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Environmental Attitudes and Practices
Amongst Small Business Owner/Managers
in the Western Australian Community Pharmacy Sector

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Abstract

The process of moving businesses into a pattern of sustainable development has become a key feature in many economies. However, most work to date has focussed on the operations of large firms and multinational corporations. The role of small and medium-sized firms has often been overlooked, even though they are an essential part of that process. For example, it is estimated that SMEs may account for up to 70% of global pollution, yet management theorists have frequently underestimated their importance.

The purpose of this study was to measure the current environmental attitudes of small business owner/managers in one particular industry, and to assess whether significant links exist between the espoused environmental attitudes of such owner/managers and the actual environmental performance of their firms. The study also sought to determine if a number of personal (predictor) variables identified in the literature (age, gender, and education level) could be used to identify small business owner/managers with a high level of environmental attitudes and performance. Finally, it also examined whether certain external variables (consumer demands, capital availability, firm size, time and information resources) have an impact on the translation of personal attitudes into business performance.

Responses from the owner/managers of 156 retail pharmacies in Western Australia were used in the study. The results showed a high level of "green" attitudes amongst owners, but no statistically significant relationship between owner attitudes and their firm's actual performance. Only one demographic (predictor) factor, that of age, appears to be significantly associated with environmental attitudes. Three external factors were found to have a significant relationship with a small firm's level of environmental performance: the amount of time available for owners to undertake discretionary business activity; the number of owners working in the business; and the level of environmental information available to business owners.

Introduction

In the last ten years, environmental (“green”) issues have become increasingly important in contemporary business management, policy making, and strategic planning (Hutchinson & Chaston 1994; Hoffman 1997; Fineman 1997). How firms deal with environmental issues is now a growing area of contemporary management research (Welford 1995; Fineman 1997).

The management of environmental issues is significant for both large and small firms. Hodge (1995:10) has pointed out that the resolution of environmental problems requires analysis and understanding of “...incentives and choices at the very microeconomic level. Why do individuals and firms make particular choices and how can we persuade them to act differently? Even at this scale, the factors are many and complex.” His views are echoed by Cramer (1998: 163), who claims that “...little research has so far been conducted into how companies put environmental management into practice and the internal and external forces that influence them.” Shaefer & Harvey (1998) have stressed the need to examine internal processes and barriers to greater environmental responsibility, whilst Petts, Herd & O’heocha (1998) argue that the links between behaviour and attitudes, and the discrepancy between what managers say and do about environmental matters, needs more investigation and explanation.

The purpose of this study was to measure the current environmental attitudes of small business owner/managers in a particular industry sector, and to assess whether significant links exist between the espoused environmental attitudes of such owner/managers and the actual environmental performance of their firms. The study also sought to determine if a number of personal (predictor) variables identified in the literature (age, gender, and education level) can be used to identify small business owner/managers who are more likely to have a high level of environmental attitudes and performance. Finally, it also examined whether certain external variables (consumer demands, capital availability, firm size, time and information resources) have a modifying impact on the translation of personal attitudes into business performance.

The Gap Between Environmental Attitudes and Performance in Small Firms

All individuals approach environmental problems with their own set of pre-existing attitudes. An attitude can be defined as both a learned predisposition to respond to a situation or object in a consistently favourable or unfavourable way (Allport & Odbert 1935), and as an indicator of an individual’s intention to act in a particular manner (Triandis 1971; Rokeach 1973). It is frequently argued that attitudes are part of a complex chain of internal events that ultimately help determine individual behaviour (Festinger 1957; Azjen & Fishbein 1980; Holahan 1982; Fazio 1990; Oh 1991). As such, it would seem likely that pro-environmental personal attitudes should result in owner/managers producing environmentally-responsible outcomes in their firms.

