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Factors influencing green purchasing behaviour: Empirical evidence from the Lebanese consumers

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ABSTRACT

Our current environmental situation requires serious attention. We can see the problems that our environment is facing everywhere, including air pollution, ozone depletion, global warming, hazardous waste disposal and water pollution. Today, consumers are aware that their individual consumption behaviour affects the environment and these consumers are more conscious of the seriousness of environmental degradation. Thus, consumers are increasingly engaging in environmentally friendly behaviour and are interested in supporting businesses that are engaging in green strategies. Green purchasing behaviour can help achieve a sustainable environment. Four factors that may influence green purchasing behaviour were examined in this study: perceived seriousness of environmental problems, perceived environmental responsibility, perceived effectiveness of environmental behaviour and concern for self-image in environmental protection. Data were collected from Lebanon, and three factors were found to have positive effects on green purchasing behaviour. The results also indicated that the perceived seriousness of environmental problems was the main contributor to green purchasing behaviour. Copyright © 2014 John Wiley & Sons, Ltd.

INTRODUCTION

Environmental degradation and sustainability are considered to be among the most serious issues we face in today's world, and there is a growing consciousness regarding all matters related to the environment. A recent study reveals that individuals rank environmental problems as today's top challenge, followed by the economy, healthcare, unemployment and crime (Paetz *et al*., 2012). In the modern era, green marketing is connected to sustainability and biodiversity. A variety of studies indicate that concern for the environment has become a major consideration in individuals' consumption decisions (Weigel and Weigel, 1978; Berger and Corbin, 1992; Bansal, 2003; Haytko and Matulich, 2008; Kotler, 2011). Dunlap (1994) found that environmental deterioration is considered very serious by people worldwide, and concerns about the degradation of the environment are increasing. Today, consumers are aware that their individual consumption behaviour affects the environment (Abdul Wahid *et al*., 2011) and of the seriousness of environmental problems; thus, people are becoming more environmentally conscious (Han *et al*., 2009). Consumers are more aware of the severity of environmental problems, which has led to an increase in their desire to buy environmentally friendly services and products from businesses that engage in environmentally friendly practices (Roberts, 1996; Kalafatis *et al*., 1999; Laroche *et al*., 2001). Paetz *et al*. (2012) have suggested that there is little doubt that it is possible to change some of the consumption activities of consumers, as long as such a shift is convenient. As a result, the need for and value of green or environmental marketing has been recognized by marketers and scholars (Yam-Tang and Chan, 1997). In addition, as a consequence of increasing environmental consciousness, consumers have become more aware of the impact of their habits on the environment and that natural resources are limited (Krause, 1993). More studies are interested in finding the factors that may contribute to promoting green purchasing behaviour, and the findings of such studies may help green marketers in their work.

The Mediterranean Region is unique in that it comprises three different continents—Southern Europe, North Africa and Western Asia—and includes more than 20 nations with shorelines along the Mediterranean Sea. This region is known for its cultural, social, economic, trade, security and political exchanges among its different countries. The unique attributes of this region provide an interesting context for marketers' studies. The ideology of 'Mediterraneanism' claims that Mediterranean cultures share common, distinctive characteristics (Harris, 2005). Recognition of the importance of the Mediterranean School of Marketing was initiated by several published studies (Cova and Cova, 2002; Carù and Cova, 2007; Dalli and Romani, 2012). More research conducted in the Mediterranean context is imperative to build the basis for further advancement of the Mediterranean marketing theory. One of the countries in the Mediterranean Region is Lebanon. Lebanon is considered to be unique in the Mediterranean Region because it boasts remarkable interaction between the Middle East and the West (Tlaiss and Kauser, 2011).

The purpose of this study is to examine the possible factors that may contribute to the boost in green purchasing behaviour of Lebanese consumers. Our results will add value to the purchasing behaviour and green marketing literature, in addition to providing scholars and practitioners with insight into better marketing in Arab countries. Arab countries play an important role in the global economy (Abuznaid, 2006). However, most marketing studies have been conducted in non-Middle Eastern countries, and this study is the first to our knowledge that examines green purchasing behaviour in a Middle Eastern country. Lebanon is considered to be uniquely important in this respect because of its interaction between Western and Middle Eastern countries (Tlaiss and Kauser, 2011).

