Preliminary Report on Oyster Consumption Study in Australia: Results of a 2003 Survey

Report Prepared For

South Australian Oyster Research Council
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Executive Summary

Oysters have been regarded as one of the most popular shellfish in Australia. The literature has prevailed in the biological aspects of oysters. However, the fast growth of the Pacific oyster production has forced producers to become aware of the need to expand their marketing efforts to ensure that demand is not outpaced by supply resulting in a further decline in prices. To increase oyster consumption, it is essential to examine consumer preferences and consumption patterns, which will be important in strengthening the Australian oyster industry and helping it to face today's intense competitive climate.

This project examines oyster consumers' demographics, consumption patterns, attitudes and preferences allowing market segments to be identified and strategies to reach these customers, which in turn provided some insights into future potential oyster consumption growth.

The study reviews the background information regarding the development of the Australian oyster industry and Australian oyster consumption trends and the review will be published in the full report. Focus group study has been depicted to help with the design of the consumer survey questionnaire. Personal interviews have been conducted with consumers in purposive randomly sampled seafood retail shops in Sydney, Melbourne, Brisbane, Adelaide and Hobart. The interview focuses on consumers' attitudes to oysters and their oyster buying and marketing practices. The collected data

have been analysed using the SPSS (Statistical Package for the Social Science) program. Means and frequencies were calculated for pertinent variables.

The findings from the study reveal that:-

- Approximately two thirds (67%) of the sampled population are oyster eaters. This high consumption rate indicates the popularity of oysters as choice seafood and the gaining importance of this industry in Australia;
- Those who most preferred oysters are males aged between 40-59. Young Australians aged between 15-19 rarely liked eating oysters. While the oyster consumption of age group 20-39 has increased compared to the previous research. It indicates that the young Australian aged from 15-19 may start eating oysters later when the peer group subsides or changes;
- Fresh half-shell oysters are still the most popular way that people in Australia enjoy eating them. However respondents also show some interests in grilled or barbecued oysters;
- There is substantial number of consumers who are aware of oysters. However most Australians regard oysters as an occasional food. Around two thirds of respondents have oysters for 2-8 times annually. There is a need of promotion for oyster industry to encourage consumers to consume oysters more frequently;
- Home consumption of oysters has increased. Purchasing oysters at a seafood retail shop is perceived that the price as reasonable and cheap compared to purchasing them at the restaurants. However there are also a number of consumers who like to eat oysters within the social environment at the restaurant;

- Fish retail shops and restaurants are used by the respondents for most of their oyster purchase. Supermarkets also play an important role for oyster sales;
- Product availability is a competitive weapon for the oyster business. Consumers expect oysters to be supplied all year round;
- Most respondents prefer to have oysters as an evening meal. If oysters were served at the restaurants, entrée meal is the favourite menu;
- Consumers' knowledge of how to store oysters, how oysters are grown, harvested and processed is fairly limited. Consumers perceive oysters being nutritional. Some male consumers show great interest in the aphrodisiacal properties of oysters; and
- Barriers to consuming oysters include their fishy flavour, texture, food safety concerns, difficulty to prepare and the expense. Freshness, quality, size, uniformity, cost, how to prepare them, and where they come from, are factors which consumers consider when purchasing oysters.

1.0 PRE-EMPT

This preliminary report is prepared in response to popular request. The final report will be issued in August. All comments are welcomed and should be forwarded to F. Kow (F.Kow@fme.amc.edu.au) before the first week of August.

The delicate flavour of Australian oysters can be attributed to the crystal clear waters and unpolluted environment in which they are cultured. The Australian oysters industry has established valuable advantage and through good reputation attained an edge over the competition in the market. The production of oysters in Australia is around 9 644 tons a year, and contributes more than A $56.9 millions to the Australian economy (ABARE 2003). However, with constantly changing markets, a marketing oriented organisation will, over time, move downstream towards the end consumer. The industry must achieve the right marketing mix to sell their products by catching up with changing consumer purchase habits. Lack of information of consumers' consumption of oysters is an important impediment to the growth of oyster consumption and to the growth of the oyster industry as a whole. The fast growth of the oyster production has forced producers to become aware of the need to expand their marketing efforts to ensure that demand is not outpaced by supply resulting in a further decline in prices. To maintain or increase oyster consumption, it is important to better understand consumer preferences and consumption patterns to strengthen the future development of Australian Oyster industry. Oyster industries need updated marketing information on the consumption of oysters. They want to know for instance 'What is best selling in the market?', 'How is the market acceptability in different cities and why?'. These questions help them to refine their marketing strategies to maximise industry's income and profitability. In 2003, the Australian Maritime College (AMC), with support from the South Australian Oyster Research Council, the Tasmanian Oyster Research Council and the Institutional Grant Scheme (AMC) undertook a study on Australian consumers' attitudes to oysters.

Eating of oysters has been scientifically proven to be healthy and nutritious. It is rich in protein, vitamins and minerals but low in kilojoules and cholesterol (FRDC 2001, Nettleton 1985). However oyster is also a highly perishable item, with spoilage being temperature dependent. This causes problems with the shelf-life of the product and the reputation of the seafood industry as a whole (Huss 1994). Meanwhile, consumers around the world are increasingly demanding verification that the food they purchase for consumption in their homes is both safe to eat and of the highest quality. Both Australian National Seafood Consumption Study in 1991 and the Seafood Consumption Study in 2000 by Ruello identified that food safety and quality are important factors when consumers buy seafood. Research studies (Brooks, 1992; Lin & Milon 1993) have shown that seafood demand has also been negatively affected by health risks associated with the consumption of seafood.

Oysters were rated as a high-risk product in the report of the National Risk Valuation Project - July 2002. In 1997, an outbreak of hepatitis A Virus occurred in oysters from the north coast of NSW. The consumers become ill after consuming these oysters. Sales of oyster and seafood in NSW experienced an 85% drop and their seafood sale experienced a 30% drop. The NSW seafood industry lost $30 millions from this outbreak (the National Risk Valuation Project - July 2002). Human safety in relation to the eating of oysters became a favourite issue of discussion during that year. Thus it is not purely accidental that FSANZ (Food Standards Australia and New Zealand) has chosen seafood as the first commodity for the development of Chapter Four of the Food Standards Code: Food Safety Primary Production and Processing Standards. Reported incidents of seafood poisoning may outweigh the positive aspects of fish and shellfish, such as nutritional benefits and variety. However, the Australian New Zealand Food Authority has responded. Mandatory food safety plans were in place. Australian Seafood Standards and the codes of practice have been developed. The industry has moved to formal quality assurance. These should help to relieve some consumers' concerns about the safety in the consumption of oysters, and lead to better quality produce.

Consumers' concerns present a challenge to oyster producers and marketers. An understanding of why consumers increase or decrease purchases of oyster products is important. Although food safety is suspected to be a major factor in decisions to consume raw oysters, other factors such as quality and presentation may also be involved. Knowledge about the consumption of oysters is a prerequisite to the formulation of successful marketing strategies and accurate forecasting.

The overall aim of this project is to provide the Australian oyster industry with an understanding of consumer attitudes, knowledge and behaviour with regards to oyster consumption. It also aims to identify the base line of the trend in the consumption of oysters, and to provide some insights into market potential of the Australian oyster industry.

