and export, is lack of adequate infrastructure facilities. Another constraints is poor infrastructure for storing raw food materials. Financial incentives and support should be provided on liberal scale to promote the modernization of agro-processing industry and for establishing new such industries in production catchments.
Bung (2013) in his research paper found that the major reasons for ill growth of mango industry include: non availability of right varieties of mangoes that are ideal for processing; lack of necessary infrastructure; lack of cooperative effort amongst processing community; and lack of integration of all the activities starting from farm gate till final consumers because of ill functioning of the government departments/nodal bodies/institutions with no clear direction and goals. A coordinated, integrated and strategic effort of all the stake holders is must to turnaround this industry. Mango processing Industry of India has to undergo a radical shift to address all the above constraints and reap the enormous advantages/benefits/ profits which this sector is to offer. Problems / constraints have to be studied in wholesome, integrated and strategic manner rather than adopting piecemeal approach.

Singh (2014) analysed that In view of the availability of physical, natural and human resources available in India, it can be concluded that food processing sector has a potential to change the socio-economic conditions of rural India. A Strong and dynamic food processing sector can play a significant role in diversification of agricultural activities, improving value-addition opportunities and creating surplus for export of agro-food products. This requires policies and plans for improvement of food processing infrastructure including up gradation of technology and enforcement of quality standards, promoting investment in food processing, thus assisting in domestic market and export growth. For getting the fruitful results, there needs a vibrant infrastructure as well as full financial and technological support from the government to the food processing units. It is found that only one percent of total meat production is converted to value added products. India is the largest milk producer in the world but only 15% of total milk is processed through the organized sector because of lack of processing centers and proper logistic system. A major concern of our economic planners should be on the development of agriculture sector which is the base of most of the Food processing activities. This sector has given a hope for betterment to the people engaged in agriculture. It reduces the wastages and ensure the adequate supply of food products and hence, stabilizing the economy by maintaining the price at a moderate level. It is also found that food processing industry covers the
wide range of sub sectors what have potential to increase the employment and controls the migration of workforce to the other states as well as other nations.

**Kolhapure (2015)** found that the food processing industries in India are facing many problems. These problems are procurement of raw material, procurement of standardized raw material, Problem of shortage in raw material, the fluctuating price of raw material, shortage, inconsistency in supply and non availability at required time. Also most of the units have problem of quality variances which affects the quality of the final product. Majority of the units have the problem of power supply as frequent cut offs, delay in power connections, load shading etc.

**Hussain et al. (2016)** analysed that food processing Industries are very important for the growth of Manufacturing sector in India because it creates the Direct linkages between primary and Manufacturing sectors so for the development of food processing industries there is a need to developed the agriculture sector and find out the problem of agriculture sector and remove it because without the sufficient raw material the FPI can work smoothly. The most recorded problem of the agriculture sector as well as FPI is the credit facilities because the credit is available at a very high interest rate which a poor farmer and small manufacturers cannot afford. So policy makers should try to solve this problem. The newly implemented scheme i.e. Mudra Yojana and Make In India are working very good to resolve the problems of manufacturing Industries regarding credit and foreign direct investment the policy makers should suggest that they should try to do something which creates healthy marketing environment of food processed products in India.

**2.3. Opportunity and Challenges of Processed Food Industry**

This part explores the work done related to the opportunity and challenges (threats) available for the processed food industry.

**Bhalerao (1966)** examined the challenges faced by FRUIT AND VEGETABLES processing industry. The data was Marketing Society. He pointed out that the some of the challenges faced by the industry are high
perishability of FRUIT AND VEGETABLES and requirement of special
packaging and transport services. Due to short season, it was difficult to
employ expensive equipment and technicians for short duration with idle
capacity for the rest of the year. Moreover, higher capital investment for
installation of processing units is needed.

Sihrana et al. (1995) stated that the statutory governmental regulatory
standards define datum line of quality for domestic as well as for export
markets but higher market share and profitability will require ‘quality’ to be
placed in the driving seat. Conscious and organized efforts alone can ensure
the quality of consumer’s requirement, satisfaction, safety and reduction in
wastage during manufacturing.

Deshingkar et al. (2003) conducted a study on changing food systems,
resource sharing and marketing arrangements for vegetable production in
Andhra Pradesh. He found that transformations in the global food system are
causing changes in food production and marketing in India at a slower rate
than elsewhere in the developing world. But there is a growing domestic
market for horticultural produce, in both traditional and exotic vegetables. He
concluded that production and marketing arrangements are responding to
changing demand driven by urbanization and diet change.

Karmakar et al. (2003) stressed for boosting agricultural exports and
horticultural exports. In all, nine commodities viz, mango, grapes, banana,
vegetables, onions, okra, gherkins, asparagus and flowers have been identified
for tapping international markets. He suggested that enhanced exports of fresh
produce would create the need for certain essential processing operations for
improving shelf-life, preservation and transportability He further suggested
that if all commodities may not be exported in the fresh form, it would create
the need and scope for domestic agro-processing industries for surplus
production. Some commodities would find a better market and higher returns
if they are exported in the processed form. It was concluded that the
entrepreneur would naturally be tempted to manufacture ready-to-consume,
processed foods.
Sukumar (2003) emphasized that the inability of developing FRUIT AND VEGETABLES processing industry in Andhra Pradesh has resulted in the failure in exploiting various lucrative opportunities such as packaging, cold storage, raw materials handling systems for minimizing postharvest losses, organic farming, vermin compost manufacturing, bio-pesticides industry and also drip irrigation industry in the state. He observed that there are huge processing opportunities for FRUIT AND VEGETABLES in the state involving mango, orange, banana, cashew, potato, tapioca, tomato, onion, gourds, beans, Bengal gram and peas.

