

CLIENTS DRIVING INNOVATION INTERNATIONAL CONFERENCE

Practice Paper/Case Study

CLIENT DECISIONS AND E.S.D. - THE STORY SO FAR

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ABSTRACT

The following is a non-peer reviewed practice paper by a CRC-CI scholar. No new research has been conducted at this point. This paper, divided into two main sections, represents a brief summary of a wealth of available research into the environment in relation to construction and the intellectual side of client decision making. With this in mind it considers the type and benefit of the research to be conducted.

Keywords: residential industry, project homes, environment, ESD, psychology, marketing

1. INTRODUCTION

The author of this paper is a CRC – CI scholarship holder. No new research has yet been completed. This paper is written as a non-peer reviewed “practice paper” based on the literature review conducted thus far. It is set out as a summary of the primary points in the literature and a lead into the research to be conducted.

The research being undertaken considers factors influencing client purchasing decisions in relation to environmentally sustainable development. The actual new research component is likely to be narrowed down to focus on the residential sector of the construction industry and in particular the project home market. The influencing factors in this area are likely to be quite different between the investor-client and the owner occupier-client. It has not been determined at this point whether the research focus will need to be further narrowed to study only one of these two markets. While focussed towards the residential sector there will be numerous points that will have a level of validity for the industrial/commercial sector particularly those related to the investor-client.

2. THE INDUSTRY SIDE

2.1 CONSTRUCTION, THE ENVIRONMENT & ESD

Most people in industry probably have at least a basic awareness of the environment, the issues surrounding it and concepts like environmentally sustainable development (ESD). Even the general public have moved slowly towards an effort for sustainability. Australia has now reached a point where only 2% of households do not recycle or re-use waste in one form or another (Australian Bureau of Statistics ^a). A tiny step overall but a huge move from decades past.

2.1.1 Energy Consumption & Greenhouse Gases

Possibly one of the most widely recognised environmental issues is that of greenhouse gas emissions. In 1997-98 almost half of the total greenhouse gas emissions could be accounted for by the electricity supply industry. While the construction industry accounts for only about 1% of energy consumption by sector, residential energy consumption accounts for over 8% of total energy consumption (Australian Bureau of Statistics ^b). In addition to energy consumption alone, households are the third highest emitter of greenhouse gases with 13% of total emissions (Australian Bureau of Statistics ^c). These are the same households that continue to be designed and built by the construction industry today. Residential energy consumption per capita rose approximately 16% from 16.9GJ in 1973-1974 to 19.6 in 1993-1994 and is anticipated to rise a further 10% to 21.6GJ in 2009-2010. (ABS ^b)

2.1.2 Resource use - Timber in Australia

We have a positive rule in every factory and branch that each crate and box must be opened carefully without breaking the wood... All scrap wood eventually gets back to the wood salvage department. Henry Ford 1926

Driving through any new housing estate shows that the vast majority of new houses have footings and a ground floor of concrete. Nonetheless, the same drive will show that the vast majority of new houses still have timber wall frames, roof frames, floor frames and flooring where there is more than one storey. In 1999, almost 15% of Australian homes still used timber as the external cladding. This was most prevalent in Tasmania (32%) and Queensland (28%) (ABS ^b). While Australia is a net importer of timber and timber products (ABS ^c), all these timber building materials come in one form or another from forestry.

There are 164.4 million hectares of varying types of forest in Australia giving it the sixth largest area of forest in the world. This is made up of 117 million hectares of woodland, 43 million hectares of open forest and 5 million hectares of closed forest. (ABS ^c)

Australia is one of 12 'mega-diverse' countries, with ecosystems of exceptional variety and uniqueness. Clearing of native vegetation remains the single greatest threat to terrestrial biodiversity, particularly for forest ecosystems (ABS ^c). However, there is a restructure occurring in the forestry industry. Timber from native forest ecosystems is gradually being replaced by the expansion of hardwood and softwood plantation resources. At 1.5 million hectares plantations account for less than 1% of the total forest area of Australia, yet they supply in excess of 50% of the nation's timber (ABS ^c).

