Drivers and barriers to seafood consumption in Australia

Abstract

Purpose - This paper explores the drivers and barriers to seafood consumption in Australia and investigates attitudes toward pre-packaged fresh chilled seafood products.

Design/methodology - A two-stage study of seafood consumption in Australia was conducted comprising ten focus groups across six states (n=60) and a national online consumer survey (n=1815).

Findings - The main drivers for seafood consumption in Australia are health, taste, convenience, and a desire for diet variety. The main barriers to seafood consumption are price, concerns regarding origin, concerns about freshness, difficulty in evaluating seafood quality, and not liking the taste or texture of fish. The main appeals of pre-packaged fresh chilled seafood products are convenience and ease of preparation, while barriers include price and concerns about origin and freshness.

Research limitations/implications – The survey focussed on the main or joint grocery buyers in households and thus may not be representative of the entire Australian population.

Practical implications - The findings provide important insights for the Australian seafood industry in developing and delivering seafood offerings that will appeal to Australian consumers and thus stimulate seafood consumption. This knowledge will also assist the Australian Government and health educators to more effectively campaign to encourage increased seafood consumption.

Originality/value - While research on antecedents to seafood consumption in Europe has been extensive, research into the drivers and barriers to seafood consumption in western countries such as Australia and strategies for increasing seafood consumption is less evident.

Keywords Consumers, Seafood consumption, Seafood, Drivers, Barriers

Paper type Research Paper

An executive summary for managers and executive readers can be found at the end of the article.

1. Introduction

Seafood is widely accepted to be an important part of a balanced and healthy diet (Trondsen, *et al.*, 2003). Seafood consumption is related to significant health benefits including lower instances of cardiovascular disease (Sidhu, 2003; Verbeke and Vackier, 2005). While annual per capita seafood consumption in Australia is increasing, at approximately 25 kg per year, it remains well below the recommended levels of two serves per week and average consumption for other Asian and European countries, such as Korea (54 kg), Netherlands (52 kg), Spain (41 kg) and France (35 kg) (FAO, 2007). There has been a substantial amount of research concerning consumers' motives and barriers to seafood consumption in European countries; however, there is a lack of research about seafood consumption in western countries such as Australia. Recent concerns about the lack of seafood in the diet of consumers in western countries and the negative consequences for both physical and mental well-being have placed a greater urgency on the need to understand reasons for low seafood consumption. A 2010 London meeting of The Royal Society of Medicine involving the world's foremost authorities in neuroscience and nutrition warned that western nations will suffer "unthinkable health, social and fiscal consequences unless they increase consumption of DHA, an Omega-3 oil found most abundantly in seafood" (Seafood Services Australia, 2010).

In an attempt to stimulate the consumption of seafood, the Australian seafood industry has been moving toward providing a wider range of pre-packaged fresh chilled seafood products. This paper is based on the findings of a study of Australian consumers that investigated drivers and barriers to seafood consumption. The primary research questions for this study were: (1) to determine the drivers and barriers to seafood consumption in Australia; and (2) to investigate attitudes toward pre-packaged fresh chilled seafood products.

2. A review of studies of drivers and barriers to seafood consumption

Substantial research concerning consumers' motives and barriers to seafood consumption has been conducted in European countries where annual per capita seafood consumption is traditionally higher than in Australia. Understanding what triggers and inhibits Australians' consumption of seafood will provide important insights for the Australian seafood industry to develop and deliver appealing seafood offerings, and stimulate seafood consumption through "improved product quality, distribution and communication" (Trondsen, *et al.*, 2003, p. 302). This knowledge will also assist the Australian Government and other health educators to more effectively campaign to encourage increased seafood consumption. Any intervention designed to stimulate seafood consumption must consider both inhibitory and facilitating factors (Scholderer and Grunert, 2001).

2.1 Drivers of seafood consumption

Health, taste and convenience have consistently been found to be key drivers of seafood consumption (Brunso, *et al.*, 2009; Gu and Bogue, 2005). The health and nutritional benefits to be derived from a diet high in seafood positively influences seafood consumption (Bredahl and Grunert, 1997; Brunso, 2003; Olsen, 2004; Pieniak, *et al.*, 2008; Verbeke and Vackier, 2005). Verbeke, *et al.* (2005) investigated perceived health benefits of fish consumption including reducing the risk of heart disease and cancer, improving bone density, making people stronger and smarter, stimulating cerebral development and prolonging life. Health consciousness, perceptions that diet is important for health and healthy eating habits (health involvement) have been found to be positively related to seafood consumption (Olsen 2003; Ragaert, *et al.*, 2004, Trondsen, *et al.*, 2004a; 2004b). Moreover, health involvement appears to influence satisfaction and pleasure associated with eating seafood (Brunso, *et al.* 2009). However, perceived health benefits may not explain variations in seafood consumption, because almost everyone considers seafood to be a healthy meal option (Brunso, 2003; Olsen, 2003). Indeed, Verbeke and Vackier (2005) failed to find a correlation between food-health awareness and seafood consumption frequency and intention.