Dev et al. (2004) studied the challenges in processing of FRUIT AND VEGETABLES products. They pointed out that there is lack of efficient mechanism for the working of contracts between processors and farmers. They recommended the establishment of an independent Ministry of food processing and department enacting contract farming laws and providing for an efficient arbitration in cases of contract violation. They further recommended for the provision of insurance facilities to all horticultural crops of small farmers in the contract farming.

Makki et al. (2004) depicted that the effect of host country characteristics on foreign direct investments by the U.S. food processing industry in developed and developing countries. The most important host country characteristics attracting U.S.FDI have been market size and per capital income, but their influences differs between developed and developing countries. In the case of developed countries market size is not a major determinant of U.S. FDI in food processing industries while per-capita income is a very significant factor in attracting FDI. They find that the openness of a country is unlikely to have a significant impact on U.S. food processing firms' decisions to invest aboard. Their results also indicate that relative factor prices are not critical in determining investment in food industry's direct investment in transition and emerging markets. As the demand for processed food increases in these new markets, some multinational food processing companies respond by investing directly in processing plants.
Echanove (2005) studied the challenges faced by the small farmers. The study examined the main livelihood strategies that small farmers and their households adopt during the same period. It was found that small farmer's handover their orchards to the agri-business firms for several, reasons: the lack of capital for maintenance; the higher incomes that can be obtained from off-farm activities; the problems encountered in obtaining workers and the need to avoid the risk of lack of compliance by buyers. She concluded that small farmers in the global commodity chain have an important participation whose problems should be solved through adequate government measures.

Panwar (2005) conducted a survey in Gujarat to explore whether the consumption of packaged foods is influenced by the income of the household, city size and exposure to media. The study revealed that the households with an average monthly income of Rs. 15,000 or more spent Rs. 564 on processed foods per month as compared to Rs, 326 spent by the families having monthly income of less than Rs. 15,000. This shows that rise in disposable income plays a catalytic role in increasing the demand for processed [and packaged food products. It was further confirmed that those watching TV for longer hours could recall more brands as compared to those spending less time. The study also confirmed that consumption of processed foods is fuelled more by rapid urbanization because it was found that people living in the larger cities with a population of more than 5 lakhs spend more on processed foods as compared to residents of smaller towns having a population of less than 5 lakhs. It was further concluded that barring a few product categories where no significant difference was observed in the brand preference, for rest of the items brand choice as well as pattern of consumption varied widely across different socio-economic groups of consumers.

Jigeesh (2006) studied the role of cooperatives in food marketing in India. He concluded that keeping in view the ever growing demand for healthy food and the changes taking place due to globalization of business, the cooperatives should be encouraged and supported to gear up their business strategically to produce, process, and distribute different types of food products in healthy ways. They should attract consumers with their vital business ethics and trust,
and give strength to the cooperative movement locally and globally. The cooperatives with their principles and social awareness will be the right alternatives for the current flooding of corporate business firms in food marketing.

**Davos (2006)** conducted a study on customer perception regarding FRUIT AND VEGETABLES processing in India. As the Indian market matures and consumers become more quality and brand conscious, the organised sector is poised to grow and gain prominence. Moreover, given the size of the industry and the nascent development stage, the food processing sector is a key focus area for the Government of India. The importance of the sector is further enhanced by the fact that over 70 per cent of the population depends upon agricultural activity for livelihood. The government has, therefore, been focusing on commercialization and value addition to agricultural produce, minimising pre/post harvest wastage, generating employment and export growth in this sector, through a number of regulatory and fiscal measures.

**Karmakar et al. (2006)** found that the world is getting integrated into one market; quality certification is becoming essential in the market. However, there are very few dairy plants in the country, which have successfully obtained ISO, HACCP certification. There is scope for introducing newer plants adopting newer processes by the dairy industry in the country. Packaging of dairy products also another very promising area. NRI and overseas investments can take place in manufacturing dairy processing equipment, fruit packaging equipment and equipments for biotechnology related dairy industry.

**Chuku (2008)** analysed that in order to protect the environment from the adverse effects of food processing industries, a number of mitigation measures and management options that should be implemented are hereby recommended. For all of the identified negative environmental impacts, it is recommended that utilization of the best available technology; payment of optimal liability compensation to local communities and institutionalization of adequate abatement measures be adopted. The manufacturing processes should be designed to maximize recycling potential and minimize the
generation of wastes. For example, new low and non-waste technologies which can reduce environmental impacts should be adopted.

**Ruteri et al. (2009)** stated that the food industry sector in collaboration with government institutions need to address seriously of the challenges which are impeding the sector from catching up with the fast growing competitive market. Technology, professionalism, capital investment, managerial skills, and physical infrastructure are playing a major role in hindering the growth and contribution of the food industry sector towards the country's economic growth. Processors in collaboration with the government should work closely to developed good policies, strategies and operational planning which will enable the sector to exert its influence in the competitive global market. It should be noted that customers needs to be given its deserved weight. In today's competition, firms with a superior ability to provide services that customers perceive as valuable incur an important competitive advantage. The food processors need to make commitments to learn what customers need and set strategies that implement customer friendly process relationship rather than the existing one buy-sell relationship. In most cases customers base their purchasing decisions on the service they receive, not just price, quality and availability of the product that provide superior customer service for the firm is very important. Our observation also revealed a low level of understanding of food SCM concept among the majority of small and medium food processors. This observation brings out the signals for scientists to extend their researches to cover food processing sector rather than focusing on SCM in agricultural products. This will help processors to reach at a best choice when deciding to implement the concept into the complex processed food supply network.