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LITERATURE REVIEW

Different studies have examined environmental issues using the theory of planned behaviour (TPB) (Kalafatis *et al*., 1999; Brewer and Stern, 2005; Oreg and Katz-Gerro, 2006; Koger and Winter, 2010), which posits that individuals' intentions and behaviours are shaped by a combination of the individuals' perceived behavioural controls, subjective norms, and attitudes towards the behaviour (Ajzen, 1991). Kalafatis *et al*. (1999) studied the TPB in identifying probable influences on consumers' intentions to buy environmentally friendly products because the theory encourages the analysis of attitudes, cultural and personal elements and conscious behaviour control. Predictable influences that may affect green purchasing behaviour may be derived from the social sciences, such as psychology or sociology and include religion, education, culture and personal habits, for example. Other factors are related to marketing or the environment, such as pollution and the economy, among others. Mostafa (2009) suggests that environmental attitude, environmental concern, altruism, environmental knowledge and skepticism towards environmental claims are the major factors that influence the green purchasing behaviour of consumers. Dagher and Itani (2012) tested whether environmental attitude, environmental concern and social influence are factors that affect green purchasing behaviour. In his study, Stern (2000) tested four causal variables that might influence environmentally significant behaviour. These causal variables were attitudinal, personal capabilities, contextual factors, and habits and routines. Stern also identified the causes of the predilection for pro-environmental behaviour on the basis of the value–belief–norm theory (2000). The value–belief–norm theory argues that when individuals accept the values of a certain movement, they believe that their actions will reduce the threats faced by that movement and that such actions will help establish the individuals' values as personal norms (Stern *et al*., 1999). In other words when individuals apply the values in their lives, such values will make the individuals believe that their actions are effective. In their study, Kim and Choi (2005) investigated the effects of and interrelationships among perceived consumer effectiveness, environmental concern and collectivism on ecological consumption. Kalafatis *et al*. (1999) suggested that the TPB, which examines factors such as attitudes towards behaviour, subjective norms and perceived behavioural controls, provides a reliable analytical model for the intention to buy environmental products. The structure of value–attitude–behaviour is valuable for understanding the predictors of consumers' environmentally conscious behaviours (Kim and Choi, 2005). In our literature review for this study, we found different influences on purchasing behaviour. Three of these influences are related to perception, whereas the fourth influence is related to self-image. Environmental consciousness at the consumer level is driven by factors that include more media exposure, better attentiveness to environmental problems, social group pressure, strict policies and legislation. 'Perceived seriousness of environmental problems', 'perceived environmental responsibility' and 'perceived effectiveness of environmental behaviour' factors were tested because they are all related to consumer perception, which is the general cognition a consumer has towards a certain issue. The fourth influence is the concern for self-image in environmental behaviour. The term self-identity varies among disciplines as self-concept or self-image, which are all similar in meaning. Epstein (1973) suggested that a person's self-identity has substantial influences on behaviour. The perception of effectiveness is theoretically different than the perception of responsibility (Ellen *et al*., 1991). The perceived seriousness of an environmental problem is related to the level of risk that such a problem holds. Dunlap and Scarce (1991) state that a majority of people perceive the seriousness of environmental problems and that this proportion has increased substantially in recent years. This majority sees environmental problems not only as becoming more serious but also as a threat to humanity. Sparks and Shepherd (1992) suggest that the theory of reasoned action and the TPB account for the crucial role that self-identity plays in affecting behaviour intentions and behaviour. Next, we will discuss the factors examined in this study.

