

Environmental Issues in Surfing – Behaviours and Attitudes

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2009

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Abstract

A comprehensive study of the surf industry was conducted to identify the key issues within the industry. Using a sample of 125 surfers a questionnaire was performed to gain insight on green consumer behaviour and attitudes. A further questionnaire was conducted on 20 surf retailers. Results showed that the majority of UK surfers and retailers interviewed thought that there were not enough eco-products on the market, and when looking at the results the retailers gave it was clear they saw a strong future for the eco-product, that it wasn't just a phase and that demand in the future is set to increase. Results found that as a generalisation the surfer shows high concern for the environmental issues in the industry, however this is not matched by their levels of green consumer activism as the majority had not bought eco-products. Demographics of the green consumer were thoroughly investigated with Chi-square statistical analysis conducted to establish probabilities of relationship. The marketing implications from such an investigation can put an eco-company at a serious advantage, enabling them to target and identify their main customers and even to 'tap' into new customer populations. The key findings were that longboarders considered themselves to be more eco-friendly than shortboarders. The 'Surfers Path' readers were shown to be more concerned about the levels of toxicity within the industry, and also to be a more active green consumer, than other magazine readers. The other key findings were that over 30's show more concern about the levels of toxicity than under 30's and also are more active green consumers. Males were shown to be more active green consumers than females. Non-students showed a higher level of concern about the toxicity levels and to be more active green consumers than the student surfers interviewed. The main limitation to this study was the size of the samples. There are also limitations to technique such as a bias in the questionnaires, due to the participants knowing what the investigation was about and possibly filling in answers that they believe the interviewer desired.

Acknowledgements:

First of all, I would like to thank the 125 surfers who participated in the questionnaire. I had not one refusal and enjoyed conducting the questionnaire with you thoroughly.

A big thank you also to the business owners, managers and staff that were interviewed and questioned. Everyone was generally interested in the project and extremely helpful and great ambassadors for the industry.

Thank you to Ross Pomeroy, who gave sound advice.

Contents

Section	Title of Section	Page
1	INTRODUCTION	111
2	AIMS & OBJECTIVES	112
3	BACKGROUND	113
	3.1 Surf Now, Apocalypse Later	113
	3.2 Leading Activist Surf Companies	116
4	LITERATURE REVIEW	119
	4.1 Environmentalism - Is it just a phase?	119
	4.2 The Green Consumer	120
	4.3 Transparency and the Green Consumer	121
	4.4 Previous Study on the Green Consumer	122
	4.5 Questionnaire Techniques	124
	4.6 Sampling	125
	4.7 Analysis Techniques	126
5	METHODOLOGY	127
	5.1 Questionnaire1 - Surfer's Attitudes	127
	5.2 Questionnaire 2 - Retail Attitudes	130
	5.3 Interview - Industry Attitudes	130
6	RESULTS	132
	6.1 Questionnaire 1: Surfer's Results	132
	6.1 a) Summary of Sample	132
	6.1 b) Summary of Most Important Product Aspect Results Summary of Most Important Eco-Product Aspect	133
	6.1 c) Result	133
	6.1 d) Summary of Green Surf Product Buyer Behaviour	133
	6.1 e) Cross Tabulations Questions 8, 9 & 10	133
	6.2 Questionnaire 2: Retailers Results	143
	6.2 a) Key Findings	143
	6.2 b) Opinions on the future demand for Eco-Surf Products	144
7	DISCUSSION	147
8	CONCLUSION	151
9	REFERENCES	152

1.0: Introduction



Surfers have a reputation for being at one with Mother Nature, but beneath our feet there's always been that dirty little secret.

"The creation of a modern surfboard is one of the most resolutely non-biodegradable products on earth. It is an act of hostility to the environment." (Wade, 2006).

Surfboards are just the tip of the iceberg. Almost all surf hardware derives from petroleum based materials such as wetsuits (neoprene), boardshorts (nylon), leashes, and even surf wax (paraffin) for example.

The clothing industry is also far from idyllic.

"The surfing industry is merely the garment industry with a good hook." (Henning, 2007, founder of the Surfrider Foundation (USA)).

Over the last decade especially, there has been an ever increasing awareness and concern about the levels of toxicity within surfing. More and more 'activist' companies are emerging to embrace this increasing demand with a variety of low-impact, eco-friendly surf products.

Like it or not, surfing today is a multi-billion dollar activity with global participation estimated to be somewhere in the vicinity of 20 million people and growing every day (Kampion, 2003) and in the UK alone there is a 300,000 strong surf population (British Surfing Association Survey, 2007).

Surfing takes place in diverse coastal locations around the world and is expanding both in intensity in traditional locations, as well as in reach into new environments often in the developing world (Caroll 2004), (Evaliderez 2006), and the industry is now worth an estimated \$8 billion dollars per annum (Dolnicar & Fluker, 2003) and (Caroll, 2004).

Despite all this, to date there is zero study on the green consumer specific to the surf industry.

This project aims to investigate the current environmental issues within the surf industry and gain a collective view of attitudes and behaviours associated with the surf consumer, retailers and manufacturers.

2.0: Aims & Objectives

Overall Aim:

The project's overall aim is to identify the demographic variables that correlate with ecologically conscious attitudes and consumption of the surf product consumer, the level of environmental consciousness the surf retailer/manufacturer has and attitudes to the industry as a whole.

Individual Aims:

1. To provide a background to the surf industry by identifying the key environmental problems and to find the key companies and businesses in the UK setting standards for a more sustainable industry.
2. To research the UK surfer to find consumer attitudes towards the surf industry and gain insight into buying behaviours regarding eco-products and brands.
3. To find what industry (retailers and manufacturers) attitudes are to eco-surf products, alternative materials and manufacturing.
4. To evaluate and compare findings.

Objectives:

1. Research the surf industry using primary and secondary data collection.
2. Collect primary data by conducting a questionnaire on a sample of U.K surfers and retailers.
3. Collect primary data by interviewing manufacturers of surf products in the U.K.
4. Analyse findings using statistical tests.
5. Find and compare any trends there may be to each other and existing literature.

3.0: Background

As there is no previous study investigating the green consumer it is important to enlighten the reader of the surf industry.

3.1: Surf Now, Apocalypse Later

Long gone are the early days of surfing where in ancient Hawaii surfing was a deeply spiritual affair even having rituals surrounding building a surfboard. These surfboards were made using the Wili Wili, the Ula and the Koa trees.



In 1949, at the end of World War Two, many new materials had become available through advances in technology during the war. In surfing, Californian Bob Simmons first fully made use of fibreglass technology by wrapping it around a foam core, calling it the 'sandwich' (Kampion).

Urethane foam (surfboard core) is made using toluene diisocyanate (a poisonous and irritating liquid) and other polyether compounds while

fibreglass cloth is often treated with toxic chemicals such as chromium. Breathing fibreglass dust is not only unpleasant but dangerous, while polyester resins, comprised of dicarboxylic acids and dihydroxy alcohols, release volatile organic compounds (VOCs) to the atmosphere when they cure (Wade, 2006).



It is one of the great paradoxes of surfing; as despite surfing's image, there are few better examples of toxicity in practice than modern surfboard manufacture

The recent 'boom' in participation (introduction) is great for the progression of the sport but rather worrying when you consider the following statement:

'As surfers we get through around three quarters of a million boards a year. Currently only a tiny percentage of these are made from sustainable, biodegradable or even recyclable materials' (Hines, 2006).



Wetsuits were invented by Jack O'Neill (founder of O'Neill wetsuits) in the late 1940's/early 1950's after discovering neoprene when carpet fitting a DC-3 passenger plane. Today wetsuits, although changed a lot since the beginning are still mainly comprised of neoprene, a synthetic rubber produced also from petroleum products. Board shorts are often made of synthetically produced polyester and petroleum derived Nylon fabrics.

Even Surf wax, used for traction, is made from a toxic mix of paraffin, petroleum Jelly, microcrystalline wax, synthetic rubbers, glues and resins followed by some synthetic dyes and chemical scents (treehugger.com).



Surf clothing has taken off since the nineties, and as mentioned in the introduction is now estimated to be worth a staggering \$8 billion.

Everyone and anyone seems to be wearing some sort of surf derived clothing. So called 'surf' shops are springing up in the unlikeliest of places such as landlocked cities and airport departure lounge's.

It seems highly ironic that the bigger brands widely use conventionally farmed cotton when ultimately, they are helping to destroy what created them in the first place; the ocean.

Conventional cotton farming is one of agriculture's most environmentally destructive activities. More specifically, conventional cotton farming has been proven to put farmers in debt, reduce food stability due to lack of crop rotation, pollute the water table, reduce biodiversity and increases the risk of potential fatal pesticide poisoning of farmers and their families (loose-fit.co.uk).

Just to be made quite clear; a conventional cotton t-shirt uses about 150 grams of acutely toxic pesticides and insecticides; about the size of a cup of sugar (source: soilassociation.com, 2008).

"Let China sleep. For when China wakes, it will shake the world."

Napoleon Bonaparte (1769-1821)

Today China has awakened, currently going through an industrial revolution at a horrifyingly aggressive rate and is the World's 3rd largest consumer of coal and oil. Much of its energy producing methods and equipment are both inefficient and highly polluting. It is also the World's second-largest source of greenhouse gas (GHG) emissions (www.worldbank.org).

This, you may think, has nothing to do with the beautiful sport of surfing but with cheap labour and low environment restrictions many surf companies have jumped on the band wagon. Enrique Gill (2007) described it as an increasing trend for surf companies deciding to offshore the manufacturing process, shifting the burden of environmental damage to developing nations. The bigger brands have had an unhindered embrace of the free market often using "...sweat-shop labour in third world countries" (thesurferspath.com) to produce ubiquitous logo-covered merchandise with limited ethical/environmental consideration.

However, the big companies are starting to take note and are beginning to apparently 'green' up their act. A number of bigger companies are beginning to bring out environmentally-friendly lines of clothing; for example, Volcom, Quiksilver, Rip Curl and Billabong are just a few to note.

The question is: Are these companies just jumping on the band wagon and cashing in on the 'green' image?

This is what Tom Kay, founder of Finisterre, terms as the "green curtain effect". It is when a company/brand hides behind a few "green" products. This is discussed in greater depth further on in this chapter. The fact is these bigger brands *seem* to be doing exactly that on the majority of their products. It *seems* that they will go to any length to claim eco-friendly products. For example; in the current 'The Surfer's Path' (issue 65, March/April 2008), there is an advert placed by O'Neill marketing the 'thermo-neo hooded rash vest', this is then followed by a pitch;

"...it's eco-friendly too since you might be able to get by with just one petroleum manufactured wetsuit rather than both a 3/2 and a 4/3."

Do they generally mean this or are they trying to claim being 'green'?