In most small and medium-sized enterprises (SMEs), management and ownership of the firm is frequently synonymous. As a result, the owner/manager has a major impact on the performance of the business (Storey 1994). This also provides a unique

opportunity for an individual to put his or her values into practice in the workplace, and to influence the behaviour of employees, consumers and other stakeholders.

A “small business” in Australia is regarded as an enterprise which employs less than twenty persons, and a medium-sized firm is one that has less than two hundred staff (Australian Bureau of Statistics 2000). SMEs play an important role of the economic activity of the Australian economy. They are estimated to be responsible for over 40% GDP output (Gerrans & Hutchinson 1998), and to employ almost half of the total workforce. In 1998, there were approximately 950,000 small firms in Australia, representing 96% of all business enterprises (ABS 1997).

Researchers such as Gerrans and Hutchinson (1997), Merritt (1998) and Ludevid Anglada (2000) have shown that many SME owner/managers have a high awareness of their role in environmental remediation and a strong desire to address environmental issues. However, most studies also report a substantial gap between the stated attitude of owner/managers and the actual environmental performance of their firms. In Australia, Hutchinson & Gerrans’ study (1997) found a broad sympathy for “green” concerns by small firm managers, but little practical evidence of behavioural change. More recently, Acutt & Geno’s (2000) examination of SMEs in the Australian state of Queensland found no relationship between “green” views and actions taken to improve the environment. Tilley (1998), Hutchinson & Chaston (1994), and Petts et al. (1999) have all reported a similar dichotomy between attitudes and performance amongst SME owner/managers in the United Kingdom and continental Europe. This gap has been termed the so-called “SME problem” in environmental management (Merritt 1998; Tilley 1999). Table One provides an overview of recent research in this field.

It therefore appears that the following hypothesis is worthy of investigation, in order to determine if a significant link truly exists between attitudes and behaviour:

H₁: Firms whose owner/managers have positive personal environmental attitudes are more likely to display a positive environmental performance.

Other Influences on Environmental Attitudes and Performance

Whilst attitudes alone might be seen as a predeterminant of outcomes, the owner/manager’s intentions may often also be affected by a number of contingency factors that can serve to either promote or hinder the actual environmental improvement steps undertaken. Such moderating variables may include personal demographic characteristics (the age, gender and education of individual proprietors). These variables often serve as useful predictors of both likely environmental attitudes and subsequent performance. A second group of variables are those modifiers which are external to the firm. These have the capacity to affect environmental performance, regardless of the attitudes of the owner. Figure One provides a diagrammatic representation of this model.

Table 1: Some Recent Studies into SMEs and the Environment

<i>Author</i>	<i>Year</i>	<i>Country</i>	<i>Respondents</i>	<i>Industry</i>	<i>Research Focus</i>
Ludevid Anglada	2000	Spain	20	Mixed	Knowledge, views and barriers regarding environmental pollution problems
Acutt and Geno	2000	Australia	137	Restuarants, cabinet makers, car repairs, hotels	Owner attitudes and compliance with state-based environmental regulations
Tilley	1998	UK	60	Engineering, services	Management attitudes and practices
Merritt	1998	UK	117	Mixed	Management views and practices
Petts et. al.	1998	UK	389	Mixed	Management and employee attitudes towards compliance with environmental laws/policies
Townsend	1998	Australia	30	Manufacturing	Internal and external factors influencing adoption of more environmentally-responsible processes
Hillary	1997	UK	17	Textiles, mixed	ISO 14001, EMS
Gerrans and Hutchinson	1997	Australia	169	Mixed	Current EMS and other practices
Tanner et. al.	1996	USA	105	Mixed	Waste reduction activities and barriers
Murphy et. al.	1995	USA	133	Manufacturing, merchandising	Adoption of formal environmental policies
Hutchison and Chaston	1994	UK	600	Mixed	Current awareness and environmental practices

Predictor (personal) Factors

It is suggested that particular demographic features of the SME owner population may be positively linked to strong, pro-environmental attitudes and performance. Hines, Hungerford & Tomera (1986), Petts et al (1998) and Charlesworth (1998), for example, all argued that younger individuals tend to be more environmentally concerned than older persons. Amongst the general Australian population, the Australian Bureau of Statistics (1998) reported the presence of a clear relationship between environmental concern amongst the general Australian population, with concern rising in individuals up until the 30-39 year age bracket, and declining thereafter.

