

A STUDY OF QUALITY AND SAFETY ISSUES IN THE MEAT SECTOR IN INDIA AND NETHERLANDS

RASHMI KUMAR

Department of Economics, Shaheed Bhagat Singh College (E.), New Delhi, India

ABSTRACT

Worldwide meat production is estimated to be around 220 million tonnes. Indian meat sector is deprived of quality factor at several stages. Present paper is an empirical study conducted on benchmarking Indian Meat Industry against advancement at European and American. Seven industries from Netherlands and five lead meat processors of India were under study. The study revealed that Indian industries have taken initiative to meet sanitation facilities, personal hygiene and sanitation practices. However there is lack of facility of effluent treatment facility and menace of street dogs. The lesson from Netherland is of quality for export and meat industries with zero waste or fullest by product utilization.

KEYWORDS: Meat Industry, Safety, Hygiene, Quality

INTRODUCTION

According to FAO data, the worldwide meat production is estimated to be around 220 million tonnes of which India is ranked 7th with production of approximately 6.3 million tonnes, and thereby accounts for just 2.2% of the total meat production (Suresh *et al.*, 2012). But this share is at down side when compared with the global share in meat production by countries like China (25.6%), USA (16.7 %), Brazil (5.8%), France (3.8%), Germany (2.9%), and Russia (2.8%). Global share of The Netherlands is little lower than India being 1.4% of the world production. But when we compare India and Netherlands for the export value India falls far behind the Netherland the same may be seen from the Fig 1. (FAOSTAT 2013)

India stands at top position in the world in production of buffalo meat. Despite the wide production base, low productivity, food inflation, food security and food quality are the vital issues which are of major concern for the policy framers in India (Web Reference 1) There is a great need of adequate and modern processing facilities and farm level value addition to ensure the supply of quality food in sufficient quantity to the consumers. Food processing, including meat, provides the much awaited and much desired business model for the agricultural operations in the country (Abhijit *et al.*, 2013). Adoption of this processing results in value addition, reduction of wastage, and creation of large scale employment & enhancement of farmer's income which coincides with the vision of Government of India to make the country a global leader in production, consumption and export of safe, nutritious and quality processed food leading to growth of rural income and national GDP at large (Gandhi and Zhou, 2014).

Being advanced in technology and business as compared to Meat sector in India, The Netherlands may provide the chances of learning from their experiences. Government of India (GoI) sent a delegation through Ministry of Food Processing Industries, to Netherlands for possible learning. There a high quality meat is produced backed with safety and traceability standards of European Union. It delivers high export earning to the country almost six times of the export value of the India despite the lower production. One of the major constraints of Indian meat industry is its unhygienic production

(USDA, 2014). This paper aims to present a comparative study of India and Netherlands to arrive at the requisite measures for the industry in the country.

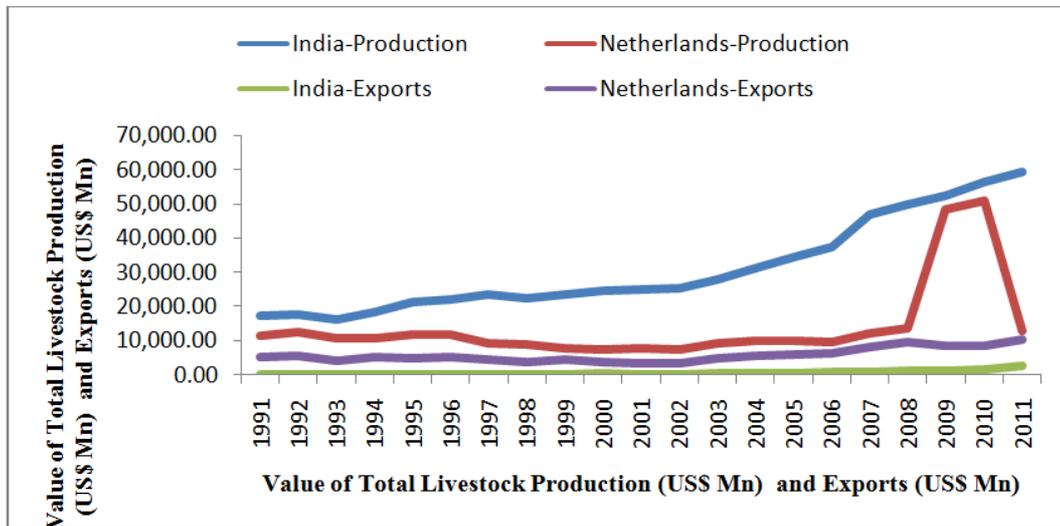


Figure 1: Comparison of Total Livestock Production and Meat Export – India and Netherlands