An article titled 'What are the Surf Industry's True Colors?' (Berry, 2007) also highlights this 'green curtain' effect that some of the bigger companies are accused of and put's it into perspective. Josh Berry is the co-founder of Proplaya, an environmental conservation non-profit organization based in Chile. He was also recruited by the 'Save the Waves Coalition' to spearhead the organization's efforts in Chile.

The article is about "A surfing brand, one of the global industry's oldest and largest companies" (Berry, 2007) that was planning to run a contest in Chile in 2007 for its signature contest dubbed 'the search'.

The number one wave proposed for the contest is one in which Save the Waves Coalition "fear will be irrevocably polluted by the forestry industry." They were also concerned because of the area's remoteness, environmental fragility and complete lack of media exposure; a contest circus would put extreme stress on the wave and its locals.

When the company was informed and asked for financial support for local environmental activists to pay for transportation, printing expenses, lobbying, land conservation and erosion control at the point break in question they flatly refused. It resulted in the local mayor and various other people from the area refusing to allow the area for the contest site.

At the time (and still is) the company was promoting its' commitment to the environment causes and how it was delving into 'green' clothing.

(Source: greensurfing.blogspot.com, 2007).

3.2: Leading Activist Surf Companies

'...The person who wants to lead the orchestra must turn their back on the crowd...'

(James Cook)

Patagonia:

Patagonia (Ventura, California), is without doubt the industry leader when it comes to eco-friendly products. The company has been globally acknowledged and has won best Surf Apparel Company Green Wave Award 2006 & 2007, "Eco-Brand of the Year" at the Volvo Eco-Design during the ISPO trade show 2008 (ispo-sportsdesign.com, 2008)

Patagonia (formerly known as Chouinard Equipment) was founded in 1972 by Yvon Chouinard and the company's mission is to build the best product, cause no unnecessary harm, use business to inspire and implement solutions to the environmental crisis.

Since 1996, Patagonia has used only organically grown cotton in its clothing line, has used recycled materials in many of its polyester fleece garments beginning in 1993. In Autumn 2008, 74% of Patagonia's products contain an e-fibre (organic cotton, hemp, chlorine-free wool and recycled polyester) and 53% are recyclable, among which is the 1st recyclable waterproof nylon hard shell. In 2005 they launched the Common Threads Recycling Program, one of the world's first garment recycling programs.

The company also has a number of other schemes and initiatives such as the Environmental Grants Program and 1% For The Planet.

Source: Patagonia.com; surferspath.com

The Surfers Path:

Another highly influential driving force towards a more sustainable surf industry is The Surfers Path magazine TSP is the first and only truly "green" surf magazine. It's printed on 100-percent post-consumer recycled paper (processed without chlorine bleach) with non-GMO soy inks.

It was founded in 1997 by Alex Dick-Reed and is unique in that it is sold (and printed) in the USA and UK. It is different from your typical 'slash and burn' style surf magazine and offers its' readers a more mature surf publication. It addresses surf travel, surf science, contemporary issues as well as, of course, environmental issues in an insightful, tantalizingly beautiful style.

In 2006 The Surfers Path introduced its' Annual Green Wave Awards to acknowledge companies, businesses and organizations for excellence and achievement in promoting sustainability and environmental consciousness in the surfing world.



In the UK:

It seems like the UK is shining, and is starting to get a reputation for itself as a major contributor towards a greener surf industry.

Finisterre (Cornwall) was founded by Tom Kay in 2002, specializing in technical apparel for the cold water surfer was nominee for the TSP Green Wave Awards in 2006 and won the award in 2007.

The company work's with some of the worlds leading textile research centres, and the range is almost entirely made from recycled and/or from recyclable fabrics. Tom identifies designs, fabrics and manufacturers to achieve an ultimate product which will have as little environmental impact as possible and also participates in lectures, along with marketing manager Ernie Capbert, highlighting the need for ecological responsibility in commerce.

Since founding, they have always donated (first % of profit, now % of turnover) to grass roots style environmental activism. For Finisterre, this has been Surfers Against Sewage and the Marine Conservation Society.

Loose-Fit (North Devon) is UK's first carbon zero surf shop (planting in excess of 200 trees 2007 alone) and specialises in eco-surf products.



It was founded in 2003 and was the winner of best Surf Retailer Green Award 2007, and is set to represent the UK at the prestigious 2008 European Business Awards for the Environmental in Brussels. The company is a member of Patagonia's 1% For The Planet and also the Global Angels Foundation.

HomeBlown (Cornwall) was founded in 2003 and produced the world's first Biofoam surfboard blanks in which nearly 50% of the core ingredients are made from agriculturally derived products. Life cycle analysis of Biofoam indicates that its production results in 36% less global warming emissions and a 61% reduction in non-renewable energy use.

HomeBlown's effort has been acknowledged and is also a Green Wave Award winner 2007.

(Source: adapted from: Source: patagonia.com; surferspath.com, finisterre.com, objectiveone.com, loose-fit.co.uk, homeblown.co.uk)

Products Currently Available

Here are some examples of the type of products currently available to the green consumer:





4.0: Literature Review

This chapter will give insight into how topics such as environmentalism can go through phases of popularity within the public's eye. The green consumer is then identified by looking at previous study and literature in this area. It finishes by exploring the possible data collection techniques that could be employed for decent analysis.

4.1: Environmentalism- Is it just a Phase?

The green movement in surfing is in its infancy. Excluding Patagonia (founded 1972) the majority of leading green surf companies established themselves in the last decade (Surfers Path 1997, Finisterre 2002, HomeBlown 2003, Loose-Fit 2003, Green Wave Awards, 2006).

There is currently extensive media-led hype surrounding the environmental issues in surfing (countless magazine articles, Newspaper articles, Internet Forums and so on).

However the question is; is environmentalism in surfing just a phase or will it continue?

Downs (1972) prosaically analyzed cyclic interest in terms of attention to environmental issues in the 60's & 70's as well as economic issues in this period.

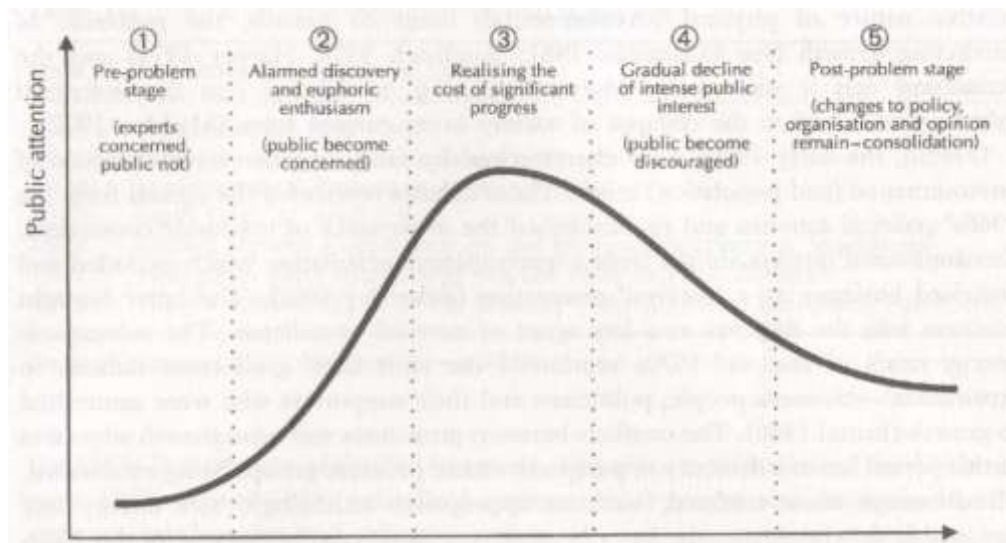


Fig 1: The 'issue-attention cycle'. Source: adapted from Downs (1972) by Eden (1996)

Figure 1 shows a graphical interpretation of what Downs (1972) coined as the 'issue-attention cycle'. Economic issues in this period (1960's and 1970's), and cyclic interest in terms of attention to environmental issues in this period has been analyzed prosaically by Downs. He stated that there were five stages to the issue-attention cycle. He postulated that environmental concern, like other media issues, would rise in public prominence as people increasingly identified a problem and called for action. Concern would then hit a plateau with the dawning realization of the costs for action (in terms of changes in legislation, and costs to businesses) before

descending again as people became discouraged by the government and companies due to these costs. Downs asserted that environmental issues would evade the final decline in his model (Downs (1971), Eden (1996)).

In regards to the history of the environment you can see aspects of Down's model supported. Shortly after the industrial revolution was the Pre-Problem stage, when the nature writers started to take note and inspire. Between 1900 and the 1950's could be considered the Alarmed discovery stage, and the 60's and early 70's the peak of public attention. After these periods, levels of interest could be seen to have fluctuated with various media campaigns, for example the 80's and CFC's destroying the ozone (UV and skin cancer), rain-forest degradation in the 90's and more currently the huge media hype surrounding global warming.

4.2: The Green Consumer

Green Consumer Behaviour

Green consumer behaviour raises a host of intriguing questions that cover a wide range of issues and that cut across many social science disciplines:

Does the green consumer have a distinctive socio-demographic profile? Is the occurrence of green consumer behaviour related to age, gender, income, political views, etc.?

What influence is exerted by peer groups and social networks to make a person in an environmentally friendly way?

Is green consumer behaviour an expression of a specific lifestyle choice?

How far is green consumer behaviour shaped by cultural climate in which it takes place? How far is green behaviour developing a cultural impact of its own?

(Source: Wagner, 1997)

These types of questions should be the basis of conducting research in this area. To gain an understanding of the green consumer, a researcher needs to find what drives them. The values, motives, desire and needs behind green consumer behaviour need to be found. What emotions and feelings are connected with 'green' shopping? What knowledge and understanding of environmental issues held by green consumers has to be found as well as the impact of media reports and pressure group campaigns have on 'public opinion' and on the occurrence of green consumer behaviour.

In answer to these questions after an extensive report by Euromonitor (1990) summarises the profile of the typical green consumer. The report showed that the green consumer is potentially an environmentalist, potentially an activist and relies on retailers to identify/label environmentally-friendly product. It also stated that the green consumer is everywhere. This means that people in general are potential green consumers but need it to be clear of what eco products actually are and how they benefit them, which is supported by Maslow's known hierarchy of needs (1953).

The report goes on to say that the green consumer is willing to pay the premium but "...demands high performance from the environmental product". So as long as the

product is good they will pay more for it. For example, if an 'eco'- surfboard performed as well as a conventional board, and is well documented as doing so, then the consumer will have no problem paying that bit extra for it.