Another variable appears to be gender, although the impacts of this demographic factor are less clearcut. Schahn & Holzer (1990) found a tentative link between gender and environmental concern, but no significant behavioural differences between the sexes. A meta-analysis of the role of demographic variables in environmental behaviour by Hines et al (1986) found only a weak relationship between gender and environmentally-responsible activities.

Education also appears to be positively associated with environmental concern. Steel (1996), Fineman (1997), and Holahan (1982) have all suggested that the higher the level of one's education, the more likely it appears that individuals will be concerned about the environment. Hines et al. (1986) also found that educational levels were slightly (but not significantly) positively correlated with pro-environmental actions amongst individuals.

This research would therefore suggest that the following hypotheses about demographic characteristics are worthy of examination:

H₂: Younger owner/managers are more likely to display a positive environmental attitude.

H₃: Firms with younger owner/managers are more likely to display a positive environmental performance.

H₄: Female owner/managers are more likely to display a positive environmental attitude.

H₅: Firms with female owner/managers are more likely to display a positive environmental performance.

H₆: Highly-educated owner/managers are more likely to display a positive environmental attitude.

H₇: Firms with highly-educated owner/managers are more likely to display a positive environmental performance.

External moderating factors

In addition to personal characteristics, there are a number of other factors that can also drive small firms to adopt more environmentally-responsible behaviour.

Gerstenfeld and Roberts (2000) have argued that environmental problems are often ignored by SMEs because owners do not have enough time to deal with them. These claims are borne out by the work of both Gombault and Verstege (1999) and Verheul

(1999), who identified a lack of time as a key determinant in the implementation of environmental projects.

Hillary (2000) and Gerstenfeld & Roberts (2000) both suggested that firm size is an important determinant in environmental performance, with larger firms more likely to adopt environmental improvement practices than their smaller counterparts.

Ecoliteracy, or the lack of relevant and accessible information about how to improve a firm's environmental business activities, also appears to be an important variable (Gombault & Versteeg 1999; Winter & Ledgerwood 1994; Hutchinson & Chaston 1994). Tilley's study of UK SMEs (1998) suggested that eco-literacy is generally in short supply amongst small business owner/managers, and is a key determinant of environmental outcomes.

Many proponents of a greener business approach have relied upon consumer demand as a key argument that firms should become more environmentally responsible if they are to survive in a competitive marketplace (Bennett 1991; Charter & Polonsky 1999; Darnovsky 1996; Day & Arnold 1998). Similarly, the Australian Bureau of Statistics (1998) has reported that environmental issues are a significant factor in purchasing behaviour by Australians.

Finally, one of the most common arguments advanced against greater environmental efforts is cost – the claim that SMEs simply do not have the financial resources necessary to adopt better processes (Raar 2000). Palmer (2000), for example, has argued that a lack of financial resources is one of the biggest single barriers to environmental progress. Townsend's (1998) study of Australian manufacturing SMEs found that the most common factor in hindering improved environmental performance was difficulty in accessing capital.

This gives rise to the final set of hypotheses examined in this study, all of which relate to external modifier factors:

H₈: Firms whose owner/managers have greater time resources are more likely to display a positive environmental performance.

H₉: Larger firms are more likely to display a positive environmental performance.

H₁₀: Firms whose owner/managers have more environmental information are more likely to display a positive environmental performance.

H₁₁: Firms whose customers are concerned with environmental issues are more likely to display a positive environmental performance.

H₁₂: Firms with greater access to capital are more likely to display a positive environmental performance.