Green purchasing behaviour

The large number of environmental problems that consumers face is the key reason behind the shift from traditional—or non-green—purchasing behaviour to greener purchasing patterns. Mostafa (2007) defined green/environmentally friendly buying behaviour as the consumption of environmentally friendly products that are 'sensitive/responsive', 'recyclable/conservable' and 'benevolent/ beneficial' to the environment. Dagher and Itani (2012) posited that consumers are trying to help improve the environment with green purchasing. Being environmentally friendly is not the only aim of consumers who engage in green purchasing behaviour; they also purchase green products when they know that such a purchase will bring them immediate benefits (Vermillion and Peart, 2010). Kotler (2011) found that consumers are using a new dimension, the degree of social corporate responsibility towards the environment, when they want to choose among brands available in the market. In recent years, the proportion of consumers who had never bought a green product decreased to less than one-half (Manget *et al*., 2009). 'The product market for healthy and sustainable lifestyle is valued to be worth approximately $209 billion and covers approximately 17% to 19% of all consumers' (Kotler, 2011: 134). This market includes energy-efficient products, eco-tourism and solar panels, among many other items (Kotler, 2011). Green consumers are changing marketplaces in many significant ways (Vermillion and Peart, 2010), and consumers are recognizing the enormous impact that their buying behaviours have on the environment (Abdul Wahid *et al*., 2011), which reinforces the position of the environment as a top world concern and brings us to empirically examine the factors that may increase green purchasing behaviour because of the importance such behaviour has on the environment and consumers.

Perceived seriousness of environmental problems

Individuals are more influenced by their 'perceived seriousness of environmental problems' than the actual severity of those problems (Ghimire and Mohai, 2005). In developing countries, people see their local and national environment

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in poor conditions because of serious issues such as the greenhouse effect, air pollution, water pollution and solid waste management (Dunlap, 1994). The most dominant local serious environmental problems were sewage treatment, and water and air quality (Lee, 2009). Asian residents perceive their local environmental problems as more severe than the Western residents (Lee, 2009). Moreover, perceived seriousness is also used to describe crimes and other types of moral violations. Because we are connecting this notion to any environmental problems, we can conclude, using the logic, that contributing to or causing environmental harm is somehow considered a crime. Lee (2008) found a negative relationship between the 'perceived seriousness of environmental problems' and 'green purchasing decisions'. Few studies have examined how gender differences affect the seriousness of the perception of environmental problems. Lee (2009) claimed that adolescent girls in Hong Kong have a higher level of 'perceived seriousness of environmental problems' than boys, which is supported by the findings from Bord and O'Connor (1997) that women have a higher perceived vulnerability to hazardous waste and global warming risk than men.

Perceived environmental responsibility

When assuming environmental responsibility, a person aims to behave in a way that can help remedy environmental damage through individual sacrifices (Stone *et al*., 1995). Environmental responsibility may also describe a person's way of living or lifestyle (Fraj and Martinez, 2006). Environmentally responsible consumers are those who are willing to support and remain responsible for a better sustainable future for the environment. The more consumers are willing to purchase green alternatives, the more they are perceived to be environmental responsible consumers and social actors (Nyborg *et al*., 2006). To intensify the perception of environment responsibility in Lebanon, it is important to provide residents with deep awareness, consciousness and knowledge concerning the environmental conditions in the country. Lee (2009) indicated that a sense of responsibility to protect the environment is typically weak at the individual level. Individuals frequently blame environmental organizations and governments for the absence of environmental protection. Moreover, studies examining the gender difference with respect to environmental responsibility indicate that women tend to be more environmentally responsible than men (Zelezny *et al*., 2000; Haytko and Matulich, 2008).