Taste has also consistently been found to be a driver of seafood consumption (Bredahl and Grunert, 1997; Olsen 2004). Brunso *et al.* (2009, p. 701) explain that taste is an important factor in explaining food consumption because "food is a matter of pleasure, and few people eat things they do not like the taste of." Studies have revealed that fish consumption is also associated with the desire for a varied diet (Rortveit and Olsen, 2009). The need for convenience has also been found to influence seafood consumption, in particular for younger consumers (Kittler and Sucher, 2004; Ryan, *et al.*, 2004). Brunso *et al.* (2009, p. 701) explain that convenience is becoming more and more important as time-poor consumers are seeking time-savings, as well as, reduced effort and mental exertion "at one or more stages of the overall meal acquisition process." The meal acquisition process involves planning the meal, sourcing and purchasing ingredients, storing and preparing food, consuming the meal, cleaning up and disposing of, or storing, any leftover food (Brunso *et al.*, 2009; Olsen *et al.*, 2007; Beck, 2007).

An orientation toward convenience influences attitudes toward food, food selection, preparation and consumption (Jaeger and Meiselman, 2004; Mahon, *et al.*, 2006; Scholderer and Grunert, 2005). A scale for measuring convenience orientation (CONVOR) was developed by Candel (2001) to measure attitudes toward the need for meals to be convenient (quick, easy and requiring minimal thinking) to plan, buy, prepare and cook. In response to this desire for convenient, quick and easy meal options, an increasingly larger range of pre-prepared meal solutions are now available. However, in a study of Irish consumers' attitudes toward convenience foods including pre-prepared meal centres, Ryan *et al.* (2004) found that 50 percent of respondents considered convenience foods to be unhealthy and 21 percent considered they did not represent good value for money, while 72 percent agreed that consumption of convenience foods allowed more time for other activities.

The purchasing, preparation and consumption of food by many Australian consumers is strongly influenced by the need for convenience. Socio-cultural changes including an increased number of women in the workforce, changes to household compositions including smaller households, and increasingly time-poor consumers with higher disposable incomes have led to a strong demand for more convenient meal solutions. Pre-prepared meals have gained popularity as people search for simple, quick and easy meal options. A qualitative study of infrequent seafood purchasers in Denmark, Iceland and Norway (n= 28) revealed that consumers want to consume more seafood but are concerned with the time and effort required to prepare it, and thus are seeking attractive, health and tasty seafood products that are convenient to prepare (Altintzoglou, *et al.*, 2010).

Rortveit and Olsen (2009, p. 316) distinguished between convenience orientation which is "a variable describing a personal characteristic" and perceived product inconvenience which is "a belief about the product or product category itself." Perceived inconvenience is associated with perceptions of how convenient a consumer considers a particular food is to plan, purchase, prepare and serve (Lockie, *et al.*, 2002; Olsen *et al.*, 2007; Rortveit and Olsen, 2009). Perceived inconvenience has been found to be a barrier to the consumption of fresh fish for some European market segments (Olsen, 2004; Olsen, 2007). Rortveit and Olsen (2009) surveyed Norwegian consumers to examine the impact of convenience orientation, perceived product inconvenience and consideration set size (range of meal options considered) on attitudes towards fish and consumption, and found that perceived product inconvenience had a greater negative influence on attitudes and fish consumption than convenience orientation (Olsen, 2007). These European studies regarding the perceived inconvenience of fish focused primarily on fresh fish consumption (and in many cases, the sourcing and preparation of whole fish), rather than the consumption of filleted or pre-packaged seafood products which is more typically associated with seafood consumption in Australia.

2.2 Barriers to seafood consumption

Numerous studies have focussed on barriers to seafood consumption in European countries (Olsen, 2004). A study of Norwegian women aged 45-69 years (n=9407) revealed that a lack of supply of fresh fish, inconsistent quality, lack of product choice, high prices, family members not liking fish, and not liking the taste of fish were key barriers to fish consumption (Trondsen, *et al.*, 2003). Olsen (2004) found that price, convenience, knowledge and availability of top-fresh products are barriers to consumption for some market segments. Brunso, *et al.* (2009) investigated barriers to fish consumption across heavy and light users in Spain and Belgium and found that key barriers included price, smell when cooking fish, and lack of satiety after consuming fish as compared with meat.

Perceptions of high prices have been found to be key barriers to seafood consumption in many European studies (Brunso, *et al.*, 2009; Myrland, *et al.*, 2000; Olsen, 2004; Trondsen, *et al.*, 2003; Verbeke and Vackier, 2005). Conversely, studies conducted in the United Kingdom (Leek, *et al.*, 2000) and Finland (Honkanen, *et al.*, 1998) did not find a relationship between price and value for money perceptions and seafood consumption.