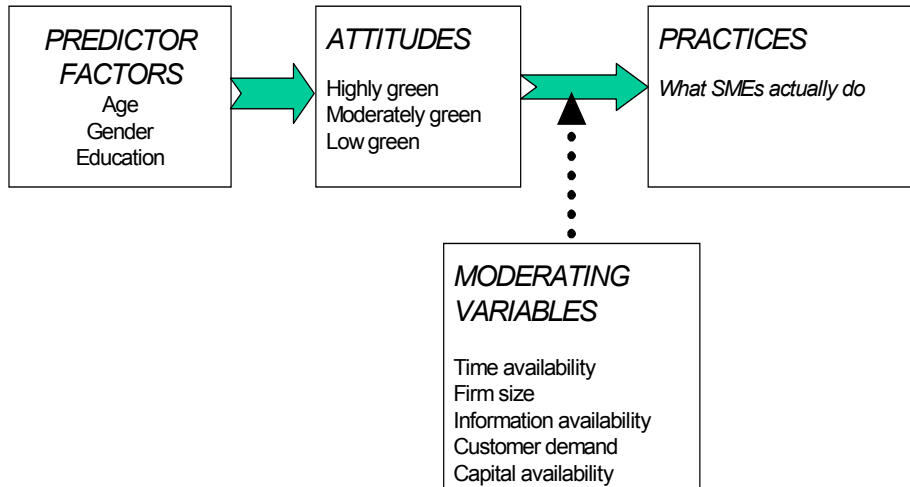


Figure 1: A Model of The Attitude-Environmental Performance Linkage

The Retail (Community) Pharmacy Sector

The study was limited to one specific category of small business, the community (or “retail”) pharmacy sector in Western Australia. These stores advise upon and dispense pharmaceutical and ancillary retail goods to the general public. Most income for firms comes from dispensing prescriptions; front-of-shop (retail) sales provide the remainder of a typical firms’ revenue (Dickson 1998). Firms in this industry are characterised by a relatively high sales turnover and a low number of staff, which allows operators to operate as quite small, but nevertheless highly profitable, enterprises (Financial Management Research Centre 1999) (see Table Two below). The industry is also a relatively stable one, with only a few new entrants and exits each year (“Pharmacy Closures Normal” 1998).

This population is discrete and easily identifiable, as all pharmacists must be licensed under the Western Australian Pharmacy Act (1964). Almost all retail pharmacies fall into the category of small or medium sized enterprises (SMEs), since the Western Australian Pharmacy Act (1964) stipulates that a pharmacist may not have a pecuniary interest in more than two pharmacies, and must personally supervise the store. In January 2000 there were 484 registered pharmacy stores in Western Australia, 95% of which were members of the state branch of the Pharmacy Guild of Australia.

Table 2: Average Performance Data for Western Australian Pharmacies

Total Income	\$1.34 million
Gross Profit Margin	\$450,000 (33.4%)
Net Profit Margin	\$157,000 (11.6%)
Total Number of Firm Staff	8 per firm
Staffing Composition	1 owner, 1 other pharmacist, 6 assistants
Trading Hours Per Week	62
Hours Worked By Proprietor	49

(Sources: Financial Management Research Centre 1999; Pharmacy Guild of Australia 1999)

Research Methodology

The research questions were examined through a mail survey of members of the West Australian branch of the Pharmacy Guild in March-April 2000, complemented by subsequent personal interviews with a number of store owner/managers. Environmental attitudes were assessed using an established country-specific multidimensional survey tool, the Australian Environmental Attitude Scale (Ray & Hall 1995). This consisted of twenty Likert-type statements, asking respondents to rate their responses to a variety of questions covering a wide range of contemporary Australian environmental issues. These included trees, cities, the Australian bush, population control, health, housing, built heritage, pollution, recycling and transportation. A number of questions were reverse-scored. The lowest possible score was 20, and the highest 100; the theoretical mid-point of the scale was 60.