Perceived effectiveness of environmental behaviour

The perceived effectiveness of environmental behaviour is defined as a measure that is used by consumers to monitor the efficiency of their efforts with respect to the environment. Roberts (1996) found that the single best factor of ecologically conscious consumer behaviour is the consumer's perceived effectiveness. Consumers will purchase green products if and only if they believe that their behaviour will have positive effect on their environment. Kim and Choi (2005) found that the probability that consumers really engage in green purchasing behaviour is greater when high perceived self-efficacy is directly influencing consumers. Perceived consumer effectiveness is also positively related with ecologically conscious behaviour (Straughan and Roberts, 1999). The increase in perceived effectiveness can predict an increase in the number of consumers exhibiting green behaviour. Ellen *et al*. (1991) recommended that businesses, marketers and environmentalists who are endorsing green behaviour should provide entities with positive comments and support for their environmental behaviour. Informing consumers about their purchasing behaviour influence will actually promote the act to increase the demand for green products (Ishaswini and Datta, 2011). Because governments have the main obligation for protecting the environment, individuals will doubt the efficiency of their behaviours in the absenteeism of governmental regulations (Dunlap and Scarce, 1991), green marketers must emphasize to consumers that their consumer behaviours are helpful for fighting environmental deterioration.

Concern for self-image with respect to environmental protection

Self-image is how a person thinks of himself or herself in different aspects of life. 'The image of an environmentally friendly person could thus project a good image of oneself to others' (Lee, 2008: 582). Sirgy (1982) developed a novel 'self-image/product-image congruity theory' that posits that consumer will consume definite products or brands that can further express his or her self-image. Green products' manufacturers can support their customer foundations and sell their green products by simply connecting the self and the public (Todd, 2004). Baker and Ozaki (2008) found that green behaviours are influenced by the pro-environmental self-image. In addition, social responsibility does not vanish once the product is consumed because green purchasing behaviour includes a self-identity that is associated with the general well-being of the public (Todd, 2004). Environmental behaviour can provide consumers with a social and special self-image besides improving their image when purchasing green products (Nyborg *et al*. 2006). A very limited number of studies investigated gender differences and their effects on the relationship between self-image and green behaviour. Lee (2009) found that male adolescents are more concerned with identifying themselves as environmentally responsible persons as part of the symbol of their social status.

HYPOTHESES DEVELOPMENT

Perceived seriousness of environmental problems

In their research, Dunlap and Xaio (2007) examined the perceived threat posed by environmental problems as one of the elements used to study public opinion about environmental issues. Likewise, Guber's model (1996) combines the 'perceived seriousness of environmental problems' with two other aspects of environmentalism to locate policy-relevant matters of environmental concern. The perception of the seriousness of pollution problems is also affected by the media (Moser and Uzzell, 2003). Such perception suggests that as the effectiveness of the media grows with the rapid development in communication and media technologies, the perception of the seriousness of environmental issues will also grow, which will also influence Lebanese consumers

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who will surely continue to perceive environmental problems as more serious over time.

H1: There is a positive relationship between the perceived seriousness of environmental problems and the green purchasing behaviour of Lebanese consumers.

Perceived environmental responsibility

Environmental responsibility is a lifestyle for individuals (Fraj and Martinez, 2006). Lee (2008) found that perceived environmental responsibility is a neutral predictor for green purchasing behaviour because it was the fourth predictor out of the seven factors tested in her study. Individual environmental responsibility is generally weak (Lee, 2009). However, Nyborg *et al.* (2006) found that the more environmentally responsible consumers are, the more willing they are to buy green substitutes. Rationally speaking, the majority of individuals who perceive themselves as environmentally responsible should act upon such responsibility and purchase green alternatives. Thus, we propose the following:

H2: There is a positive relationship between Lebanese consumers' perception of environmental responsibility and their green purchasing behaviours.

Perceived effectiveness of environmental behaviour

Perceived consumer effectiveness affects the behaviours of individuals, whether such behaviour will lead to the preferred outcome or not (Ellen *et al.* 1991). Greater perceived effectiveness is associated with individuals' greater willingness to purchase environmentally friendly products, to contribute to environmental groups and to recycle (Ellen *et al.* 1991). Individuals try to participate in behaviours that they believe they are able to realize (Conner and Armitage, 1998). An important factor in the theory of achievement motivation from Atkinson (1964) is the expectation of success (Ajzen, 1991). People engage in behaviour that they think will be successful (Wigfield, 1994; Wigfield and Eccles, 2000), which suggests that consumers will buy green products if they perceive that their behaviour will benefit environmental development and indicates that the higher the perception of consumers' own behaviour, the more they are willing to 'go green'. Thus, we propose the following relationship:

H3: There is a positive relationship between the perceived effectiveness of environmental behaviour and the green purchasing behaviour of Lebanese consumers.