This study has used the survey research methodology. A shopping centre sampling method (Resurrection 1998; Sudman 1980) was used to collect data. Purposive simple random sampling method has been used to select a sample of seafood retail outlets from the Yellow Pages. The data for this study have been obtained through an in-market interview of seafood consumers. Before the design of the questionnaire, a focus group study was done in March 2003 in Launceston to elicit issues to be addressed in an oyster consumption survey. Responses from the focus group have been used to help in developing the questionnaire, test questions, and phrasing of questions. The pre-test of the questionnaires was complied by a sample of 100 people in Launceston in April 2003 to ensure the validity of the measures, as well as making it more user-friendly. The consumer survey questionnaire is attached as Appendix 1. From April to July 2003, personal interviews of consumers in sampled seafood retail outlets of shopping centres have been conducted chronologically, in Hobart, Adelaide, Sydney, Brisbane and Melbourne.

According to Sudman (1980), usually as few as 5-10 shopping centers are sampled and for possible estimate of sampling variance, a sample of at least of two shopping centers is needed. In this study, firstly, recommendation was made from the Fishing Industry Council and experienced seafood markets in those sampled capital cities regarding five suburbs in which to better to sell oysters or seafood. Afterwards, by a simple random sampling method, five shops were randomly chosen in each city of, Sydney, Melbourne

Brisbane, Adelaide and Hobart. The chosen shops are listed Appendix 2. Interview were done throughout the entire day, which attracted both households and office worker. The sampling unit is a consumer. The duration of the interview is aimed at approximately 5 minutes at most. All the interviewers were trained prior to interviewing consumers.

The effective sample size of this study is calculated based on the formula of Zikmud (2002), a 95 percent confidence level (Z: 1.96) and acceptable magnitude of error (E) (10%) were chosen, the estimate of the standard deviation from the pilot study is (50%). The calculated formula is as following:

$$n= (ZS/E)^2$$

Z= standardised value corresponding to a confidence level

S= sample standard deviation or an estimate of the population standard deviation

E= acceptable magnitude of error, plus or minus an error fact (the range is one-half the total confidence interval)

Therefore, the number for each sampled city is 96 drawn from the formula. It means that at least 480 questionnaires should be done in five sampled cities of this study. Finally 696 questionnaires (including oyster users and non-users) have been collected for this study.

Before the survey was conducted in selected central shopping centres, contacts have been made to obtain permission from the owner of shops to conduct interview there. Customers have been met randomly in the central shopping centre during the predetermined time, and they were asked to participate in the interview. Participation was voluntary. If the customers agreed to respond to the interview, they were asked questions from the questionnaire. The respondents' names and addresses were not asked in the questionnaire. Every interviewed customer has been informed that the responses would be kept strictly confidential. Access to data would be open only to the chief investigator and the researcher, and only aggregated results (not individual responses) would be mentioned in the research outputs.

Information on consumer attitudes to oysters and consumer behaviour of oyster purchases attained from the survey of this study are summarised in this report. The results should be very useful in organising the retailing of oysters, advertising and publicity campaigns to encourage the marketing of oysters. It will give an insight into current consumer habits of purchasing oysters. Secondly, the results would be a guide for sellers to use in targeting consumers who are most likely to increase their oyster consumption. The results will be important and helpful to ensure that the oyster industry maintains its competitive advantage and retains its reputation for clean, safe, reliable and quality oyster products.

Some recommendations towards developing an individual oyster marketing strategy are referred to the final full report to be published in August. The information of this study would be very useful in organising the retail of oysters, as well as advertising and publicity campaigns to encourage the future marketing of oysters.

2.0 Findings of Consumers Study

At the start of the questionnaire respondents were asked whether they consume oysters or not. If not, the reasons why the respondents did not consume oysters were ascertained. The questionnaire covered oyster consumption habits such as the enjoyment of cooking, frequency of eating oysters and so on, and also consumers' attitudes to oysters in general.

2.1 Demographic data

The respondents in this study were consumers met randomly at the seafood shop in the randomly selected shopping centres from five major cities. Out of a total of 696 questionnaires were collected in the study, 468 respondents (67.2%) are oyster users, the rest are non-oyster users. For non-oyster users, interviewed questions simply include the reason why not eating oysters and some demographic information if interviewed consumers would like to reply.

Table 1 shows that, on average, interviewed consumers had a high level of education, and half of them were under 40 years old. The education profile shows that 19.3% had a high school or lower degree, 34.5% respondents had a TAFE degree, and 46.2% had a university or higher degree. Age breakdown of the sample is 39 years or younger accounting for 50%, while those age of 40 years or older accounted for the rest. The age and education demographic characteristics reflect the active purchase group.

Almost the similar number of male and females were interviewed in the study: 48.5% were male and 51.5% were female. Interviewed consumers from Sydney account for 25.2%, followed by 21.3% from Melbourne, 18.8% from Brisbane, 17.6% from Hobart, and 17.1% from Adelaide. Most of the interviewed consumers (67.3 %) were English-native speakers, leaving 32.7 % originating from the other countries.

Table 1: Sample characteristics

Variables	**Frequency N**	**Percentage %**
Age		
15-19	73	10.9
20-39	263	39.1
40-59	242	36.0
60 and above	94	14.0
valid case	672	
missing values	24	
Gender		
Female	338	51.5
Male	318	48.5
valid case	656	
missing values	40	
City		
Sydney	175	25.2
Melbourne	148	21.3
Brisbane	131	18.8
Hobart	122	17.6
Adelaide	119	17.1
valid case	695	
missing values	1	
Language spoken at home		
English	331	67.3
Chinese	46	9.3
German	33	6.7
Greek	16	3.3
Italian	18	3.7
Korean	7	1.4
Japanese	5	1.0
African	5	1.0
Thai	4	0.8
Dutch	3	0.6
French	3	0.6
Spanish	3	0.6
Indonesia	3	0.6
Arabic	3	0.6
Vietnamese	2	0.4
Aboriginal	2	0.4
Others	8	1.7

valid case	472	
missing values	204	
Educational level		
Primary school	12	2.4
High school	84	16.9
TAFE	171	34.5
University	194	39.1
Higher degree	35	7.1
valid case	496	
missing values	200	

2.2 Eating Oysters

Of the randomly interviewed 696 consumers at seafood retail shops, 468 (67.2%) respondents said that they ate oysters. The rest are non-oyster eaters (Figure 1). This finding shows that there is promising potential markets for oyster in Australia. The seafood consumption study in Sydney (Ruello 2001) indicated that oysters are perceived as one of the best selling shellfish. The study of Spawton (1993) shows that about half of the adult population have oyster. In 1998, the Mckinna found that one third of the sampled population eat oysters. The dropped rate may be due to the Sydney rock oyster virus outbreak in 1997. However the study of Ruello (2000) indicated that 64% of the sampled population in Perth like oysters. This figure is quite close to the present study. There is a trend to show the increased population to consume oysters. In this study, 468 cases are available for further analysis of oyster consumption patterns.