Performance indicators were evaluated using a number of questions previously employed over several studies by the Australian Bureau of Statistics (1992; 1994; 1996; 1998; 1999). These covered several different possible types of environmental activities, including participation in recycling, contributions to green groups and activities, use of energy and water, and business process improvement activities. However, subsequent analysis found that most of these indicators had limited effectiveness. As a result, only one behaviour, the purchase of environmentally-friendly products for use within the business (“Buy Green”), was used as the dependent variable in this analysis (see Table Three).

Table 3: Survey Questions Relating To Buy Green Behaviour

*When purchasing products for use **within** your business, rather than for resale to consumers, how frequently do you choose to buy...(tick the relevant box)*

	Never	Rarely	Sometimes	Frequently	Always
Unbleached paper products?					
Recycled paper products?					
Phosphate-free cleaning products?					
Refillable containers?					

This set of variables was chosen for use as the primary dependent variable since green purchasing is an entirely voluntary activity – it is not mandated by any rules or external bodies. Even where such activities are carried out by other staff members, purchasing policy is an action directly under the control of the shop owner/manager. Furthermore, participation or non-participation in such activities is equally open to all pharmacies (that is to say, all stores have relatively easy access to such products, since most of these items can be found in supermarkets or obtained from commercial suppliers). Finally, unlike activities such as recycling, purchasing decisions do not depend on the provision of external resources (such as recycling bins from local government authorities or shopping centre landlords).

A composite score (labelled “BuyGreen”) was determined by summing the answers to these questions, and then dividing by four to obtain a mean score out of five. Respondents with missing values were omitted from the procedure (n=5). Final scores ranged from 1 to 4, with a mean of 2.34, median of 2.25, a standard deviation of 0.78, and skewness of -.102. Principal components analysis indicated only one factor. A factor analysis was conducted, but the factors formed were unreliable, and a single composite score was used instead (which had an alpha level of 0.7360 and a standardised item alpha of 0.7386).

Statistical Analysis

Testing of the hypotheses and the model was conducted using a number of different analytical techniques. Bivariate tests were first used to evaluate the strength of direct relationships between different variables. Three different multivariate analytical techniques (cluster analysis, discriminant analysis, and regression) were then used to assess the effectiveness of the overall model. Unless otherwise noted, all of the tests discussed in this chapter employed a significance (alpha) level of 0.05 (5%).

Most respondents in this study showed a strong “green” (environmentally-friendly) stance. Aggregate scores for the AEAS had a range from 47.00 to 91.00, with a mean of 69.6, median of 70, a standard deviation of 8.53, and a skewness measurement of 0.007. This indicates that the response set was relatively well distributed, and that it closely approximated a normal distribution curve.

Bivariate testing did not reveal a statistically significant relationship for most items. Most importantly of all, the central argument of this study – that the environmental attitudes of pharmacy owner/managers is strongly linked to the performance of their firms – was not supported. In a similar vein, there did not appear to be any significant relationship between environmental performance and gender, education level, number of staff, customer demand, or availability of capital. Likewise, there was no link between AEAS scores and the owner’s gender or education. Table Four below summarises the results of such tests.