It also summarizes that they read and learn about environmental concerns and action from newspapers and magazines. So you would expect a reader of *The Surfers Path* to be clued up on issues and products available and therefore expect them to be green consumers. Finally it summarizes that the green consumer is strongly influenced by packaging, has brand loyalty and must be constantly encouraged.

Although the report is outdated a number of the points ring true and are supported by a number of sources.

The experience of a brand is a series of interactions that, over time, can encourage brand loyalty. The consumer is buying something larger than the product or service: they are buying into the philosophy and the spirit behind the brand, which in a green consumers instance is to protect and reduce impact on the environment. This explains why the eco-surf 'activist' companies looked at previously (section 3.2) heavily promote their philosophies, initiatives and give clear, concise facts about what their products are and how buying their products benefit the environment. This in turn benefits the consumer's selves, their conscience and their needs which relates back to Maslow's Theory of Needs.

Basically there needs to be a clear understanding that the buyer responds to a number of variables that determines the degree to which firms satisfy needs in the market. This provides the basic opportunity for satisfying customer needs.

4.3 Transparency and the Green Consumer

Transparency is another key element to the green consumer and it is vital that green companies are completely see-through. This is supported by a point Finisterre could not stress enough about transparency at a recent university talk attended; there must be nothing hidden from the consumer otherwise they lose respect. This is what founder Tom Kay (2007) calls the "...*how, where and why*" of materials.

These statements of transparency are supported by an article from the Advertising Age (Owsley, 2007). The article presents advice to corporate marketing officers on how to make their brands acceptable to environmentally conscious consumers.

They found that the green customer is most skeptical of the marketing directed at his progressive sensitivities. If you're going to claim natural, organic or Earth-friendly, anytime you window-dress with the idyllic, you need to be acutely aware that you've given consumers the green light to pull back the marketing curtain and inspect the premises.

This is what Tom Kay (2007) referred to as the '*...green curtain effect*', that some bigger surf companies are accused of; trying to claim environmentally friendliness by marketing a few 'eco' products when in reality, behind this 'green curtain' the majority of the company is about as eco-friendly as a coal power station. They will find your authenticity shortcomings. So being prepared with answers to the tough questions or, even better, acknowledging where you have gaps between practice and aspiration, shows your consumers you're honest.

Genuine disclosure is a rare corporate communication and, as we've just learned, people are generally floored when they hear it. The flaw becomes minor because they have uncovered a business enterprise more concerned with improving the core than polishing the veneer. And that's much greater proof of the company's true integrity than any tagline or slogan could ever to be (Owsley, 2007)

This article is further supported by an article found by Shrum (1995).

The authors constructed a psychographic profile of the green consumer in terms of variables directly related to purchase behavior, such as price consciousness and general care in shopping, interest in new products, and brand loyalty.

The results show the green consumer to be an opinion leader and a careful shopper who views information on products and advertising, but also suggest that the green consumer is rather skeptical of advertising. The implications are that green consumers may be receptive to green marketing and advertising, but marketers should take care not to alienate them by using ambiguous or misleading messages.

This sends a very strong message to any potential companies wanting to move into the green consumer market and to the market as whole; you have to be transparent not just as an individual company but as representatives of the environmentally friendly surf industry.

This again demonstrates how crucial this underlying theme of transparency is to maximize potential. In fact the more you read you soon realize that starting an environmentally friendly company would be pointless unless you made every effort to 'green' the whole company head to toe as much as is economically and viably possible (adapted: Allen, 2007).

4.4 Previous Study on the Green Consumer

There is extremely limited study (if any) regarding the green surf consumer. Therefore studies regarding the green consumer in general must be investigated.

Has demand for green products failed to match expectation in the general market?

A 1990 survey carried out by Tesco found that about 50% of consumers said that they would pay extra for eco-friendlier products, however receipts showed that the total spent on green products was only 10% (Environment Committee, 1991). This suggests that people show a strong level of environment consciousness but do not put their money where their mouths are.

This is supported by a 1993 report by Yankelovich Partners of Westport who pointed out that only 10% of US buyers could be characterized as 'evergreen'-people committed to purchasing 'green' products. All other buyers demonstrated 'a basic willingness to translate whatever [environmental] concerns they do possess into concrete action' (Green Market Alert, 1993). Similarly, a 1996 survey by Environmental Research Associates found that only 10% of adults report that they look for environmentally information on labels.

However these are old surveys, and as we saw in the section 3.1, trends of interest change. Morris (2007) pointed that over the course of the past decade a significant

niche has emerged for green products. This is supported by the fact that it was the same time that companies such as Finisterre and Loose-Fit were founded and seem to be positively thriving.

It is also important to look at studies into the demographics of the green consumer to find who the green consumer is. For example, a recent poll by J. Walter Thompson found that persons classified as most green tended to be "better educated older females with high incomes and liberal orientation, " whereas those least green tended to be "younger, apolitical, less well-educated males" (Levin, 1990).

Age has been explored by a number of researchers (e.g. Anderson et al., 1974; Kinnear *et al.*, 1974; McEvoy, 1972; Murphy et al., 1997; Roberts, 1996; Samdahl and Robertson, 1989; Zimmer et al., 1994). The general belief is that younger individuals are likely to be more sensitive to environmental issues.

There are various theories offered as to why this is the case, however the most common belief is that people who have grown up in a time where environmental concerns have been a salient issue at some level, are more likely to be sensitive to these issues.

There has also been conflicting findings to this theory. Some research has found non-significant relationships (Kinnear *et al.*, 1974; McEvoy, 1972). Others have found the relationship to be significant and negatively correlated with environmental sensitivity and/or behaviour as predicted (e.g. Anderson *et al.*, 1974; Zimmer *et al.*, 1994). Still others have found the relationship to be significant, but *positively* correlated (e.g. Roberts, 1996 Samdahl and Robertson, 1989). Explanations for this positive correlation include attitudes formed as a result of "depression-era" conservation (Roberts, 1996; Samdahl and Robertson, 1989) and/or behaviours stemming from a general increase in social and charitable activities among the middle aged (Roberts, 1996).

Gender and the green consumer is another demographic that has been extensively researched (e.g. McEvoy, 1972; Roper, 1990; Samdahl and Robertson, 1989).

Most researchers argue that women are more likely than men to hold attitudes consistent with the green movement. Theoretical justification for this comes from Eagly (1987), who holds that women will, as a result of social development and sex role differences, more carefully consider the impact of their actions on others.

As is the case with age-based green research, the results of gender-based investigations are still far from conclusive. Several studies have found the relationship not to be significant (Samdahl and Robertson, 1989). Others have found support for the theoretical justification given (e.g. Roper, 1990) and a 1996 a study investigated the proportion of US consumers looking for environmental information on labels. They found that only 6% of men specifically looked for environmental information as opposed to 12% of women. This suggests that women more conscious about such issues (Euromonitor, 1996).

Still others have found the opposite of the predicted relationship (McEvoy, 1972) and Mostafa (2007) who conducted a large study across Egypt. He found that women appeared to be less aware of environmental issues compared with men. Men showed more environmental concern and more positive outlook towards green

purchase compared with women. However this study was conducted in Egypt and may not apply to the west.

Income is generally thought to be related to environmental sensitivity. The most common belief is that higher income earners can afford the slightly increased costs of buying eco-friendly.

Several studies have shown this relationship between higher income and increased sensitivity (e.g. Kinnear *et al.*, 1974; McEvoy, 1972; Roper, 1990; Zimmer *et al.*, 1994). A study by Samdahl and Robertson (1989) found the opposite.

Other studies have shown a non-significant direct effect of income on environmental awareness (e.g. Anderson *et al.*, 1974; Antil, 1978).

Studies examining education and environmental issues have been found to be more consistent than previous demographic variables discussed.

A definitive relationship between the two variables has not been established, however, the majority of these studies have found that those who are more educated show more environmental sensitivity (Anderson *et al.*, 1974; McEvoy, 1972; Murphy *et al.*, 1978; Roper, 1990; Van Liere and Dunlap, 1981; Zimmer *et al.*, 1994). Samdahl and Robertson (1989) found the opposite, that education was negatively correlated with environmental attitudes, and Kinnear *et al.* (1974) found no significant relationship.

4.5 Questionnaire Techniques

Meticulous and careful planning should be undertaken when designing a questionnaire.

For data collection, postal/e-mail, self administrated or group administrated questionnaires could be used (Fink & Kosecoff, 1985).

The main advantages of postal/e-mail questionnaires are that data collection and processing are both low cost There is also avoidance of interview bias and the ability to reach respondents who live at widely dispersed addresses or abroad which would be good for this project to compare various surfing nations.

The main disadvantages of postal/e-mail questionnaires are generally low response rates and constant biases (Oppenheim, 1999)

Self administrated questionnaires are to be presented by an interviewer, the purpose of the enquiry explained and then the respondent is left alone to complete. This ensures a high response rate, accurate sampling and a minimum of interview bias, while permitting explanation and assistance.

As stated earlier the method of approaching the respondents is of paramount importance to increase response rates. Advanced warning via letter or e-mail to invite participation and explaining the method of sampling used (how the respondent came to be chosen) are such methods of increasing participation. Publicising works well, as does giving an incentive. For example, in this projects case a free bar of eco-wax for every 20th respondent.

(adapted: sourced: Oppenheim, 1999. Questionnaire Design, Interviewing and Attitude Measurement).

For most types of questions they will either be 'open' or 'closed'. A closed question is one in which respondents are offered choice of alternative replies. Questionnaires of this kind may offer simple alternatives such as 'Yes' and 'No' or more complex such as a scale.

Open questions are not followed by any choice, and the answers have to be recorded in full. The amount of space provided will determine the length of answer. The chief advantage of the open question is the freedom it gives respondents.

Having a selection of both open and closed questions allows for a wider scope of answers. The disadvantage of open questions is that they are harder to interpret and compare (Fink, 1995). 'Have you considered buying eco-surf products? Why/why not?' This is an example of an open question, which allows the participant to respond with their own interpretation. An example of a closed question in a survey is; 'on a scale of 1-4, please rate your self as being eco-friendly. With closed questions it allows the response to be known in advance. Closed questions produce standardised data that can be analyzed statistically (Fink, 1995).

Another point to mention is that it is highly recommended to carry out a pilot study. A pilot study is like a dress rehearsal for the main study.

Pilot studies use a small number of people and allow the researcher to see if the instructions given to the participants are understood and to make sure all aspects work as intended. If problems occur, then the researcher returns to the design of the questionnaire to fix the troublesome aspects (Wright, 1997).

4.6 Sampling

A sample is obtaining information from a portion of a larger group; known as a population (De Vaus, 1996: Fink, 1995). There are two main types of sampling; probability and non-probability. Probability sampling is when each person in the population has an equal chance of being selected (De Vaus, 1996), while non-probability sampling does not guarantee that all eligible persons have an equal chance of being included in the sample (Fink, 1995).