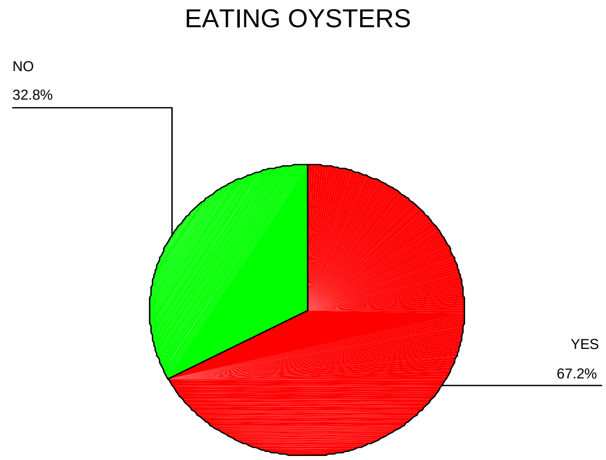

Figure 1: Percentage of respondents' reply on eating oysters (N= 696)

2.2.1 The influence of gender on eating oyster

Table 2 shows that 51.5% of sampled oyster consumers are male, and 48.5% are female. Females had a higher percentage (58.9%) of not eating oysters than males (41.1%). This is consistent with the study of Mckinna (1998) that males eat oysters far more frequently than females. In the US Consumption of Oysters 2000 report, Hardesty (2001) arrived at the same finding. During the interview, a proportion of male consumers expressed an interest in eating oysters as an aphrodisiac. The image of aphrodisiacal properties of the oysters (Ruello 2002) may be one of the reasons why males eat more oysters than females do. However the study of Spawton (1993) found that consumers do not perceive oysters as an aphrodisiac. There needs a particular scientific research to testify this issue. In this study, it is marginally more male oyster eaters, but very much more females do not eat oysters. The study of Mckinna (1998) implies that females are more likely to eat oysters with a topping. Innovative cooking of oyster may change the females' perception to try oysters.

Table 2: Eating oysters by gender

Eating Oysters	Gender	Frequency	Percentage
Yes	Male	239	51.5
	Female	225	48.5
No	Female	113	58.9
	Male	79	41.1
Valid cases		656	
Missing values		40	
Total		696	

2.2.2 The influence of age on eating oysters

The result (Table 3) indicates that the age group between 40-59 has slightly higher rate to eat oysters than the other age groups (41.9%). There is also a potential higher rate that 40.5% who eat oysters are aged between 20-39. The age group over 60 represents 13.7%, and 15- to 19- year olds eat fewer oyster than the other age groups. This result is consistent with the findings of Spawton (1993) that the regular oyster eaters were adults both male and female over the age of 35 and also the study of Mckinna (1998) that the main oyster consumers appear to be male, 35-49 year age group.

Teenagers and middle aged people account for 63% of those not eating oysters. It appears that the result is consistent with the earlier research that young people are losing interest in eating oysters (Wadly V. 2002 pers. comm.). But higher consumption rate of the age group of 20-39 from the result of this study indicates that the teenager may start eating oysters later when peer group pressure subsides or changes. The study of Mckinna

(1998) proved that consumption appears to be slightly increasing and on the increase with younger people.

The reason why the teenagers would not like oysters may be that young people have not had as much experience with oysters as most older consumers (Ruello 2002) or probably the culture is wrong for them to try oysters. One interviewed customer expressed a view that the reason why oysters are not very attractive to young people is that young people are more used to fried food, such as, that served at Macdonald, Kentucky, Hungry Jack etc. reflecting the changing eating style. They have too many choices of food. However, for the older generation in Australia, there were not as many take-away shops and restaurants available when they were young. They have had much more exposure to fresh oysters with the introduction being by their parents. At present, health eating is popular around the world. It is good point to attract young people to eat oysters. The younger generation needs to be introduced to oysters by their parents at their early age, which could improve the oyster consumption of younger generation. Generally, how to attract young people to eat oysters will be the key to future oyster consumption.

Table 3: The influence of age on eating oysters

Eating oysters	Age	Frequency	Percentage
Yes	15-19	18	3.9
	20-39	189	40.5
	40-59	196	41.9
	60 and above	64	13.7
No	15-19	55	26.8

	20-39	74	36.2
	40-59	46	22.4
	60 and above	30	14.6
Valid cases		672	
Missing values		24	
Total		696	

2.3 Reasons for not eating oysters

It is complex to explain the reasons why people would not like to have oysters. The survey (Figure 2) showed that 'dislike the taste' accounts for 44.4%; following 'prefer other seafood' which accounts for 12.3%; 'high price' which accounts for 6.6%; 'do not like seafood' which accounts for 6.2%; 'I hesitate to try unfamiliar foods I have never tasted ' which accounts for 6.2%; ‘suspicious product' which accounts 5.3%; 'poor quality and taste' which accounts for 5.3%; ‘difficult to judge the quality and freshness’ which accounts for 0.9%; 'unavailability' which accounts for 0.9%; and 'not allowed as part of religion' which accounts for 0.4%;'other' which accounts for 11.5%. None of the interviewed consumers stated the reason why not to eat oysters as ‘poor packaging and presentation’, ‘preparing oysters is time consuming’ and ‘do not know how to cook oysters’. During the interview, most nonusers strongly stated that they dislike the slimy texture, said oysters were too salty and that they disliked the appearance of raw oysters. One consumer simply described that oysters look ugly, and that she does not have any motivation to eat it. Some customers love other seafood, but not oysters. Like other food, some people are allergic to oyster. It seems that consumers' suspicion of the safety of consuming oysters is not the most important reason given by people to explain why they do not eat oysters. Taste and price are the main reasons for non-oyster eaters. The finding is in keeping with the study of Spawton (1993) and Hardesty (2001) that many nonusers do not eat oysters because they dislike their texture and taste, also the expensive price (Mckinna 1998).

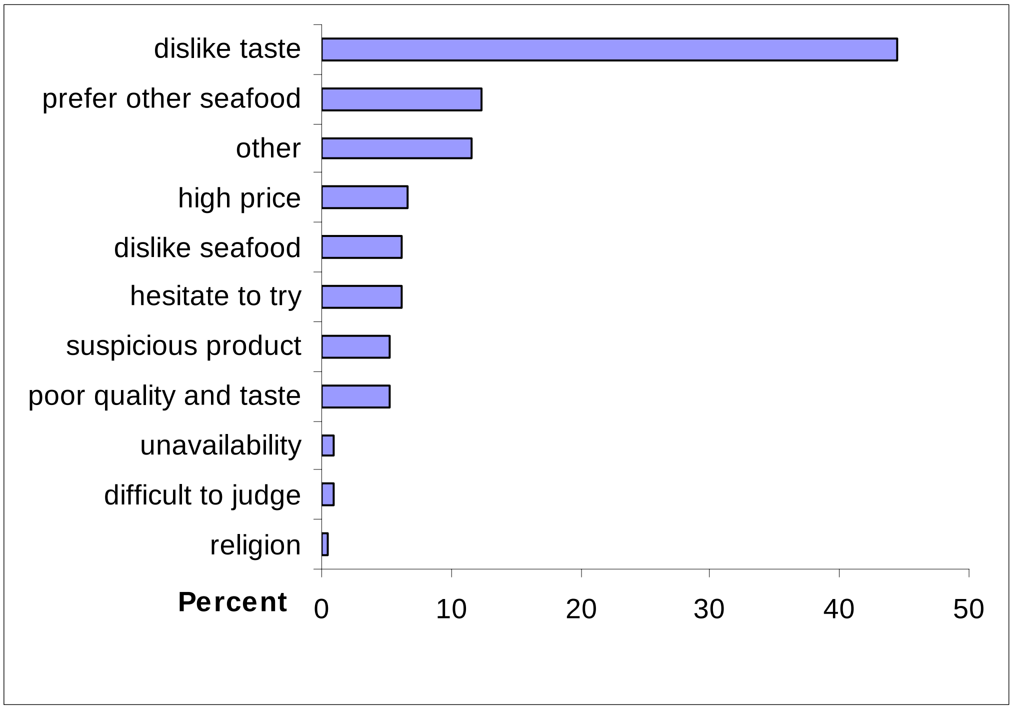

Figure 2: Stated reasons of not eating oysters (N= 228)

2.4 Consumption patterns of oysters

Various choices related to oyster consumption were examined. Primary focus, however, was given to five choices in particular: 'dine in or out', ' where to purchase oysters', ' preferred style of oysters', ' annual frequency of eating oysters' and 'when to eat oysters'.