Table 4: Bivariate Test Results

	N	Test	Result	Significance	Decision
H ₁ : Firms whose owner/managers have positive personal environmental attitudes are more likely to display a positive environmental performance.	136	Pearson One-tailed	0.126	0.075	Reject
H ₂ : Younger owner/managers are more likely to display a positive environmental attitude.	133	Pearson One-tailed	-0.225	0.005	Accept
H ₃ : Firms with younger owner/managers are more likely to display a positive environmental performance.	148	Pearson One-tailed	0.088	0.144	Reject
H ₄ : Female owner/managers are more likely to display a positive environmental attitude.	135	Spearman One-tailed	0.113	0.097	Reject
H ₅ : Firms with female owner/managers are more likely to display a positive environmental performance.	150	Spearman One-tailed	-0.009	0.454	Reject
H ₆ : Highly-educated owner/managers are more likely to display a positive environmental attitude.	133	Spearman One-tailed	-0.058	0.255	Reject
H ₇ : Firms with highly-educated owner/managers are more likely to display a positive environmental performance.	148	Spearman One-tailed	0.124	0.133	Reject
H ₈ : Firms whose owner/managers have greater time resources are more likely to display a positive environmental performance.	151	Pearson One-tailed	0.205	0.006	Accept
H ₉ : Larger firms are more likely to display a positive environmental performance.	144	Pearson One-tailed	-0.195	0.010	Accept
H ₁₀ : Firms whose owner/managers have more environmental information are more likely to display a positive environmental performance.	151	Pearson One-tailed	0.142	0.044	Accept
H ₁₁ : Firms whose customers are concerned with environmental issues are more likely to display a positive environmental performance.	150	Pearson One-tailed	0.064	0.222	Reject
H ₁₂ : Firms with greater access to capital are more likely to display a positive environmental performance.	146	Spearman One-tailed	0.016	0.846	Reject

Model Testing - Cluster Analysis

A cluster analysis of the Buy Green scores was then undertaken. According to Drew & Bishop (1999), cluster analysis can allow researchers to group elements into homogeneous sets, so producing typologies of items or elements that allow underlying patterns to emerge. Point biserial correlation was employed to measure the difference (dichotomy) between cluster groups (Hinkle et al. 1988). The greater the resulting biserial correlation result (r_{pb}), the greater the difference between the groups (Cohen & Cohen 1975), indicating a higher likelihood that cluster members are genuinely different from each other. T-tests were then conducted to determine that a significant difference existed between the means of each group.

A four cluster arrangement produced the highest meaningful bi-serial correlation ($r_{pb} = 0.4957$), with the results summarized in Table Five.

Table 5: Analysis Results for 4-Cluster Set of Buy Green

	<i>Cluster 1 (Low purchasing)</i>	<i>Cluster 2 (High purchasing)</i>	<i>Cluster 3 (Moderate)</i>	<i>Cluster 4 (Getting greener)</i>
<i>Mean score</i>	1.15	3.64	2.15	2.93
<i>N</i>	28	16	65	42

Missing: 5

Cluster One represented pharmacy owners with a low level of sensitivity to environmentally-responsible purchasing behaviour. These “low purchasing” respondents generated a mean score of 1.15 (out of a possible maximum score of 5), and contained 28 members (19%) of the total respondent group. In contrast, “high purchasing Buy Green” respondents (Cluster Two) contained the smallest number of pharmacists (16 persons, or 11% of the total sample). A large number (65 respondents, or 43%) of the data set belonged to Cluster Three, representing a medium level of green purchasing activity, and were labelled the “moderate group.” Finally, there is a substantial group of pharmacists (42 persons, representing 28% of all respondents) described as “getting greener,” in that their scores are better than the moderate group, but who have not yet reached the level of best environmental practice as performed by the members of Cluster Two.

**Table 6: Independent Samples T-Test
for 4-Cluster Set of Buy Green**

	<i>Equal variances?</i>	<i>T</i>	<i>d.f.</i>	<i>Sig. (2-tailed)</i>	<i>Decision</i>
<i>Clusters 1 v. 2</i>	Assumed	-38.49	42	.000	Accept
	Not assumed	-40.50	36.28	.000	Accept
<i>Cluster 1 v. 3</i>	Assumed	-17.82	91	.000	Accept
	Not assumed	-19.10	60.48	.000	Accept
<i>Cluster 1 v. 4</i>	Assumed	-40.46	68	.000	Accept
	Not assumed	-37.56	43.55	.000	Accept
<i>Cluster 2 v. 3</i>	Assumed	21.54	79	.000	Accept
	Not assumed	26.66	32.04	.000	Accept
<i>Cluster 2 v. 4</i>	Assumed	15.29	56	.000	Accept
	Not assumed	13.98	23.10	.000	Accept
<i>Cluster 3 v. 4</i>	Assumed	-17.51	105	.000	Accept
	Not assumed	-19.54	103.73	.000	Accept