Lack of ability to determine the quality of seafood, and whether it is fresh, has been found to be a major barrier to seafood consumption (Verbeke and Vackier, 2005, Verbeke, *et al.*, 2005). Past experience and familiarity with a product category influence the extent to which people search for information, and recall and use information, when evaluating product quality and making purchasing decisions (Howard and Sheth, 1969; Verbeke, *et al.*, 2005). Regular purchase of a product category influences self-confidence in making decisions with respect to that product category (Sogn-Grundvag and Ostli, 2009). Past experience in buying and preparing fish has been found to be a strong predictor of future purchase intentions (Myrland *et al.*, 2000; Verbeke and Vackier, 2005). Research has revealed that many consumers perceive difficulty in evaluating, selecting, preparing and cooking seafood (Juhl and Poulsen, 2000; Sogn-Grundvag and Ostli, 2009; Sveinsdottir, *et al.*, 2009). Hence, Altintzoglou, *et al.* (2010, p. 224) reported that encouraging consumers to add more seafood to their diet requires "clear advice on preparation methods and materials".

Seafood consumption has also been found to be positively related to the availability of fresh seafood (Scholderer and Grunert, 2001; Shepherd and Sparks, 1994; Sveinsdottir *et al.*, 2009). Conversely, lack of availability of fresh seafood of consistent quality and lack of product choice have been found to inhibit seafood consumption (Altintzoglou, *et al.*, 2010; Olsen, 2004). Rortveit and Olsen (2009, p. 316) also revealed that variety or the "number of considered dinner alternatives have a significant positive effect on consumption frequency." Variety can also be considered in terms of whether people can purchase seafood in the form they want, in the desired portion size, and whether pre-packaged seafood products are available. The availability of pre-packaged seafood meal solutions as a strategy to increase seafood consumption remains problematic, as research to date indicates mixed acceptance of these products. Finally, research to date is overwhelmingly European with little or no research in other Western countries. Hence, the purpose of this paper is to explore the drivers and barriers to seafood consumption in the Australian context. An overview of the research design will be presented next.

3. Methodology

To investigate the research objectives, two separate studies were designed and conducted concurrently, a qualitative focus group study and a quantitative online survey. The qualitative study comprised ten focus groups of seafood consumers with an average of six consumers per group (n=60). The focus groups were conducted to allow a deeper understanding of consumers' motivations and inhibitions with respect to seafood consumption and attitudes toward pre-packaged seafood products. NVivo 8.0 software was used to assist with categorising key themes arising from the qualitative data.

The quantitative online survey of Australian consumers (n=1815) included both seafood category purchasers (purchased in the past 3 months, n = 1308) and non-category or light seafood category purchasers (either have not purchased in the past 12 months or purchased in the past 3 - 12 months, n = 507). The online survey measured Australian consumers' motivations and barriers to seafood consumption and attitudes toward a pre-packaged seafood range.

4. Results and discussion

4.1 Profile of participants

The ten focus groups were conducted across five states of Australia and comprised five groups where participants were from a family situation and five groups where participants were either single or part of a couple. Males and female seafood consumers were included in the focus groups and identified as being either the main or joint grocery shopper in their household. The majority of respondents to the online survey were females (72.9%). Most of the respondents were aged 35-54 years (48.4%), followed by consumers aged 55 years and over (32.2%), and then younger consumers aged 18-34 (19.4%). Most were couples or singles who did not have children living at home (56%), with 44 percent of respondents being couples or singles with either younger children (under 13 years), teenagers, or adult children (20 years and over) living at home. Nearly three-quarters of the respondents (74%) resided in capital cities. Forty nine percent of respondents were on an annual household income of less than AUD80, 000, with 34 percent reporting an annual household income of AUD80 000 or more. Forty-one percent of the respondents were full-time employed, 21 percent were part-time employed, 18 percent were retired, and 19 percent were either not in the work-force or studying. Seafood consumption for this sample was low with average consumption being 1.5 times per month, well below the recommended two servings per week, and with very few of the respondents eating seafood more than three times per week.

4.2 Shopping behaviours for seafood

The focus group results indicated that consumers buy the majority of their seafood from supermarkets with convenience and price the key drivers. Respondents noted that they also purchase from fishmongers, but less frequently, with the key motive for purchasing from fishmongers being the desire for high quality seafood for a special occasion. The survey findings supported the focus group results revealing that Australian consumers most frequently purchase fresh chilled seafood at the supermarket delicatessen section (63%), followed by fishmongers (48%), the supermarket self-service freezer section (45%), the supermarket self-service chiller section (44%), butchers (19%), and fish and chip shops (14%). This shopping pattern is consistent with a study of Belgium consumers which also revealed that the majority of seafood is purchased at supermarkets (Verbeke and Vackier, 2005). Conversely a qualitative study of infrequent purchasers of seafood in Denmark, Norway and Iceland (n=28), conducted by Altintzoglou, *et al.* (2010) found that the quality of fish at supermarkets was poor and therefore, fishmongers were the preferred source of good quality seafood in those countries. In Australia, fishmongers are also perceived to be more able to provide expert advice. As one of the focus group members explained, “the fishmonger normally knows what they're talking about.” Another focus group member stated:

> *If I want someone who can showcase fish, I want someone who knows the fish, so I’ll go to a fishmonger. If I’m going to ask if it’s fresh/frozen, what region is it from, how long it’s been stocked… I’m going to throw 20 questions at them.*

Planned versus impulse buying. Focus group participants were asked about their purchasing habits for seafood in terms of whether their purchasing was planned or more of an impulse decision at the point-of-purchase. About one third (n = 22) commented that they carefully plan their meals and use shopping lists. For example, focus group members commented:

> *So, I talk to my partner or whoever I know is going to be around and see if everyone agrees on that. I will actually write lists.*

> *Generally, I don't splurge. I have a list and I stick to it. I spend the time to plan my menu for the week and then I go through the cupboards and work out what I've got.*

Conversely, numerous comments (n = 46) indicated that seafood purchasing is influenced at the point of sale by specials. For example, focus group members stated:

> *I always go over to have a look and see what's on special and then make a decision.*

> *If it's on special. That's what I look, for because it's expensive nowadays.*

These findings are consistent with other studies of seafood purchasing behaviour. For example, Altintzoglou, *et al* (2010, p. 227) found that while some consumers are organised and plan their meals ahead of time, other consumers are more impulsive and "decide what to prepare on the way to the retail store or even in it".

Respondents to the online survey were also asked whether their seafood purchasing was planned or impulse and what factors influenced their decision (table 1). In line with the findings of the focus groups, the survey revealed that shopping for seafood is mostly planned (73%) and influenced by habit or regular purchasing, budget, food preferences, meal occasion, dietary preferences, as well as who and how many are to be fed. Impulse buying for seafood (27%) is more associated with supermarket shopping than the fishmonger, and is primarily influenced by specials/price promotions, budget, habit or regular purchase, meal occasion, food preferences, who is to be fed and diet preferences.

Table 1: Factors influencing planned versus impulse purchasing of fresh chilled seafood

Planned seafood purchasing (73%)		**Impulse seafood purchasing (27%)**	
Factors influencing	**%**	**Factors influencing**	**%**
habit or regular purchasing	47	specials/price promotions	45
budget	41	budget	38
food preferences	39	habit or regular purchase	29
meal occasion	36	meal occasion	27
dietary preferences	28	food preferences	25
who is to be fed	27	who is to be fed	24
how many are to be fed	26	dietary preferences	20

Hence, one challenge for the seafood industry in stimulating consumer demand for seafood is to influence the consumer's consumption circle (10-15 regularly prepared meals which are "known by heart") and gain a place on the household weekly menu and shopping list (Altintzoglou, *et al.,* 2010, p. 227). However, this could prove difficult as seafood consumption appears to be "highly habituated" (Verbeke and Vackier, 2005, p. 79). For example, focus group members commented, "It's not in my routine" and "I'd have to modify my shopping habits." Childhood fish consumption, and in particular in the first five years of life, appears to influence fish consumption in later life (Altintzoglou, *et al.* 2010; Nestle *et al.* 1998; Trondsen, *et al.,* 2003). For example, focus group members pointed out:

> *A lot of my family don't eat fish and if they do, it's fish and chips. I wasn't brought up in a fish family. I developed my taste for fish after I left home.*
>
> *Because I love seafood, I grew up with it. Our Xmas was always seafood. Our family gatherings were always seafood. So it's just a staple.*

Given that 27 percent of seafood purchases are impulse purchases, there appears to be substantial opportunity to influence consumers to purchase seafood at the point of sale via price promotions, incentives, sampling, and attractive and appealing seafood products. However, discounted seafood products are met with some suspicion due to their being close to their use by date.

4.3 Drivers of seafood consumption

Focus group participants were asked what motivates their consumption of seafood in terms of the needs and benefits it meets. In line with the literature, taste (and hedonic attributes) was a major driver of seafood consumption in Australia (Brunso, *et al.* 2009; Kittler and Sucher, 2004; Olsen 2004). The majority indicated that they enjoy eating fish and like the taste of fish, expressing affective attitudes such as "taste, yummy", and "the taste. It's a lovely taste", "I do love my fish," and "the reason is taste, I love it".