For probability sampling, there are four main ways in which to take a sample; which one is portrayed depends on the essence of the problem (De Vaus, 1996). The four sampling techniques are; Simple random sampling, Systematic sampling, Stratified sampling and Cluster sampling (De Vaus, 1996: Fink, 1995; Fink & Kosecoff, 1985).

Sample Size

The sample size is the number of people in which need to be surveyed (Fink, 1996). The amount of people which is decided needs to be enough to get accurate and reliable results. The bigger the sample is the more expensive it is (Fink & Kosecoff, 1985); however there will be a greater accuracy.

4.7 Analysis Techniques

The aim of social science is to understand the way in which people think and behave. Statistical procedures play an integral part in determining what, if any, patterns there are in the data and if the data supports or discredits any theories under investigation (Wright, 1997).

“SPSS is probably the most widely used suite of programs for statistical analysis in the social sciences- the Statistical Package for the Social Sciences (SPSS).” (Bryman & Cramer, 1999).

SPSS enables quantitative data to be scored and analysed efficiently and in a variety of ways.

Information is in-putted into a data file using a coding system. Coding assigns a number value to a question answer, for example; a closed question with a provided answer such as yes or no, it is possible to assign 1 as yes and 2 as no. This is useful for bivariate analysis, which concentrates on examining the relationship between two variables.

Each item that an answer is recorded to is a variable. Variables can be sub-divided into two types; independent and dependent. An independent variable denotes a variable that has an impact on the dependent variable, i.e. the cause of the dependent variable. For example, smoking cigarettes.

A dependent variable is deemed to be an effect of the independent variable, for example, lung cancer.

These variables can be cross-tabulated, usually a table of frequencies of two or more categorical variables taken together. These cross-tabulations can then be used to display relationships between the variables in analysis, graphically represented in a bar graph, pie-chart or histogram.

Any found relationships can be tested using Chi-square analysis. Chi-square tests the correspondence between a hypothesised distribution of frequency and an observed distribution of frequency counts.

The expected value/count is the number that would appear if the two variables were independent of each other. The observed value/count is the frequency results that are actually obtained when conducting an analysis.

Chi- square tests these observed and expected counts and finds the statistical probability using a significance of $p < 0.05$. This is the most widely accepted value by which researchers accept as a result as statistically significant. It means there is less than 5% chance that the given outcome could have occurred.

Finally, for results that can not be cross-tabulated SPSS can test the mean, median, mode and standard deviation.

(Source: adapted from: Brunt, 2005; Bryman & Cramer, 1999).

5.0 Methodology

Two self-administrated questionnaires and an interview were designed. The first questionnaire was aimed at the general UK surfing population to gain insight and understanding of general attitudes. The second was for surf retailers and the interview was aimed at manufacturers.

5.1 Questionnaire 1- Surfer's Attitudes

Questionnaire Design

Pilot Study

A pilot study was conducted involving 20 participants to check the questions were understood and to assess suitability for this investigation. Please see appendix 1 a, for a copy of this pilot study. When inputting the data into SPSS it was soon realised that not all of the questions were needed and that some of the data was going to be awkward and the questions had to be changed/re-coded.

Revised Questionnaire

Please see appendix 1 b, for a copy of revised Questionnaire 1- Surfers Attitudes.

The questions can be divided into four categories; sample information, environmental consciousness/activism, desired product properties and industry environmental ratings.

Questions 1, 2, 3, 11, 12 and 13 are designed to be used to summarize the sample of participants, so there is a clear idea of who the sample represents. They are also the independent variables to be used for cross-tabulation in the analysis.

Questions 4 and 5 are designed to find out the level of environmental consciousness the participant has (how environmental they see themselves as a surfer) and question 6 is to find their level of activism (have they actually bought an eco-surf product).

Question 6 is to find out what aspects of product properties are most important to them. These are to be compared with answers from Questionnaire 2 (retailers) and the manufacturer interviews to see if currently available eco-products can match these aspects.

Questions 9 is designed to find out if participants see there being enough eco-products (niche or not niche?)

Question 7 and 10 are designed for determining whether transparency is a key factor to the consumer. For example, if a participant ticks all fives then it suggests that they think a conscious company must address all these factors to be truly respected within the green consumer's eye. Also, question 10 is aimed to find whether big companies are doing enough to promote sustainability (green curtain effect or not?).

Target Sample and Data Collection Technique

I approached anyone who was wearing surf clothing or appeared to be a surfer (self administered/primary research). Participants were politely asked if they would not mind completing a questionnaire, briefed as to what the research was in aid of, were told to ask if they were unsure of anything and then left to fill in the questionnaire. It was made quite clear that they could withdraw at anytime with no hard feelings. In all not one person said no and the whole process was fun.

As stated earlier this was aimed at gaining the attitudes of the general surfing population. To achieve this; time, location and type of approach were carefully considered. In total **125 surfers** filled in the questionnaire carried out on three specific occasions:

Data Collection 1:

Date: Saturday January 19th 2008.

Location: Beaches/streets of Perranporth, Newquay, Watergate Bay and Constantine, West Cornwall (see figure 2). These are regarded as the hub of the British surf scene.



Fig.2: Map showing locations of data collection in Cornwall.



Fig. 3: Perranporth.



Fig.4 Fistral, Newquay.



Fig.5: Watergate Bay.



Fig.6: Constantine Bay.

Conditions: 5 ft at 12 seconds on the buoys, 12 MPH North-Easterly wind according (magicseaweed.com) (windguru.com). A good Cornish winter weekend, clean three foot peaks, good power and a good range of surfers from novices to expert.

Data Collection 2

Location: University of Plymouth and University College Plymouth St Mark & St John (Marjon).

Date: Over the month of January.

Further Comments: Questionnaires handed out to student surfers.

Data Collection 3

Location: Fistral Beach, Newquay.

Date: Sunday 2nd March 2008.

Further Comments: This was finals day of the BUSA (British Universities Sports Association) Surfing Championships held at Fistral. The participants represented various surfers from around the UK.

5.2 Questionnaire 2- Retail Attitudes

Questionnaire Design

Please see appendix 1 c, for a copy of Questionnaire 2.

A pilot study was not carried out for this questionnaire as it would not have been appropriate as there was only a small sample, the businesses were often stuck for time and time was a limiting factor for the project itself.

The questionnaire was designed to gain both quantitative and qualitative data and to be quick and simple to increase response as it was understood that the retailers may not have much time.

Target Sample and Data Collection Technique

Smartly dressed (not too smart as to intimidate), surf shops and retailers were approached at random during the mid week. This was to increase response as during the weekend it would have quite possibly been too busy.

Wherever possible the owner or manager was targeted to complete the questionnaire as they tend to have a better understanding of the industry.

This questionnaire targeted non-specific retailers to represent general attitudes. A total of 20 businesses were questioned:

Air Jam (Newquay), Animal (Plymouth), Atlantic Action (Braunton), Billabong Flagship Store UK (Plymouth), Boardwalk (Newquay), Earth, Wind & Water (Jersey), Emoceani (Newquay), Freedom (Newquay), Gul International (Newquay), Hunter Boardwear (Braunton), Newquay Surf Centre (Newquay), North Shore (Newquay), Ocean Magic (Newquay), Overhead Surf (Newquay), Quiksilver Flagship Store UK (Newquay), Seabase (Newquay), Smile Surf Shop (Newquay), South Coast Surf (A39 road outside Plymouth), Surfed Out (Braunton), Surfing Life (Plymouth).

Data Collection 1

Location: High streets of Newquay, West Cornwall.

Location: Braunton, North Devon

Location: Plymouth, South Devon

5.3 Interview- Industry Attitudes.

General Approach

Initially it was planned to e-mail the questionnaires but it was found the return rate was very low. The questionnaire was then taken direct to the manufacturer's door, however this proved to be very costly in terms of vital limited resources; time and money.

In total only six manufacturers were approached. Due to this the questionnaire took on a more interview styled technique. For a copy of the original please see appendix 1 d.

The data was insufficient to make accurate assumptions from or effective statistical analysis. The data is suitable to be used in the conclusion however.

Analysis Method

SPSS software has been used to file and analyze data.

The questions and results had to be coded using a scheme specific to this investigation. For a copy of the surfers and retail questionnaires coding schemes please see appendix 1e.

Mean, mode, median and standard deviation has been used to statistically analyze the results.

Cross-tabulation was carried out between specific hypothesised independent and dependent variables. Some data had to be re-coded to collapse data categories to enable a valid Chi-square and highlight trends where appropriate.

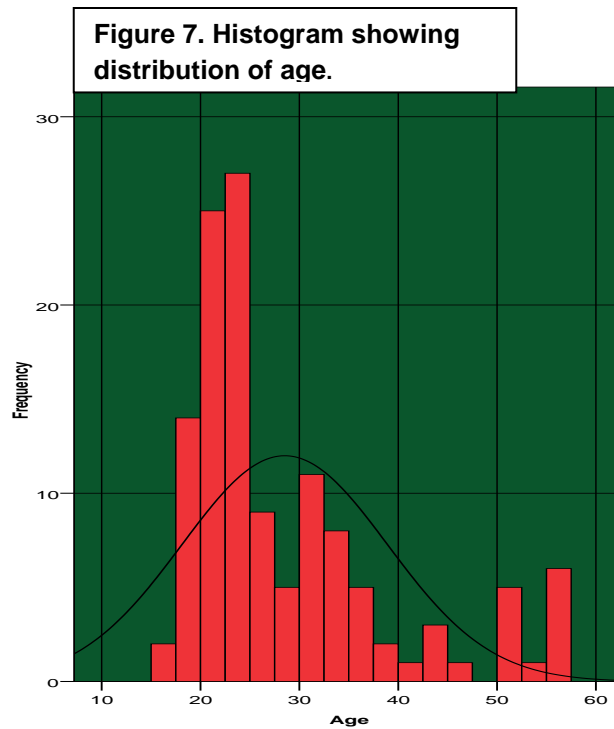
For these cross-tabulations, Chi-square was used to find the significance level of any relationships that may have occurred.

The results have been analysed and displayed in the form of histogram, bar charts, frequency tables, cross-tabulations and been subjected to further statistical tests.

6.0: Results

6.1 Questionnaire 1: Surfers Results

6.1 a) Summary of Sample



52.8% respondents were in their 20's, 20.8% in their 30's, 12.8% under 20, 9.6% in their 50's and 4% were in their 40's.

Appendix 2 a shows some statistics for the age sample. The mean age was 28.52, the median age was 23 and the mode was 23. The oldest participant was 57, the youngest was 16 and the range spanned 41 years.

To summarize, the opinions most represented were from people in their late twenties.