The existence of four different clusters, or groups, of business proprietors would appear to support the arguments of some writers that firms can be categorised into different types of environmentally-responsible behaviour. Kinlaw (1993), Winsemius & Guntram (1992) and Day & Arnold (1998) have all suggested that there are four different types (or levels) of organisational greening behaviour. The four clusters identified in this study support Winsemius & Guntram's (1992) theory that firms can be classified as reactive (i.e. undertake minimal effort to improve environmental performance), receptive (becoming more willing to consider pro-environmental behaviour), constructive (usually attempt to improve performance) or proactive (always seek to be environmentally-responsible in their behaviour).

Model Testing – Discriminant Analysis

The cluster determination was followed by subsequent analysis via both discriminant analysis and one-way ANOVA, in an attempt to determine what links (if any) existed between the Buy Green clusters and the predictor and modifier variables.

Discriminant analysis provides a useful tool for assessing whether group membership can be predicted from a set of variables, or to predict what variables discriminate between two or more groups (Coakes & Steed 1999). Discriminant analysis loading all of the independent variables produced no significant results. An examination of the pooled within-group correlation matrix indicated that multicollinearity was not a problem. The three functions so produced by the discriminant analysis procedure were not significant, as shown in Table Seven.

Table 7: Discriminant Analysis of Buy Green Predictor & Modifier Variables

<i>Function</i>	<i>Eigenvalue</i>	<i>Variance explained</i>	<i>Canonical correlation</i>	<i>Wilks' Lambda</i>	<i>Significance</i>	<i>Decision</i>
1	0.177	52%	0.387	0.727	0.072	Reject
2	0.115	34%	0.321	0.855	0.278	Reject
3	0.049	14%	0.216	0.954	0.571	Reject

Individual discriminant analysis calculations were then performed for each of the different predictor and modifier variables. A summary of the results of these calculations can be found in Table Eight below. Only two items (the amount of Time Available and the Level of Information) appeared to be significantly related to environmentally-responsible purchasing behaviour. Subsequent analysis of variance (ANOVA) results for each item produced similar results (see Table Nine).

Table 8: Discriminant Analysis of Individual Buy Green Predictor & Modifier Variables

<i>Variable</i>	<i>Eigenvalue</i>	<i>Wilks' Lambda</i>	<i>Significance</i>	<i>Decision</i>
Owner's Age	0.022	0.978	0.370	Reject
Owner's Gender	0.018	0.982	0.448	Reject
Owner's Education	0.054	0.949	0.054	Reject
Number Staff	0.017	0.983	0.486	Reject
Number Owners	0.046	0.956	0.098	Reject
Sales Turnover p.a.	0.021	0.979	0.398	Reject
Time Available	0.062	0.941	0.031	Accept
Level of Information	0.059	0.944	0.042	Accept
Customer Demands	0.028	0.973	0.275	Reject

Table 9: ANOVA Results - Individual Buy Green against Predictor/Modifier Variables

<i>Variable</i>	<i>Significance</i>	<i>Decision</i>
Owner's Age	0.370	Reject
Owner's Gender	0.448	Reject
Owner's Education	0.054	Reject
Number Staff	0.486	Reject
Number Owners	0.098	Reject
Sales Turnover p.a.	0.398	Reject
Time Available	0.031	Accept
Level of Information	0.042	Accept
Customer Demands	0.275	Reject

These results indicate that the predictive value of the independent variables is highly limited. As can be seen, only the variables relating to Time Availability and Level of

Information are significant. An additional variable, Owner's Education level, also comes quite close to reaching the acceptance level of 0.05.