Methodology

Comparative case study of the Indian and Netherlands meat industry has been carried out to highlight the concerned quality and safety issues. Interviews method was used as one of the main methods to collect data. Interviews based on a questionnaire are put to 2-3 functionaries, information were also supplemented from their webpages. Seven lead companies from The Netherlands were studied being leader for export in the country or for their functional uniqueness. A brief profile of the selected companies is described below:

Van Drie Group specialises in Veal slaughter house and contract farm and deals with slaughtering process of calves right from rearing of the calves to their transportation to slaughter house, deboning and processing.

Vion Group's pork slaughter house is its main competency and is essentially involved in pork slaughtering, deboning, cutting into primal cuts and processing.

Meat Processing System Group is a slaughter house equipment manufacturer being a full line supplier and possessing turnkey capabilities, control software, global coverage and experience.

VriescentraleAsten Group was established in year 1989 and is the largest European cold store.

Sonac Son Group is the sole rendering plant in the Netherlands, established in 1941. It receives all the fallen and some slaughtered carcasses within one working day after their mortality. Dehiding of the carcasses is done followed by being subjected to a process of high temperature high time pasteurization, sterilization, deboning and crushing.

Storteboom Group is involved exclusively in the slaughtering of chicken with processes ranging from deboning and cutting to processing.

Myen Group specialises in manufacturing of poultry slaughter house equipment & assemblage of tailor made slaughterhouse equipment.

On the one hand, first hand study of various modern meat processing units at Netherlands were undertaken to

demonstrate the comparisons and to indicate the areas of learning required by the Indian Industry.

Five Indian companies viz. *Hind- Agro* (Industry 1), *Allanasons* (Industry 2), *Al-Kabeer (Andhra Pradesh)*(Industry 3), *Deonar (Mumbai)* (Industry 4) and *Ghazipur (MCD, Delhi)* (Industry 5) were studied. Other than interviews stated above, study on Indian Meat sector by NABARD Consultancy Services Pvt. Ltd. was also relied for the study.

GENERAL OVERVIEW OF MEAT SECTOR IN INDIA AND NETHERLANDS

Livestock is one of the important elements for the Indian Economy. The livestock sector has seen massive growth in the last two decades and; the economic growth and domestic increase in income has further supported this International demand for Indian livestock. Since India has about 13% of worlds' cattle population and 56% of world's buffalo population; amongst livestock sector, cattle and buffalo play a major role in India's economy (APEDA, 2013). In International market also, the demand for Indian buffalo meat has been going up which leads to increase in the meat exports. Vietnam Social Republic, Malaysia, Egypt Arab Republic, Saudi Arabia and Jordan have been the main markets for Indian buffalo meat and other animal products. Meat processing is quite neglected in the country owing to the fact that of the total meat produced in the country; hardly 1% is used for processing (FAO). This is evident as there are merely 48 Integrated Modern Meat Processing Export oriented units possessing licence from APEDA. These plants are eco-friendly and are world class following the sanitary and phytosanitary (SPS) guidelines given in Codex Alimentarius for Quality safe meat and also have HACCP and ISO: 9000 certification. The major concern goes to the more than 800 small and medium meat processing plants which cater to the domestic market and are invariably suffering from lack of access to latest technology, mechanised plants and trained man-power. Good Health Practiced (GHP), Good Manufacturing Practices (GMP), and Hazard Analysis and Critical Control Points (HACCP) are hardly followed thereby emphasizing the need for substantial improvement in efficiency, productivity and quality levels. Multinational enterprises in meat sector are the need of the hour to bring positive changes in India.