**Kumar (2010)** in his study depicted that the future prospect of Indian food and vegetable processing industry is full of opportunities in the demand side. Because the Engel elasticity of demand for the processed food is greater than one and its indicate that percentage increase in demand is greater than the percentage increase in income. In his study he shows that compounded annual growth rate of consumption expenditures in rural area is 1.16% and in urban
area it is 1.35% over the period 1993-94 to 2004-05. This increasing trend in consumer expenditure is due to the increasing trend in the income of Indian costumers. The increasing per capita total consumer will lead to a higher per capita consumer expenditure on high valued food items like fresh and dry fruits/ and processed food and hence demand for theses products will increase.

**Kumar (2010)** depicted that urbanization, increase in income, changing lifestyle, and foreign influence has induced demand for processed foods and has implications for the growth and performance of food processing industries in India. The paper assesses the growth and perspectives of 15 sub groups of the food processing industry using the data published by the Annual Survey of Industries (GOI, various issues) on organised industries for the period of 1989 to 2008. Based on the growth performance two groups of food processing industry were identified i.e., traditional and emerging sectors.

**Majumdar (2012)** found that India is one of the attractive destinations of FDI, specially for the food processing sector; there are still some significant constraints toward the development of this sector. One of the biggest constraints is that this industry is capital intensive. It creates a strong entry barrier and allows lesser number of players to enter the market. Lesser players mean lesser competition and lesser competition means reduced efforts to improve the quality standards. Another one constraint is poor infrastructure for storing raw food materials. One of the best methods of addressing these constraints is more and more FDI.

**Singh et al. (2012)** found that there are many promising dynamics which support good growth of Food Processing Industry; there are still some significant constraints which, if not addressed sooner, can impede the growth prospects of the Food Processing Industry in India. One of the biggest constraints is that this industry is capital intensive. It creates a strong entry barrier and allows limited number of players to enter the market. Players mean competition which reduces efforts to improve quality standards. Major challenges faced by the Indian food processing industry include: educating consumers that processed foods can be more nutritious; dealing with low price elasticity for processed food products; need for distribution network;
development of marketing channels; streamlining of food laws; improving food quality standards and strengthening food testing network; strengthening institutional framework to develop manpower for improving research & development capabilities to address global challenges. These challenges must be addressed to achieve full potential of the Indian food processing industry.

Kumar et al. (2013) discussed the emerging scenario of Government policy, regulatory Framework and business trends in Food Processing Industry in India. The findings and conclusion of the paper is that the India is the world’s second largest producer of food next to China, and has the potential of being the biggest in the world. Food processing is a key industrial sector for India; it accounts for a gross output of more than US $ 69.4 billion, Population explosion has proved to be a boon to multinational producers. Indian now provides a big market for their products. They seek opportunities for collaboration with Indian industrial houses to supply processed food products. This sector has large potential for exportable commodities in India. Hence these sectors of industry provide multifarious opportunities to potential investors in this Sector, both domestic and foreign.

Rais et al. (2013) analyzed that the food processing sector is growing, but it is yet to compete in the world market. India’s share in world export is meager with 1.17%. There is a wide gap between productivity and processing of items. The factors which have been used to study food processing industry are S&T capability of sector, its employment generation capacity and skills needed in the sector. The S&T capability segment venture into the changing trend of technology, difference between conventional and modern technology, the areas in which India is lagging behind. The employment generation capacity highlights growth and size of the industry and skills about the kind of human resources involved in the industry, the level of technology used in the sector. The employment generation capacity of the sector is huge, but the industry is not working at its potential. The labor force is highly unskilled, with 80% of them having educational level below 10th standard. The impact of a variety of policies and programs undertaken by government to develop food processing sector has not been very encouraging. The state needs to
strengthen its efforts in S&T capability, infrastructure support and skill set in order to develop food processing industry.

Rais et al. (2014) analysed that India’s north-eastern region (NER) is endowed with various sorts of fruits, vegetables, and other agro-products, and has the potential to be a sunrise zone for food processing and other agri-businesses. He deals with immense opportunities present in food processing in the region. It is observed that simple value addition like cleaning, sorting and packaging can increase income of farmers by 42.8% per kg. It is also observed that although Central Government and various other state governments have come out with various policies and schemes for the development of sector in the region, still the sector is highly unorganized and inefficient. It is also established that the development of food processing sector in NER is hindered due to lack of infrastructure facilities like poor connectivity with national and international market, inadequate supply chain and poor power supply.

Murty et al. (2014) depicted that the Indian food industry presents a very large opportunity to every stakeholder. This is primarily driven by a robust consumer demand, the changing nature of the Indian consumer, who is more informed and willing to try new products; and the strong production base of the country. Needless to add, the several gaps in the current production and delivery systems actually present a huge opportunity for the growth of companies willing to bet long term in this sector. However, the growth of food processing companies has been sub-optimal because of high cost, low level of productivity, high wastage and lack of competitiveness of Indian food products in the global market. Therefore, to fully leverage the growth potential of the sector, current challenges that are being faced by the industry need to be properly addressed and steps need to be taken to remove the bottlenecks hampering the pectoral growth.