In line with the literature, health was found to be a major driver of seafood consumption (Olsen, 2004; Pieniak, *et al.*, 2008; Verbeke and Vackier, 2005). Focus group members stated:

> *Just healthy reasons. We like eating healthy. Just purely Omega 3, we believe it's good to have a combination of things throughout the week. Low fat really.*

> *For me, having been on Weight Watchers, I have to have a minimum of three lots of fish a week and probably a bit more.*

As predicted in the literature, convenience was another key motivation for seafood consumption with many of the focus group members remarking on the convenience of having frozen seafood in the freezer which could be used for a quick and easy meal (Brunso, *et al.* 2009; Candel, 2001; Jaeger and Meiselman, 2004; Mahon, *et al.*, 2006; Scholderer and Grunert, 2005). Comments from focus group members included:

I come home from work and don't want to cook, go to the freezer, grab it and put in the pan and heat it up.

I like to have things in the freezer and grab them out. Something easy to create.

Previous studies have revealed that fish consumption is associated with the desire for a varied diet (Rortveit and Olsen, 2009). Focus group members also noted that they consume fish for "having variety in your diet" and explained, "it's also variety. I get bored".

The findings of the online survey supported both the literature and the focus group findings with respect to key drivers of seafood consumption. However, key drivers of seafood consumption in Australia vary slightly across form, that is, fresh chilled seafood versus frozen seafood (table 2).

Table 2: Drivers of seafood consumption by form

Fresh chilled seafood		**Frozen seafood**	
Driver	**%**	**Driver**	**%**
high in Omega 3	61	convenience	55
low in fat	58	readily available	46
taste/flavour	51	price	42
freshness	51	high in Omega 3	42
convenience	49	already pre-prepared	39
variety of meals	32	low in fat	38

For fresh/chilled seafood consumers the key drivers are health (high in Omega 3 and low in fat), taste, freshness, convenience, and diet variety. Key drivers for the consumption of frozen seafood include convenience, ready availability, price, high in Omega 3, already pre-prepared, and low in fat. These findings are consistent with the literature where health benefits, taste and convenience have been frequently identified as key motives for seafood consumption (Brunso, *et al.*, 2009). Contrary to the literature (where studies have focussed primarily on the consumption of fresh seafood, and where price and lack of availability have been identified as barriers rather than drivers of seafood consumption), lower prices and ready availability of frozen products are key drivers of the consumption of frozen seafood in Australia (Brunso, *et al.* 2009; Olsen, 2004; Trondsen, *et al.* 2003).

4.4 Barriers to seafood consumption in Australia

Focus group members were asked what prevented them from consuming higher levels of seafood. Consistent with the literature, price and lack of availability of fresh fish were cited as key reasons for lower consumption levels (Brunso, *et al.* 2009; Olsen, 2004; Trondsen, *et al.* 2003). Focus group members commented that seafood can be a very expensive meal option, with one focus group member jesting: "you actually need to take out a second mortgage if you intend to buy seafood. It is not cheap".

Perceptions regarding the lack of availability of fresh fish in Australia are mostly associated with a lack of availability of Australian seafood at supermarkets. As found in some European studies (Brunso, *et al.* 2009), local preferences are also a major concern with regards to seafood in Australia. Focus group participants expressed a preference for Australian fish and held concerns about imported seafood products in terms of safety and possible contamination, as well as, a desire to purchase quality, fresh seafood and support the local fishing industry. For many Australian consumers, Australian seafood inherently represents quality, freshness, safety and sustainable fishing. Country of origin issues are exemplified in the following comments from focus group participants:

> *If they were prepared to put more Australian products in there, I would much more prefer that.*
>
> *People want Australian products because they know it's sustainable.*

One of the key factors acting as a barrier to seafood consumption in Australia is the issue of freshness. Seafood is a highly sensory-involved food category and consumers in the focus groups expressed difficulties in assessing freshness, as well as, determining whether the seafood had been frozen. This situation is exacerbated by a perception that some supermarket personnel appear to lack knowledge of where the seafood is from and whether it has been previously frozen, as well as, a lack of trust in information provided. Focus group members commented:

> *The big question I ask them is, has it been frozen previously? And that's a big question, because you can't refreeze it, and 9 times out of 10 they don't know, or if they do, they're not willing to say.*

> *I am scared, because I think that the supermarket has done it already [frozen the fish] and I don't trust them.*

The findings of the online survey revealed that the major barriers to seafood consumption vary slightly across usage rate (regular versus light or non-consumption), as well as, between fresh and frozen seafood (Table 3). Major barriers to the consumption of seafood in general included price, concerns about where the seafood comes from, concerns about freshness, not being able to determine if the seafood is good quality, and not liking the taste and/or texture of seafood. For fresh chilled seafood, the presence of bones was also identified as a barrier to consumption, while price was considered to be slightly less of a barrier for the consumption of frozen seafood.