In Netherlands, a highly mechanized agriculture sector employs only 2% of the labour force but provides large surpluses for the food processing industry and for exports. The country has been one of the leading European nations for attracting FDI and is one of the four largest investors in the US. When it comes to the value of agricultural exports, Netherlands is ranked third worldwide. Meat production accounts for 5.6 billion Euros of which includes the share of Pork (44%), Veal (15.1%), Poultry (14.2%) and others (26.7%). Beef sector of Netherlands is equipped with 8 slaughter houses and around 34 thousand farms and 27 lakh animals. Food and Consumer Products Safety Authority (Voedsel en Waren Autoriteitproducten or VWA), General Inspection Services (AlgemeneInspectie Dienst or AID) and SKV (Stichtingkwaliteitsgarantie Vleeskalversector or The Foundation for Quality Guarantee of the Veal Sector are usually involved in the quality and safety guarantee audits.

KEY OBSERVATIONS FROM THE STUDY

Table 1 and Table 2 are the summarized presentation of the information gathered through questionnaire. Units were studied for animal slaughtering and meat processing procedures followed besides examining the quality standards. Findings are discussed as under:

COMPARISON OF SLAUGHTER, PROCESSING AND QUALITY ASSURANCE

Based on the study of slaughter facilities and slaughter procedures in India, NABCONS classified abattoirs under three groups viz. *Traditional technology abattoirs* which follow time-old floor slaughter and dressing procedures, *Intermediate technology abattoirs* in which some investments have been made to improve the infrastructure facilities with twin objectives of enforcing hygiene and reducing manual labour, *Modern technology abattoirs* with modern facilities and following online procedures for slaughter and dressing with required facilities for receipt of animals at one end of overhead rails and delivery of carcasses at the other end. For animal slaughtering and meat processing, the transport of livestock was as per the guidelines given by the SPCA Act of 1960 and BIS Standards of 2007 which takes care of animal welfare while being transported. Both India and Netherland have practice of Ante-mortem examination of the animals was conducted by the veterinarians after unloading. Following the examination, the animals fit for slaughter were kept in the “Knocking box”.

At The Netherlands there were meat units specialised in the production of high quality pork, buffalo, veal and poultry meat further serving the retail, foodservice and manufacturing sectors. For quality and accountability, certain meat units had an Internal benchmarking system enabling various business units to learn from each other and make improvements, the same is also cited by Gerbens-Leenes et al., 2013. Slaughtering is then conducted and the carcass found fit for consumption after post-mortem examination are transferred to chillers for storage at 2-4⁰C for 24 hours. As the deboned temperature reached 7°C, the carcass was brought to deboning hall having room temperature between 12°C-15°C for deboning and preparation of prime cuts. Various prime cuts were prepared as per the buyer's requirements.

Important lesson on quality and safety was assurance by monitoring the Critical Control Points (CCPs) of HACCP and ISO: 9000 and 22000. The microbial examinations of samples of meat, water, air, personal swabs from the worker's hand, etc. were conducted at random by in-house laboratory. The cartons with frozen meat were thereafter loaded in the refrigerator containers having temperatures as low as -18°C to -20°C. In the production process cold chain is maintained since the carcasses are chilled to the end users i.e. processing plants / individual consumers. Due to the high degree of self sufficiency of the Netherlands, the meat units are strongly export-oriented leading to high turnovers. Apart from high value meat production, some of the units are market leaders for the supply of process machinery, transport systems and controls for the slaughter line. MPS Red Meat Slaughtering designs, manufactures and installs bespoke and effective solutions for customers worldwide, from an individual machine, through detailed solutions, to a complex, integrated project. MPS Red Meat Slaughtering are experts at providing traditional products quality with modern slaughter line processes. Meat Industry guide sets out the legal obligations which needs to be followed in the meat sector and thus are followed in Netherlands' meat units (FSA, 2014)

COMPARISON ON OTHER QUALITY AND SAFETY ISSUES

The Indian meat sector was highly unorganised and fragmented wherein millions of farmers spread all over the country rear one or two animals like buffalos, goats, sheep's, pigs etc. The rearing is not on very scientific line as the farmers are mostly illiterate with knowledge of Good Hygienic Practices (GHP) being totally absent. There were very few large farms which reared 100-500 buffalos but that basically was for milk production and not for meat production purpose. On the other hand the meat sector in Netherlands was fully organised with rearing of animal being done on large farms (500-1000 animals). Animals were raised for meat purpose on scientific line following GHP and monitoring their growth

in well-defined manner. Detailed record of each animal is kept right from its birth (including the details of its parents), the type of feed being given to them, healthcare being provided, their weight gain is meticulously recorded. This results in much hygienic source of meat with clear traceability.

