

THE GOVERNMENTS OF MALAYSIA AND THE STATE OF JOHOR

W.P. MEAT MARKETING IN JOHOR

63

## **WORKING PAPER**

**JOHOR TENGAH AND TANJONG PENGGERANG REGIONAL MASTER PLAN**

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WORKING PAPER

MEAT MARKETING IN JOHOR

Introduction

This paper is divided into three parts. The first summarizes the present meat marketing system in Johor discusses proposals which have been put forward for centralization of livestock slaughter in the State and makes recommendations on livestock slaughter facilities required in Johor Tenggara. Part II comprises a report by the FAMA counterpart on a survey of meat marketing in Johor. This was carried out in April 1970 during his three month period of secondment to the Project. The final section is a brief cost-benefit analysis of the proposals centre slaughterhouse at Kluang.

on Beef, Poultry, Pig and Poultry.

Beef

The major market for beef is among the Malay section of the population. Beef marketing in Johor, and presumably in the rest of Malaysia is faced with a number of problems:-

(a) Most people are not heavy or regular beef eaters, this is partly because of low income levels and also because of a lack of any traditions of beef eating.

(b) The Malays and Indians mainly live in rural areas and thus the market is dispersed.

(c) Although animals here are small by western standards (the average buffalo is replaced by the Vat. Dept. to yield a 400 lb. carcass, and cattle 250), nevertheless the quantity of meat produced by one carcass is relatively large in terms of the market demand.

(d) Because of climatic conditions meat deteriorates rapidly unless stored under refrigeration. This however is not popular since meat is traditionally eaten fresh i.e. within a few hours of slaughter, and this practice undoubtedly helps reduce disease risks. This makes price daily delivery of meat.

Given these problems the present beef marketing system goes a long way in providing meat in reasonable quantities to an large section of the population at reasonable prices. Regular beef slaughter takes place at 5 main centres in the State:-

PART I

SUMMARY AND RECOMMENDATIONS

As has been emphasized, it is considered that one of the major areas for future agricultural expansion in Malaysia is livestock product i.e. meat, milk and eggs. All of these products present considerable marketing as well as production problems. This section of the paper will review the current meat marketing system in Johor for each product: in turn consider proposals for reorganization and make recommendations on marketing and slaughter facilities in Johor Tenggara. Demand projections and discussion of individual marketing, problem have been included in the appropriate working papers on Beef, Goats, Pigs and Poultry,

Beef

The major market for beef is among the Malay section of the population. Beef marketing in Johor, and presumably in the rest of Malaysia is faced with a number of problems:-

- (a) Most people are not heavy or regular beef eaters, this is partly because of low income levels and also because of a lack of any tradition of beef eating.
- (b) The Malays and Indians mainly live in rural areas and thus the market is dispersed.
- (c) Although animals here are small by western standards (the average buffalo is reckoned by the Vet. Dept. to yield a 400-lb. carcass, and cattle 250), nevertheless the quantity of meat produced by one carcass is relatively large in terms of the market demand.
- (d) Because of climatic conditions meat deteriorates rapidly unless stored under refrigeration. This however is not popular since meat is traditionally eaten fresh i.e. within a few hours of slaughter, and this practice undoubtedly helps reduce disease risks. Thus retailers prefer daily delivery of meat.

Given these problems the present beef marketing system goes a long way in providing meat in reasonable condition to as large a section of the population as possible at <sup>a</sup>reasonable price. Regular beef slaughter takes place at 5 main centres in the State:-

Johor Baharu	-	5-6 animals/day
Kluang	-	about 2 animals/day
Batu Pahat	-	about 4 animals/day
Muar	-	about 4-5 animals/day
Segamat	-	about 1 animal/day

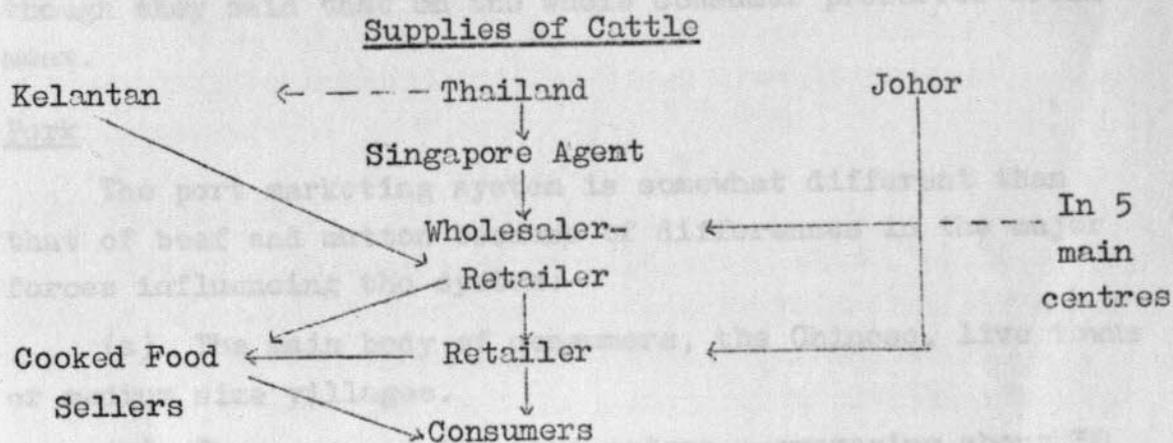
Slaughter of these animals takes place in the government slaughter houses in the early hours of the morning, i.e. 3-4 a.m. When the carcass is cut up the meat is transported to the local market by motor vehicle or often by tricycle and is ready for sale by 6-7 a.m. Outlying districts are served by van, taxi or bus delivery, again with most of the meat being delivered by about 8 a.m. Generally speaking rural centres are served by the nearest regular slaughtering centre. Thus Kota Tinggi, Layang Layang and small towns in Johor Baharu district, and Pontian and areas in the south of Pontian district are all served from Johor Baharu. Benut and district and most of Batu Pahat district deal with B.P. market. Kluang serves most of Kluang district and Mersing district and even into S.E. Pahang. Generally speaking Muar market serves that district but Tangkak is served more from Jasin (Malacca). One wholesaler operates both in Muar and Jasin and serves the west part of Muar district from both centres and also has a link with a retailer in Segamat. There is also a wholesaler in Segamat who supplies that area including Labis. These same channels also obviously serve restaurants, satay sellers and other cooked food vendors.

Although it was noted earlier that housewives prefer fresh meat, most beef retailers interviewed indicated that they do have access to a refrigerator or some other cooling facility such as ice box and that they use this to keep any meat left over at the end of day's business. This is then retailed with the fresh supply obtained the next day.

In earlier discussion of the demand for beef in Johor it was noted that in fact very few cattle are kept in the State. Most of the supplies of meat come from Kelantan (mainly by rail) or from Thailand by sea through Singapore. Most wholesalers receive fairly regular shipments from these sources and only look for local supplies if their major source fails them. As beef is rather a special item of the diet, it is eaten particularly on occasions such as Hari Raya. Many local animals are slaughtered at this time in

small slaughter-houses throughout the state, and also illegally (i.e. not in an approved facility and without permission). Over most of the State local supplies are sufficiently sparse for wholesalers not to be able to rely on them. This is less true in the Muar - Malacca area where more cattle and buffaloes are kept.

The present marketing system for beef can best be summarized in the following diagram:-



### Mutton

There are two major sources of mutton, local goats and imported sheep. Some mutton is imported in chilled or frozen form, but this makes up a small proportion of the total. The marketing system for mutton is similar to that for beef, and there is some overlap in the individuals involved.

Live sheep are imported mainly from Australia and through Singapore agents. These animals are forwarded by lorry to the wholesalers and or retailers. The majority of slaughter of these animals is carried out at the major markets as for beef and carcass meat is distributed in the same way. Because the carcasses are smaller butchers in the main towns appear to purchase animals live and do their own slaughtering and thus there is less wholesaling of meat than in the case of beef.

A good deal of unrecorded slaughter of goats takes place. Butchers in smaller centres buy live animals and slaughter more or less every day. Most of the trade in the main towns appears to be in imported lamb. Most retailers reported that consumers "prefer" lamb because it is cheaper. In this context this is more a reflection of the fact that more is sold. Local goat sells at a higher price - about

\$3.00 per kati as against \$1.80 per kati for imported mutton. This reflects on element of "preference" for goat i.e. consumers are willing to pay more for goat than for imported mutton.

Almost every mutton dealer interviewed reported that he had access to refrigerated storage and that this was in almost daily use, to keep meat from one day to the next. Some of them reported that they handled "cold storage" meat although they said that on the whole consumer preferred fresh meat.

### Pork

The port marketing system is somewhat different than that of beef and mutton because of differences in the major forces influencing the system:-

(a) The main body of consumers, the Chinese, live towns or medium size villages.