2.4.1 Dine in or out

In this study, oyster usually consumed at home dominates consumption, as 55.2% of respondents eat oysters at home, while the rest prefer to dine out for oysters mostly (Figure 3). The higher home consumption rate in the study is mostly contributed by the respondents from Hobart (Table 4). It may appear that the shucked half-shell oysters make it easier and cost effective to have oysters at home. This finding is contradicted to the studies of Ruello (2002), Spawton (1993) and Mckinna (1998). But it is interesting and happy to see the home consumption of oysters is improved than the past. Please note that henceforth the word, <u>respondents,</u> refers to 468 oyster eaters being interviewed in this study.

On the other hand, the result of Table 4 shows that respondents from Sydney, Melbourne and Adelaide are more likely to have oysters when dining out, rather than at home. This is in-cline with the oyster consumption study by Ruello and (2002) and Mac Makrid & Associates (2002) that people consider oysters a social food and fun to eat. In contrast, the majority of respondents from Hobart and Brisbane prefer to eat oysters at home (Table 4). From the observation of the interview, some people mentioned that it is much cheaper to have oysters at home. However they show a concern of the knowledge of the storage of oysters. Some respondents are interested in buying half a dozen of oysters once due to the easier strorage. Summarily, the respondents from Hobart show significant difference among the choice of dine in or out for oysters. Much more respondents indicated to have oysters at home. However there is similar number for the two choices among the respondents from the other cities.

The result of the influence of age on the place to eat oysters (Table 5) indicated that among those people who eat oysters at home, nearly half are aged 40-59, about one third are aged 20-39, one sixth are aged over 60s, the remaining 5.8% are teenagers. Among those dining out, around half are aged 20-39, one and a half quater are aged 40-59, one eighth are aged over 60s, and the left 1.5% are teenagers. It appears that respondents in the age group of 20-39 are more likely to dine out for oysters, which implies that these respondents regard oyster as an item for entertainment. While the older generation do not. Most respondents aged over 40 and also teenagers from 15-19 like having oysters at home. It may give oyster retailers some implications on how to properly segment their customers.

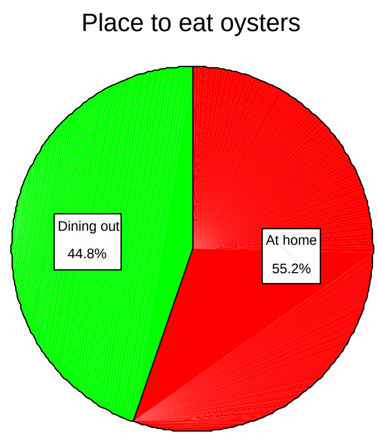

Figure 3: The place to eat oysters (N= 468)

Table4: Place to eat oyster by living city (N= 468)

Place to eat oysters	City	Frequency	Percentage
At home	Sydney	49	19
	Melbourne	52	20.2
	Brisbane	52	20.2
	Adelaide	42	16.3
	Hobart	62	24.1
			100.00
Dining out	Sydney	57	27.3
	Melbourne	57	27.3
	Brisbane	39	18.7

	Adelaide	37	17.7
	Hobart	19	9.0
			100.00
Valid cases		466	
Missing values		2	
Total		468	

Table 5: Place to eat oysters by age

Place to eat oysters	Age	Frequency	Percentage
At home	15-19	15	5.8
	20-39	94	36.6
	40-59	109	42.4
	60 and above	39	15.2
			100.00
Dining out	15-19	3	1.5
	20-39	93	44.7
	40-59	86	41.3
	60 and above	26	12.5
			100.00
Valid cases		465	
Missing values		3	
Total		468	

2.4.2 Where to purchase oysters

Figure 4 illustrates that oyster buying is dominated by fish shops and restaurants. The great majority (77%) of respondents expressed that most oysters, which they bought, were from this source. Chain Supermarket and local supermarket also play an important secondary role for most of their oyster purchase of the respondents, with 10% using this outlet for oyster purchases. Farmgate oyster purchases have been used by 4% of respondents on some occasions. Two minorities (both 3%) use fish and chip outlets and wholesalers for most of their oyster purchases. In addition, a handful of respondents (3%) use other sources (catching their own, telephone order and so on).

The Seafood Consumption Study in Sydney by Ruello (2001) indicated that Australian supermarkets have increased seafood sales due to their prevalence and convenience. In this study, about one tenth of respondents choose supermarkets to purchase most of their oysters. There might be increased oyster sales at Australian supermarkets in the future with the fast expanding of the hyper supermarkets. The study also illustrate that the majority of respondents regard professional fish retail shops as their first option for purchasing oysters for home consumption.

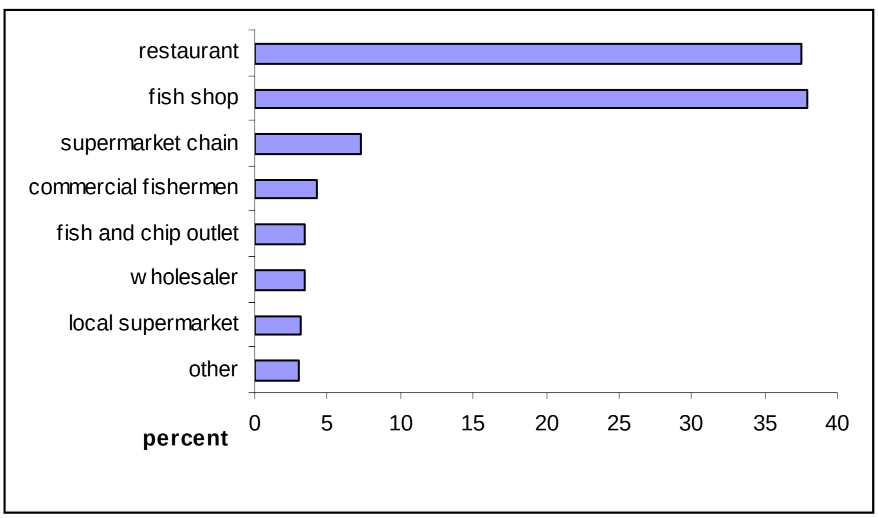

Figure 4: Place to purchase oysters (N= 468)

2.4.2.1 The influence of residence city on 'where to purchase oysters'

There is relatively little variation in outlet usage across the sub-groups from different cities (Figures 5). Similar to the over-all picture, restaurants and fish shops are the major outlet usage for oyster purchase for each city. The rate to purchase oysters at supermarkets is very much higher for the respondents from Hobart than the other cities.

The respondents from Melbourne (4%) show lowest interests in using supermarkets to purchase most of their oysters. About one tenth of respondents from Melbourne show interests in purchasing oysters at the fish and chip shops, which presents higher rate than the respondents from other cities. It is interesting to see that the respondents from Adelaide do not show interests in using fish and chip shops to purchase oysters. Small handful respondents from Sydney, Brisbane and Hobart (3%, 4%, 1% respectively) used fish and chip shops for most of their oyster purchase. Around one tenth of respondents from Hobart (12%) prefer to buy oysters from wholesalers, 5% from Adelaide, minority (1%) from Sydney and Melbourne. Respondents from Brisbane do not choose wholesalers to purchase oysters. Respondents from Hobart show strongest interests in purchasing oysters straight from fishermen (11%). While the figures showing for the respondents from Sydney and Brisbane are low. For using other sources (catching their own, telephone order and so on) to purchase oysters, respondents from Hobart show higher preference (7%), while only few minority respondents from the other cities are using this source. In summary, Hobart consumers present a very different pattern of purchasing behaviour compared with other cities. The results may have some implication for the oyster industry to target their future sales.