Tyagi (2014) analysed that the growth of food processing companies has been sub-optimal because of high cost, low level of productivity, high wastage and lack of competitiveness of Indian food products in the global market. Therefore, to fully leverage the growth potential of the sector, current challenges that are being faced by the industry need to be properly addressed
and steps need to be taken to remove the bottlenecks hampering the sectoral growth. FICCI survey has thus acted as a first step in identifying these challenges, thus providing a roadmap for all the stakeholders to work on, and thus contributing in realizing the immense potential of this industry. India is the second largest producer of food in the world. Whether it is canned food, processed food, food grains, dairy products, frozen food, fish, meat, poultry, the Indian agro industry has a huge potential, the significance and growth of which will never cease. Sea fishing, aqua culture, milk and milk products, meat and poultry are some of the agro sectors that have shown marked growth over the years. Linkages between members of the food supply chains and prevailing policies and business environments to take advantage of the global market.

**Babu et al. (2015)** analysed that FDI is related positively with real GDP and previous period FDI inflow but inversely related with inflation. It showed that the macro economic instability in terms of inflation has been an important factor which influenced the inflow of FDI in India. The study observes that FDI is a significant factor influencing the level of food processing growth in India. It provides a sound base for food processing growth and development by enhancing the financial position of the food processing sector. It also contributes to the GDP and foreign exchange reserves of the country.

**Tambe (2015)** analyzed that the decade-and-a-half of Indian economic reforms have now reached a stage where it is bringing about changes in the agriculture and food processing sectors. Reforms had more or less bypassed the agriculture sector till recently. However, demographic factors, changing lifestyles and consumer demand for greater variety has increased pressures on the food processing sector to provide products at competitive prices. Experience of large developed agricultural economies has proven that the integration of production and processing stages are a universal feature of efficient food marketing systems in the advanced stages of economic development.

**Dastane et al. (2015)** found that processed food industry in India is witnessing a steady growth, along with increasing acceptance to the processed food. Last
few decades have shown change in consumption pattern with the change in
disposal income. The change is steadily modifying the habits and preferences
towards processed food. Raw material for industry is abundantly available
because of strong agricultural base. Despite of favorable circumstances,
factors like wastage, cultural habits of preferring fresh food, relatively low
level of mechanization and many more are posing challenges in front of the
industry. With the presence large population with incredible potential to grow
Indian economy give large array of opportunity to grow for Indian food
processing industry. Changing lifestyle further expands the scope for growth,
but the combination of all these factors also makes it difficult to reach
organized sector to unorganized market. Challenges are many but
opportunities are encouraging.

Tiwari et al. (2015) analysed that global Food habit is changing with change
in life style for the last few decades. This change may be due to many factors
like liberalization, dual family income, nuclear family, modern kitchen, time
constraints and various other factors. The individuals and population is
shifting for their food from fresh agri-product to processed food. This has
given a new business opportunity with social uplift, various changes can be
observed through the records available on food intake pattern. This study
refers the status of food processing industry in central Indian population
specially in Chhattisgarh state. Also highlight the techniques of processing the
foods to make it consumable in easiest form for the consumers.

Navyashree et al. (2016) found that Information and communication
technology (ICT) is a general purpose technology (GPT) that has the potential
for significant impact on many industries in an economy. Adoption of ICT can
benefit the firms in the industries in terms of efficiency, effectiveness,
innovation, growth and competitiveness. For India, food processing is as an
important industry in terms of its contribution to gross domestic product
(GDP), employment and investments. Hence, the objective of the present
study is to identify the determinants of ICT investment intensity for the firms
belonging to the food processing industry in India. The time period is four
years from 2011 to 2014. Panel data regression technique is used for the
analysis. Preliminary results indicate that capital intensity is the most important determinant of ICT investment intensity in this industry. Other factors like age of the firm and size of the firm are also statistically significant in select econometric models.

### 2.4 International Marketing

This part explores the work done related to the export of processed food industry.

*Vyas (1996)* suggested that the net exporter developing countries should give high priority to agro-processing. This would provide opportunities for earning additional foreign exchange and would facilitate the export of high value of products. The product traders and exporters should be made aware of the proposed health and safety standards. The developing countries should be prepared to meet the sanitary and phytosanitary provisions of the Uruguay round agreements.

*Kaul (1997)* reported that Indian export of processed Fruit and vegetables increased for Rs. 12.12 crores in 1983-84 to over Rs. 491 crores in 1995-96 showing an overall increase of mango pulp, pickles and chutneys. India was the major exporter of cashew kernels and enjoys complete control on the export market up to 1970 with more than 90% share of the world’s exports. However this situation changed gradually with the entry of Brazil into the world trade, reducing Indian share which was 64% during 1995-96. In species India has emerged as one of the largest exporter of red chilies.