(b) They are regular port eaters - averaging about 30 lbs. per head per year. Over 60 percent of Chinese households interviewed in the Project survey said they bought pork daily, and 90 percent bought it once per week or more. Thus the market is steady and not subject to great seasonal fluctuations.

(c) Pigs are normally slaughtered at about 150 lbs. liveweight or about 110 lbs. dead weight. This will supply about 1300 people for one day (30 lbs./head/yr. = about 1 lb/day/12 people).

(d) Consumers are said to prefer fresh meat.

(e) Because of climatic conditions it is not possible to store unrefrigerated meat for long periods (or to transport it long distances) without deterioration.

Given these conditions the present marketing system appears to be a logical solution to the problem of distribution. There are very few wholesalers in the pork trade. Most retailers buy pigs either more or less fat or breed and rear them themselves, killing one or more every day depending upon normal market demand (occasionally one pig may be split among two retailers). This minimises transportation and storage of meat but does mean some waste of offals and other waste products such as blood. The extent

of this waste is not known. Thus slaughtering is highly dispersed and is carried on in small slaughter houses in most communities with populations of more than about 2,000.

### Poultry

The marketing of poultry will not be considered in any detail in this report. Formal slaughtering facilities are normally not required. In Malaysia birds are transported to market and sold live to consumers, who may have then killed and dressed on the spot if they wish. A small proportion of production is processed into a frozen product or canned e.g. as chicken curry.

### Current Problems

Given the various factors, indicated above, which influence the marketing of meat, it may be said that the present system functions reasonably well. The day-to-day operation is described in detail in part II of this report. Major criticism of current marketing arrangements has centred around the problem of meat hygiene and may be summarized as follows:-

- (a) Meat Inspection - 80-90 percent of meat slaughtered in the country is said not to be properly inspected.
- (b) Slaughter hygiene - most of the slaughter-houses are old and lack modern facilities. "Line" slaughtering for example is not practised.
- (c) By-product utilization. Animals are slaughtered in very small number and by-products are not efficiently utilized.
- (d) Marketing and price policy. There seems to be no policy with regard to meat marketing and price determination. Certain practices such as purchasing without weighing could be detrimental to the development of the livestock industry. Prices can vary widely.
- (e) Facilities for chilling meat. These facilities are in many cases inadequate and often non-existent.
- (f) Meat marketing. The present system of meat marketing is haphazard and disorganized. The handling of meat by wholesalers and retailers leaves

much to be desired especially from the point of view of hygiene and cleanliness.

- (g) Slaughtering normally takes place for only a very few hours in early morning. As a result facilities are very much under-utilized.

In order to attack these problems it has been proposed to reduce the number of slaughterhouses in the country drastically and centralise slaughter in new, modern slaughterhouses. Plans were drawn up by consultants for such a programme. In Johor it has been proposed to build a new slaughterhouse at Kluang to serve the bulk of the State's needs. Large central slaughterhouses are recommended primarily to allow more effective use of waste products than at present and to allow better meat inspection. When animals are slaughtered at 1 a.m. to 4 a.m. as at present inspection of carcasses must be carried out under conditions of artificial light. Such inspection is less satisfactory than under natural light. It is proposed that slaughter in the new facilities be carried out during the day to allow this, and the meat be chilled for sale later. While it is accepted that the above advantages will result if fewer larger slaughterhouses are used:-

(a) More transport of animals and meat will be required. This would result particularly for pigs, where as has been indicated, slaughter is at present widely dispersed. Animals will have to be transported to the slaughterhouse and then return again to the point of sale.

(b) Whereas at present animals are slaughtered and sold immediately centralised slaughter would require extensive cooling facilities and use of refrigerated vans etc. if meat is to remain in a satisfactory condition for 24 hours or more as would be required. Both of the above factors will increase retailers costs and result in higher meat prices.

(c) As noted earlier beef is taken from Johor Baharu to smaller centres such as Pontian and Kota Tinggi usually in the back of taxis. Even if refrigerated transport were introduced to take meat from Kluang to Johor Baharu it

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(1) Wernberg N.E. 1967 - "Feasibility Study on Establishment of Modern Regional Slaughterhouses in Malaysia"

Wernberg N.E. 1968 - "Study for Regional Slaughterhouse in Kluang, Johor, West Malaysia".

would almost certainly continue to be distributed from there on in the same way as at present. Refrigerated transport of such small quantities would be totally uneconomic. In the same way unless specific steps are taken to upgrade marketing facilities much of the benefits to hygiene will be lost.

(d) At present many individuals slaughter their animals especially pigs very early in the morning and sell the meat during the remainder of the morning. They will find it very difficult to put the time saved, by having slaughter carried out for them, to any effective use. Extra charges they have to bear for this will reduce their income further.

In order to assess where possible the affect of these factors on the profitability of the proposed slaughterhouse at Kluang a brief cost-benefit analysis was carried out. This is detailed in Part III of this paper. This takes into account probable extra transport costs resulting from centralized slaughtering and the benefits resulting from increased use of by-products. It is estimated that the return to resources invested in such a slaughterhouse would be between 3 and 4 percent. As a result it is suggested that the proposal to erect such a facility be reviewed and it is assumed that the marketing system will broadly remain as at present. Some upgrading of present facilities might be contemplated e.g. moving pig slaughtering facilities in Johor Baharu to new premises allowing extension of cattle and sheep facilities to be expanded on the present site. More widespread promotion of use of refrigerated storage and provision of cold storage lockers at public lockers would also be helpful and could help overcome public resistance to chilled or frozen meat.

#### Recommendations for Project Area

(1) Beef. As presently envisaged beef supplies from Johor Tenggara would arise from 2 sources, (a) sales of male and cull female stock from dairy herds and (b) slaes from beef herds. Since both these types of enterprise will cross local Indian dairy stock with exotic larger dairy or beef breeds the resulting stock will probably be about 800-1000 lbs. liveweight. Carcase weights will be 400-600 lbs. or somewhat larger than those at present handled by the marketing system. This will tend toexacerbate the problem of large carcasses relative to market demand.

Beef for the local market will tend to replace supplies from Kelantan or Thailand and as such should be easily handled by the present marketing system. As populations in Penggerang and Kota Tinggi builds up it is likely that increased cattle slaughter will take place at Kota Tinggi. Otherwise most supplies will be handled at Johor Baharu or Kluang and no specific new facilities will be required.

Marketing channels for beef for export, mainly from the two larger units proposed, will be opened by the organisations involved and arrangements for slaughter will be made by them.

(2) Mutton

Goats are seen as a potentially valuable supplementary enterprise especially in connection with FLDA type land development schemes. Production and consumption are both likely to be widespread and consideration should be given to construction of simple slaughtering facilities in central villages.

(3) Pork

The demand for pig slaughter facilities will depend upon the location of the Chinese section of the population. They are likely to be in the minority in rural areas, especially in Penggerang where FLDA are the major developers. Concentrations however will probably occur in the new towns areas. It is therefore recommended that slaughterhouses be constructed in the two new towns and later in the Sembrong Central Village to serve that part of the Project Area.

PART II

A SURVEY OF MEAT RETAILERS AND WHOLESALERS IN JOHOR

Introduction

A survey was conducted on meat retailers and wholesalers in the major towns in Johor from the 1st. April 1970 to the 9th. April 1970. As the title indicated this is an attempt to gain a more precise knowledge on the existing pattern of meat marketing in the state. The survey covered retailers and wholesalers for beef, mutton as well as pork. Other than studying the existing pattern of meat marketing, it is also the aim of the survey to find out indications as to the feasibility, as well as the general feelings among the two groups of market functionaries of establishing a centralized slaughterhouse to serve the needs of the state. The second will be treated separately.

There is as yet no established system of meat marketing in the state of Johor. A large proportion of the state's requirements are imported either from the other states mainly Kelantan or from other countries mainly Thailand and Australia. The present system with its over-lapping of functions reflects a market experiencing the earlier stage of growth. The preference among consumers for fresh meat and the non-existence of specific grading and cuts indicate consumers level of sophistication in meat consumption.

Coverage and Methods

This survey covered all the major consuming areas of Johor Baharu, Kota Tinggi, Pontian, Batu Pahat, Muar, Segamat, Kluang and Mersing, all under the administration of town councils. In addition it also covered some of the bigger local councils in each district. Thus in total it covered all the town councils and 13 (29%) of the 86 local councils. Approximately the survey then covered a population of about 31% under the town councils and about 29% in all the local councils or approximately 36% of the total population in Johor<sup>(1)</sup>. (See Appendix I).