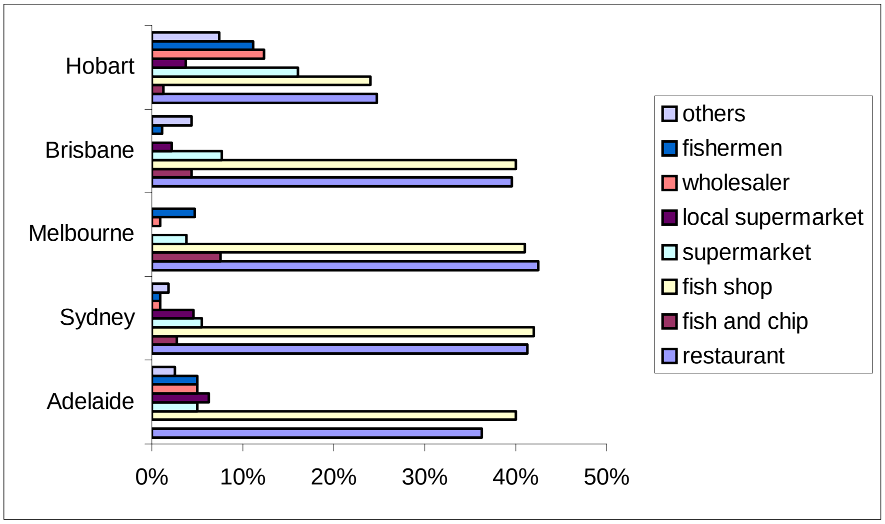

Figure 5: Outlet usage for oyster purchase in Sydney (N= 106), Melbourne (N= 109), Brisbane (N= 91), Adelaide (N= 81) and Hobart (N= 81)

2.4.3 Preferred style of oysters

The degree which oysters are enjoyed according to presentation is ranked by fresh, grilled, smoked, pickled and other forms (Figure 6). Frozen oysters are the most unwelcome product. Fresh oysters on the half shell are the most enjoyable presentation. This observation is consistent with the finding of Hardesty (2001), and Mckinna (1998). Kilpatrick oysters are preferred by one fifth of the respondents. All the other styles of oysters have a niche market. According to the oyster study of Ruello (2002), in the short or mid term, frozen oysters or highly processed oysters would not have any particularly attractive opportunities in Australian markets. Kilpatrick oysters have not yet proven profitable in recent years in Australia. It appears that the Australian oyster markets will still be dominated by fresh oysters, but Spawton (1993) indicated that cooked oysters could be best to be tried by oyster non-eaters. The development of various oyster cooking methods will stimulate the promotion of oysters to the public and educate the consumers how to enjoy the oysters by different ways.

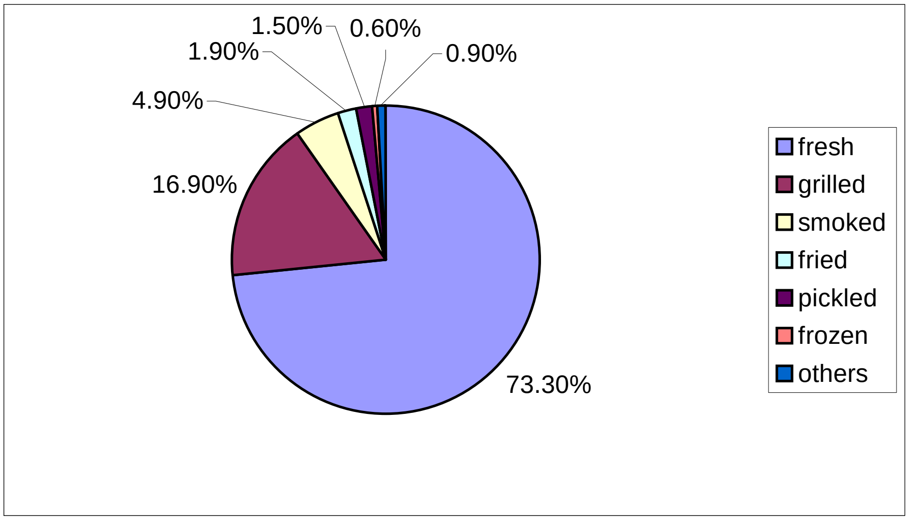

Figure 6: Preferred style of oysters (N= 468)

2.4.3.1The influence of residence city on 'preferred style of oysters'

There was little variation in preferred style of oysters among sub-groups from different cities. The following figure shows that fresh oysters are the most preferred style by respondents from different cities. Great majority of the city dwellers: 70%, 72%, 75%, 75% and 75% respondents from Sydney, Melbourne, Brisbane, Hobart and Adelaide respectively preferred fresh oysters. However respondents also showed some interests in other prepared styles of oysters, such as grilled oysters. About one quarter of respondents from Sydney and Brisbane prefer grilled oysters. One tenth of respondents from Hobart, Melbourne and Adelaide like grilled oysters. It seems that grilled or barbecued oysters may become a new favourite way for people to enjoy the oysters, particularly as Australians love barbecues so much. The results also indicated that respondents showed little interests in fried oysters. During the interview, some non- oyster users said that they might try oysters if they were included in a ‘fishermen basket’. It could be a good way to encourage more people to try oysters. Frozen oysters are not welcome at each city. A handful respondents from Melbourne, Sydney, Hobart and Adelaide like smoked oysters. Most of these respondents eat oyster occasionally. It is interesting to see that respondents from Brisbane do not show interests in pickled, smoked and fried oysters. It is surprising that 6% respondents from Hobart showed interest in pickled oysters, which is more than the respondents from the other cities. There are niche markets for different styles of oysters in Australia. Generally, the innovative ways to cook oysters should be researched, developed and promoted to attract more people to try oysters.

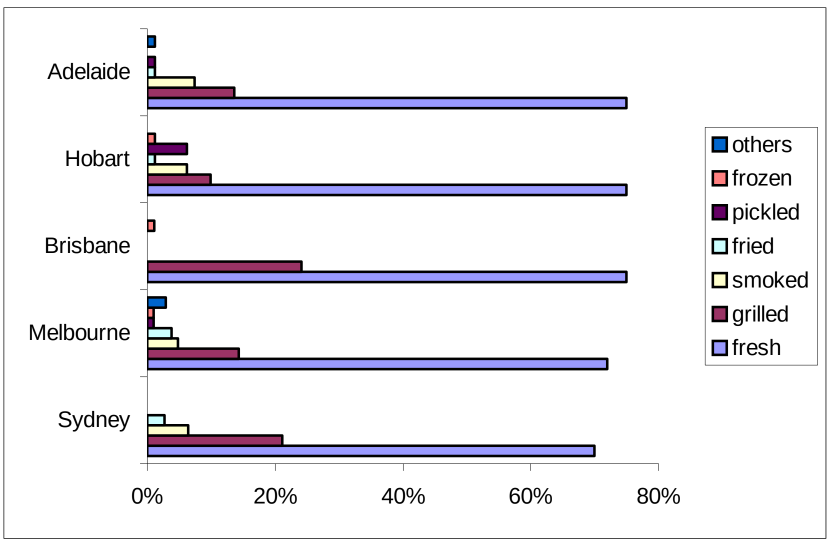

Figure 7: Preferred style of oysters in Sydney (N= 106), Melbourne (N= 109) Brisbane (N= 91), Adelaide (N= 81) and Hobart (N= 81)

2.4.4 When to eat oysters

The results of Figure 8 present that there are a great portion of respondents in the study said that they more likely have oysters as an evening meal (25.1%) when eating at home. Preference for the time to enjoy oysters is then followed by lunch (9.6%) and breakfast (7.5%). It is interesting to see that a small number of respondents enjoy oysters for breakfast. When dining out, most people will have oysters for an entrée meal (32.3%)

instead of a main meal (4.1%). Almost one fifth of respondents have oysters as a celebration for a special day (16.7%) such as Christmas and Easter, which is ranked third highest in the Figure. During the interview, some retailers reported that they had big sales on those special days. Special days should be particularly targeted by the oyster marketers. Special price at the special day or special promotion may encourage consumers to consume more oysters.