Table 3: Barriers to seafood consumption by usage rate and form (%)

Overall barriers to seafood consumption		Barriers to consuming fresh chilled seafood		Barriers to consuming frozen seafood	
Barrier	**%**	**Barrier**	**%**	**Barrier**	**%**
price	42	price	53	concerns about origin	48
concerns about origin	30	concerns about origin	46	concerns about freshness	40
concerns about freshness	27	not being able to determine if the seafood is good quality	35	not being able to determine if the seafood is good quality	39
not being able to determine if the seafood is good quality	23	concerns about freshness	33	price	36
not liking the taste/texture	22	usually has bones in it	18	not liking the taste/texture	22

4.5 Attitudes toward pre-packaged fresh chilled seafood

The low levels of consumption of online survey respondents are concerning given the substantial health benefits to be derived from seafood consumption, high levels of obesity and heart disease amongst Australian consumers and recent concerns for mental health in Western nations. One strategy for stimulating the demand for fresh seafood is to provide consumers with a range of pre-packaged fresh chilled seafood products. A key aim of the project was to determine Australian consumers' attitudes and purchase intentions towards these types of products.

Focus group participants were presented with pictures of a proposed range of pre-packaged seafood products. Positive comments regarding the appeal of the range concerned convenience and ease of preparation, for example:

> *Well it's packaged, and you've got your sauces, and it's ready to go. Like, chuck it in the oven, chuck it in the frying pan.*

> *You would grab that off the shelf and go. I mean, I have bought some of the fish with that when I couldn't be bothered doing much.*

Many participants reported being time-poor and liked the option of being able to select products from the self-service sections of the supermarket, as opposed to waiting to be served at the delicatessen section. For example, focus group participants commented:

> *See, that [pre-packaged seafood] would be quicker to just select. You don't have to muck around with a ticket waiting to be served.*

> *You can just throw it in your trolley and keep going. It's convenience, because sometimes you've only got 20 minutes to do your shopping. I'm on a mission.*

These attitudes are consistent with findings in the literature that pre-prepared meals are perceived to be more convenient and time-saving (De Boer, McCarthy, Cowan and Ryan, 2004). Another major advantage of pre-packaged seafood products is the inclusion of a use by date on the packaging, allowing consumers to be clear about how fresh the product is, and when it needs to be consumed. Freshness has been identified in numerous studies as an important factor in forming consumers' attitudes toward seafood (Olsen, 2004). For example, focus group consumers noted:

> *They've got a use by date, and the use by date is usually about 5 days. I wouldn't normally buy fish and keep it at the bottom of the fridge for that long, but because it's vacuum sealed it lasts in your fridge for 3 or 4 days.*

> *I would think it [pre-packaged seafood] could be even fresher. It's all under control and you've got a use by date on it.*

Focus group participants acknowledged that pre-packaged seafood products would necessarily be more expensive to cover the costs of packaging and processing. Nevertheless, some consumers liked knowing exactly how much the pre-packaged product was going to cost, as opposed to the more random experience at the delicatessen, where large-sized fillets selected by staff can make the cost of a seafood meal more expensive. Comments from focus group members included:

> *You can see the price. You get it out of the deli and you never know how much it's going to cost you.*

> *At least you know how much it is before you actually buy it. At least in the frozen section you can't work out how much it is per kilo. In the deli though, it's never 1kilogram, it's always 1200gms.*

However, some more experienced cooks were not interested in pre-packaged foods at all, preferring to prepare their meals "from scratch." For example, comments from the focus groups included:

> *As a cook, I like to make things from scratch. I like to use fresh ingredients rather than frozen. I am not afraid to experiment and break out from the recipe.*

> *You've got two extremes. Got the lazy cook, who is "the frozen" or this one [ready-to-cook offering] and that one [natural fillet offering] who is "buy the fresh fish and do all the prep yourself." Occasionally, you do want it from scratch. It's fun to cook. It's fun to play with your own herbs.*

The online study revealed that the majority of regular seafood consumers currently purchase (64%) and prefer to purchase (50%) unpackaged seafood products from the delicatessen section of the supermarket or a fishmonger. Only 18 percent of regular seafood purchasers indicated a preference for boxed seafood (e.g. frozen products), 13 percent preferred seafood packaged in a sealed tray, while 11 percent indicated a preference for vacuum packed seafood, with only 7 percent preferring bagged fish. This indicates that there may be some, although somewhat limited, potential for a wider range of pre-packaged fresh chilled seafood products.

Table 4: Current regular and preferred seafood purchase by packaging format (%)

Seafood format	Regularly purchase (%)	Prefer to purchase (%)
unpackaged seafood products	64	50
boxed seafood (e.g. frozen products)	43	18
seafood packaged in a sealed tray	30	13
vacuum packed seafood	30	11
bagged seafood	21	7

When presented with the same range of pre-packaged fresh chilled seafood products as were the focus group participants, 11 percent of the online survey respondents indicated that they definitely would purchase, 36 percent indicated that they probably would purchase, 34 percent were unsure, 12 percent indicated that they probably would not purchase, and seven percent indicated that they definitely would not purchase. In keeping with the literature, convenience was the main appeal of the pre-packaged fresh chilled seafood range for the online survey respondents (table 5), as well as, being able to prepare the meal quickly, ready availability, a good variety of products, and the fact that the product is already prepared (De Boer *et al*, 2004). However, other appeals of the fresh pre-packaged seafood range including perceptions of freshness and healthiness contradicted previous studies of convenience foods (Gofton, 1995; Olsen, *et al.*, 2009). Major barriers to the acceptance of pre-packaged fresh chilled seafood products were price, concerns about source, freshness, and appeal to the whole household, how to prepare the product, as well as, limitations on species and types available.