Other features of the survey:-

- 48.8% male, 51.2% female.
- 54.3% students, 45.6% non-students.
- 71.2% surf year round, 24.8% summer only, 4% did not surf.
- 45% rode a longboard, 32% rode shortboards (77.5%); the rest rode retro, mini-mal & longboard.
- 34.64% read TSP, 41.44% read Carve or Wavelength.

6.1 b) Summary of Most Important Product Aspect Results:

- Price: 52.1 % scored very important or essential, with a mode score of very important and a mean between 'average' and 'very important'. Standard deviation was 1.288 so varied results.
- Brand logo: majority score of average (43.20%) with a mean score towards 'minimal' importance. St. deviation= 1.095. Varied response.
- Durability: 81.6% rated very important or essential. Deviation of 0.875= strong trend. Both mean & mode was 'very important'.
- Performance: 81.6% rated very important or essential. Deviation of 0.884= strong trend. Both mean & mode was 'very important'.
- Styling: 75.2% rated very important or essential. Deviation of 0.714= strong trend. Both mean & mode was 'very important'.

6.1 c) Summary of Most Important Eco-Product Aspect Results:

- Recyclable, organic, non-toxic, fair-trade materials & low-impact manufacturing all showed highly consistent results with the majority in all cases rating 'very important' to 'essential'.
- Recyclable & Non-toxic had the highest means, suggesting these valued as being slightly more important by the UK surfer.

6.1 d) Summary of Green Surf Product Buyer Behaviour:

- 68.8% had not bought eco-products compared to 31.2 % that had.
- Vast majority (93.6%) thought that there are not enough eco-products on the market.
- Vast majority (96.8%) thought bigger brands did not do enough.

6.1 e) Cross Tabulations Questions 8, 9 & 10.

In this section the data has been re-coded and sorted into independent variables (Q's 2, 11, 12 & 13) and dependent variables (Q's 4, 5, & 8). The data for these variables has been cross-tabulated, subjected to a Chi-square test and trends then expressed in a bar chart.

Independent Variables:

- Q.2. What board do you ride?
- Q11. Age?
- Q12. Sex?
- Q13. Profession?

Dependent Variables:

Q4. How would you score yourself as being environmentally friendly?

Q5. Surfing is a beautiful yet highly toxic sport. As surfers we have a huge carbon footprint; we drive to the beach, fly to exotic destinations, ride polyurethane boards, wear neoprene wetsuits and use petro-chemical derived wax, all highly toxic. How much does this concern you in general?

Q.8 Have you ever bought sustainable/ eco-surf products, please specify?

Board Ridden and Environmentally Friendly Ratings

Fig 8. Bar chart showing percentage scores of board ridden environmentally vs. friendly ratings. (short/long).

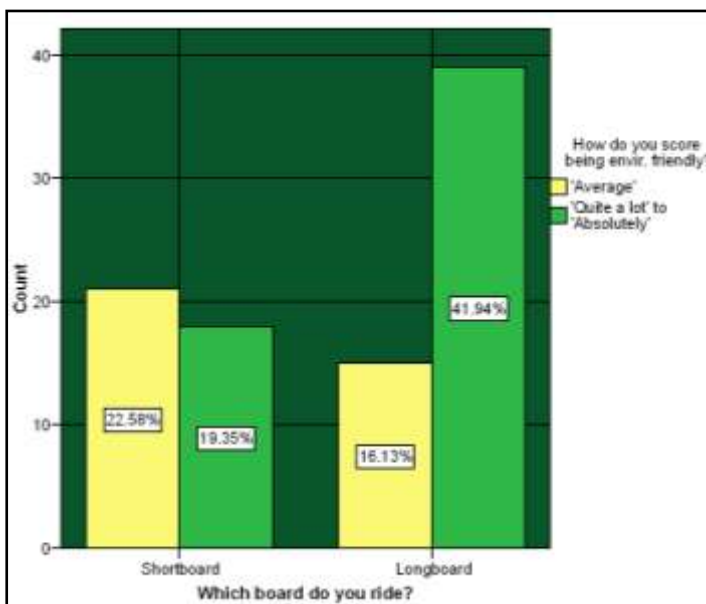


Table 1. Significance results of *shortboard/longboard (independent variable) and environmentally friendly scores (dependent variable).*

Statement	Chi-square	Degrees of Freedom	Probability	Significance of result	Accept or reject hypothesis
how much would you spend travelling	6.486	1	95%	significant	Accept

The hypothesis can be accepted that there is a 95% probability that there is a relationship between the type of board the participants rode (short/long board) and how they scored on being environmentally friendly.

The association is made clear in Figure 8, where a significantly greater amount of long-boarders rated themselves as 'quite a lot/absolutely' than 'average' compared to the short-boarders where more rated themselves as 'average' eco-friendly than 'quite a lot/absolutely'.

When looking at the cross-tabulation frequency table (appendix 2 e) it is also made clear as the shortboarders expected count for rating 'average' was 15.1 but the actual observed count was 21. The expected count for rating of 'quite a lot/absolutely' was 23.9 however the actual count was 18.

For the longboarders the expected count for rating 'average' was 20.9 but the observed count was 15, the expected count for rating 'quite a lot/absolutely' was 33.1, however the observed count was 39.

More shortboarders than expected rated themselves 'average' and less than expected rated 'quite a lot/absolutely'. More longboarders than expected rated 'quite a lot/absolutely' and less than expected rated 'average'.

From this it can be confidently said that long-boarders considered themselves more environmentally-friendly than short-boarders.

Further findings:

There is an inclination of shortboarders being less concerned about the toxicity statement, as 4.3% rated themselves 'not at all/ a little' compared to none of the longboarders. This is especially worth considering when the sample contains more longboarders.

This is further supported when looking at the cross-tabulation frequency table (appendix 2 e) which shows that the expected count for shortboarders to rate themselves as 'not at all/a little' was 1.7 but the actual observed count was 4.

It is important to note that the pre-recoded bar chart (see appendix 2 e) showed that the only board category to have bought more eco-surf products than not was retro. Bodyboard and mini-mal riders were the only categories to have not bought eco-products at all. However there are not enough participants in these categories to make accurate assumptions and carry out a Chi-square test. However there is no statistical test to prove these relationships.

Favourite Surf Magazine and Concern to Toxicity Statement Scores

Fig 9. Bar chart showing percentage scores of magazine read vs levels of concern to toxicity statement.

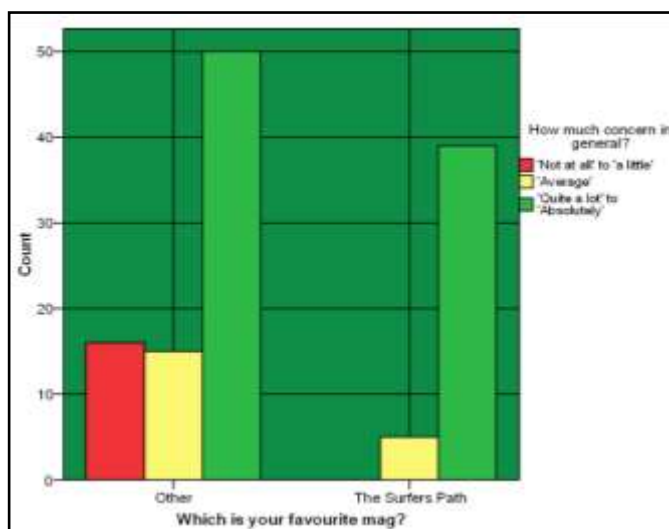


Table 2. Significance results of *magazine read (independent variable) and levels of concern to toxicity statement scores (dependent variable).*

Statement	Chi-square	Degrees of Freedom	Probability	Significance of result	Accept or reject hypothesis
how much would you spend travelling	12.503	2	99%	significant	Accept

The Chi-square test found that there is a 99% probability of relationship as the p value is less than 0.01.

Looking at the expected and observed frequency's it is clear that The Surfers Path readers were more concerned than expected and less likely than expected to rate negatively (expected count=31.3, observed count=89). The other surf magazine readers were less likely to be concerned than expected and more likely to be less concerned than expected. Therefore TSP readers show more concern than other magazine readers.

This is not represented clearly in the bar chart as there is a fairly significant larger amount of participants who read other magazines.

Favourite Surf Magazine and Eco-Surf Product Purchasing Behaviour

Fig 10. Bar chart showing percentage scores of magazine read vs. eco-product purchasing.

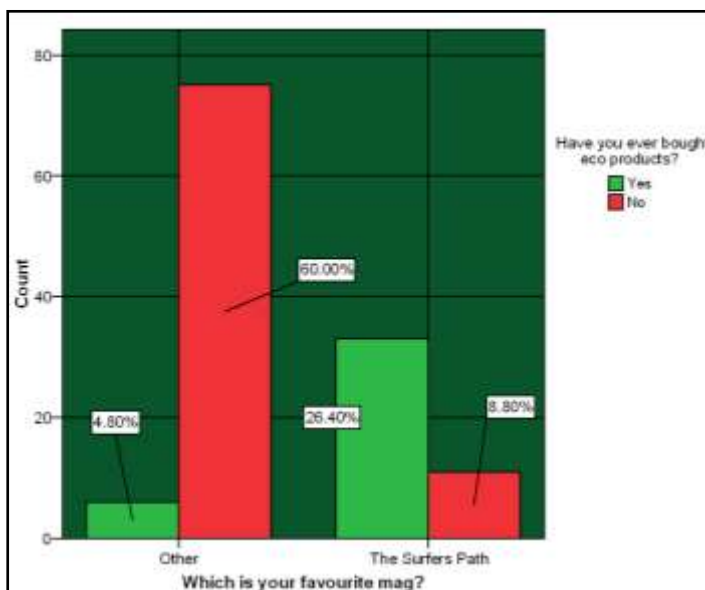


Table 3. Significance results of *magazine read (independent variable) and eco-surf product purchasing behaviour (dependent variable).*

Statement	Chi-square	Degrees of Freedom	Probability	Significance of result	Accept or reject hypothesis
how much would you spend travelling	60.685	1	99%	significant	Accept

The Chi-square test showed very high significance in the results with a 99% chance of there being a relationship between the two variables.

The Surfers Path readers showed to be a significantly more active green consumer than people who read other magazines.

This is shown clearly in the bar chart and when looking at the observed and expected frequency tables. For other magazine readers, the expected count of having bought eco-products was 25.3, however the observed count was only six, and for saying no the expected was 55.7 however the observed was 75. In comparison, The Surfers Path readers expected count for buying eco-products was 13.7 however the observed was much higher of 33. In comparison, for not buying eco-products they showed an observed count of 11 but an expected count of 30.3.

Age Group and Concern Ratings for the Level of Toxicity

Fig 11. Bar chart showing percentage scores of environmentally friendly ratings vs. board ridden (short/long).