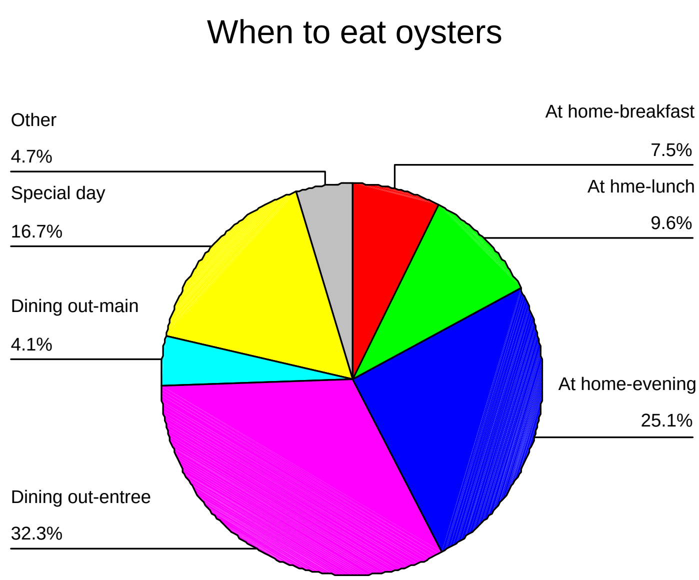

Figure 8: When to eat oysters (N= 468)

2.4.5 Annual frequency of eating oysters

The following Figure 9 shows that one third of respondents claim to shop for oysters 2-4 times a year, which is regarded as in-frequent oyster users. A quarter of respondents purchased oysters about 5-7 times a year, which is regarded as frequent oyster users. Heavy oysters users were considered for the respondents who shopped for oysters more than 10 times a year (18%). One sixth of respondents claimed to buy oysters at least 8-10 times per year, which is also considered as frequent oyster users. The remaining 7.1% respondents rarely eat oysters with purchase frequency being once a year. The result of the study showed that oysters are not a frequently purchased food among most respondents. People like the flavour of oysters and consider them fun to eat. The observation of the interview revealed the same finding as the study of Ruello (2000) and spawton (1993) that oysters are occasional food for most consumers. To increase the frequency of oyster consumption may be a continual static for the future development of the oyster industry.

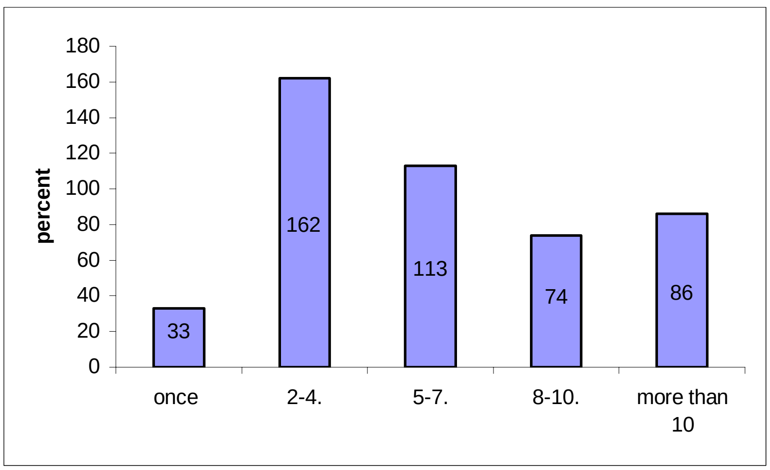

Figure 9: Annual frequency of eating oysters (N= 468)

2.4.5.1 The influence of residence city on ' the annual frequency of eating oysters'

The results presented in following Figures 10 show that there is relatively slight variation in oyster consumption frequency among sub-groups from different cities. About one third of respondents consume oysters 2-4 times a year except the half of respondents from Hobart. Further, one quarter of respondents from Sydney, Melbourne and Brisbane had oysters 5-7 times a year, while around one fifth of respondents from Hobart and Adelaide do so. Respondents from Adelaide (22%) and Brisbane (20%) have a higher rate of consumption of oysters, 8-10 times a year, than respondents from the other cities. While the score for the respondents from Hobart is lowest (only 9%). As for frequent oyster users, respondents from Adelaide (25%) showed the highest rate. The score is ranked following by the respondents from Melbourne, Hobart, Brisbane and Sydney. About one tenth of respondents from Sydney and Hobart (14% and 9%) respectively are not very interested in oysters. They only had oysters once a year. The score for the respondents from the other cities are minor. The group of consumers who had oysters once a year may have the most potential to increase their future oyster consumption if the oysters were better promoted. Hence those groups of oyster consumers could be well targeted by oyster marketers. From the observation of the interviews, it was found that the size of population and the variety of ethnic groups in the city do affect consumption of oysters in some ways. Niche markets for regions around the capital cities should be well segmented and promoted. Health eating and fresh produce should be well promoted by oyster marketers to increase the frequency of oyster consumption.

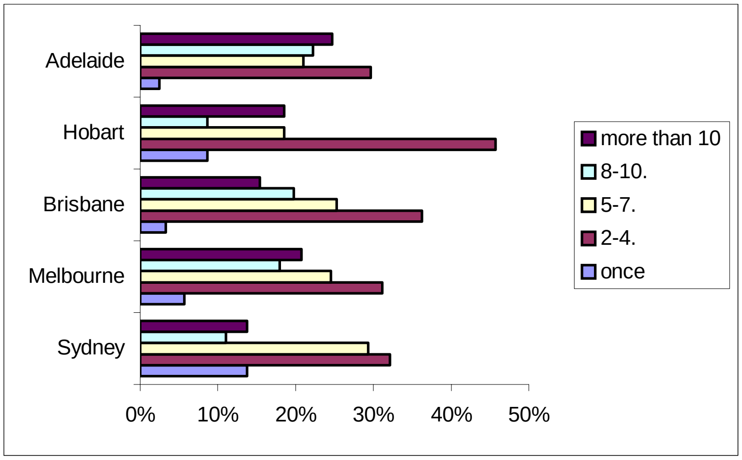

Figure 10: Annual frequency of eating oysters in Sydney (N= 106), Melbourne (N= 109), Brisbane (N= 91), Adelaide (N= 81) and Hobart (N= 81)

2.5 Consumer Attitudes

Table 6 presents the results of the means of consumer attitudes to oysters, the scores of which appear in ranked order. Score 1 represents strongly disagree. Score 2 represents disagree. Score 3 represents neutral. Score 4 represents agree. Score 5 represents strongly agree. It is interesting to see that there is no significantly negative attitude to oysters among respondents. Freshness is perceived to be the highest concern when respondents purchase oysters. This is in consistent with the findings of the study of Graham et. al. (1993). Obviously, a continual supply of high quality oysters is the key to the success of oyster marketing.

The result clarifies that consumers do consider the safety of eating oysters. Safety consideration was still an important concern for shellfish consumption, even though seafood safety and quality assurances have been in place in the oyster industry. Some people are still afraid of being poisoned by oysters. However it is not as serious as when the oyster incident occurred in Sydney in 1997. The freshness and quality of oysters seemed more important than safety considerations, when respondents purchased oysters. Taste, quality, safety and quality regulations of oysters, a reliable retailer and environmental issues also play an important secondary role in consumer concerns regarding oysters. Their mean scores are much higher than the average.