Model Testing - Regression

Multiple regression allows researchers to assess the relationship between one dependent variable and several independent variables, and can be used to produce an equation that represents the best prediction of the dependent variable (Tabachnick & Fidell 1996). Stepwise regression was employed, which allows for different independent variables to be admitted if they contribute significantly to regression, and for such variables to be deleted during later stages of the regression calculation if they no longer contribute significantly to the regression equation (Coakes & Steed 1999). All of the predictor and modifier variables, and the AEAS score, were entered as independent variables. The dichotomous variable of Gender was recoded as a dummy variable. Buy Green was used as the dependent variable. Results of the multiple regression are displayed in Table Ten below:

Table 10: Regression Results

<i>R</i>	<i>R</i> ²	<i>Adjusted R</i> ²
0.356	0.126	0.111

	<i>Beta</i>	<i>T</i>	<i>Significance</i>
Constant	2.593	14.430	0.000
Number of Owners	-0.267	-3.017	0.003
Time Available	0.225	2.541	0.012

The resultant model consisted of the following elements:

$$\text{Buy Green} = 2.593 + (-0.267)(\text{Number of Owners}) + (0.225)(\text{Time Available})$$

Both the coefficient of determination (R^2) and the adjusted R^2 were quite low. This means that only 11% of the variation in Buy Green scores can be explained by the time available to pharmacy store owner/managers and by the number of owners of the firm. Attitude scores and personal predictor variables showed no significance.

These results tend to confirm the conclusions reached in previous, qualitatively-based studies into SME environmental behaviour in the United Kingdom by Tilley (1998) and Hunt (2000). Information appears to be an important external factor for SMEs. Knowledge of environmental problems can act as a spur to improved performance, by helping show *why* action is needed. The second role of environmental information is in providing a means by which firms can learn *how* and *when* to act; without this, the opportunity to change will usually be lost (United Nations Environment Program 2000). It follows that when environmental information is in short supply, it is unlikely that SMEs will move to improve their environmental performance (Hillary 1999).

Time availability is directly related to the owner/manager's ability to effectively collect and process information. The number of owners of the firm is also a reflection of time usage. The greater the number of owners, the more the workload can be

shared. This in turn gives individual owner/managers additional free time and the chance to not only receive more information, but also to act upon it. As Simon (1957) argues, most business managers operate in a situation of so-called “bounded rationality,” where their ability to collate, understand and usefully act upon information is circumscribed by the day-to-day pressures of their job. Where owner/managers have a large amount of discretionary time, their ability to collect information is greater, and so too is the resultant level of environmental performance (Hunt 2000).

Conclusions

The results of this study would appear to show that there is no substantial link between the environmental attitudes of SME owner/managers and their firm’s actual performance. Nor are there many other factors which have a significant impact of the environmental behaviour of SMEs in the retail pharmacy sector. Only one demographic (predictor) factor, that of age, appears to be significantly associated with environmental attitudes. Even age has no significant link to actual environmental performance. Finally, three external moderating variables were found to have a significant relationship with the level of environmental performance: the amount of time available for owners to undertake discretionary business activity; the number of owners working in the business; and the level of environmental information available to business owners.

These results suggest that attitudes are not, after all, effective predictors of behaviour (Holahan 1982). Thirty years ago, one of the major researchers working in the field of attitude study suggested that perhaps the most appropriate definition of an attitude was as a marker of “... what people *think* about, *feel* about, and how they *would like to behave*...” (Triandis 1971:14), rather than as an indicator of what they actually do. Therefore, if change is to take place within the business community, it will not be driven by “eco-friendly” business operators, but by more pragmatic considerations, such as information accessibility (Palmer 2000; Townsend 1998).

Encouraging SMEs to become more environmentally responsible will therefore require an understanding of these determinants by individual proprietors, governments, sustainable development advocates, and small business support agencies, as well as an ability to effectively utilise them.

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