It should be noted here that the town and local councils

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(1) Base on 1957 Census of Population - Assuming constant rate of population growth.

have a much higher density of the Chinese population compared to other areas mainly because they are commercial centres and that more Chinese are engaged in business and commerce. Most of the local councils were also Chinese resettlement areas created during the emergency period. The other races principally the Malays are mostly located in the periphery of these areas. However, with regard to the purchase of meat, most are made within town or local councils irrespective of race. The Chinese are in fact the predominant racial group in the survey areas, about 121% more compared to Malays (See Appendix II) and comparatively more Indians are concentrated in estates and areas bordering these estates. Thus in terms of coverage of the various racial groups the survey can be considered as fairly representative.

The majority of meat retailers and wholesalers conduct their business in markets which are either privately owned or run by public bodies. As such the survey was mainly conducted in such markets.

The number of retailers and wholesalers<sup>(1)</sup> interviewed for beef, mutton and pork were 43, 16 and 28 respectively, making the total number of respondents to 87 (See Appendix I). In terms of the total number of retailers and wholesalers in the survey areas they represent roughly about 67% under beef, 35% under mutton and about 17% in the case of pork. (See Appendix II). However, the number of respondents does not in most cases directly reflect the amount of business transacted in the markets covered. In many of the markets surveyed, there often occurred cases of a number of stall managed or under the overall management of one person although the stall licences were under different names and operated by different people. Basing on this premise the number of licences issued by either the town councils or the local councils need not reflect the actual number of meat sellers who are owner-operators in the markets. Often, the retailers were in fact employees of a wholesaler who was also operating in the market or they might even be members of his own family.

### Methodology

This survey was based on interviews by using prepared

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(1) Most of the meat wholesalers also performed the functions of a butcher and retailer. Of the three functions wholesaling and retailing are regarded of having greater weight here and thus the wholesalers are in most cases classified as wholesaler/retailer.

questionnaires and also on a number of personal interviews with officers of the town and local councils. The interviews were mostly held in market places although in a few cases respondents were interviewed in their homes. Timing of visits to the markets proved to be quite crucial in conducting the survey. The sales of meat usually reach its peak quite early in the day and more often than not many of the meat sellers have done all their business even before noon. In such cases a visit made during late afternoon would find the meat stalls quite empty except for a few, left to finish the days sale.

The selection of the samples were based on the assumption that the major consuming areas were areas of population concentration. Based on this assumption all the major towns in Johor were selected and also a few of the more populated local councils in each district. No attempt was made to cover a much bigger proportion of the local council areas because they were assumed to have very much the same characteristics.

#### Sources of Meat

The supply of meat, namely mutton, and pork within the state of Johor is recorded to have come from three main sources. These can be in the form of live-animals, carcasses or even parts of a carcass. The sources are namely:-

- i. Imported
- ii. Other states of West Malaysia
- iii. Small production areas in Johor

#### Imported Meat

According to the data collected, the source of most of the imported meat for consumers in Johor are mainly Australia, New Zealand, Thailand and Singapore. Those imported from Singapore usually have their origin from the other three countries quoted above. This being so simply because Singapore is the most convenient point of landing either for live animals or for meat carcasses, which are the main forms of imported meat. The latter are usually imported frozen.

Out of the 87 respondents interviewed only 17 (20%) performed, in addition to the other functions, the function of a wholesaler. However, the number of importers reported

were 16; 7 were beef importers and 9 were mutton importers. Of the 9 mutton importers 4 were operating only at retail level. It would be of interest to note here that out of the 16 importers 8 reported importing beef animals or carcasses and 11 reported importing mutton animals or carcasses which would only suggest that some of the beef importers were also importing mutton and vice versa. Pork seemed to be essentially of local origin.

In the case of imported beef and mutton all of them were imported through agents who were mostly based in Singapore. A number of the agencies are in fact associations of meat sellers mainly wholesalers. A few of the local wholesalers are members of these agencies. **Beef and in this case either buffalo or oxen** were imported mainly from Thailand through agents mentioned above. Mutton and in this case, imported lambs came mainly from Australia and Singapore while the latter had its source of supply from either Australia or New Zealand.

Table 1

Sources of Meat from other countries

COUNTRIES OF ORIGIN	NO. OF IMPORTERS REPORTING		
	BEEF	MUTTON	PORK
Australia	1	6	-
New Zealand	1	1	-
Thailand	5	-	-
Singapore	1	4	-
Total	8	11	0

Meat from States

Live animals for meat purposes do come in quite substantial number into Johor, especially from the states of Kelantan and Kedah. This is especially true in the case of either buffaloes or oxen. The majority of the importers interviewed were wholesaler/retailers. In the case of beef 14 out of a total number of 43 wholesalers and retailers (32%) reported importing either beef or beef animals from other states. The actual quantity brought in from the other

states was very much larger than than percentage of wholesal-ers/retailers engaged - because they operated on a com- paratively bigger scale. In the case of mutton and pork most of the wholesalers and retailers got their supply of goats and pigs from Johor. 81% of the mutton wholesalers and retailers had their supply from Johor and 100% in the case of pork wholesalers and retailers. In the case of beef about 77% of the wholesalers and retailers, mostly retailers, got their supply from Johor. But the quantity of meat purchased by importers who were usually wholesaler/retailers were very much more than the total quantity purchased by all the retailers.

Table II  
Sources of Meat from states

STATES	NO. OF RETAILERS/WHOLESALERS REPORTING		
	BEEF	MUTTON	PORK
1. Kelantan	7	-	-
2. Kedah	2	-	-
3. Malacca	4	-	6
4. Johor	33	13	28
5. Others	1	-	7
Total	47	13	41

Meat from districts

In terms of the supply of meat from the districts in Johor the main sources seemed to be Johor Baharu, Batu Pahat and Pontian. Beef and mutton mainly from the first two dis- tricts and pork from the last district. Of the 43 beef wholesalers and retailers interviewed 12 (30%) purchased beef from Johor Baharu and 10 (22%) purchased beef from Batu Pahat. In the case of mutton 6 (40%) of the whole- salers and retailers (mostly retailers) reporting, had their supplies from Johor Baharu and 3 (20%) from Batu Pahat. For pork 16 (32%) of the wholesalers and retailers reporting obtained their supply from Pontian; 11 (22%) from Batu Pahat and only 7 (14%) from Johor Baharu.

Table III indicates that most of the districts and areas covered by the survey have their own supply of beef, mutton and pork, although certain areas have a bigger concentration of meat supply<sup>1</sup>. These concentrations of supply areas in different parts of the state suggests that some of the areas are acting as supplying agents for the other neighbouring districts. It may also be due to the fact that these areas have a higher population density and consequently consume more meat.

Table III

Sources of Meat from Districts

DISTRICT	NO. OF WHOLESALER/RETAILER REPORTING		
	BEEF	MUTTON	PORK
1. Johor Baharu	12	6	7
2. Pontian	6	1	16
3. Batu Pahat	10	3	11
4. Kluang	7	1	5
5. Segamat	3	2	3
6. Muar	7	2	6
7. Kota Tinggi	2	-	-
8. Mersing	2	-	2
Total	49	15	50

Methods of Purchase

Purchase of meat by wholesalers and retailers were either by cash or credit and in many cases both methods were employed. The survey revealed that 44 (50%) of the wholesalers and retailers reporting preferred payments in cash, while 19 (22%) preferred payments in credit and 24 (28%) preferred both methods. (See Table IV). Credits were usually very short-term credits of a day or two. Only the few operators operating on a much larger scale and in this case usually wholesalers that have credit arrangements of

<sup>1</sup> Supply of meat here only implies secondary sources and not as primary sources of meat.

a longer period. In certain cases the credit ties were regarded as necessary in order to maintain constant flow of supply.

Table IV

Meat Wholesalers & Retailers Methods of Purchase

TYPE OF WHOLE-SALER/RETAILER	NO. OF WHOLESALERS AND RETAILERS REPORTING		
	CASH	CREDIT	BOTH
Local Buyers	44	9	18
Importers	0	6	2
Both	0	4	4
Total	44	19	24

Of the 8 importers interviewed - who sold only imported meat - 6 had credit arrangements with their agents. And, 4 of the 8 who purchased local meat and also imported meat, did their business on credit. Thus purchase of meat through credit was more prevalent among those who operated on a comparatively larger scale, who were often wholesalers as well as importers.

Estimates of Quantities by Source

There are a number of inherent difficulties in estimating quantities by source. One rather obvious difficulty is that all types of meat were reported to have been purchased from a number of sources and meat sellers were not in the habit of keeping accurate records of their sources of purchase. As such the figures obtained in this survey at best represents only an estimation of meat purchased by main source and not a total breakdown of all sources. Another difficulty posed in making such estimation is that, figures were given both in terms of dead weight as well as live weight which again requires an estimation of the weight and thus making the estimation a little more inaccurate. This difficulty is accentuated further by the fact that the survey covers only a certain percentage of all meat sellers in the state. As such any estimation is useful within the limitations set above.