Concern for self-image in environmental protection

Self-identity reflects the extent to which an individual sees himself or herself satisfying the standards for certain societal roles, such as concern for green issues (Conner and Armitage, 1998). Bailey (2003) found that, as a practical application, it is important to maintain the original denotative meanings of an image, concept and identity to build a common structure associated with self-image, self-concept and self-identity. Self-image is improved when individuals purchase green products (Nyborg *et al.* 2006). Lee (2008) found self-image to be the third predictor out of seven factors tested regarding the factors that affect adolescents' green purchasing behaviour in Hong Kong. Self-identity, as well as self-concept, has been shown to influence individuals' behaviour (Conner and Armitage, 1998). Thus, we propose the following hypothesis:

H4: There is a positive relationship between the concern for self-image in environmental protection and the green purchasing behaviour of Lebanese consumers.

Figure 1 identifies the four proposed hypotheses in a conceptual framework.

RESEARCH METHODOLOGY

Sample and procedure

In this study, we collected data from Lebanon. Lebanon is considered to encompass interaction between the West and the Middle East (Tlaiss and Kauser, 2011). The Lebanese culture has a combination of both Christian-European and Arab Non-Fundamentalist Muslim values (Neal *et al.*, 2005). The data for this study were collected using an online questionnaire that was preceded by a brief introduction. The

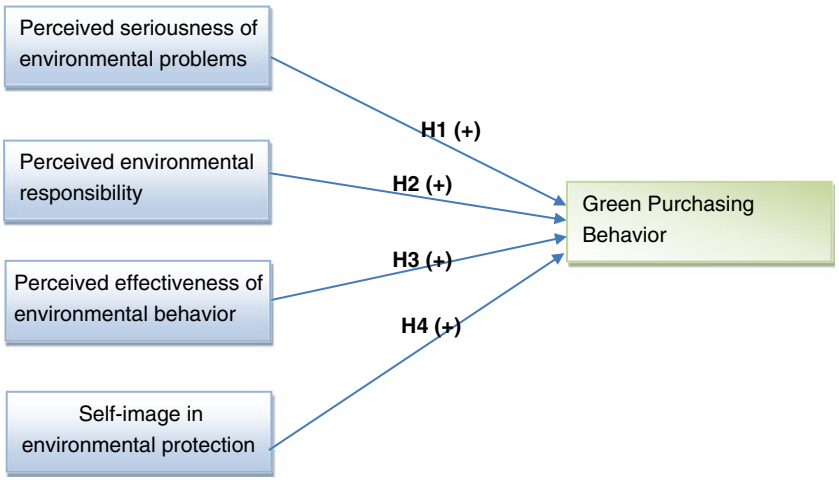

Figure 1. A conceptual framework. This figure is available in colour online at wileyonlinelibrary.com/journal/cb

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questionnaire used in this study was adopted from Lee (2008). The target sample for our research was any Lebanese consumer who has independent purchasing power. All respondents participated voluntarily. A special link was sent to all individuals in our sample via email. A total of 135 questionnaires were sent to potential respondents, and 101 completed questionnaires were received, resulting in a response rate of 75%.

Measures

The questionnaire was composed of six sections. The first four sections measured four independent variables—'perceived seriousness of environmental problems', 'perceived environmental responsibility', 'perceived effectiveness of environmental problems' and 'concern for self-image in environmental protection'. The fifth section measured the dependent variable, green purchasing behaviour. In the last section of the questionnaire, we addressed demographic questions.