2.1.3 Environmentally Sustainable Development – ESD

The importance of ESD itself to the future of our nation cannot be underestimated. Based on the U.S. experience, green buildings will and do:

- Save energy. About two thirds of electricity and over one third of total energy used in the U.S. is consumed in buildings. Efficient new buildings are saving 70 to 90% of this traditional energy use and contrary to popular myth often several percent in capital cost. In addition they have the economic benefit of typically selling or leasing faster, better retention of tenants due to superior amenity and comfort and lower operating costs. All of which enhance financial returns.
- Save Water. Saving water through the use of efficient plumbing fixtures also reduces overall energy use while potentially eliminating the need to dam new rivers or increase existing catchment areas and create or increase water and waste water treatment facilities.
- Improve Labour Productivity: On average Americans spent 80 to 90% of their time indoors. Green buildings have superior visual, thermal and acoustic comfort which creates a low stress, high performance environment. Research in the U.S. and Europe shows improved productivity and a reduction of absenteeism for those working in green buildings both in office based work and manufacturing along with improved retail sales in 'green-built' retail buildings (particularly related to provision of naturally lighting). These improvements create a unique competitive advantage and further improve real estate value and market performance.
- Improve Health: The U.S. EPA estimates that building related illnesses in the U.S. account for \$60 billion of annual productivity lost

nationwide. A wider study valued that lost productivity in excess of \$400 billion. Enhanced indoor air quality improves health and productivity and reduces liability risk.

- Provide Pollution Reduction: One unit of electricity saved saves three to four units of fuel (usually coal) at the power plant. In turn there is less emission of the principal greenhouse gas CO₂, along with SO_x and NO_x gases which contribute to acid rain.
- Protect the Environment: Poorly (commonly) designed or situated buildings scar the landscape physically and visually, seize precious agricultural and pastoral lands and afflict or destroy wildlife habitat and native flora. Inversely ESD allows for restoration and enhancement of habitat and considers the long term aspects for essential agriculture and the alteration of existing landscape and natural water paths.
- Enhance Security: In the U.S. the construction of buildings consumes one quarter of all harvested timber; Worldwide construction annually consumes 3 billion (thousand million) tons of raw materials. Green buildings reduce the dependence on precarious resource imports and dwindling world supplies of resources and hence have the potential to improve trade balance and competitiveness, and create a fairer, more resource-abundant world.

(Barnett and Browning, 1998; Hawken, Lovins & Lovins, 1999)

Typical American offices spend about one hundred times the amount per square meter for people (payroll with on-costs and individual equipment) as they do for energy. Yet the above benefits are an untapped source of savings for companies. Well measured case studies in Europe and the United States consistently show gains in labour productivity in the range of 6 to 16% when workers are thermally comfortable, can see better and can hear themselves think. If labour productivity increased just one percent in the typical American office this will produce the same bottom line as entirely eliminating the energy bill (Hawken et al., 1999). At the bottom end of proven productivity gain (6%), any office working company could allow six times their annual energy bill (averaging \$400,000 for large firms in Australia - typically 4% of total operating cost (ABS^b) to be invested in an ESD retrofit to the building and have it paid back in the first year through productivity gains.

Australian research, limited as it is, shows similar results. Industry experience in the commercial building sector plainly indicates that operating energy improvements between 30 and 70% on current industry practice can be readily achieved. In Australian commercial office buildings the average lighting energy is about 16 W/m². With the use of current technology this could be halved to 8 W/m² and emerging technologies would bring this down to 5 W/m² without reduction in lighting quality (Bell & Fawcett, 2001). This is a direct saving of millions of dollars to building owners and occupiers and remembering that one unit of energy saved at the users end is three to four units saved at the power plant (Barnett, 1998) is an enormous saving to our environment in greenhouse gasses.

2.2. Economics - The Residential Sector in Context

When considering the commercial/industrial sector compared to the residential sector the following habitually come to mind:

- The often large physical size difference in individual projects.
- The often vast size of budget differences in individual projects.
- The often massive difference in annual budgets and turnovers.
- The comparatively limited number of organisations involved in commercial work, and;
- The often enormous size difference of the involved organisations.

There may even be a perceived difference in the professionalism of the individual organisations involved in the two sectors. Given all these factors one could soon be forgiven for thinking just how small the residential sector is compared to its big brother in commercial/industrial construction.

Certainly construction itself is large enough. In Australia, the property and construction industry make up approximately 14% of gross domestic product (Hampton, 2004). This combination makes the largest contribution to national GDP of any industry, even coming in ahead of manufacturing at around 11% (Australian Bureau of Statistics ^d). There are 250,000 businesses employing 750,000 people. 94% of businesses employ less than 5 people (Hampton, 2004). Here in Queensland as at May 2004 the construction industry employed 118,000 people (Australian Bureau of Statistics ^e), over 7% of all people employed in the state.

The key figures of building activity in Australia for the quarter ending March 2004 show that approximately \$12.1 billion (thousand million) worth of building work occurred in that three month period. Of that \$12.1b approximately \$7b was new residential building, \$1.3b was alterations and additions to residential buildings and \$3.8b was non-residential work (Australian Bureau of Statistics ^f). Historical data shows the residential sector to be approximately 60% and upward of all building in Australia (Australian Bureau of Statistics ^g). In the March 2004 quarter the residential industry was approaching 70% of all construction work by value.