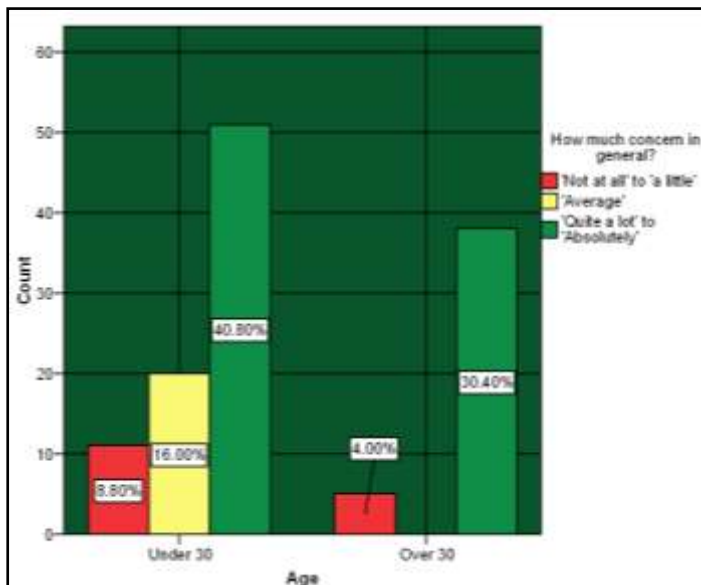


Table 4. Significance results of *age (independent variable) and concern levels to toxicity statement scores (dependent variable).*

Statement	Chi-square	Degrees of Freedom	Probability	Significance of result	Accept or reject hypothesis
how much would you spend travelling	13.273	2	99%	significant	Accept

A certainty of 99.99% can be accepted that there is an association between age and levels of concern, and a 0.01% probability that this result has arisen through chance.

When looking at the frequency table in (appendix 2 e), for under 30's the observed count (20) was much higher than expected (13.1) for rating 'average'. The observed count (51) for rating 'quite a lot/absolutely' was also lower than expected (58.4).

In contrast, the over 30's observed count was 0 for rating 'average' much lower than the expected of 6.9, however for rating 'quite a lot/absolutely' the expected count was 30.6 but the observed was 38.

This shows an association that over 30's were more likely to score themselves as 'quite a lot/absolutely' and less likely to score 'average' or 'not at all/a little'. The under 30's were more likely to score 'average' than 'not at all/a little' or 'quite a lot/absolutely'.

This strongly shows that the over 30's show more concern about the levels of toxicity statement compared to the under 30's.

Age group and Green Consumer Buying Behaviour

Fig 12. Bar chart showing percentage scores of age vs. eco-surf product purchasing.

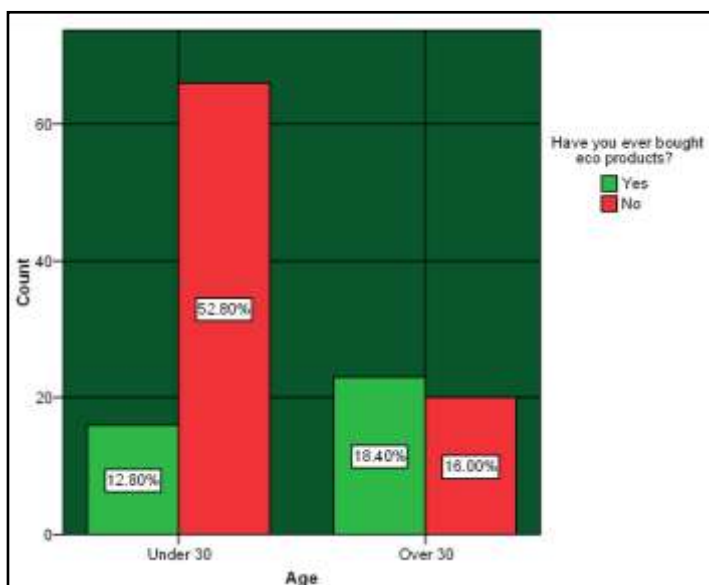


Table 5. Significance results of *age (independent variable) and eco-surf product purchasing behaviour (dependent variable).*

Statement	Chi-square	Degrees of Freedom	Probability	Significance of result	Accept or reject hypothesis
how much would you spend travelling	15.170	1	99%	significant	Accept

There is a 99% certainty that there is an association between the variables (age and purchasing of eco-products) and the null hypothesis can be rejected.

Due to the un-equal distribution, data has been re-coded to form two categories; under 30 and over 30. There is still an imbalance as only 34.4% of over 30's make up the sample compared to 65.6% who are under 30.

It is clear from the bar chart that the under 30's are not as environmentally active as there only 12.8% had bought eco-products compared to the 52.8% who had not. The over thirties however show that they tended to be more environmentally active as more participants had bought eco-products than not. It is worth noting that although there were significantly less over thirties than under thirties, the total of over thirties who had bought eco-products was more than the total of under thirties who had.

Sex and Green Consumer Buying Behaviour.

Fig 13. Bar chart showing percentage scores of sex vs. eco-product purchasing.

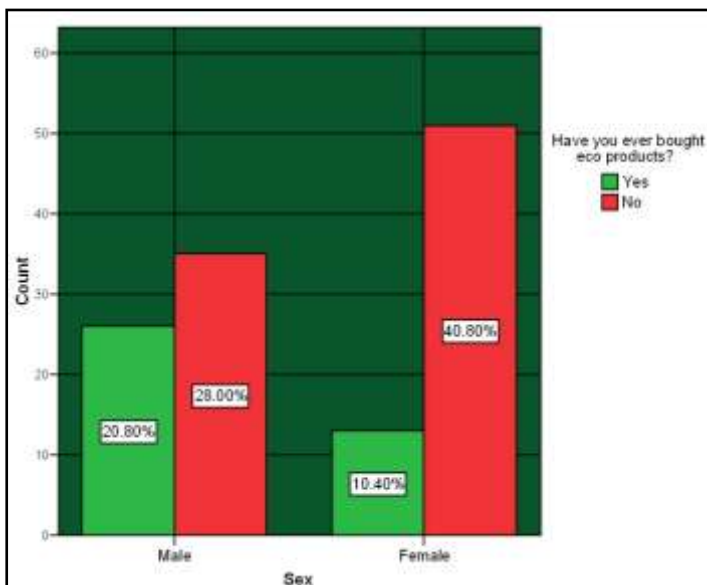


Table 6. Significance results of **sex (independent variable) and eco-surf product purchasing behaviour (dependent variable).**

<i>Statement</i>	<i>Chi-square</i>	<i>Degrees of Freedom</i>	<i>Probability</i>	<i>Significance of result</i>	<i>Accept or reject hypothesis</i>
how much would you spend travelling	7.242	1	99%	significant	Accept

The Chi-square test has shown there to be a very strong statistical association between gender and eco-surf product buying behaviour.

Here in the table the value of significance is less than 0.01, therefore null hypothesis can be rejected at the 99% level.

When looking at the bar chart it clearly shows that double the male participants (20.8%) had bought eco-surf products than females (10.4%).

When looking at the cross-tabulation frequency table in appendix 2 e, the association is made a lot clearer. The expected frequency for males buying eco-products is 19 however the observed frequency was 26, the expected frequency for the male respondents to have not bought eco-products is 42 however the observed frequency was 35. This shows that males were significantly more likely than expected to have bought eco-products than not.

In contrast, the female respondents observed frequency for buying eco-products was 13 and the expected count was 20. The observed frequency for females to have not bought eco-products was 51 whilst the expected is 44. This shows that females were significantly less likely to have bought eco-products than not.

These findings suggest that males were more environmentally active than the females.

Further Findings:

However, it is worth noting that in the cross-tabulation frequency table (appendix) more females (42) rated 'quite a lot/absolutely' than expected (37.4). In contrast, less males (31) rated themselves as being 'quite a lot/absolutely' than the expected count (35.6).

This suggests that females rate themselves as being more eco-friendly than males. This is also supported in the bar chart as you can clearly see that roughly half the males rated 'average' and half rated 'quite a lot/absolutely' compared to the big difference in the distribution of female answers for these two ratings.

However there is no statistical support.

Profession and Ratings of Concern for the Level of Toxicity Statement.

Fig 14. Bar chart showing percentage scores of student/non-student vs. levels of concern to toxicity statement.

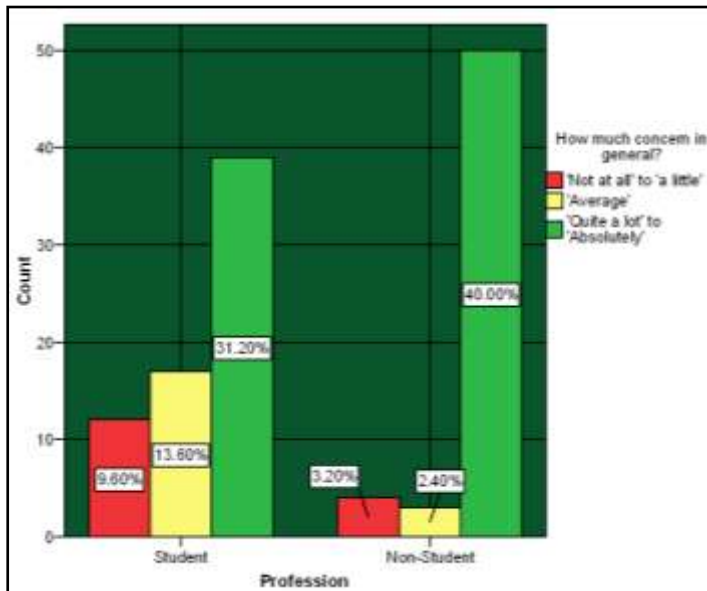


Table 7. Significance results of *student/non-student (independent variable) and concern levels to toxicity level scores (dependent variable).*

Statement	Chi-square	Degrees of Freedom	Probability	Significance of result	Accept or reject hypothesis
how much would you spend travelling	14.302	1	99%	significant	Accept

The Chi-square test has shown there to be a highly significant association between profession and ratings of concern.

The null hypothesis can be rejected at the 99% level.

This association can be found when looking at the cross-tabulation frequency table in appendix 2 e. The table shows that the observed count (12) for students rating their concern as ‘not at all/a little’ is more than the expected count (8.7). The same was found for students rating ‘average’ (observed count=17, expected count=10.9), however for the rating of ‘quite a lot/absolutely’ the observed frequency (39) was significantly lower than the expected count (48.4). This shows that students were more likely to rate themselves ‘not at all/a little’ and ‘average’ than expected and less likely to rate themselves as being ‘a lot/absolutely’ concerned than expected.