We used the 5-point Likert scale, which ranged from 1 (*never*) to 5 (*always*), 1 (*strongly disagree*) to 5 (*strongly agree*) and 1 (*not at all*) to 5 (*to a great extent*). The perceived seriousness of environmental problems factor was measured with five items, such as 'How serious do you think environmental problems are?' The next factor, perceived environmental responsibility, was measured by seven items, including 'I should be responsible for protecting our environment'. The perceived effectiveness of environmental behaviour factor was measured with four items, such as 'I think if I engage in some pro-environmental behaviours in my everyday life, I will contribute to helping our environment'. Three items were used to measure the concern for self-image in environmental protection factor, which includes 'Supporting environmental protection makes me more socially attractive'. Finally, green purchasing behaviour was measured using four items, such as 'When I want to buy a product, I look at the ingredients label to see if it contains components that are environmentally friendly'. The demographic variables collected in the last section of the questionnaire were gender, marital status, age and level of education.

RESULTS

The demographic characteristics of our sample

Of the 101 respondents, 58.4% were male, and the majority were between 20 and 30 years of age (60.4%). More than half the respondents were single (56.4%), and 62.4% of respondents held a bachelor's degree. Table 1 shows the full detailed description of the demographic characteristics of the respondents.

Table 1. Sample demographics

Demographics variables	Frequency	Percent
Gender		
Male	59	58.4%
Female	42	41.6%
Age (years)		
Younger than 20	11	10.9%
20–30	61	60.4%
31–40	18	17.8%
41–50	7	6.9%
51–60	3	3.0%
Older than 61	1	1.0%
Marital status		
Single	57	56.4%
In a relationship	23	22.8%
Married for first time	18	17.8%
Remarried	1	1.0%
Separated	0	0%
Divorced	2	2.0%
Widowed	0	0%
Level of education		
High school or equivalent	3	3.0%
Technical school	1	1.0%
Some college	9	8.9%
Bachelor's degree	63	62.4%
Master's degree	19	18.8%
Doctoral degree	2	2.0%
Professional degree	2	2.0%
Other (specify)	0	0%
Missing	2	2.0%

Reliability of the measures

We calculated Cronbach's alpha (α) to study the reliability of each factor in the questionnaire. The alpha (α) for each factor was as follows: 'perceived seriousness of environmental problems' ($\alpha = 0.716$), 'perceived environmental responsibility' ($\alpha = 0.843$), 'perceived effectiveness of environmental behaviour' ($\alpha = 0.802$), 'concern for self-image in environmental protection' ($\alpha = 0.741$) and 'green purchasing behaviour' ($\alpha = 0.862$). The measures ensure satisfactory element structure reliability (Nunnally, 1978) (refer to Table 2). The Cronbach's alpha results in our study provide empirical support for the results found in Lee (2008).

Correlation analysis results

To test the proposed relations for H1 through H4, we used a correlation and regression analysis. Hypothesis 1 (H1) was supported; a significant correlation of $r = 0.478$ indicated a significant positive relationship between the perception of the seriousness of environmental problems and green purchasing behaviour. This relationship contradicts the negative relationship found in Lee's study between the perceived seriousness of environmental problems and green purchasing behaviour (2008). This contradiction might result from the difference in the nature of the two samples. Furthermore, Lee (2008) suggested that the negative relationship she found may have resulted from the desensitization that affects adolescents.

Hypothesis 2 (H2) was also supported, with a significant correlation of $r = 0.439$. Lee (2008) found that perceived environmental responsibility was the fourth predictor of green purchasing behaviour. Another study conducted by Nyborg *et al*. (2006) found that the more environmentally responsible consumers are, the more willing they are to buy green substitutes. However, no significant correlation was found between the perceived effectiveness of environmental behaviour and green purchasing behaviour; thus H3 was not supported. Hypothesis 4 (H4) was supported; the results indicated a

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Table 2. Correlation and Cronbach's alpha