*Kapur (1997)* studied that in recent years the concept of high-value agricultural products have gained importance as the United States has actively worked towards increasing the share of these products in its agricultural export mix. It was found that the U.S. food processing industry is a major purveyor of high-value agricultural product exports. It was concluded that vertical integration was the most advantageous vertical form between ingredient processors and food manufacturers in terms of profit level and market share.
Dattatreyles (1997) concluded that despite having a second position in world production of fruits and vegetables, India's export share in world exports of fruits and vegetables was only 17% in 1994-95. Apart from the natural factors of soil and climate, India is located geographically close to important markets for fruits and vegetables. Due to increasing global imports of fruits and vegetables, he viewed bright prospect of India's export of these horticulture. He also suggested to tap the export potential of India in fruits and vegetables, infrastructural constraints need to be removed so that post harvest losses are reduced and incomes are enhanced. Pre harvest practices are to be followed by the farmers so as to improve the quality of the produce to make it acceptable in the markets.

Gangwar et al. (1999) suggested that India should prefer to export processed products rather than fresh products, which will improve incentives by raising producer prices even industries capable of processed products as per international specialization and improvement in infrastructural facilities are the vital link for agro-exports on sustainable basis. Although, this would require large investment yet it would be much more paying the long term perspective.

Bhattacharya (2004) calculated the compound growth for agricultural exports and nominal growth and found that -India's trade surplus in agriculture was due to the high growth of non traditional commodities i.e. fruit juices, processed food and beverages etc. and somewhat offset by the continuing dismal performance of India's traditional products like cashew nuts, tea, coffee, spices etc.

Vashisht et al. (2004) surveyed on the import and export of vegetables. They found that India is the major producer of vegetables in the world only next to China. At present the major importers of fresh vegetables from India are UAE and Bangladesh which together import fresh vegetables to the extent of 65 percent.

Goyal (2006) depicted that demand as well as production of Fruit and vegetables has increased considerably over time in India. Production of fruit
has grown at an annual compound growth rate of 4.35 percent and vegetables at 5.74 percent during 1992-2002. Now, further processing has assumed paramount importance for commercial exploitation by creating time, form and space utilities. The installed capacity utilization is low (below 50 percent). The growth in output of processed Fruit and vegetables was greater during the 1990's than the 1980's, mainly due to new Government economic policies. India witnessed a substantial increase in exports of processed Fruit and vegetables during the 1990’s, but total exports still remaining a very small fraction of total output. Exports could be increased by developing appropriate research and development policies and relaxing the constraints faced by the processing industry.

2.4. Competitiveness

2.4.1. General studies on competitiveness as a concept

Kathuria (1995) pointed out that presently, India is not price competitive because they are in excess of international prices across a wide range product. Author identified three sets of factors to make the firms globally competitive. These are (i) firm specific decision variables (ii) economy related variables and (iii) policy variables. These must operate in a mutual reinforcing manner. The second and third sets of factors constitute the macro environment in which a firm operates. The second set of factors does not poses any constraint in achieving the international competitiveness. But the policy variables have a significant bearing to achieve international competitiveness. Moreover, the firm specific variables are also equally important in achieving international competitiveness.

Deveshwar (1998) has pointed out that the competitiveness of an industry is intertwined with the nation’s competitiveness. There are so many restrictions to attain the competitiveness. There are so many restrictions to attain the competitiveness in isolation of the economic environment like urgency of catalyzing and channelizing the investment in terms of the up gradation of human capital, expansion and modernization of the infrastructure, and the productivity enhancement in agricultural and Industrial sectors. The researcher
also postulated that the foundation of economic growth activity lies in the perception of a favorable risk reward and outcome of the investment opportunities.

Chandawarkar (1998) in his study pointed out that globalization and the entry of multinationals has forced the Indian corporate sector to seek for global competitiveness. According to him, upgradation of human resources quality will help in attaining this mission. Interdependence and growing trade is compelling the sector to analyze the environment across the markets. Sustainable growth in new areas requires talented and skilled labour along with easy capital availability. Author emphasized upon the subsequent key issues for enhancing the competitiveness at global level in his work such as (i) imparting value based qualitative education, (ii) developing a healthy work culture, (iii) consistent and comprehensive human resource policy and (iv) selecting parameters of high priority from world class organizations. Furthermore, liberal government policy and revolutionary changes in information technology would help the nation to enhance its competitiveness worldwide. It can be easier with the willing participation of valued human resources.

Boss et al. (1998) concluded that in addition to change in the government policies and programme, a commitment to quality has to be ensured to meet the competitive challenges in the international market. Furthermore, the Indian firms must develop a global vision and appropriate strategies to carve out a niche in the global markets. This is possible only if they develop products with international standards and align its internal resources with the external environment. According to him, the attainment of global competitiveness depends upon the firm’s ability to understand the opportunities and constraints imposed by its environment.

Akyuz et al. (1998) pointed out in their research paper that the pressure of competition has led the companies to enlarge their ability to creative response, and to disperse their innovations worldwide. The author emphasized also that the global competitiveness requires the simultaneous optimization of sale, scope and economies in factor cost, along with the flexibility to cop with
unforeseen changes in exchange rates, tastes and technologies. Effective configuration and coordination of assets and capabilities of company resources can also be helpful to achieve the competitiveness at global.

Ahuja (1998) concluded in her paper that internationalization of the world economy created a situation in which the emergence of global village has become a reality. According to author, the competitiveness is one of the major pre requisites for commercial success at the global level. In the era of increasing competition, survival would depend upon product development strategies, consistent innovation and customer friendly approach. A clear understanding of the determinants of competitiveness such as identification of niche market, technological up gradation, flexibility in design, quality, cost and delivery is vital for ensuring the greater marketability of the output at global level.