In India there was no organised animal market from where animals could be bought and slaughtered for meat purposes. In most of the cases the farmers brought one or two animals to a traditional open air market near their village and sold them to the butcher. These markets did not have clean resting places for the animals, clean drinking water, clean feeding stalls and any facility for animal health check-up before purchase. There was hardly any system of contract rearing in India. While in Netherlands, contract farming of animal was always carried out. This naturally improved the quality of meat which was made available to the consumers. In Netherlands, the transportation of animals took place in well-constructed and comfortable transport truck while in India the animals were transported in a very crowded, cruel and unhygienic manner which thereby brings lot of injuries to the animals.

In India, there was hardly any integrated meat processing plant for the domestic consumers. There were only few integrated processing plants which cater to the demand of export as discussed earlier in the paper. For the domestic market in India animals were slaughtered either in the slaughterhouses licensed by Municipal bodies, which were mostly traditional in nature with no modern facilities. Facilities for collection and proper disposal for blood and offal's were absent as has been found in the NABCONS study. The butchers who worked in these traditional slaughterhouses are not trained in the scientific manner. On the other hand, Netherlands had one of the most modern integrated meat processing plants with a slaughterhouse, meat processing unit & packaging unit and a transportation unit to produce hygienic meat for the consumer.

Because of the unhygienic slaughtering and handling of meat in India, the quality of meat has been a big question mark. However, in the export oriented units based in India the production of meat is done in a good hygienic condition as it is done in Netherlands and they always adopt GHP, GMP and HACCP. Almost all of these units had their own testing laboratory to check the quality of meat by them before it is packed and shipped. In Netherlands all the meat production units were integrated as mentioned earlier and were most modern and mechanised to a great extent with least human interference.

In India the meat was carried in open carts or smaller vehicle after slaughter and hence was always prone to bacterial infection. While in Netherlands the meat was transported in an air-conditioned specifically designed truck so that the quality of meat could be maintained.

The retail outlets for meat in India were mostly traditional in nature with not many facilities for hygienic storage and preservation of meat and meat products. This also created an issue of quality. Some meat and poultry processing units have now started establishing their chain of modern retail outlets having much better arrangements for selling quality products.

CHALLENGES AND OPPORTUNITIES FOR INDIAN MEAT INDUSTRY

Traditional large animal abattoirs as surveyed by NABCONS, large animals were slaughtered in the public slaughterhouses following traditional method of slaughter characterized by poor facilities and unhygienic slaughter practices. Anti-mortem facilities, isolation pens and carcass hanging facilities were present in only 20% of the studied slaughterhouses. In general, ante-mortem and post-mortem inspections were not found to be satisfactory in all the

slaughterhouses and no records were maintained. Waste disposal systems were quite poor with waste water being left in the open areas. However, in case of modern abattoirs, an additional quality control parameter of quality protocols and accreditations comprising six points on GHP, GMP, HACCP, FSMS Manual, ISO 22000 and SPS were covered. The mentioned accreditations were followed in 70% of the abattoirs under study. Therefore for domestic meat consumption, this sector needs to be thoroughly reviewed ensuring quality production.

In the past, India had achieved Green Revolution, White Revolution and Blue Revolution which led to self-sufficiency in Food grain sector, allowing India to occupy the no. 1 position in Milk production and increased fish production. Indian farmers have been able to achieve these mammoth targets with correct guidance and full support by multiple authorities like scientists, corporate firms, policy makers, local authorities, institutions etc. For instance, corporate firms like PepsiCo India have associated themselves with 21,000 farmers in 2009 and is targeted up-to 50,000 by 2012 (*source: PepsiCo India website*). Similarly, NIFTEM (National Institute of Food Technology Entrepreneurship and Management) has initiated a village adoption programme wherein students have to identify a village and establish a work plan to organize resources by providing vital linkages, micro credits, Govt. policies and also, provide access and training programme to farmers through KVK (Krishi Vigyan Kendras) which disseminates information on Agricultural technologies which are of low cost and also promote good agricultural practices (*source: NIFTEM website*). It is only through such initiatives that India can achieve another revolution in the meat sector. So while, there are a lot of challenges and weaknesses in the meat sector, it still has a lot of untapped potential which can be achieved by providing adequate guidance to the farmers. Similarly, the entry of Meat multinationals from abroad will also help the nascent Indian Meat Industry to improve their productivity, efficiency and quality.