Beef

Table V

Estimates<sup>1</sup> of Beef by Source Per Month

<u>Source</u>	<u>Quantities in lb.</u>	
	<u>67%</u>	<u>100%</u>
Kelantan -	92567	138160
Johor -	38950	58134
Malacca -	1839	2744
Others <sup>2</sup> -	119500	178358
Total	252856	377396

<sup>1</sup> Dead weight - Buffalo - 400 lb/head  
 - Oxen - 250 lb/head

<sup>2</sup> Mainly from Thailand.

Beef animals that came from Kelantan and from the other sources mainly Thailand were mainly in the form of live animals. Those that had its source from Johor and Malacca were usually beef carcasses or parts of carcasses. It is also most probable that a certain percentage of the meat and carcasses involved in the inter-district trade had its source from either Kelantan or Thailand, and as such some double counting is possible<sup>1</sup>.

Mutton

In the case of mutton most of the supply came from Australia and New Zealand, some of which were recorded to be imported from Singapore. However most of the goat meat were supplied by the state itself. As in the case of beef animals above, it is most probable that mutton animals were also

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<sup>1</sup> The number of beef animals slaughtered in Johor Baharu as recorded by the Johor Baharu Town Council in 1969 was 1954 animals or approximately 635,050 lb. taking the average dead weight per animal as 325 lb. The survey reported about 207 animal per month, approximately 2484 animals per year or 807,300 lb. This is about 27% more than what has been recorded by the Town Council. On further investigation it was found out that a certain percentage of the beef animals were traded live, which more or less confirm the possibility of double counting.

involved in the inter-district trade which again brings out the possibility of double counting in the estimations made.

Table VI

Estimates of Mutton by Source Per Month

<u>Source</u>	<u>Quantities in lb.<sup>1</sup></u>	
	<u>35%</u>	<u>100%</u>
Johor	8019	22911
Australia	102600	293143
Singapore	24698	70566
Total	135317	386620

<sup>1</sup> Average live weight per mutton animal is estimated as 60 lb.

Pork

Pork is basically local in origin. Most of the state's needs have been met by local supplies as indicated in the table below. Unlike beef and mutton the supply of pork is more wide-spread and was thus available in most of the major towns in Johor. But the fact that supplies did come in from Negeri Sembilan and Selangor may indicate that the state's supply is still insufficient.

Table VII

Estimates of Pork by Source Per Month

<u>Source</u>	<u>Quantities in lb.<sup>1</sup></u>	
	<u>17%</u>	<u>100%</u>
Johor Baharu	37324	219553
Pontian	41856	246212
Batu Pahat	24661	145065
Kluang	8931	52535
Others <sup>2</sup>	29432	173129
Total	142204	836494

<sup>1</sup> Average live weight per pig is estimated as 1 pikul

<sup>2</sup> Especially Selangor and Negeri Sembilan.

Frequency of Purchase

Table VIII

The Frequency of Meat Purchases  
by all meat wholesalers and Retailers

Frequency Dis- tribution	Beef		Mutton		Pork	
	W	R	W	R	W	R
Daily	3	27	1	7	-	7
1-2 times a week	5	1	2	2	1	2
3-4 " " "	-	2	-	-	-	4
5-6 " " "	-	1	-	-	-	1
1-2 times a month	1	1	-	2	-	1
3-4 " " "	1	1	1	-	1	7
5-6 " " "	-	-	1	-	-	2
7-8 " " "	-	-	-	-	-	2
Total	10	33	5	11	2	26

W - Wholesaler

R - Retailer

A breakdown of purchases by all meat wholesalers and retailers would indicate that the majority of beef as well as muttons wholesalers and retailers bought their purchases either daily or a number of times a week. Only a small proportion of these wholesalers and retailers purchased their meat on a monthly basis. This was also true to some extent in the case of pork but interestingly a fair proportion of the pork retailers did also purchase their meat on a monthly basis.

Types of Meat Purchased

Table IX

Types of Meat Purchased by all Meat  
Wholesalers and Retailers

Types of meat purchased	Beef		Mutton		Pork	
	W	R	W	R	W	R
1. Live animals	8	3	6	6	2	24
2. Carcasses	2	30	-	5	-	2
Total	10	33	6	11	2	26

Meat is usually purchased either in the form of live animals or in carcasses which here includes parts of carcass. The survey indicated that most of the beef and mutton wholesalers bought live animals and so also was the majority of the pork retailers. The purchase of carcass or parts of a carcass on the other hand seemed to be most frequent among the beef retailers. This seems quite logical considering the size of beef animals and the amount usually retailed by beef retailers. In contrast very few of the port retailers bought carcass or parts of carcass.

### Quantity Purchased

The quantity of beef, mutton and pork purchased by each of the retailer or wholesaler interviewed was generally dependent on the extent of the demand in each area i.e. the population in the area and its racial composition. Generally more beef were sold in areas having a higher proportion of Malays: mutton in areas having a higher proportion of Indians and pork in the Chinese areas.

In terms of quantity purchased 14 (33%) of the beef retailers purchased less than 6 pikuls per month or roughly just about 20 katis per day. Cumulatively 20 or more than 50% of the beef retailers interviewed reported purchasing less than 10 pikuls per month or roughly about 33 katis per day. Above was generally the case in the smaller town council areas and in the more isolated local council areas. The Malay population within these areas, due possibly to a lower standard of living have less demand for meat which could be regarded as luxury items. In the bigger towns meat were purchased by a few wholesalers who later distributed the meat to the smaller town and local councils.

The purchasing pattern in the case of mutton follows very closely to the pattern for beef. More of the meat were purchased by wholesalers or retailers operating near estates where Indians were more predominant. As in the case for beef 8 (47%) of the retailers purchased below 10 pikuls per month. But it is quite significant to note that 5 (30%) of the mutton wholesaler/retailer purchased up to 100 pikuls per month or about 3.3 pikuls per day. The large percentage of these mutton were derived from lamb and mutton carcasses imported either from Australia or New Zealand.

The amount of mutton from local goats sold throughout the atate seemed to be less significant. This is primarily due to a fairly wide price differentiation between goat meat and lamb meat.

In the case of pork, purchases seemed to concentrate between 11 pikuls to 40 pikuls per month (about 70%). The survey further indicated that a far bigger quantity of pork were sold in town and local council areas compared to other types of meat. It is most probable that this is due to the concentration of population in both areas and a higher consumption level per capita of the Chinese group<sup>1</sup>. Though purchases and sales were high, the pork wholesalers or retailers did not purchase in very big quantities because unlike beef and mutton animals, pigs were readily available.

Table X indicates the amount of meat purchased by wholesalers and retailers in each of the towns and local councils covered by the survey. Generally, the meat sellers in the town council areas purchased comparatively bigger quantities than their counterparts in the smaller local councils. For beef retailers, purchase vary between 1.8 pikuls to 113.1 per month; for mutton retailers between 1.9 pikuls to 86 pikuls per month and for pork from 7.5 pikuls to 80 pikuls per month. In the case of wholesalers, for beef, purchase vary between 81 pikuls to 468 pikuls per month; mutton 36 pikuls to 268 pikuls per month and for pork 15 pikuls to 65 pikuls per month. It would be interesting to note that some of the meat retailers in the bigger towns purchased much bigger quantities than a number of the wholesalers in the smaller towns. This was primarily due to the higher population in the area and that the difference in function need not reflect the amount of business done.

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<sup>1</sup> According to the Household Budget Survey conducted by the Statistics Department in 1957 the Chinese consumption of pork per capita was 9.6 katis per month. (See Appendix III) for comparison between racial groups and between urban and rural areas.

<sup>1</sup> To give a weighted average figure for all meat retailers and wholesalers would be highly unrepresentative due to wide variations in purchase.

	Purchase Price (live weights) \$ / kati	Selling Price (dead weights) \$ / kati
<u>BEEF</u>		
Wholesaler	0.58 - 1.80	2.00
Retailer	1.08 - 2.00	
<u>MUTTON</u>		
Wholesaler	0.75 - 0.87	(1.60(lamb))
Retailer	1.20 - 1.40	(2.40(goat))
<u>PORK</u>		
Wholesaler		2.00
Retailer	0.65 - 1.20	

Above are the computed prices for all types of meat given the total quantity and price. The purchase prices quoted for beef in the lower range seemed to be rather low and a little too high in the higher range. This would suggest two phenomena:-

- i) Price depends on the quantity purchased and that wholesalers paid less for purchasing more compared to retailers who usually purchased very much less.
- ii) Both wholesalers and retailers performed double functions and thus accounts for the wide range of purchase prices. Some wholesalers in the smaller areas did purchase only specific parts of carcass especially meat.

The prices for mutton and pork seem to be more reasonable although the wholesalers and retailers for both meat follow very much the same characteristics as in the case of beef in the sense that there exist a fair amount of duplication in functions.