Variables	1	2	3	4	5	
1. Perceived seriousness of environmental problems	1	0.547**	0.070	0.259**	0.478**	(0.716)
2. Perceived environmental responsibility	0.547**	1	0.178*	0.399**	0.439**	(0.843)
3. Perceived effectiveness of environmental behaviour	0.070	0.178*	1	0.113	0.057	(0.802)
4. Concern for self-image in environmental protection	0.259**	0.399**	0.113	1	0.387**	(0.741)
5. Green purchasing behaviour	0.478**	0.439**	0.057	0.387**	1	(0.862)

Note: Cronbach's alpha figures are in brackets.
*Correlation is significant at the 0.05 level.
**Correlation is significant at the 0.01 level.

significant correlation of $r = 0.387$, which suggests a positive correlation between 'concern for self-image in environmental protection' and 'green purchasing behaviour'. Lee (2008) also supports the same correlation, with 'self-image' being the third top predictor of green purchasing behaviour of adolescents in Hong Kong. According to Nyborg *et al.* (2006), people improve their self-image by purchasing green products. Table 2 contains a complete description of the correlation of all the factors that were measured.

Regression analysis results

To further examine the hypothetical relations, regression analysis was conducted. Hypothesis 1 (H1) predicted a positive relationship between 'perceived seriousness of environmental problems' and 'green purchasing behaviour'. The results of the analysis of variance (ANOVA) test reveal an *F*-value of 29.323 and a significance of 0.000 (at a 0.05 significance level), which, when added to the coefficients of determination R^2 for the regression analysis (equal to 0.229), indicates that 22.9% of the variation in the measure of green purchasing behaviour is explained by the perceived seriousness of environmental problem factor and provides empirical support for the first hypothesis (H1). 'Green purchasing behaviour' is positively related to the 'perceived seriousness of environmental problems'.

Hypothesis 2 (H2) predicted a positive relationship between perceived environmental responsibility and green purchasing behaviour. The results of the ANOVA test reveal an *F*-value of 23.654 and significance of 0.000 (at a 0.05 significance level), which, when added to the coefficient of determination R^2 for the regression analysis (equal to 0.193), indicates that 19.3% of the variation in the measure of green purchasing behaviour is explained by the perceived environmental responsibility factor. The positive significant relationship offers empirical support for the second hypothesis (H2). 'Green purchasing behaviour' is positively affected by 'perceived environmental responsibility'. As for the third proposed relationship between perceived effectiveness of environmental behaviour and green purchasing behaviour, there was no significant relationship. Thus, Hypothesis 3 (H3) was not supported.

Hypothesis 4 (H4) predicted a positive relationship between concern for self-image and green purchasing behaviour in environmental protection. The results of the ANOVA test reveal an *F*-value of 17.491 and a significance of 0.000 (at the 0.05 significance level), which, when added to the coefficient of determination R^2 for the regression analysis (equal to 0.150), indicates that 15% of the variation in the measure of the green purchasing behaviour is explained by self-image in environmental protection and provides empirical support for the fourth hypothesis (H4). 'Green purchasing behaviour' is positively affected by 'concern for self-image in environmental protection'.

DISCUSSION

This study is based on previous studies and provides empirical support for such studies, and our results add to the green purchasing behaviour literature. A significant positive relationship was found between green purchasing behaviour and three factors: 'perception of the seriousness of environmental problems', 'perception of environmental responsibility' and 'concern for self-image in environmental behaviour'. These three factors can be used to increase consumers' green purchasing behaviour. The more environmentally responsible consumers are, the more willing they will be to buy green substitutes, and consumers' self-image is improved when they purchase green products (Nyborg *et al.* 2006). A consumer will also seek to project a good image of herself or himself as an environmentally responsible person to others (Lee, 2008). According to our results, we note that a consumer will engage in more green purchasing behaviour when his or her perception of the seriousness of environmental problems increases, when his or her perception of environmental responsibility increases and/or when his or her concern for self-image in environmental behaviour increases. Additional research should be conducted to find the best tools and channels through which each of these factors can be positively enhanced. The findings of this study thus reveal a significant concern for choosing the most effective strategies of communication, which should include those communication tools and marketing techniques developed over the most recent decade, such as social media, viral marketing and word of mouth. For those who promote green programs and behaviours as public policy-makers and marketers, this study offers insights that will help their efforts. Importantly, these insights do not reduce the need for more governmental rules and regulations regarding the environment. Public policy-makers are responsible for creating policies that increase consumers' green behaviour by offering rewards and helpful information as well as by helping the manufacturers of green products to supply more green alternatives (Ellen *et al.*, 1991).