Table 5: Attitudes toward pre-packaged fresh chilled seafood products (%)

Appeals	%	Barriers	%
convenient	67	price	37
able to prepare the meal quickly	56	concerns re origin	35
freshness	54	concerns re freshness	34
able to tell what is in it	54	don't know what is in it	24
good variety of products	52	mostly non-Australian species	18
healthy	48	does not appeal to the whole family	14
readily available	45	limited species/types available	13
already prepared	42	unsure how to prepare it	10

Consistent with the findings of European studies of seafood consumption, many Australian consumers lack the knowledge and confidence to select and prepare fresh seafood (Juhl and Poulsen, 2000; Sogn-Grundvag and Ostli, 2009; Sveinsdottir *et al.*, 2009). Focus group members commented on the lack of information provided and their need for direction, for example:

> *I find one of the things is that they don't tell you on the packaging, is how best to cook things.*

> *I would imagine that people who would be buying that [pre-prepared seafood] would want a little bit more instruction ... they want to know how long to cook it for. What to do. Chuck it in a pan. Put it in the oven. What am I going to do?*

Most of the focus group participants agreed that the inclusion of recipes and serving suggestions on the packaging for seafood products would be beneficial. For example, one focus group member commented:

> *I've noticed in Coles they've been doing a lot of recipes which I think it's good. Cards and things. But particularly for fish. A lot of people aren't confident about cooking fish. I think that would be a good thing to do.*

5. Managerial implications and applications

This study revealed that Australian consumers do not consume the recommended level of seafood, but would like to eat more seafood. In addition to the perceived convenience of seafood as a quick and easy meal solution, consumers purchase seafood to provide variety to their diet and for its taste and health benefits. However, price, concerns about the source of the seafood, difficulties in assessing the quality of seafood and concerns about freshness create barriers to increased seafood consumption.

The findings revealed that pre-packaged seafood products may overcome or minimise some of the key barriers to seafood consumption by providing greater convenience, assurances of freshness (use by date), information on source (country of origin labelling), assurances of quality (branding), and more transparent pricing (price per portion). Seafood consumption is primarily planned behaviour, however, this research indicated that there is an opportunity to influence seafood consumption at the point of sale if consumers find something that meets their desire for convenience and diet variety, and represents good value for money. Consumers are looking for innovation, local products, and above all fresh products.

The findings also indicate that there is a lack of trust on behalf of many seafood consumers, in particular with respect to receiving accurate information concerning the source of the seafood, whether the seafood is fresh, and whether it has been frozen. The seafood industry and seafood distributors need to build consumer trust if seafood consumption is to improve. Moreover, many consumers are not confident in selecting, storing or preparing seafood, and thus require education, instructions and suggestions.

6. Limitations and future research

This study was limited to investigating key drivers and barriers to seafood consumption and attitudes toward pre-packaged fresh chilled seafood products in Australia. Future research could include cross-cultural comparisons of other western countries such as the United Kingdom and the United States. Future research could seek to provide a richer understanding of western consumers' seafood consumption by investigating evaluative and affective attitudes toward seafood and the influence of subjective norms (i.e. social norms, moral obligations, food and health involvement) and behavioural controls (i.e. availability of fresh seafood, knowledge and confidence in selecting, purchasing and preparing seafood, and the influence of habits, childhood consumption and past experiences).

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Executive summary and implications for managers and executives

The health benefits of seafood consumption are well established. While there has been much research concerning consumers' motives and barriers to seafood consumption in European countries, there is a lack of research about seafood consumption in western countries, such as Australia, the United States and the United Kingdom. Recent concerns about the lack of seafood in the diet of consumers in western countries and the negative consequences for both physical and mental well-being have placed a greater urgency on the need to understand reasons for low seafood consumption. Understanding what triggers and inhibits consumption of seafood will provide insights for stimulating seafood consumption. This study focussed on drivers and barriers to seafood consumption in Australia.

Key drivers and barriers of seafood consumption

Health, taste and convenience have consistently been found to be key drivers of seafood consumption. The health benefits of fish consumption include reduced cardio-vascular disease and cancer, improved bone density, improved cerebral development and prolonged life. However, the perceived health benefits have not explained variations in seafood consumption. Socio-cultural changes including an increased number of women in the workforce, smaller households, and increasingly time-poor consumers with higher disposable incomes have led to a strong demand for more convenient meal solutions. A lack of availability of fresh fish, inconsistent quality, lack of ability to determine the quality of seafood, lack of product choice, high prices and family members not liking fish have been identified as key barriers to fish consumption.