#### Conditions of Meat

Conditions of meat here refers to the state of the meat when they reach the market. They can either be fresh, frozen or chilled. The intention here of finding out the state of meat on arrival in the market is to get some indications on wholesalers' and retailers' preference as well as preferences among consumers assuming that the former reacts to the latter.

The survey indicated that only 3 meat sellers preferred either frozen or chilled meat and they were all imported meat. In this case both beef as well as mutton were imported either in the form of chilled meat or frozen meat. This may lead to the conclusion that more meat have been imported in the form of live animals.

Local meat on the other hand were purchased wholly in their fresh form. This of course does not give the overall picture because local meat especially the leftover of a day's sales were reported to have been kept in refrigeration units which means that a certain amount of local meat were sold as chilled meat. However, consumers are not very well aware of this practice because meat sellers usually mix the other days' meat with the current days' meat and being usually small in quantity they cannot be very well detected.

Table XIII

Methods of Slaughter Employed by Wholesalers and Retailers of Meat

Types of Meat	No. of Respondents Reporting			
	Own-self or Assistant	Local Authority	Local Butcher	Others
Beef	6	7	11	1
Mutton	7	6	3	-
Pork	25	20	1	-
TOTAL	38	33	15	1

Methods and Costs of Slaughter

Methods of slaughtering meat animals fall within the categories shown in the table XIII. The more popular methods seemed to be one of self-service, by the wholesaler or retailer himself and through using the services provided by the local authorities. A number of the local authorities especially the town councils do provide slaughterers at a fixed rate but for the majority of the local councils slaughtering is undertaken by either the wholesaler or retailer himself. In the case of slaughtering by own-self

or assistants many of the wholesalers interviewed reported having **employed** full time slaughteres usually at a monthly salary of about \$100 to \$200 a month. Often the slaughteres also assist in the selling of the meat. Local butchers or butchers operating independently seemed to be much more preferred by the beef sellers.

The rate of slaughtering seemed to be about 60 cents for goats and lambs; \$1.20 to \$2.00 for pigs and \$1.50 to \$3.00 for buffaloes and oxen.

It is also interesting to note here that among some of the reasons given by the wholesalers for preferring monthly paid slaughterers was that they could have more control over them and that pinching of meat and the other parts of the animals would be minimized.

#### Retailers Preferences

An attempt has also been made to identify retailers preference for meat and also to a certain extent the meat sellers response to consumers' preference in meat. They fall within the following categories:-

- i) Preference between different types of meat
- ii) Preference between parts of carcass.

In terms of the preference between fresh and either chilled or frozen meat, there seemed to be a preponderent agreement among wholesalers and retailers of the different types of meat, for fresh meat - and this is very much a reflection of consumers' preference. Out of the total of 87 respondents only two have a preference for either chilled or frozen meat. The preference for fresh meat is quite obvious in a situation where fresh meat is easily available. Chilled or frozen meat could only be sold after much reduction in price. To illustrate, the price of lamb meat usually comes to around \$1.50 per kati while the price of goat meat is usually around \$2.20 per kati.

#### Grades Retailed

The grades specified by wholesalers and retailers of meat would to a great extent reflect sophistication in consumers preference for meat. However, it is felt that the desire for different grades of meat would depend on the types of dishes prepared by consumers (i.e. mainly house-

wives). Most of the local dishes do not require specific cuts of meat or parts of a carcass. The desire for different grades also depend on the level of consumption. People of a higher consumption level would be more selective in their choice for meat. Malaysians comparatively are low meat consumers.

The different grades generally specified by most wholesalers and retailers of meat are as follows:-

- 1) lean meat
- 2) lean meat plus tendon
- 3) lean meat plus fat
- 4) meat plus bone
- 5) fats
- 6) internal organs

There is actually some slight difference between the grades of beef, mutton and pork. Beef usually is graded very much in line with the grades quoted above. Mutton however, in most cases have only a single grade and that is lean meat plus tendon plus bone. As for pork there is slightly more grades for meat of the different parts of a carcass and in addition blood is also sold. And, having a higher fat composition the grade for fat more frequently applies to pork than the other meat. Pork is also sold in the form of fried meat. It should also be noted that generally most Malays and Indians do prepare meat as a whole dish. Most Chinese on the other hand prepare meat as part of a dish.

### Storage

Meat is generally stored in refrigeration units whose temperatures are usually kept at about chilling points. The meat is not meant to be kept for a long period, usually just to keep what remains of the days, to keep frozen or chilled meat for a few days and sometimes to keep fresh carcasses. The capacity of the refrigeration units varies from small home refrigerators to a much bigger capacity market freezing or chilling units which usually are managed by the market authorities. Refrigeration units were seldom utilized exclusively for meat. In most cases the units were also used for storing other perishable items such as fish and vegetables.

Table XIV

Reasons for storage	No. of Respondents Reporting		
	Beef	Mutton	Pork
1. To keep fresh carcass	2	1	1
2. To keep frozen/chilled meat	1	2	-
3. To keep the day's meat	26	12	4
Total	29	15	5

The survey revealed that only 49 (56%) of the sellers used refrigeration units for one reason or the other, (See table XIV). The majority of the meat sellers utilized the units for storing the day's meat that could not be sold and meat for selling the next day. Those who kept beef or mutton in the form of fresh carcass, frozen or chilled meat were usually wholesalers and importers.

Table XV

TYPES OF MEAT	FREQUENCY IN UTILIZATION			
	Everyday	A few times a week	Seldom	Never
Beef	13	6	8	16
Mutton	10	2	1	3
Pork	1	-	3	24
Total	24	8	12	43

In terms of frequency in the utilization of the refrigeration units 13 beef sellers (30%) made use of the units every day and also 13 (60%) of the mutton sellers. But it is interesting to note that 16 (33%) of the beef sellers and 24 (85%) of the pork sellers reported never having to use the refrigeration units. In the case of pork it is primarily due to the fact that consumers of pork which mainly are the Chinese do not prefer refrigerated pork, and as such pork sellers would usually see that the days meat are sold even to the extent of consigning any unsold meat to regular customers at much cheaper price on credit.

Rent of Refrigeration Units

Most of the refrigeration units were either self-owned or provided by the market authorities. Out of the 44 respondents who reported using refrigeration units. 15 (34%) reported owing the units themselves. These units of course range from home refrigerators to the much bigger units in the market. 5 reported using the units free of charge. In these cases the amount usually kept were very small. The others rented the units either on monthly terms, daily or even according to the amount refrigerated. Renting on monthly terms varies between \$9.00 to about \$40.00 per month depending on the wholesalers or retailers scales of operating. Some very small operators pay daily rent of about 0.25 cents to \$1.00 per day or for those in terms of quantity refrigerated 0.02 cents to 0.05 cents per kati.

Generally refrigeration was not regarded as an essential feature for the marketing of meat except in the case of wholesalers and importers. Refrigeration was seldom regarded as a form of regulating supply but more frequently to preserve already exposed meat not saleable fo the day.

Consumers Preference

An attempt was also made in the survey to find indicators as to consumers preference for different types of meat and particular parts of the meat. It is assumed here that wholesalers and retailers of meat are quite well aware of the consumers' preferences. Generally the preference for particular types of meat, seemed to be essentially based on habits of consumption. As to the preference for different parts of the meat, it depends on what can be said as the 'menu for the day'.

Table XVI

Consumers Preference for Different Types of Meat

	<u>No. of Respondents</u>		
Beef	Buffalo	-	4
	Oxen	-	41
	Lamb	-	14
Mutton	Goat	-	3

With regard to consumers preference for different types of meat only 4 of the beef sellers reported consumers preferences for buffalo meat to that of oxen meat while the rest 41 indicated a preference for oxen meat. The reasons given as stated above were primarily habitual, some stated that oxen meat had a better texture compared to that of buffalo meat.

As for mutton the preference seemed to be that of lamb meat to that of goat meat. This is due primarily to rather wide differences in price between the two types of meat - lamb meat being very much cheaper and also easily available.

Generally for the Malays who are both beef and mutton eaters the preference were for beef meat. The reason given was that mutton retained a certain taste after cooking, not very favourable to many Malays.

The preference for particular parts of the meat was said to be dependant on the type of dish to be cooked for the day. In other words there was no marked preference for any particular cuts of particular parts of the carcass. Table XVII shows that there is a stronger preference for lean meat. This proves to be so because lean meat can be used for practically all kinds of local food preparations. Lean meat plus tendon and meat plus bones were preferred for the preparation of 'curry' and other similar dishes. While internal organs on the other hand were preferred for their medicinal values.

Mutton, which applies for both goat and lamb meat were reported to have been sold in a mixed form i.e. meat plus bone and at a standard price. This of course is due to the small amount of lean meat that can be derived from either goat or lamb.