CONCLUSIONS

On the basis of the comparative study and the analysis presented earlier in the paper, the following conclusions have been reached. Since the Export oriented Integrated Meat Units of India compare equally well with the Multinationals Meat Enterprises of Netherland, there will not be any benefit to them by the entry of MNEs in India. Rather they may have a very strong competition which would force them to further improve the productivity, efficiency and quality of meat. The other smaller Meat Processing units of our country will have an opportunity to learn from the coming MNEs in India and this will help them in improving their efficiency, productivity and quality levels. The strong competition being put up by the entering MNEs will also force these Meat Units to improve their products quality and price-wise by discarding their inefficiencies. Off-course the units which do not improve, may be forced out of business. The consumers will be immensely benefitted in getting much better product quality-wise and price-wise. Our Meat industry will get motivated to adopt GHP, GMP and HACCP practices which will benefit them to a great extent in the long run. The modern abattoirs of MNEs will create conducive condition for modernising of our traditional abattoirs. The models adopted by MNEs for backward-forward linkages, transportation of animals and finished meat products will lead to modernising our systems also. Crores and crores of male buffalo calf which are left to die in our country can become productive meat supply source on the model of Veal Integrated Meat units and contract farming of Veal calf. This will result in several billion rupees worth lean meat of male buffalo calf which have huge demand abroad. The meticulous training /skill up-gradation regime being followed by the MNEs will show the way to our meat industry to do the same for the butchers/other workers and managers of the meat industry. This will enhance their efficiency, productivity and quality substantially.

Table 1: Observation from Selected Indian Meat Industry

Practices	Conditions	Hind-Agro	Ind Agro	Al-kabeer	Deonar	Ghazipur
Quality Adherence Practises	a. Sanitation facilities	Yes	Yes	Yes	Lacked in some	Yes
	b. Personal hygiene	Yes	Yes	-do-	Not Satisfactory	Yes
	c. Sanitation practices	Yes	Yes	-do-	-do-	-do-
Quality control measures	a. Ante-mortem & Post-mortem inspection	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory
	b. Carcass Trimming & washing Disposal of condemned meat	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory
	c. Stray dogs menace in premises	No	No	No	Present	No
Waste disposal	a. Blood collection	Conditions stringently followed	-do-	-do-	Blood mixed with effluents	-do-
	b. Disposal of solid wastes	Well managed	Well managed	Well managed	Well managed	Well managed
	c. Availability of (ETP)	Absent	Absent	Absent	Absent	Absent

Table 2: Observation for Meat Industry at the Netherlands

Practices	Conditions	Van Drie Group	Vion Group	Storeboom Group	Sonac Group
Quality Adherence Practises	a. Sanitation facilities	Yes	Yes	Yes	Yes
	b. Personal hygiene	Yes	-do-	-do-	Yes
Quality control measures	Ante-mortem and Post-mortem Inspection	Satisfactory	Satisfactory	Satisfactory	Satisfactory
	Internal benchmarking system	Present	Present	Satisfactory	Absent
Waste disposal	Reuse and disposal of residual products	Recycling reduces the disposal of waste to 10%	Absent	Absent	Absent
Observation from Meat Non-Processing Industries in Netherlands					
	Meat Processing System Group	VriescentraleAsten Group		Myen Group	
Specialization	Full line supplier, Turnkey capabilities, Control software, global coverage and experience	Largest European cold store		Manufacturing of poultry slaughterhouse equipment and assemblage of tailor-made slaughterhouse equipment such as live bird handling, slaughtering, chilling, cutting up, deboning, packaging and dispatch, weighing and measurement.	

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