The results particularly indicate that the issue of labelling is a big concern for respondents when buying oysters (4.25). Consumers are very keen to know the origin and harvest time of purchased oysters. They expect clear labelling of oysters on the package to be done by the retail shops or maybe by the industry. Labelling appears to confuse consumers sometimes. Some respondents do not realise that there are three kinds of different flavour of oysters coming from South Australia, Tasmania and New South Wales. The labelling issue was also mentioned in the Sydney seafood consumption study of Ruello (2000). Traceability of oyster supply presents a challenge to oyster marketers.

The result of mean score (4.11) show that respondents strongly were aware of that oysters are healthy food. While not many respondents can tell exactly the nutritional ingredients oysters include. Also very rarely were respondents in the study sick from oysters. However, respondents showed concerns about how to judge the good quality of oysters.

The results also illustrate that respondents' concerns about attractive presentation, shape and size of oysters are relatively medium (3.49, 3.07, 3.52) respectively. They do care about those factors. Some respondents mentioned that nicely presented oysters do encourage them to purchase oysters when they have not yet decided what to buy for dinner or lunch. However, it seems that these are not the most important factors affecting consumers' decision to purchase oysters.

The mean of the scale of knowledge about the preparation of oysters is just over neutral level (3.16), which implies most of respondents do not have enough knowledge of preparation for oysters. It was found from the interview that most respondents do not really understand the difference between farmed oysters and feral oysters. Furthermore, some respondents in Sydney showed interest in purchasing on the spot -shucked oysters at the Sydney fish market, which were perceived as the freshest product. Similarly, at the restaurant, supermarket of fish shops, the oysters could be stored live in the tank. The consumers could pick up the favourite oysters. Then the shop assistant could help to shuck the oysters on the spot. It seems that consumers are more convinced with the quality of purchased oysters with this way.

The results also indicated that most people do not know about the seasonal availability of oysters. However the respondents expect the whole-year supply of oysters. Some respondents expressed that they are disappointed with the stock out of oysters when purchasing them. Respondents also do not show enough interest in trying different preparation method of oysters. Concerns regarding the price of oysters are moderate (3.35). Some respondents are ready to pay extra money for really high quality oysters, while price is an important factor considered by some respondents when making a decision to purchase oysters. This is in consistent with the result of the study of Ruello (2002). During the interview, some respondents mentioned that specially priced oysters would be a good way to increase oyster consumption. Consumers' concern on the package of oysters is moderate (3.19). Most respondents indicated that they buy half-dozen or a dozen half shell fresh oysters in a cardboard case. The innovative packaging of oysters might attract them in some way.

The implications of these results are that the industry should focus on those who currently eat oysters and design a feasible strategy to improve the frequency of eating oysters, as well as expanding promotions to attract more people to eat oysters. In addition, identifying consumer consumption behaviour, attitudes to oysters and characteristics about the demographic of oyster consumers may provide insights into the type of people who will more likely be future oyster consumers. From the findings of the consumer attitudes to oysters, the importance of consumer perception of fresh, safe product, reasonable price, high quality, traceability and correct labelling were emphasized. The study of Ruello (2002) also mentioned those points. These findings are helpful for the future oyster promotional campaign.

Table 6: Mean scores of consumers' attitudes to oysters (N= 468)

Subscale/items **(1= strongly disagree, 2= disagree, 3=neutral, 4= agree, 5= strongly agree)**	**Mean**	**SD**
Consumer Attitudes		
9. I care about freshness when buying oysters	4.52	0.63
22. The seafood safety and quality assurance are important issues	4.44	0.70

in the oyster industry		
23. I prefer to buy oysters from the premises that adopt such seafood safety and quality assurances approved by the government rather than those premises that do not	4.419	0.81
11. I care about quality of oysters when buying them	4.40	0.74
21. I care about the health and safety regulations concerning oysters when I eat them	4.36	0.76
10. Oysters taste good	4.31	0.73
19. I expect either a fresh or defrost sign to be on the label	4.25	0.83
17. I expect the date of the catch to be on the label	4.21	0.88
24. I care about environmental issues when buying oysters	4.16	0.86
20. I expect the name of the oyster to be on the label	4.14	0.85
8. Oysters are good for my health	4.11	0.74
27. I have not had any bad experience of eating oysters	4.12	1.08
18. I expect the site of the catch to be on the label	4.06	0.88
14. Farmed oysters are more safe to eat	3.75	0.83
28. I care about the size of the oysters when buying them	3.52	0.93
12. Attractive presentation will encourage me to buy oysters	3.49	0.89
25. I would buy good quality oysters even if the price is higher	3.35	1.02
16. I would buy nicely-packaged oysters	3.19	1.02
26. I would eat more oysters when they are in season	3.18	0.95
15. I know how to prepare oysters	3.16	1.07
29. I would try different styles of oysters if someone suggests me how nice the taste of oysters are	3.13	0.90
13. I care about the shape of the shell when buying them	3.07	0.95

3.0 Conclusions

The purpose of this study is to identify potential marketing opportunities for the Australian oyster industry. The main findings from the study reveal that males show slightly higher rate to prefer oysters than females. Age group between 40-59 are the regular oyster users. Teenager Australians rarely liked eating oysters. Maybe the culture is wrong for them to eat oysters. The increase consumption rate of the age group of 20-39 probably indicates that they may start eating oysters later when peer group pressure subsides or changes. The taste and texture of oyster was the main barriers for non-oyster eaters other than the concerns of safety of oysters. Fresh half-shell oysters is the most favourite product form which respondents enjoy. However some respondents show some interests in the grilled or barbecued oysters. Most Australians regard oysters as an occasional food. Around two thirds of respondents have oysters for 2-8 times annually. Most of respondents likely purchased oysters at fish retail shops and restaurants. The result shows increased home consumption of oysters than previous studies. Product availability is a competitive weapon for the oyster business. Consumers' knowledge of how to store oysters, how oysters are grown, harvested and processed are fairly limited. Male consumers showed great interest in the aphrodisiacal properties of oysters. Consumers who enjoyed eating oysters at a restaurant preferred the social environment that the restaurant offered. Barriers to consuming oysters were its fishy flavour, health concerns, difficulty to prepare and the expense. Freshness, quality, size, uniformity, cost, how to prepare them, and where they come from, were factors which consumers considered when purchasing oysters.

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Appendix 1 Survey Questionnaire

Information Sheet

The Australian Maritime College is conducting research to better understand the issues that arises in marketing of oysters. This research is endorsed and partly sponsored by the South Australia Oyster Research Council, the Tasmania Fishing Industry Council and other related organisations. This study seeks to determine factors affecting the consumer consumption of oysters and further to examine the importance of these factors. Additionally, it aims to investigate current marketing situation of oysters in the main Australian capital cities. Your responses will be invaluable for the Australian oyster industry.

The attached questionnaire will take approximately 5-10 minutes to complete. Please answer the following questions based on your knowledge and experience. There are no right or wrong answers. Your responses will be kept **strictly confidential**. Access to data will be available only to the chief investigators. All the collated information will be coded by the researcher and only the aggregated results (not the individual responses) will be mentioned in the research output.

The project has received ethical approval from the Northern Tasmania Social Sciences Human Research Ethics Committee. If at any time you wish to discuss the study or if you have any questions concerning the research procedures, please contact:

The chief investigators

Dr. Felicia Kow, Ph: 03-6335 4473, Email: F.Kow@fme.amc.edu.au,

Thank you for your kind co-operation.