Table XVII

Consumers Preference for Parts of a Carcass

	NO. OF RESPONDENTS REPORTING			
	Lean meat	Lean meat & tendon	Meat and bones	Internal organs
Beef	40	21	23	11
Mutton	9	5	9	2
Pork	27	2	17	8
Total	76	28	49	21

### Ownership and Rent of Stalls

Since most of the market are owned by either private individuals (very few) or by the market authorities the stall can only be either in the wholesalers or retailers name or under somebody elses name. The survey revealed the following state of situation:-

	Beef	Mutton	Pork	Total
Own stall	29	12	23	64
Under other name	14	4	5	23
Total	43	16	28	87

Most of the stall-holders (74%) had stalls under their names and this applies equally to beef, mutton and pork sellers. However, compared to the others a far bigger percentage (67%) of beef sellers operated stalls under the name of somebody else. Here, more often the stalls were under the management of some beef sellers in the market who in many cases were wholesalers. The persons who bore the name of the stalls were only operators and they might or might not be related to the real owner.

The reason why many of the stall-holders preferred to own a number of stalls and employ operators or workers was to take advantage of the economics of bigger scale operations. This was especially so in the bigger centres. By managing a number of stalls a meat seller would be in a position to buy live animals and need not be dependant on the other operators. He could then be in a position to influence at least his own supply of meat. In the case of pork this state of dependence on other sellers was minimized by group purchasing of pigs and distribution in accordance to what was regarded as the regular amount of sales or to the amount ordered.

### Rent of Stalls

Rent of stalls vary between each local town council. Generally the rents in the bigger local councils were much higher then these in the local councils. They differed too, between the different types of meat sold. Mutton stalls were charged a lower rent than the beef stalls but the pork

stalls had to pay the highest. The rent charged for stalls in a market either in the local council or town council is guided by the town or local council ordinance, and this is usually decided by the Local Councillors. (See Appendix V). The most obvious reason for charging a higher rent for pork stalls and a lower rent for beef and mutton stalls is that, usually the amount of business done by the pork stalls are very much more compared to the other meat stalls.

Table XVIII

Frequency distribution of rent for all Meat Stalls in the Survey Areas

Frequency Distribution of rent per stall in (\$)	No. of Stalls
10 - 20	19
21 - 30	13
31 - 40	21
41 - 50	13
51 - 60	12
61 - 70	1
70 - above	6
Total	85

The frequency distribution above for all meat sellers indicate that a much bigger proportion of the stalls paid a rent between \$10.00 to \$40.00 (62%). Most of these stalls were either beef or mutton stalls. The stalls having higher rents were mostly pork stalls with some beef stalls which were mainly those located in the town council areas.

Conditions of Meat Stalls in the Market Surveyed

Some general observations were also made on the conditions of meat stalls in the markets surveyed. The markets in the town and local councils are under the supervision and control of the respective authorities. The town councils usually have market inspectors to look after the general conditions of the market and the local councils usually employ their own market overseers. In addition the Health Department provides the service of Health Inspectors and Town overseers to look after sanitation and health matters in-

cluding the hygiene and cleanliness of markets. As for the local councils, depending on the population size, some of them are served by the Public Health Overseers who are also employed by the Health Department. In cases where the local councils are small but quite close apart they will then be under the supervision of one Public Health Overseers.

The conditions of the meat stalls in the markets surveyed seemed to depend very much on the conditions of the markets, and they vary from the view of hygiene and general cleanliness. But generally the stalls in the town councils were much better than those of the local councils although conditions could still be very much improved. Many of the local councils markets were in great need for some general repairs. But it was the few privately owned markets which were very much below the desirable standard of hygiene and cleanliness and which invariably need more immediate attention.

#### The Hygiene of Meat Selling

It was observed that most of the meat sold in the markets surveyed were already exposed meat. In cases where meat is being sold in the first floor of the market building such as the Johor Baharu market the amount of exposure to dusts and flies are very much minimized. Flies are very much influenced by the cleanliness of the market and the areas surrounding it. In many of the stalls observed, flies seemed to be continuously hovering over the meat which were either hung or just laid on the stall. To improve this situation would need a certain amount of reconstruction or at least an introduction of fly and dust-proof equipment such as by installing glass or wire mesh cases on meat stalls. It would also be difficult to persuade meat sellers to see the need for such renovations. However, a more specific standard of hygiene and cleanliness should be set and supervised by the authorities on the markets in general and on meat stalls in particular.

#### Conclusions

The survey in many ways serve to confirm some hypothetical feelings with regard to meat marketing in the Johor state. Some of them could be expressed as the following:-

- i) Meat with the exception of pork is mostly imported

into Johor either from the other states mainly Kelantan or from other countries mainly Thailand, Australia and New Zealand. A large proportion of the import are live animals; beef animals being mainly from Thailand and lamb from Australia and New Zealand.

- ii) Except for some wholesalers meat is mainly retailed in comparatively small quantities and purchased almost daily.
- iii) Meat is sold mainly in the fresh form. Only imported carcasses are chilled or frozen. This is in response to consumers who prefer to make their purchase and in the morning.
- iv) In terms of meat consumption in the state, pork is the major item followed by beef and mutton. This was indicated by the number of pork, beef and mutton stalls in markets all over the state.
- v) Meat animals are slaughtered in slaughter-houses situated in most of the major towns in the state, especially in the west coastal towns. These areas are also the major consumption areas in the state.
- vi) Grading of meat is still rudimentary reflecting a market in its developing stage. The local types of meat preparations also do not encourage a more sophisticated method of grading.

Generally it can be said that the system of meat marketing in Johor is still in the developing stage and it is very much dependant to the level of meat consumption and consumers preference for meat. Level of consumption of course very much depends on the standard of living. It is thus difficult to envisage a substantial increase in the level of consumption if the standard of living is to remain static or increase but at a very slow rate. On the other hand it would also be difficult for consumption to increase substantially if here is only a preference for fresh meat and there is not much change in the types of dish prepared. These variables need to be considered in the study of meat marketing especially at the consumption level.

APPENDIX I  
THE NUMBER OF BEEF, MUTTON AND PORK RETAILERS AND  
WHOLESALEERS INTERVIEWED IN JOHOR

NO.	TOWN/LOCAL COUNCIL	NO. OF RESPONDENTS	BEEF			MUTTON			PORK		
			RETAILER	WHOLESALEER/RETAILER	TOTAL	RETAILER	WHOLESALEER/RETAILER	TOTAL	RETAILER	WHOLESALEER/RETAILER	TOTAL
1	JOHOR	15	6	3	9	1	2	3	-	-	3
2	BAHARU	5	1	-	1	1	-	3	-	-	3
3	KULAI	3	1	-	1	1	-	1	-	-	1
4	ULU TIRAM	6	2	-	2	2	-	2	-	-	2
5	KOTA TINGGI	-	-	-	-	-	-	-	-	-	-
6	SEDILI	-	2	-	2	1	-	1	1	1	3
7	BESAR	6	1	-	1	-	-	1	-	-	1
8	PONTIAN	2	1	-	1	-	-	1	-	-	1
9	BENUT	5	1	-	1	-	-	1	-	-	1
10	B. PAHAT	2	1	-	1	-	-	1	-	-	1
11	SENGGARANG	2	2	-	2	-	-	2	-	-	2
12	RENGIT	7	1	-	1	1	-	1	-	-	1
13	MUAR	4	2	-	2	1	-	1	-	-	1
14	TANGKAK	2	1	-	1	1	-	1	-	-	1
15	PARIT JAYA	5	3	-	3	1	-	1	-	-	1
16	SEGAMAT	5	2	-	2	1	-	1	-	-	1
17	LABIS	2	1	-	1	1	-	1	-	-	1
18	CHA'AH	7	1	-	1	1	-	1	-	-	1
19	KLUANG	3	1	-	1	1	-	1	-	-	1
20	RENGAM	4	3	-	3	1	-	1	-	-	1
21	KAHANG	2	1	-	1	-	-	1	-	-	1
	MERSING	-	3	-	3	-	-	-	-	-	-
	ENDAU	2	1	-	1	-	-	1	-	-	1
	TOTAL	87	33	10	43	11	5	16	26	2	28