2.3 TO WHAT END?

The residential construction industry is a massive component of society and the economy. It has a huge direct influence on our environment and an indirect influence that is incalculable. Those associated with the industry are probably familiar with its environmental affects in things such as: land degradation, loss of agricultural land, the problems of expanding hard surfaces, effluent disposal, waste materials, destruction of native forest and habitat, natural water course degradation, chemical hypersensitivity, greenhouse gas emissions, excessive energy and water consumption, the social ills created through poor suburban design and so on. The individual problems often seem endless. In many cases the industry is acting to find and implement solutions to the individual problems. But how often do we step back and look at the whole issue in context.

Although unsustainable buildings' harm may appear to be localized, it actually ripples outwards, sometimes for thousands of miles. Philippine forests are clear-cut for plywood used to build offices in Japan, where sheets used to form concrete are typically thrown away after one use. Homes in Southern California are framed with old-growth lumber from Washington and powered by

burning coal strip-mined from Navajo sacred lands in Arizona. Ultimately, the costs of poor design are borne not solely by a building's owner and those who work and live there, but by everyone.

(Barnett & Browning, 1998)

The changing nature of Australian society to a greater environmental awareness is statistically shown by huge growth in recycling (ABS ^a) and increased government expenditure on reduction and repair of environmental degradation. It can further be evidenced by the increased number of seats for the Greens in the last Federal election; the number of green issues on the political election agenda compared to past decades (Murray River, Tarcine Forest, Tasmanian timber industry etc.); changes to the BCA, thus legislating for energy efficiency requirements in buildings; the NSW governments legislation of the BASIX concept for reduction of water use and greenhouse gas emissions in housing; etc.

With the continuing swing in attitude the residential building industry will by force of law or force of economics be required to move towards serious implementation of ESD as time goes by. The choice now remains for it to lead or to follow. One of the oft quoted reasons for the failure of industry to move itself towards a large scale implementation of ESD is lack of consumer demand.

1998 research by ABARE (in Australian Bureau of Statistics ^b) showed that for Australian firms economic factors such as insufficient rate of return and overly long payback periods were the most common reason for not implementing energy efficiency changes. Nonetheless, 81% of all energy efficiency recommendations within Australian firms were implemented.

Lack of consumer demand is often put down to the aforementioned economic principles. However, as shown in Section 2 insufficient rate of return and lengthy payback periods are generally a misnomer. In the residential sector it would seem highly unlikely that the client would usually even be aware of such concepts.

The residential sector is a massive element of society at large. The overseas experience and Australian research shows that ESD done properly provides huge economic and social gains with no outstanding downside. Nonetheless, the Australian construction industry has failed or refused to pick up the golden ball and run.

The purpose of this research is to consider this issue from the client-side of the equation. The intent is to identify the factors influencing client decision making in relation to ESD in the residential sector. If these factors can be accurately identified they can then be utilised for the benefit of future clients, the environment, and the Australian construction industry.

The remainder of this paper provides a preliminary, general summary of important points in relation to client decision making taking evidence from the disciplines of psychology, marketing and economics.

3. THE CLIENT SIDE

A seriously in-depth consideration of the literature available considering the relevance of marketing, psychology and economics, all of which are interrelated in this context, can not even be considered given nature of the paper. The following is a summary of a few of the major points in relation to these.

3.1 MARKETING – INDUSTRY AND THE CLIENT

Consider the following:

<p><i>In Selling</i> <i>Emphasis is on the product</i></p> <p><i>Company first makes the product and then figures out how to sell it</i></p> <p><i>Management is sales volume-oriented</i></p> <p><i>Planning is short-run oriented, in terms of today's products and markets</i></p> <p><i>Needs of sellers are stressed</i></p>	<p><i>In Marketing</i> <i>Emphasis is on customers wants</i></p> <p><i>Company first determines customers' wants and then figures out how to make and deliver a product to satisfy those wants</i></p> <p><i>Management is profit-oriented</i></p> <p><i>Planning is long-run oriented, in terms of new products, tomorrow's markets and future growth</i></p> <p><i>Wants of buyers are stressed</i></p>
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(Miller & Layton, 2000)

The difference between selling and marketing could be considered purely semantic. From a certain perspective it is, however, in context it is both conceptual and material and using Miller's cross referenced definitions above it is plain to see that the Australian project home industry is involved in selling, not in marketing. The project home industry is successfully designing the product first and providing the sales push second with only superficial consideration of customer wants. Management is very much sales volume oriented, the sellers' needs are paramount and apart from turning the house into another disposable product there is no thought given to the longer term future. The residential industry, with minor exceptions, tells the client what they can have and then cleverly gets them excited about having it. What residential investor would not desire to have increased occupancy levels by design? What owner occupier would not want the benefits of vastly reduced life cycle costs that come into effect from day one at potentially no extra capital cost? It is rare to see the industry go beyond the usual, "Would you like fries with that?" approach to residential client needs.