Hello. We are conducting a study on consumers' attitudes to eating oysters. Would you mind sparing a few minutes to answer a few short questions?

Please select an appropriate answer

1. Do you eat oysters? (1)Yes (2) No

2. What is the main reason that you do not eat oysters?

(1) Poor packaging and presentation (2) Poor quality and taste
(3) Price too high (4) Unavailability (5) Suspicious product
(6) Prefer other seafood (7) Do not like seafood
(8) Dislike the taste (9) Preparing oysters is time consuming
(10) Do not know how to cook oysters (11) Difficult to judge the quality and freshness
(12) I hesitate to try unfamilar foods I have never tasted (13) Not allowed as part of religion (14) Other

(If you do not eat oysters, please do not continue the questions. Thank you.)

3. Where do you usually eat oysters? (1) At home (2) Dining out

4. Where do you normally purchase oysters?

(1) Restaurant (2) Supermarket chain (3) Local supermarket
(4) Fish and chip outlets (5) Fish shop (6) Private supplier/ wholesaler
(7) Commercial fishermen (8) Others

5. What is your preferred style of eating oysters?

(1) Fresh (1/2 shell) (2) Frozen (3) Pickled (4) Smoked (5) Grilled (eg. Oysters kilpatrick) (6) Fried and/or crumbed (7) Others

6. When do you usually eat oysters?

(1) At home- breakfast (2) At home-lunch (3) At home- evening (4) Dining out –entree
(5) Dining out –main (6) Special day (7) Other

7. How often do you eat oysters a year?

(1) Once (2) 2-4 times (3) 5-7 times (4) 8-10 times (5) More than 10 times

Please response that corresponds most closely to your view/attitude towards each statement (Q8- Q29). The numbers corresponding to responses are: 5 for Strongly agree; 4 for Agree; 3 for Neutral; 2 for Disagree; 1 for Strongly Disagree.

	Strongly	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Q8 Oysters are good for my health	1	2	3	4	5
Q9 I care about freshness when buying oysters	1	2	3	4	5
Q10 Oysters taste good	1	2	3	4	5
Q11 I care about quality of oysters when buying them	1	2	3	4	5
Q12 Attractive presentation will encourage me to buy oysters	1	2	3	4	5
Q13 I care about shape of the shell when buying them	1	2	3	4	5
Q14 Farmed oysters are more safe to eat	1	2	3	4	5
Q15 I know how to prepare oysters	1	2	3	4	5
Q16 I would buy nicely-packaged oysters	1	2	3	4	5
Q17 I expect the date of catch to be on the label	1	2	3	4	5
Q18 I expect the site of catch to be on the label	1	2	3	4	5
Q19 I expect either fresh or defrost sign to be on the label	1	2	3	4	5
Q20 I expect the name of the oyster to be on the label	1	2	3	4	5
Q21 I care about the health and safety regulations concerning oysters when I eat them	1	2	3	4	5
Q22 The seafood safety and quality assurance are important issues in the oyster industry	1	2	3	4	5
Q23 I prefer to buy the oysters from the premises that adopt such seafood safety and quality assurances approved by the government rather than those premises that do not	1	2	3	4	5
Q24 I care about environmental issues when buying oysters	1	2	3	4	5
Q25 I would buy good quality oysters even if the price is higher	1	2	3	4	5
Q26 I would eat more fresh oysters when oysters are in season	1	2	3	4	5
Q27 I do not have any bad experience of eating oysters	1	2	3	4	5
Q28 I care about the size of the oysters when buying them	1	2	3	4	5
Q29 I would try different styles of oysters if someone suggests me how nice the taste of oysters are	1	2	3	4	5

30. To which of the following age groups do you belong?

(1) 15-19 (2) 20-39 (3) 40 to 59 (4) 60 and above

31. What is the language you speak at home?

(1) English (2) Greek (3) Italian (4) German (5) Dutch (6) Chinese
(7) Vietnamese (8) French (9) Thai (10) Korean (11) Spanish (12) Japanese
(13) Indonesian (14) Arabic (15) African (16) Aboriginal (17) others

32. What is your education level?

(1) Primary School (2) High School (3) TAFE (4) University
(5) Higher degree

33. What is your gender?

(1) Male (2) Female

34. Where are you from?

(1) Melbourne (2) Sydney (3) Brisbane (4) Hobart (5) Adelaide

Thank you for taking the time to complete this survey.
Please be assured that your responses will be kept strictly confidential.

Appendix 2 List of Surveyed Seafood Retail Shops

Adelaide:

Cappo's Seafoods Pty Ltd
43 Grote St Adelaide
ph: (08) 8231 9046

The Oyster Shop
61 Jetty Rd Glenelg SA
ph: (08) 8376 7200

SAMTASS Brothers Seafood
Central Market, 46-48 Gouger St. Adelaide

Foodland
711 Burbridge Rd West Beach SA 5024
ph: (08) 8235 9853

Angelakis Bros
Central Market, Arcade Adelaide
ph: (08) 8400 1300

Hobart:

Mures Fishmongers
Victoria Dock Hobart TAS 7000
ph: (03) 6231 2121

Makos Fresh Fish
Constitution Dock Hobart TAS 7000
ph: (03) 6231 0090

Northgate Shopping Centre
Northgate S/C Cnr Main Rd & Riddoch St
Glenorchy, TAS 7010
Ph: (03) 6273 1555

Woolworths Pty Ltd in Claremont
Cnr Boxhill& Main Rd
Claremont , TAS, 7011
Ph: (03) 6249 1766

Woolworths Pty Ltd in Sandy Bay
2 Cooper St ,
Sandy Bay , TAS, 7005
Ph: (03) 6211 661

Melbourne

Fisch
Chadstone shopping centre Chadstone Vic 3148
03 9568 1138

Ocean world seafood
Shop 239 Chadstone shopping centre Chadstone Vic 3148
03 9569 9889

Prossers seafoods
Shop 31 Victoria Market Melbourne VIC 3000
ph: (03) 9329 6017

Claringbold's Seafoods

Shop 510, Prahran Market
163-181 Commercial Rd. South Yarra, Vic 3141

Fishy Business
724 Glenferrie Rd. Hawthorn Vic 3122
03 9818 5644

Sydney

Burwood Plazza Seafood
Shop 9 Burwood Plazza, 42 Railway Parade, Burwood, NSW, 2134.
PH: 02 9745 3948

Capitol Seafood
Shop 209, Westfield Shopping Centre, Chatswood, NSW, 2067
PH: 02 9411 8110

De-Costi Seafoods Roselands
L 42 Roselands Shopping Roselands NSW 2196
PH: 02 9750 4033

Nicholas Seafood Traders
Sydney Fish Markets, Box 247, Pyrmont, NSW, 2009
PH: 02 9968 1542

M& H Michael's Seafood
Shop 3034 Level 5, Westfield Shopping Centre, Parramatta, NSW, 2150
PH: 02 9633 2819

Brisbane

Morgans Oyster Bar
Bird of Passage Pde Scarborough QLD 4020
PH: 07 3203 4592

Raptis Fish Markets
90 Colmslie Rd Colmslie QLD 4170
PH: 07 3249 7805

Fish Factory & Rock oysters Pty Ltd
363 Lyton Rd Colmslie QLD 4170
PH: 07 3399 9888

Murray's Fish Market
106 Deshon St Buranda QLD 4102
PH: 07 3391 2671

Sam's Seafood
15 Hercules St Hamilton QLD 4007
PH: 07 3633 4700