APPENDIX II

THE NUMBER OF BEEF, MUTTON AND PORK RETAILER AND WHOLESALERS  
IN THE SELECTED TOWNS AND THE NUMBER INTERVIEWED

NO.	TOWN/LOCAL COUNCIL	BEEF			MUTTON			PORK		
		TOTAL	NO. INTERVIEWED	TOTAL	NO. INTERVIEWED	TOTAL	NO. INTERVIEWED	TOTAL	NO. INTERVIEWED	
1	JOHOR BAHARU	14	9	10	3	16	3			
2	KULAI	1	1	1	1	10 (1)	3			
3	ULU TIRAM	1	1	1	1	6 (5)	1			
4	KOTA TINGGI	3	2	2	2	8 (1)	2			
5	SEDILI BESAR	3	2	2	1	-	3			
6	PONTIAN	1	1	1	1	8	1			
7	BENUT	14	3	7	-	5	1			
8	BATU PAHAT	1	1	1	-	25	1			
9	SENGGSRANG	2	2	4	-	6	1			
10	RENGIT	7	3	1	-	4	2			
11	MUAR	2	2	1	1	12	1			
12	TANGKAK	1	1	1	1	8	1			
13	PARIT JAWA	6	3	2	1	3	1			
14	SEGAMAT	4	2	3	1	13	2			
15	LABIS	1	1	4	1	8	1			
16	CHA'AH	9	4	5	1	6	1			
17	KLUANG	1	1	2	1	13	1			
18	RENGAM	1	1	2	1	8	1			
19	KAHANG	3	3	2	-	6	1			
20	MERSING	1	1	-	-	1	1			
21	ENDAU	1	1	-	-	1	1			
	TOTAL	75	43	47	16	164 (5)	28			

( ) - PORK SOLD AS FRIED MEAT

APPENDIX III

POPULATION OF DISTRICTS, TOWN AND LOCAL COUNCILS  
AND LOCAL COUNCILS SURVEYED

	DISTRICTS	TOEN COUNCILS	LOCAL COUNCILS	LOCAL COUNCILS SURVEYED
1.	JOHOR BAHRU	75080	35566 (20)	10535 (2) (29.62%)
2.	MUAR	54349	37385 (16)	11510 (2) (30.79%)
3.	BATU PAHAT	40016	22386 (13)	3961 (2) (17.69%)
4.	SEGAMAT	18451	31339 (13)	11467 (2) (36.59%)
5.	Kluang	51350	18773 (11)	4742 (2) (25.26%)
6.	PONTIAN	16233	11392 (4)	2216 (1) (19.45%)
7.	KOTA TINGGI	16929	8420 (4)	2724 (1) (32.35%)
8.	MERSING	14743	7542 (5)	2675 (1) (35.47%)
	TOTAL	287151	172803 (86)	49830 (13) (28.84%)

SOURCE - CENSUS OF POPULATION 1957

## POPULATION OF PRINCIPLE TOWNS, VILLAGES AND LOCAL COUNCIL AREAS SURVEYED

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TOWN/LOCAL COUNCIL	MALAYSIANS	CHINESE	INDIANS	OTHERS	TOTAL
1. Johor Baharu	28,998	33,357	7,407	5,238	75,080
2. Kulai	601	6,913	231	12	7,757
3. Ulu Tiram	154	2,510	98	16	2,778
4. Kota Tinggi	1,939	4,975	439	115	7,463
5. Sedili Besar	2,043	644	21	16	2,724
6. Pontian Kechil	983	7,214	211	40	8,450
7. Benut	581	1,567	52	16	2,216
8. Batu Pahat	9,446	26,436	2,173	2,961	40,016
9. Senggerang	337	1,629	78	1	2,045
10. Rengit	374	1,387	48	7	1,816
11. Muar	11,350	24,750	2,031	,919	39,050
12. Tangkak	1,116	7,363	518	16	9,013
13. Parit Jawa	435	2,001	52	9	2,497
14. Segamat	3,430	12,357	1,933	731	18,451
15. Labis	1,295	4,959	315	171	6,720
16. Cha'ah	804	3,613	320	10	4,747
17. Kluang	7,460	19,591	2,571	1,561	31,183
18. Rengam	240	1,662	340	33	2,275
19. Kahang	66	2,375	25	1	2,467
20. Mersing	3,453	3,194	471	111	7,229
21. Endau	1,563	1,021	80	11	2,675
TOTAL POPULATION 1957	444,907	392,425	71,002	19,231	927,505

APPENDIX V

Federation of Malaya  
No. 36 of 1952

The Local Council Ordinance 1952

Section 12

- (1) It shall be lawful for every council to perform any public work which may tend to improve communications and to promote sanitation and cleanliness in the local council area and the health, security or well-being of the inhabitants thereof.
- (2) Every council shall have power to make by-laws for carrying out any of the objects specified in subsection (1) and in particular, but without prejudice to the generality of the foregoing, may make by-laws for any of the following purposes.
- (d) providing and regulating public markets.
  - (da) regulating the construction, control and management, by registration, licencing or otherwise, of places in which food or drink for human consumption is sold, prepared or stored for sale.

APPENDIX VI

CONSUMPTION OF MEAT BETWEEN RACIAL GROUPS 1957  
HOUSEHOLD BUDGET SURVEY

	KATIS PER MONTH		
	BEEF	MUTTON	PORK
Malays - Urban	2.72	0.72	-
Rural	1.03	0.05	-
Average	1.88	0.39	-
Chinese - Urban	0.75	0.09	8.80
Rural	0.55	0.02	9.32
Average	0.65	0.06	9.60
Indians - Urban	0.38	2.87	0.19
Rural	0.23	2.64	0.18
Average	0.31	2.76	0.19

PART III

COST - BENEFIT ANALYSIS OF THE PROPOSED  
CENTRALISED SLAUGHTERHOUSE

The present marketing arrangements, for livestock have been described earlier. This system has been criticised on a number of grounds by the Veterinary Department on a number of grounds and proposals have been put forward to erect a number of relatively large slaughterhouses in different parts of the country. Johor would be served by one in Kluang. Strictly speaking this is outside the Project Area but since it will obviously affect marketing arrangements a brief cost-benefit analysis appear in order, especially since none has been carried out by the consultants to the Veterinary Department in their proposals.

The present marketing systems have been described elsewhere. Compared to what one might hope for they do leave a certain amount to be desired and the above criticisms have some validity in these terms. Whether they justify the expense of establishing centralized slaughterhouses and reorganizing the marketing system is another question. This brief exercise is aimed at estimating the costs and benefits involved in such a programme in Johor.

Analysis

The analysis takes the slaughtershouse and facilities as proposed by the consultants as given. Except for labour costs these are unchanged. The proposal was as follows:-

Capacity of Slaughterhouse

	<u>Buffaloes and Oxen</u>	<u>Sheep and Goats</u>	<u>Pigs</u>
Lairage	60	145	900
Killing per day	26	100	400
Killing per hour	10	20	100
Average killing hours/day	2.6	3.5	4
Maximum daily capacity in 7½ hrs.	75	150	750
Carcase cooler capacity	24	80	230

In addition facilities would be provided for full utilization of by-products, i.e. preparation of hides, rendering of fat, manufacture of meat and bone meal etc.

Capital Costs were estimated as follows:-

	(Thousand Dollars)
Land	44
Sitework	120
Building	777
Equipment	1133
Fees etc.	242
	<hr/>
	2320

Operating Costs were estimated by the consultants as follows:-

<u>Item</u>	<u>Cost Per Annum (\$000)</u>
Fuel Oil	29
Electricity	40
Water	15
Administration Personnel, 19 at \$8,000	152
Operating personnel 81 at \$5,000	405
Administration Expense	48

These costs have been taken as above except for operating personnel. Since most of these are slaughterline or by-product workers it was felt that \$400 per month average-including foremen was over-generous. This has been halved giving an average of \$200 per month. No shadow wage has been applied since these jobs will displace others in existing slaughterhouses and the one is assumed to cancel out the other.

#### Other Costs and Benefits

The establishment of a single slaughterhouse means that animals would have to be transported to it and meat taken to consuming centres. Since at the present a large proportion of livestock is produced near consuming centres and slaughtered there (especially pigs) this would mean an increase in costs resulting from increased transport expenses imposed by the new system.

On the other hand slaughter charges are made by local slaughterhouses which would no longer have to be met (although fees would be payable at the new abattoir). This would constitute a saving resulting from the project.

In addition the project is expected to improve by-product utilisation. The increased value of by-products over the present is a benefit resulting from the project.

Transportation Costs

These were estimated on the basis of the cost per animal slaughtered at the abattoir.

(a) Live Animals:-

(i) Cattle. At present most cattle are brought into the state either by rail from Kelantan or by boat through Singapore. Cost road transport is likely to be about 10 cents/animal/mile, or about \$6 per animal for the Johor Baharu - Kluang journey. Assuming half of the animals have to be transported for this distance this means a cost of \$3 per animal slaughtered.

(ii) Sheep. The vast majority of sheep are at present imported through Johor Baharu. Assuming again half of the total make an additional trip to Kluang at a cost of 2 cents per animal per mile, this means an average cost of 60 cents per animal slaughtered.