Study and outcomes

Two studies, a focus group study and an online survey were conducted to identify key drivers and barriers to seafood consumption in Australia, and to identify attitudes toward pre-packaged chilled seafood meals. Ten focus groups of seafood consumers across five states of Australia (n=60) were conducted. The online survey of Australian consumers (n=1815) measured motivations and barriers to seafood consumption and attitudes toward a pre-packaged chilled seafood range.

Focus group results indicated that consumers buy the majority of their seafood from supermarkets with convenience and price the key drivers. The survey revealed that shopping for seafood is mostly planned (73%) and influenced by habit, budget, food preferences, meal occasion, dietary preferences, as well as who and how many are to be fed. Hence, one challenge for the seafood industry in stimulating consumer demand for seafood is to influence the consumer's consumption circle. However, given that about one-third of seafood purchases are impulse, there is an opportunity to influence consumers to purchase seafood at the point of sale via price promotions, incentives, sampling, and attractive and appealing seafood products.

Taste, hedonic attributes, health, convenience and diet variety are major drivers of seafood consumption in Australia. For fresh/chilled seafood consumers the key drivers are health (high in Omega 3 and low in fat), taste, freshness, convenience, and diet variety. Key drivers for the consumption of frozen seafood include convenience, availability, price, high in Omega 3, and low in fat. Major barriers to the consumption of seafood include price, concerns about where the seafood comes from, concerns about freshness, not being able to determine if the seafood is good quality, and not liking the taste of seafood. Local preferences are a major concern with focus group participants expressing a preference for Australian fish and holding concerns about imported seafood in terms of safety and possible contamination. A barrier to seafood consumption in Australia is the issue of freshness. Seafood is a highly sensory-involved food category and consumers expressed difficulties in assessing freshness, as well as, determining whether the seafood has been frozen. This was exacerbated by a perception that some supermarket personnel lack knowledge of where the seafood is from and whether it has been previously frozen. Many Australian consumers lack the knowledge and confidence to select and prepare fresh seafood. Focus group members commented on the lack of information provided and agreed that the inclusion of recipes and serving suggestions on packaging would be beneficial.

The study also explored Australian consumers' attitudes and purchase intentions towards pre-packaged chilled seafood products. Focus group participants were presented with a proposed range of pre-packaged seafood products. Positive comments regarding the appeal of the range concerned convenience and ease of preparation. Many participants reported being time-poor and liked the option of being able to select products from the self-service sections of the supermarket, as opposed to waiting at the delicatessen section. Another major advantage of pre-prepared seafood products was the inclusion of a use by date on the packaging, allowing consumers to be clear about freshness. Participants acknowledged that pre-packaged seafood products would be more expensive to cover the costs of packaging and processing. Nevertheless, some consumers liked knowing exactly how much the product was going to cost, as opposed to the more random experience at the delicatessen, where large-sized fillets selected by staff can make the cost of a seafood meal more expensive. However, some more experienced cooks were not interested in pre-packaged foods, preferring to prepare their meals "from scratch." For the survey respondents, convenience was the main appeal of the pre-packaged fresh chilled seafood range. Major barriers to the acceptance of pre-packaged chilled seafood products are price, concerns about source, freshness, and appeal to the whole household, how to prepare the product, as well as, limitations on species and types available.

Suggestions for marketing and further research

In addition to the perceived convenience of seafood as a quick and easy meal solution, consumers purchase seafood to provide variety to their diet and for its taste and health benefits. However, price, concerns about the source of the seafood, difficulties in assessing the quality of seafood and concerns about freshness create barriers to increased seafood consumption. Availability of pre-packaged seafood meals may overcome some of the barriers to seafood consumption by providing greater convenience, assurances of freshness (use by date), information on source (country of origin labelling), assurances of quality (branding), and more transparent pricing (price per portion). Seafood consumption is primarily planned behaviour, however, this research indicated that there is an opportunity to influence seafood consumption at the point of sale if consumers find something that meets their desire for convenience and diet variety, and represents good value for money. Consumers appear to lack trust, in particular with respect to receiving accurate information concerning the source of the seafood, whether the seafood is fresh, and whether it has been frozen. The seafood industry needs to build consumer trust if seafood consumption is to improve. Moreover, many consumers are not confident in selecting, storing or preparing seafood, and thus require further education.

Future research could seek to provide a richer understanding of western consumers' seafood consumption by investigating evaluative and affective attitudes toward seafood and the influence of subjective norms (i.e. social norms, moral obligations, food and health involvement) and behavioural controls (i.e. availability of fresh seafood, knowledge and confidence in selecting, purchasing and preparing seafood, and the influence of habits, childhood consumption and past experiences).