Miller & Layton (2000) also make the following pertinent observations:

"In the 1990's, many Australians are placing a greater emphasis on the quality of life rather than on the quantity of goods consumed. The theme is 'not more, but better'. High on the list of what people consider integral to quality of life is the natural environment. Thus, we hear more concerns expressed about air and water pollution, holes in the ozone layer, acid rain, solid waste

disposal and the destruction of rainforests and other natural resources. These concerns have raised the public's level of environmental consciousness.

The proportion of consumers who are concerned about the environment is growing. In 1994, a study in Australia found that 85 per cent of the sample believed that all individuals had a responsibility to care for the environment. A further 80 per cent indicated that they had modified behaviour including purchasing for environmental reasons. However, it is important for businesses to remember that to satisfy 'green consumers', a product must also be competitive with alternatives on factors such as price."

The famed playwright George Bernard Shaw once commented, "Few people think more than two or three times a year; I have made an international reputation for myself by thinking once or twice a week." Ensuring the competitive nature of green building can take considerably more mental effort in the design stage but other than a level of thought that goes well beyond the accepted practice of project home builders there is nothing to increase the complexity or price of ESD over and above standard thoughtless design.

The marketing industry recognised the shift in consumer sentiment towards environmental concern a decade ago. The building industry has had to have it legislated to make small shifts in a direction the clientele already want to move. In commercial construction it is possible that given the size of individual budgets and the one-off nature of the work (even more so than residential) that industry invests the time with the client to find out what the actual needs are and how they might best be met. However, it is evident that the residential industry is self-serving in nature and fails en-masse to seriously consider or deliver client needs from a true marketing perspective.

3.2 ECONOMIC PSYCHOLOGY

It is essential to understand that psychologically speaking there is a difference between cognition, attitude and behaviour. Cognition covers our ability to understand, to develop knowledge; our thought processes in relation to an object or action. Attitude is, separately, how we feel about an object or action, our mental response to it or our opinion of it. Behaviour, separate again to cognition or attitude, is the actual conduct we take in relation to the object or action. The most important point which differs from traditional psychological theory (from the 1930's through to the 1970's) is that attitude and behaviour are only linked very loosely if at all. A considerable amount of work by the likes of Fishbein and Wicker has proved the attitude-behaviour link is very weak indeed (Foxall, 1997; Eagley & Chaiken, 1993).

The human ability to understand a concept (cognition) does not mean that he or she will actually believe it (creating attitude). "Selective distortion tells us that marketers cannot assume that a message, even if factually correct, will necessarily be accepted as fact by consumers. In designing a message, the distance between the audience's current belief and the position proposed by the message must be considered. If the distance is large, a moderate claim may be more believable than a dramatic claim, and therefore more effective in moving consumers in the desired direction" (Miller, 2000). Everyone at one

point or another has made a statement of fact to someone only to have it dismissed as being false. Religion and science were for some centuries at loggerheads over the difference in belief and cognitive knowledge, the flatness of the world being a prime early example.

The difference between attitude and behaviour is constantly borne out in general society. They are the minor hypocrisies that we all see in others or indulge in ourselves. It is the morally righteous who puts forth certain philosophies to others but fails to consistently live them personally. In the environmental context it is when someone espouses green ideologies or simply bemoans the waste in society and then throws an aluminium can or a newspaper into the standard household waste because the recycling bin is outside. As most people are guilty of both of the above at one point or another it is easy to understand the limited connection between attitude and behaviour.

4. CONCLUSION – THE RESEARCH TO COME

The summaries given have only provided a shallow smattering of a bulk of fascinating research into the viability of ESD and into consumer behaviour and what leads may be drawn on for further research as to what indeed influences client decision making in relation to ESD in the Australian residential construction industry.

The particular importance of the anomaly discussed in Section 3.2 is to the upcoming research. In discerning the factors influencing client decision making the research must endeavour to uncover at what level (cognition, attitude or behaviour) the breakdown occurs. Current evidence (Section 3.1) would suggest that there is some form of breakdown in cognition. How broad and how influential this is remains to be seen. If the breakdown is minimal at this level at which of the other two levels does it occur and once again, how broadly does it occur and how influential is it?

Given that ESD is proven around the world to be environmentally beneficial and economically viable, and; given that some years ago the marketing industry recognised the now statistically proven consumer move towards environmental sensitivity and altered its technique accordingly for many products; what has been the block to change in the project home market? Can we discover it from the consumer end? If so, can we alter this condition? By better understanding the factors affecting client's decisions in relation to ESD we can move toward providing a consistent industry led change for the betterment of our environment and the future security of our residential industry.

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