Arora (2000) pointed out in his research that the global competitiveness is no longer related to comparative cost advantage. It is a dynamic subject. He opined that global competitiveness would become absolute due to change in raw material or value addition.

Aggrawal (2000) pointed out in his paper that globalization of world economy offers both, opportunities as well as challenges for developing countries. Rising protectionism, discriminatory Government procurement policies and the growing trend towards bilateralism instead of multilateral trade agreements dampens the opportunities. According to researcher, these nations have lost a lot of time in preparing for global competitiveness. A higher level of world prices, continuing devaluation of their currencies and increase in the quantum of their imports is adding new intricacies in their international competitiveness.

Sidiqui (2001) in his paper examined that the competitive ability of developed countries was laid in their locational advantages. But now, the scenario has changed because these countries are becoming wealth driven instead of being investment or innovation driven. They are losing their competitiveness in the international market consequently.
Bakshi (2001) examined that Indian industry has lack of access to global technology and instead largely depends on second and third grade borrowed technologies. It results in narrow range of exports, low profitability and lack of competitiveness in world economy.

Vyas (2002) examined in his research paper that the developing countries like India are not much benefited with globalization. Because the rules governing the world level economic institutions, particularly International Monetary Fund (IMF) and the World Bank are biased against these nations. Further, the international agreement under WTO have not helped the developed countries due to sanitary standards, concealed subsidies and the discrimination in the approach of quality assurance.

Varsheny (2002) noted that the developing countries would find it difficult to export in a proactive global environment and would rather lose their competitiveness because they would face threats in terms of cheap imports and stiff competition in the world market. According to author, the countries would have to impose cuts on their imports, which would necessarily affect the exports of developed countries and be helpful attaining global competitiveness.

Sahay et al. (2002) in their research paper emphasized on the revamping of entire business strategy and the restructure of the supply chains in Indian organization to enhance the global competitiveness. They presented seven point agenda: (i) eliminating transaction cost and uncertainties of transaction processing; (ii) minimizing constraints of order fulfillment networks connectivity; (iii) improving distribution network connectivity; (iv) facilitating competition both within and between the supply chains; (v) developing professionalism and skills in logistics management; (vi) Facilitating movement across national borders; and (vii) enabling the creation and distribution of accurate information to compete globally.

Babu (2002) pointed out in his research paper the competition from imports poses a threat to domestic manufactures in a liberal trading environment. It often demands continuous technological upgradation and innovation. This can
be achieved with rapid industrialization and a more realistic approach to develop globally competitive.

**Sridharan (2003)** pointed out in his article that India is lagging behind in competitiveness. Although the country’s economy is the fastest growing after china, but its per capita income is lower than many others. According to the author, the size of a country or its population, availability of cheap labour, or a robust judicial system is not the guarantors of the competitiveness at global level.

**Mehta (2003)** has postulated some measures in his article for determining competitiveness such as fully liberalization of domestic economy and fully endorsement of domestic competition. Further, author opted for enhancing competitiveness those inefficient companies to be taken over by efficient ones and in case they do not want to merge or improve, let them wither away. At the same time, allow the companies to grow as big as they can; to achieve economies of scale; encourage all types of industry- big, medium and small – to adopt the latest technologies. They ought to psychologically be prepared to work on thin margins and try to increase their earnings through large sales volume. Besides it must be kept in their mind that the international market is consistently good and are rightly priced; there would be many international buyers for their products.

**Jhaveri (2003)** in his work found that the conflict between service and manufacturing sectors totally close the eyes towards the opportunities emerging from linkages between the two and is losing the competitiveness of the nation. The author suggested for a joint effort from both the sectors to have an appropriate linkage between the two for achieving high level of efficiency in synergetic manner.

**Das (2003)** has identified three stages to make the Indian companies competitive and to gain more market share in the global market. These are (i) become strategic- minded rather than opportunistic (ii) to become innovation driven and (iii) proactive government role. Government cannot create competitive industries but it can encourage or even push the companies to
raise their perspectives. It can promote sustained investment in human skills and innovation through fiscal policy. Government can ensure competition by reducing the state and private monopolies, removing price controls and lowering tariff and trade barriers.

### 2.4.2. Competitiveness of Processed Food Industry

In this section we reviewed some important literature related to the competitiveness of Processed Food Industry.

The International Food policy Research Institute in its 1994 report noted that Indian horticultural products are facing competition on two counts i.e. price and quality. Reducing the cost of transportation can reduce price and preservation of raw materials and the quality can be improved by extension services and training at the farmers’ level and at processing level. The report highlight that more research and development activities are required in the field of production of raw material, handling of raw material, processing of raw material, packaging, preservation and transportation of goods.

**Guleria et al. (2003)** assessed the competitiveness of Indian wheat during 1990's by comparing the domestic and international prices of wheat and found that Indian Wheat was competitive only during the year 1995-96, when wheat price was at upper side. In all other years, Indian wheat was internationally uncompetitive.