(iii) Pigs. At present pigs are mainly reared adjacent to consuming centres and slaughtered there. Transport is therefore minimal. Centralised slaughter would require large scale movement of animals and meat. An estimate of the average costs per animal slaughtered was made by assuming that 1968 slaughter figures by district represented production in the district and all originated in the district centre. The cost per animal from each to Kluang was computed assuming a cost of 2 cents per mile. The weighted average cost was then obtained (see Table I) as \$1.

TABLE I - PIG TRANSPORT COST

Source	Distance to Kluang	Cost	% of State Total	Weighted Cost
Johor Baharu	60	1.20	24.35	.2922
Batu Pahat	30	60	18.95	.1137
Pontian	85	1.70	8.17	.1389
Kluang	-	-	10.39	-
Segamat	68	1.35	12.71	.1716
Kota Tinggi	65	1.30	1.93	.0251
Mersing	65	1.30	3.19	.0415
Muar	60	1.20	18.34	.2201

= approximately \$1/animal slaughtered.

135,543

989

500

Meat haulage - 50 cents/ton mile?

Cattle = 6.25 cents/animal/mile.

Sheep and goat = 0.625 cents/animal/mile.

Pigs = 2.2 cents/animal/mile. = 2 approximately = \$1 per animal.

Meat Transport

Overall costs for refrigerated meat transport were taken as 50 cents per ton-mile.

(a) Beef and Mutton

This cost estimated similarly to that for pigs. Current slaughter figures were taken to represent district consumption. This is not strictly accurate since Johor Baharu for example acts as a slaughter centre for cattle for Pontian and Kota Tinggi. It was assumed however that the general marketing structure will stay unchanged and that Johor Baharu will continue this wholesaling function and meat will be brought from Kluang Department overnight in Johor Baharu and then distributed as at present. The weighted transport costs per animal slaughtered were estimated as in Table 2, assuming costs for cattle of 6.25 cents per animal mile for cattle and 0.625 cents for sheep and goats.

(b) Pork

Assuming 110 pounds carcasses means a cost per animal-mile of 2.5 cents. Assuming distribution as in Table 1 this means a cost per animal of \$1.25.

Benefits

(a) Fees saved

Fees at present charged vary between slaughterhouses and in some cases include slaughter. Average fees excluding slaughter are:-

Cattle	\$1.00 - 1.40	say \$1.20
Sheep and goats	50-70 cents	say 60 cents
Pigs	\$1.00 - 1.50	say \$1.25

(b) By-products

In the report on the Kluang slaughterhouses it was assumed that the slaughterhouse would buy the offals etc. from the animal owners at current prices. This was assumed to cost \$264,000 per year. The sale price of the products obtained after processing was estimated as \$1,180,000. The total increase in value was credited to the slaughter house. However, since these offals have a market value they must

TABLE 3 - GENERALISED SLAUGHTERHOUSE - COST BENEFIT ANALYSIS A

Year	Building and Equipment	Electricity and Water etc.	Management	Labour	Administration	Transport Costs (net)			Total Costs	Benefits	NCF
						Cattle	Sheep	Pigs			
1	2,320,000	84,100	152,000	202,500	47,500	30,285	4,352	99,368	2,940,205	610,000	-2,530,105
2	70,094	84,100	152,000	202,500	47,500	31,798	4,570	104,337	696,899	640,500	56,399
3	70,094	84,100	152,000	202,500	47,500	33,389	4,798	115,031	709,412	672,525	36,887
4	70,094	84,100	152,000	202,500	47,500	35,058	5,038	120,776	717,066	706,151	10,915
5	70,094	84,100	152,000	202,500	47,500	36,812	5,291	126,822	725,119	741,459	16,340
6	70,094	84,100	152,000	202,500	47,500	38,653	5,555	133,162	733,564	778,532	44,968
7	70,094	84,100	152,000	202,500	47,500	40,583	5,833	139,821	742,431	817,459	75,028
8	70,094	84,100	152,000	202,500	47,500	42,613	6,124	146,812	751,743	858,332	106,589
9	70,094	84,100	152,000	202,500	47,500	44,741	6,431	148,000	755,366	901,249	145,883
10	70,094	84,100	152,000	202,500	47,500	46,977	6,752	148,000	757,923	946,311	188,388
11	70,094	84,100	152,000	202,500	47,500	49,325	7,090	148,000	760,609	969,969	209,360
12	70,094	84,100	152,000	202,500	47,500	51,789	7,444	148,000	763,427	994,218	230,791
13	70,094	84,100	152,000	202,500	47,500	54,378	7,816	148,000	766,388	1019,073	252,685
14	70,094	84,100	152,000	202,500	47,500	57,095	8,207	148,000	769,496	1044,550	275,054
15	70,094	84,100	152,000	202,500	47,500	59,951	8,617	148,000	772,762	1070,664	297,902
16	70,094	84,100	152,000	202,500	47,500	62,948	9,048	148,000	776,190	1097,431	321,241
17	70,094	84,100	152,000	202,500	47,500	66,095	9,501	148,000	779,790	1124,867	345,077
18	70,094	84,100	152,000	202,500	47,500	69,402	9,976	148,000	783,572	1152,989	369,417
19	70,094	84,100	152,000	202,500	47,500	72,872	10,474	148,000	787,540	1181,814	394,274
20	70,094	84,100	152,000	202,500	47,500	76,514	10,998	148,000	791,706	1211,389	419,653
									17,281,108	18,539,452	1,258,344
											- 521,974

IRR = 3.55%

TABLE 4 - CENTRALISED SLAUGHTERHOUSE - COST BENEFIT ANALYSIS B

Year	Building and Equipment	Electricity and Water etc.	Management	Labour	Administration	Cattle	Sheep	Figs	Transport Costs (net)	Total Costs	Benefit	NCF
1	2,320,000	84,100	152,000	202,500	47,500	30,285	4,352	99,368	2,940,105	610,000	-2,330,105	
2	70,094	84,100	156,560	208,575	47,500	31,798	4,570	104,537	707,534	640,500	-	67,034
3	70,094	84,100	161,257	214,832	47,500	33,389	4,798	115,031	731,001	672,525	-	58,476
4	70,094	84,100	166,095	221,277	47,500	35,058	5,038	120,776	749,938	706,151	-	43,787
5	70,094	84,100	171,078	227,915	47,500	36,812	5,291	126,922	769,612	741,459	-	28,153
6	70,094	84,100	176,210	234,752	47,500	38,653	5,555	133,162	790,026	778,532	-	11,494
7	70,094	84,100	181,496	241,795	47,500	40,583	5,833	139,821	811,222	814,222	-	6,237
8	70,094	84,100	188,756	249,049	47,500	42,613	6,124	146,812	835,048	858,332	-	23,284
9	70,094	84,100	194,419	256,520	47,500	44,741	6,431	148,000	851,805	901,249	-	49,444
10	70,094	84,100	200,252	264,216	47,500	46,977	6,752	148,000	867,891	946,311	-	78,420
11	70,094	84,100	206,260	272,142	47,500	49,325	7,090	148,000	884,511	969,969	-	85,458
12	70,094	84,100	212,448	280,306	47,500	51,789	7,444	148,000	901,681	994,218	-	92,537
13	70,094	84,100	218,821	288,715	47,500	54,378	7,816	148,000	919,424	1,019,073	-	99,649
14	70,094	84,100	225,386	297,376	47,500	57,095	8,207	148,000	937,758	1,044,550	-	106,792
15	70,094	84,100	232,148	306,297	47,500	59,951	8,617	148,000	956,707	1,070,664	-	113,957
16	70,094	84,100	239,112	315,486	47,500	62,948	9,048	148,000	976,288	1,097,431	-	121,143
17	70,094	84,100	246,285	324,951	47,500	66,095	9,501	148,000	996,526	1,124,867	-	128,341
18	70,094	84,100	253,674	334,700	47,500	69,402	9,976	148,000	1,017,446	1,152,989	-	135,543
19	70,094	84,100	261,284	344,741	47,500	72,872	10,474	148,000	1,039,065	1,181,814	-	142,749
20	70,094	84,100	269,123	355,083	47,500	76,514	10,998	148,000	1,061,412	1,211,359	-	149,947
									19,745,000	18,539,452		-1205,548

The Internal Rate of Return of the project is 3.55 percent assuming constant labour costs and less than zero if labour cost is assumed to rise at 3 percent per annum. The analysis has probably been generous to the project. No account has been taken of additional costs which would be incurred to produce chilled overnight storage at distribution centers. Also the valuation of the value of by-product is probably on the generous side.

The results suggest that unless a considerable premium is placed on improved hygiene, which appears to the observer to be of a reasonable standard at the moment, the expenditure involved in a slaughterhouse project of this type would not be justified. Other and cheaper methods must exist for improving the hygienic conditions of meat. In addition it is difficult to see how the provision of centralised slaughterhouses will itself stimulate animal production. In this regard consideration might be given to meat processing, especially poultrymeat, by methods, such as canning or freezing which could help stabilise markets.