For non-students however the opposite was found. The table shows that the observed count (4) for non-students rating their concern as ‘not at all/a little’ is less than the expected count (7.3). The same was found for non-students rating ‘average’ (observed count=3, expected count=9.1), however for the rating of ‘quite a

lot/absolutely' the observed frequency (50) was significantly higher than the expected count (40.6). This shows that non-students were less likely to rate themselves 'not at all/a little' and 'average' than expected and significantly more likely to rate themselves as being 'a lot/absolutely' concerned than expected.

This can also be seen in the bar chart.

From this we can say with confidence that non-students showed a higher level of concern about the toxicity in the sport than students

Profession and Green Consumer Buying Behaviour

Fig 15. Bar chart showing percentage scores of students/non-student vs. eco-product purchasing.

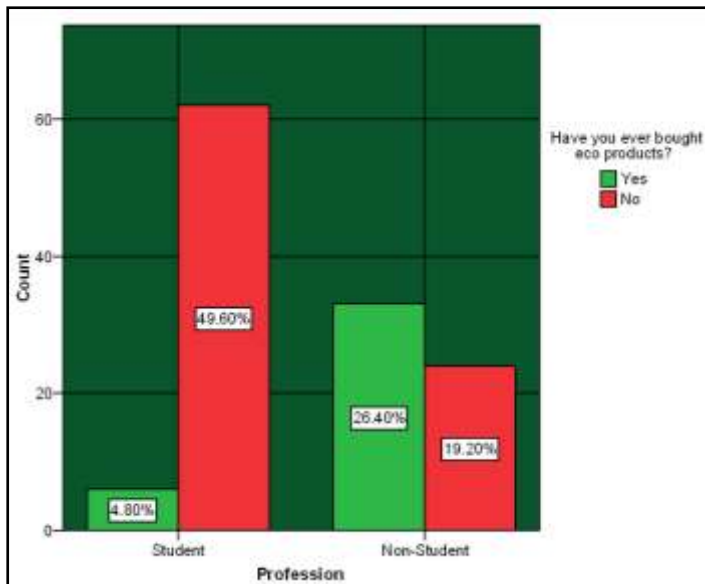


Table 8. Significance results of *student/non-student (independent variable) and environmentally friendly scores (dependent variable).*

Statement	Chi-square	Degrees of Freedom	Probability	Significance of result	Accept or reject hypothesis
how much would you spend travelling	34.784	1	99%	significant	Accept

There is a 99% certainty that there is an association between the variables (profession and purchasing of eco-products) and the null hypothesis can be rejected as there is a strong relationship.

From the bar chart this relationship is clear to see; more non-students had bought eco-products than not compared to the large difference in students who hadn't in comparison to those that had. It is also clear that non-student participants (26.4%) had significantly bought more eco-products than students (4.8%), which is especially

significant when you consider the sample contained more students than non-students.

This is further supported by looking at the cross-tabulation frequency table in the appendix. The table shows highly significantly that the observed frequency (6) of students who had bought eco-products was much less than the expected (21.2). In high contrast, the non-students observed frequency (33) of respondents who said yes was much greater than expected (17.8).

These are highly consistent results and strongly suggest that the non-student surfer is a lot more environmentally active than your general student surfer.

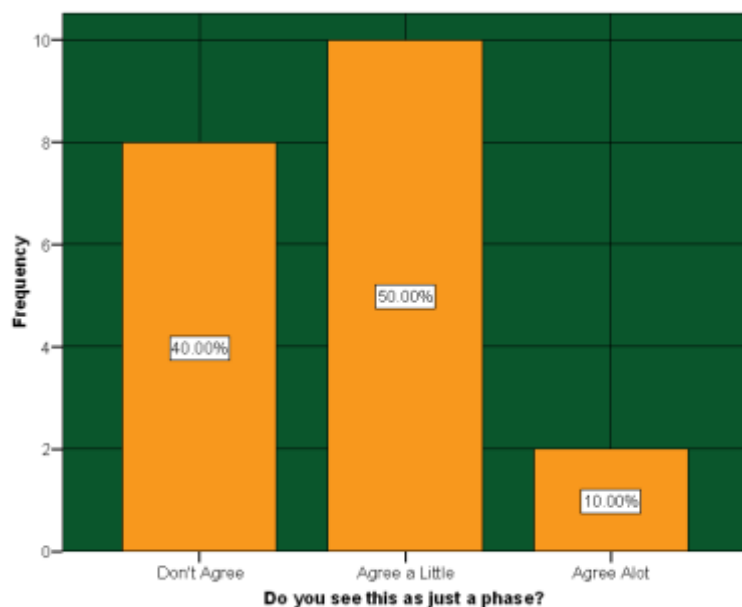
6.2 Questionnaire 2: Retailers Results

6.2 a) Key Findings:

- 20 surf retailers questioned.
- Half the retailers currently stock eco-surf products, half had not.
- Out of the 10 that had not stocked them, 70% of retailers had thought about it and 60 % were planning to in the future.
- 95 % thought there should be more eco-products on the market.
- 90% of retailers 'agreed a lot' or 'strongly' agreed that bigger brands did not do enough to promote sustainability within the industry.
- 80% agreed 'a lot' or 'strongly' that eco-products were out-priced by conventional products, with only 20% agreeing 'a little'. No retailers 'strongly disagreed'.
- 75% of retailers either agreed 'a lot' or 'strongly' with eco-products being out-performed by conventional products available. 25% only agreed 'a little' and none 'strongly' disagreed.

6.2 b) Opinions on the Future demand for Eco-Surf Products

Fig 16. Showing the percentage levels of agreement for eco-products being just a phase.



From figure 16 it is clear that the majority of 90% did 'not agree' or 'a little' that eco-products will remain just a phase. Only 10% agreed a lot and no retailer did 'not agree' at all.

Fig 17. Showing the percentage levels of agreement for eco-products remaining as a niche.

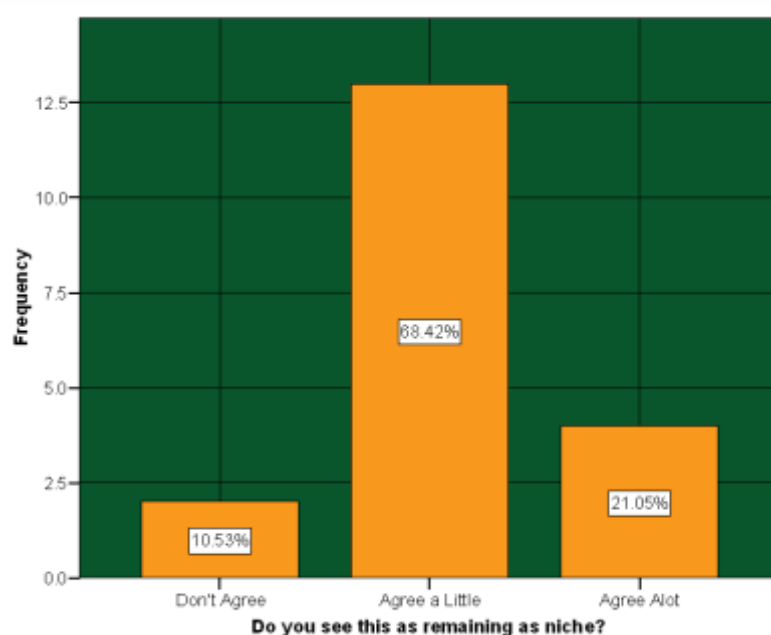


Figure 17 shows that 78.95 % of retailers did 'not agree' or 'agreed a little' that eco-products would remain as a niche. 21. 05 % agreed 'a lot' and no retailers strongly agreed.

Fig 18. Showing the percentage levels of agreement for an ever increasing demand of eco-products.

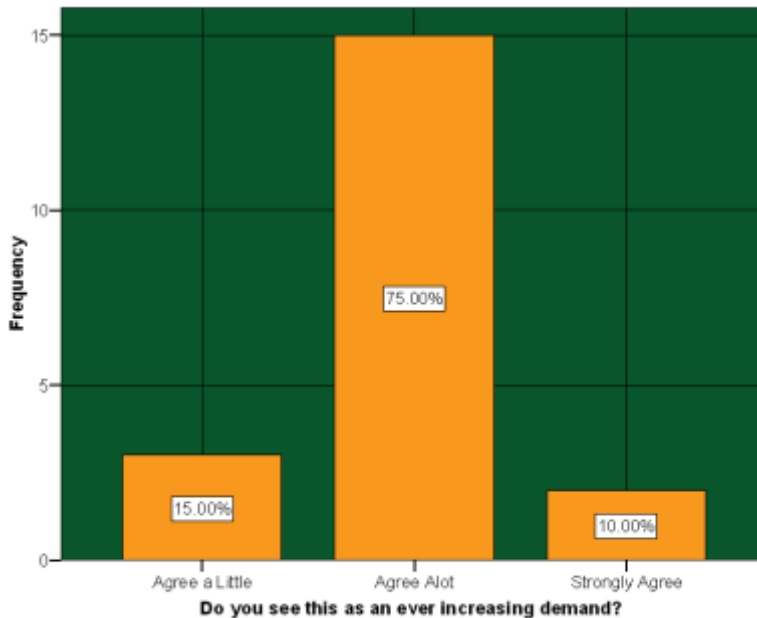


Figure 18 shows that 85% agreed 'a lot' or 'strongly' agreed that there was an ever increasing demand for eco-surf products. 15% 'agreed a little' and none 'strongly disagreed'.

Fig 19. Showing percentage levels of agreement for eco-products dominating the future market.

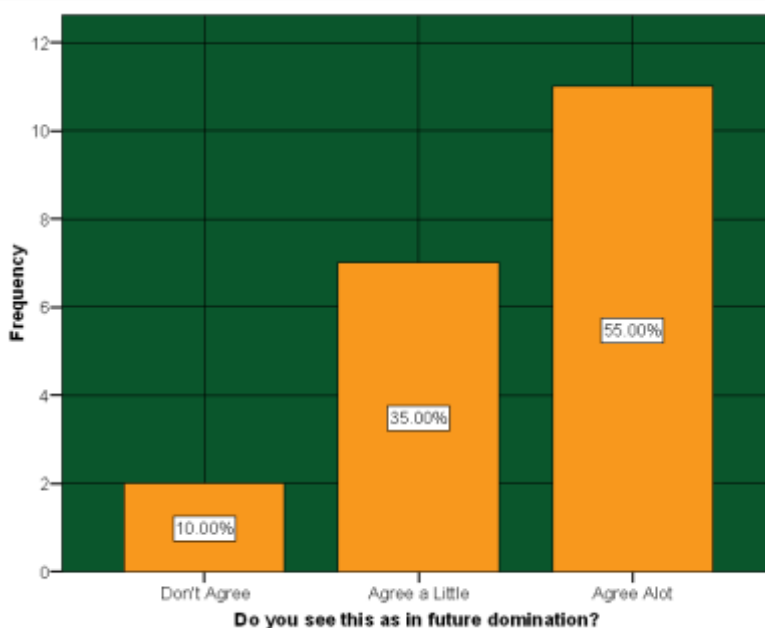


Figure 19 shows that the majority of retailer respondents (55%) 'agreed a lot' that eco-products will dominate the future market. However, it also shows that this question had the most varied results as 45% agreed 'a little' or 'did not agree at all'.