**Ali et al. (2009)** found that the food industry has experienced positive change in TFP (Total Factor Productivity) with varied magnitude across sub-sectors during the pre and post liberalisation periods. The positive gain in TFP is basically due to change in technological process, i.e., shift in production frontier due to increased doses of capital input. The contribution of efficiency to TFP change is very small and needs attention for sustainable growth of the food processing sector. The variability in efficiency and TFP results across food processing sectors clearly indicate that high-value addition segments such as confectionery, meat and meat products and fruits and vegetables have shown a positive growth during the post liberalisation period. This implies that
there have been structural changes in the food processing sector towards high-value segments following the changes in consumption patterns in the domestic markets. These findings also suggest that food processing segments with high-value addition opportunities have greater for investment attraction.

**Shamsudin et al. (2011)** evaluated the market competitiveness of Small and Medium Enterprises (SMEs) in the Malaysian Food Processing Industry (FPI) in terms of technical efficiency and productivity growth. The findings suggested that Technical Efficiency (TE) was 0.756 during the period of 2000-2006, indicating that SMEs in the Malaysian food industry were able to expand their output by 24.4 percent while using the same level of inputs. Total Factor Productivity (TFP) growth was negative 1.3 percent. Processing and preserving poultry and poultry products were the sub-industry with the highest productivity growth, while manufacturing of tea had the lowest. Research and development (research & development), training and public infrastructure were determinants that positively affected the TFP growth.

**Singh et al. (2013)** analysed the impact of WTO on rice export competitiveness by using Blassa’s Revealed Comparative Advantage Index and White’s Revealed Competitive Advantage Index in respect of Agricultural Trade and Merchandise Trade in the changing scenario of liberalization, privatization and globalization. The study concluded that the increasing competitiveness of Indian and Pakistani rice exports is a result of WTO implementation.

**Majumdar (2013)** in his study depicted that out of eight processed food items there are four items where India enjoys comparative advantage in the world market. Except few processed products, most of the cases the growth rates were quite high. However, the contribution of this sector to the world trade is almost insignificant. Despite being one of the world’s major food producers, with huge potential for exporters, Indi’s accounts in the world food trade is only 1.5%. The constraints like non-availability of adequate infrastructural facilities, age-old technology, lack of adequate quality control, inefficient supply chain, inadequate shortage facility, high inventory cost, high packaging cost are creating negative environment to the growth of this sector.
It is estimated that around 20 to 25% food stock is lost due to lack of proper storage facilities. Another important factor is that due to its being a capital intensive Industry, it leads to less number of producers in this specialized sector. The local market of Processed food is still small because of that the exporters fail to achieve economies of scale which indirectly influencing the world trade share of processed food. Food processing sector is also badly affected by lack of funding. Long gestation period and low returns create risk to lending money for this sector. As a result, a significant portion of its capacity has remained unutilized. The stagnant price realizations in the international market have also dented the prospect of some Indian processed food in the overseas market. Some other countries have started flooding of processed food in the global market at cheaper prices. Despite all these problems, this sector has a bright future. Several giant firms have entered in to this sector. It can be mentioned that effective supply chain needs to be develop for the sustained growth of this sector. Brand building through technology up gradation should also be taken into consideration to give a fillip to this sector. There should be quality management, firm adherence to export commitments and acquisition of appropriate negotiation skills.

Temesgen et al. (2014) studied that there is a negative divergence between private and social profits indicating an expansion of the production of upland rice was profitable at farm level but not competitive at country level. This was because net effect of policy invention is to reduce the farm level profitability of upland rice in area. The result show up the need for removing existing policy distortions in the structure of economic incentives to enhance economic efficiency and to attain country level competitiveness in upland rice production.

Kanyagia (2015) concluded MRM (Mwea Rice Mills) was unable to achieve a competitive edge against the competitors because it applied one of the strategies more than other strategies and that was product differentiation. While it used more of product differentiation the organization did not apply it wholly and concentrated more on packaging that has not been changed regularly over the last five years. The study therefore recommended that MRM
should use more of product differentiation. This was in agreement that well differentiated product offered both aesthetic benefit and functional benefits to the customer and therefore constant innovation is important to ensure introduction of new or similar things in the organization. Secondly it was recommended that total quality management was important for the MRM to achieve competitiveness based on differentiation. There was a significant relationship between differentiation strategy and performance. Cost leadership was found to be key for MRM to remain competitive. It is recommended that MRM would reduce costs that the organization experienced during production and this was possible through innovation and utilization of the production technology to capacity. Through this the organization is able to cut on unnecessary costs during the production process and therefore this would be translated to the final cost to the customer. He recommended that MRM should concentrate more on segmentation. It was found that MRM did not have any form of segmentation in place. MRM needed to study its market and divide it according to the tastes and abilities of different customers. By segmenting the market MRM would be able to attract a bigger pull of customers. The organization should then choose the segments in which to operate in comfortably.

**Jafar et al. (2015)** stated that economy of Pakistan based on agriculture, owing to the export of agricultural commodities is major source of foreign exchange earnings. Export of rice play a vital role in Pakistan’s economy. However, trade policies influenced the performance of agricultural sector, as there are some gaps of technical advancement in system, financial irregularity, as well as other constitutional regulatory factors. Pakistan is following three years Strategic Trade Policy Framework (STPF) since 2009, to enhance the performance and efficiency of trade sector. Since last few years, trade of rice is decreasing due to traditional markets, energy crises and lack of research and development in agricultural sector. Thus, Pakistan has lost its more than 30% share from Gulf market via rice export during previous three decades. The transaction cost to imports is significantly lower than the exportation, which is negatively affecting the competitiveness of country’s exports. So, it's prior need to pay attention in the export chain sector, to approach the Europeans
markets for encouraging trade performance of rice sector, as well as, improve the reforms in trade policies to compete in the international market for maximum foreign exchange revenues.