The answers were the least consistent for this question than any other in section 6.2 b, with the largest deviation of 0.69 indicating uncertainty.

Summary of 6.2 b:

From the retailers results there is a strong inclination that they see an increase in demand for eco-products in the future and that they are not just a phase. However, the sample is far too small to make accurate assumption.

7.0: Discussion

There was a lot of data gathered for this investigation, however only the key points are to be discussed.

Durability and performance showed to be the most important product aspects that the surfers questioned regarded most highly. The vast majorities of 81.6 % of respondents rated 'very important' or 'essential' for both durability and performance.

This comes as no surprise as surfing equipment is generally expensive, prone to breaking due to large stresses imposed by breaking waves. Not only this, durability and performance of a leash or surfboard is relied on in heavy situations in terms of safety. There is also an intrinsic relationship between a surfer and their equipment.

Price showed the most variance in results with the largest deviation out of the five aspects questioned (price, performance, durability, styling and brand/logo). This could be due to the fact that there was a very un-equal distribution of age within the sample (vast majority under 30) and that there was more students than none students. One could presume that generally, students and younger participants have lower incomes and cannot afford the extra price associated with eco-products.

Several studies have shown this relationship between higher income and increased sensitivity (e.g. Kinnear *et al.*, 1974; McEvoy, 1972; Roper, 1990; Zimmer *et al.*, 1994).

Recyclable, organic, non-toxic, fair-trade materials & low-impact manufacturing all showed highly consistent results with the majority in all cases rating 'very important' to 'essential'. This shows that these five aspects are *all* regarded high in importance within the surf consumer's eye as a requirement of an eco-surf product. This implies that an eco-company or a company wanting to be seen as green must address all of these aspects in some form to maintain transparency (see 4.3) and respect within the consumer's eye.

The majority of 68% of surfers had not bought eco-products compared to 31.2% that had.

It was statistically proven (95% chance) that longboarders rated themselves as being more environmentally friendly than shortboarders. There was also an inclination that longboarders were more concerned about the levels of toxicity statement than the shortboarders. However there is no statistical proof to back this up; a much larger sample would be needed to elaborate on this possible trend.

There is no supporting literature to justify this relationship, though reasons could be due to the fact that longboarders represent the more soulful side of surfing, and the fact that there are a lot more eco-longboards available on the market compared to shortboards. It could also be because of other factors, such as there being a larger number of older people who ride longboards (over thirties were found to be more concerned and more environmentally active as a consumer than the under thirties).

To further this, a cross-tabulation could be performed on age and board ridden.

There was also an inclination that retro were more environmentally active as they were the only board category that had all bought eco-products with no retro board

rider having not bought them. However, retro only made up a tiny portion of the sample. Again a much larger, equally distributed sample containing more retro board riders is needed to elaborate on this.

Some very significant results were found for the surf magazine read cross-tabulations.

There was a 99% chance that there was a relationship, with readers of *The Surfers Path* showing more concern for the levels of toxicity statement. There was also a 99% chance of a relationship between surf magazine read and eco-product purchasing. There was a clear difference, showing a highly substantial majority of TSP readers having bought eco-products than not compared to the opposite trend for other magazine readers. There is no previous study to support this, however when looking in section 4.4 (The Green Consumer) at the extensive report by Euromonitor (1990) which showed that the green consumer relies on retailers to identify/label environmentally-friendly product. It also summarizes that they read and learn about environmental concerns and action from newspapers and magazines. So you would expect a reader of *The Surfers Path* to be clued up on issues and products available and therefore expect them to be green consumers which is proved in this study.

For age and concern towards the level of toxicity statement there was a 99% chance of a relationship. It was found that the over 30's showed more concern than the under 30's. It was also found that there was a 99% probability of relationship between age and purchasing of eco-products. This was very clearly shown that only 12.8% of under 30's had bought eco-surf products compared to the 52.8% that had not. More over 30's had bought eco-surf products than not and more than the under 30's even though the under 30's made up a larger portion of the sample.

This goes against the most common belief that younger individuals are likely to be more sensitive to environmental issues. People who have grown up in a time where environmental concerns have been a salient issue at some level, and are more likely to be sensitive to these issues (e.g. Roberts, 1996b Samdahl and Robertson, 1989).

However as seen when reviewing previous studies, others have found the relationship to be significant and negatively correlated with environmental sensitivity and/or behaviour as predicted (e.g. Anderson *et al.*, 1974; Zimmer *et al.*, 1994). Roberts (1996) stated that younger people were more sensitive due to an increase in social and charitable activities among the middle aged. This could also be a reason why the older people in the sample were shown to be more concerned/active, not just applying to why younger people have shown as being more sensitive.

As stated earlier, it could be possible that over 30's are more likely to have a larger income as the majority of under 30's were students. There needs to be a larger sample, or a sample with more non-students under 30 to justify accuracy.

Gender and eco-surf product purchase behaviour showed to a 99% statistical probability of relationship. It was proven that males were more active green consumers as double had bought eco-surf products compared to the females. This is surprising as females showed to rate themselves as being more eco-friendly than the males, however there was no statistical support for this.

This goes against a recent poll by Thompson who found that persons classified as most green tended to be "better educated older females with high incomes and liberal orientation, " whereas those least green tended to be "younger, apolitical, less well-educated males" (Levin, 1990).

It is not supported by the fact most researchers argue that women are more likely than men to hold attitudes consistent with the green movement (e.g. Roper, 1990) and the 1996 by Euromonitor (1996) who found that only 6% of men specifically looked for environmental information as opposed to 12% of women. This suggests that women more conscious about such issues (Euromonitor, 1996).

The findings are however supported by (McEvoy, 1972) and Mostafa (2007) who conducted a large study across Egypt. He found that women appeared to be less aware of environmental issues compared with men. Men showed more environmental concern and a more positive outlook towards green purchase compared with women.

A 99% chance of relationship was found between students/non-students and levels of concern to the toxicity statement. Non-students showed a higher level of concern which goes against previous study reviewed. The majority of study has found that those who are more educated show more environmental sensitivity (Anderson *et al.*, 1974; McEvoy, 1972; Murphy *et al.*, 1978; Roper, 1990; Van Liere and Dunlap, 1981; Zimmer *et al.*, 1994). Samdahl and Robertson (1989) found the opposite, that education was negatively correlated with environmental attitudes which supports the findings. A 99% chance of a relationship was also found and very clearly shown that non-students were more active green surf consumers than students which again is not supported by the majority of findings. As stated before, this could be to do with non-students possibly having more money than students.

Out of the 20 surf retailers half had stocked eco-surf products, half had not. This at first appears surprising as the vast majority of both surfers (93.6%) and retailers (95%) thought there should be more eco-products on the market. However, when talking with the retailers it was clear that out of their entire stock they only sold 1 or 2 eco-surf products such as an organic t-shirt, or eco-wax, and some listed epoxy constructed surfboards as an eco-product (although less damaging than a conventional board, still not considered an eco-product).

As just previously mentioned; the vast majority of surfers and retailers thought that there should be more eco-surf products available on the market. When looking at the results from 6.2 b, there was a strong indication that there is an increasing demand for eco-surf products and that it is not just a phase.

When looking at Downs' (1972) 'issue-attention cycle' model (section 4.1), it can be said from this studies findings that the attention to eco-surf issues is somewhere after stage 2 (alarmed discover stage) but not as far as stage 3. Where it goes from here only the future will tell, will the bigger brands realise the costs of changing their entire businesses for this new demand and try to discourage the green movement?

In regards to the bigger brands and their new 'eco-friendly' lines and initiatives (3.0) it appears that their efforts have not been recognised by the surfers and retailers

questioned in this study. A highly significant 96.8% of surfers thought that bigger brands did not do enough to promote sustainability and again a highly significant 90% of retailers 'agreed a lot' or 'strongly' that the bigger companies should be doing more.

Maybe they have heard of the exploits Berry (2007) pointed out in section 3.0?

A classic example of what Tom Kay (Finisterre) termed "the green curtain effect" and other findings in 4.3.

8.0 Conclusion

The study has covered a wide area of topics associated with the environmental issues in surfing and the green consumer.

The high toxicity levels of the surf industry and other environmental issues were highlighted to give good background knowledge to the basis of research for a reader who may not be familiar with such issues.

The leading activist surf companies in the UK were briefly profiled as well as the global industry leader, Patagonia. It is apparent there is a growing movement within the surf industry, and the UK is right up there with the best of them. Even the bigger brands are starting to embrace this 'green' movement with new 'eco'-friendly lines. It is not clear if this is to increase profit (as they may be missing out on 'green' custom) however it is a step in the right direction. One thing is for sure, both the vast majority of surfer's and retailers questioned in this study did not think they do enough to promote and develop sustainability in the industry.

The 'green' movement in surfing is relatively new with the majority of activist companies forming in the last decade. The question is; is it just a phase or will it continue to flourish?

Results showed that the majority of UK surfers and retailers interviewed thought that there were not enough eco-products on the market, and when looking at the results the retailers gave it was clear they saw a strong future for the eco-product, that it wasn't just a phase and that that demand in the future is set to increase.

Demographics of the green consumer were thoroughly investigated with Chi-square statistical analysis conducted to establish probabilities of relationship. The marketing implications from such an investigation can put an eco-company at a serious advantage; enabling them to target and identify their main customers and even to 'tap' into new customer populations.

The key findings were that longboarders considered themselves to be more eco-friendly than shortboarders. The *Surfers Path* readers showed to be more concerned about the levels of toxicity within the industry and also to be more active green consumers than other magazine readers.

The other key findings were that the over 30's show more concern about the levels of toxicity than those under 30 and are also more active green consumers. Males were shown to be more active green consumers. Non-students showed a higher level of concern about the toxicity levels and to be more active green consumers than the student surfers interviewed.

The main limitations to this study were the sizes of the samples. The retail questionnaire was only administered to 20 surfers so it is impossible to make accurate assumptions. The surfer's questionnaire suffered from an un-equal distribution of age, with the majority in their twenties, and an un-equal distribution of students in the under 30 age category.

There are also limitations to technique such as a bias in the questionnaires; due to the participants knowing what the investigation was about and possibly filling in answers that they believe the interviewer desired.

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Appendices

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