Eskandari et al. (2015) analyzed that supportive government policies was named as the first step to enter the industry and the competitive scene. But strong management, for the systematic and strategic planning and coordination between organization units was the main reason for the success of the firm. A rich capital, to escape the mono-product economic, progress towards joining the global competition, skilled manpower, which prevents the creation and enhancement problems have been raised as a serious competitive challenges. However, purchasers acceptable quality, reasonably price which is both responsive to customer demand, the other hand, responsive to the shareholders capital that among the main priorities of the firm's work has been recognized and in a sense, can be named, it is part of Porter's scale advantage. According to them, the increased production reduced cost per unit of product due to the constant variable cost.

Akmal et al. (2015) provided an analysis on structure of export and competitiveness of Pakistan’s basmati rice over the period 1987-88 to 2011-12 by using revealed comparative advantage (RCA) and regional revealed comparative advantage (RRCA) approaches. Results demonstrate that overall Pakistan’s share in world basmati market has declined from 47% in 1987-92 to 32% in 2008-12 periods at global level and also at regional level i.e. Iran, Saudi Arabia and United Arab Emirates (UAE) markets. However Pakistan has increased its market participation in Oman and United Kingdom (UK) from 60 % to 83 % and 14% to 39 % respectively during the period under analysis. Iran, Saudi Arabia, Sultanate of Oman, UAE, and UK have shown a high geographic concentration in basmati exports from Pakistan however registered a decline in export concentration over time. The analysis of export competitiveness revealed that the Pakistan has revealed comparative advantage in basmati export, implying revealed competitiveness of very high degree as basmati remained a dominant commodity of Pakistan’s export basket.
Sampaothong et al. (2016) depicted that several problems emerge on Thai rice production, such as cost, payment and rice distribution at destination country. At the destination country, Thai rice has been mix with the low quality local rice, in this way the original quality is corrupted. In addition, the weak contribution from government may also give impact to Thai rice export. On the contrary, the competitiveness of Thai rice includes technology, production capacity and high quality of rice production. The major competitiveness of Thai rice is brand loyalty, Thai rice has well known as high quality rice up to now, thus premium segment should be a target for Thai rice export market.

Rahman et al. (2016) assessed international competitiveness, profitability, output supply and input demand of maize production two major maize growing areas (i.e., Dinajpur and Lalmonirhat districts) of northwestern Bangladesh. Results revealed that maize production is globally competitive and, therefore, can successfully substitute its import. Maize production is also profitable at the farm level (Benefit Cost Ratio = 1.21) with no adverse influence of farm size on yield and profitability. Maize farmers are also responsive to changes in market prices of inputs and outputs. A 1% increase in maize price will increase output supply by 0.4%. The most dominant driver of maize supply and other input demands is land. A 1% increase in available land will increase maize supply by a substantial 3.9%. In addition, landless laborers will benefit through an increase in hired labor demand when land area increases. Policy implications include investments in research & development, tenurial reform to consolidate land holding and smooth functioning of the hired labor market in order to increase maize production and profitability in Bangladesh.

Makama et al. (2016) analyzed in the rice industry that the average nominal protection coefficient was 0.48 thus indicates that Rice producers in Karnataka (India) were dis-protected and the average effective protection coefficient was 0.44 indicating a high export competitiveness of the India Rice. However, the average domestic resource cost was found to be less than one (0.37) this means that domestic resources were efficiently utilized in case of rice crop in
above mentioned state of the country and also indicated that they have comparative advantage in the production of rice crop. All the indicators were less than unity thus a reflection that the domestic price of Rice in the country is lower than the world market price and hence competitive worldwide. They recommended that, in order to improve the competitiveness of Indian Rice in particular and Agriculture in general, attention needs to be given to domestic market thereby rationalizing subsidies on certain inputs and improvement of domestic market performance.

Kuchhal et al. (2016) noted that countries like India, China & Russia even though being much more technically advanced as compared to others have very low technical efficiency as compared to countries such as Nepal and Cambodia. The "Global Competitiveness Index" (GCI) is a measure which evaluates the productivity and efficiency of countries. According to World Economic Forum “The Global Competitiveness Report 2015-2016” India (GCI- 4.3), China(GCI-4.8), Russia(GCI-4.4) have much higher GCI as compared to Nepal(GCI-3.9) and Cambodia(GCI- 3.9) thus further verifying our claims of technological advancement of India over Cambodia & Nepal. We observe that major developing countries perform poorly as compared to the underdeveloped countries like Nepal, Cambodia & Israel. Another interesting observation we noted while running the DEA model is that the countries with large number of employees working in this sector have low technical efficiency. Also Countries with low capacity utilization have high technical efficiencies with Russia, Bangladesh & Sri Lanka being the exceptions. It can be noted from the dataset that countries with high annual sales growth have technical efficiency higher than the threshold value i.e. 0.4548 with Nepal & Israel being the only exceptions. India despite being the third largest producer of food in the world has not realized its full potential due to low rate of technological progress and increasing inefficiencies of the firms. Faster technological progress can be ensured by heavy investments in research & development. Government should manage the resources being put in the food processing industry appropriately to reduce inefficiency. Moreover countries with high technical efficiency should strive to improve/maintain their efficiency in order to keep the annual employment growth rate steady.