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Prominently, the positive relationship between the perception of the effectiveness of environmental behaviour and green purchasing behaviour was not supported. Ajzen (1991) suggested that the expectation of success is an important factor in the theory of achievement motivation. Nonetheless, the perceived effectiveness of environmental behaviour and green purchasing behaviour were not correlated. We note that Lebanese consumers do not expect their individual green purchasing behaviour to help improve the environmental situation in the country. The ineffectiveness of green purchasing behaviour in helping to improve environmental conditions is a possible reason for such a neutral relationship in our study. The individual effectiveness of green purchasing behaviour in sustaining the environment should be stressed more, which might be undertaken through print media, new media, education and other resources. If consumers perceive that their green purchasing behaviour will influence the environment positively, they will substitute their purchases for green products. Ellen *et al.* (1991) recommended that marketers, businesses and environmentalists who promote green behaviour should provide individuals with positive feedback and reinforcement of their individual environmental behaviours, noting the efficacy of their individual efforts toward the environment. The more a consumer understands how his or her individual behaviour affects the environment, the more he or she will buy green products. In our results, the main factor related to green purchasing behaviour is the perception of the seriousness of environmental problems with $r = 0.478$, followed by the perception of environmental responsibility with $r = 0.439$ and finally the concern for self-image in environmental protection with $r = 0.387$. Taking these results into consideration, government officials must take action, such as educating citizens from high school and at the university level about serious environmental problems in general and in their nation specifically. The educational process will require modification to the curriculum to include the issues and problems that our environment faces and alternatives for protecting our environment, beginning with green behaviour.

LIMITATIONS AND FUTURE STUDIES

Although our research was prudently prepared and met its goals, we are still aware of its limitations. Furthermore, although the online, self-reporting questionnaire for collecting data is an adequate estimate of actual behaviour, future studies should attempt to collect data during actual purchases. Consumers try to understate past behaviours that are communally undesirable and try to overstate behaviours that are communally desirable. Thus, we suggest collecting data at the entrance of a mall or supermarket when consumers are making their purchases. Another limitation was the sample; targeting only Lebanese consumers might be an obstacle for generalizing such findings. Additional data should be collected from other Middle Eastern countries.

In this study, we examined only four factors affecting green purchasing behaviour, but we are certain that many other factors may affect such behaviour, and they should be examined. Future research should explore additional, direct and mediating factors such as culture, personality and the type of product. Future studies must include more qualitative approach (e.g. Rettie *et al*. 2014). Further research concerning the Mediterranean marketing theory is recommended for the contributions it can make to the general marketing theory.

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BIOGRAPHICAL NOTES

Grace K. Dagher is an Assistant Professor of Management at the Lebanese American University. Her research interests include employee engagement, cultural intelligence, cross-cultural behaviour, consumer behaviour and human resource management. She has presented her research at several international conferences, and her work has appeared in journals such as *Management Research News*, *Journal of Advertising Research* and others.

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REFERENCES

Abdul Wahid N, Rahbar E, Shyan T. 2011. Factors influencing the green purchase behaviour of Penang environmental volunteer. *International Business Management 5*(1): 38–49.

Abuznaid S. 2006. Islam and management: what can be learned? *Thunderbird International Business Review 48*(1): 125–139.

Ajzen I. 1991. The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes 50*(2): 179–211.

Atkinson J. 1964. *An Introduction to Motivation*. American Book-Van Nostrand-Reinhold: New York.

Bailey J. 2003. Self-image, self-concept, and self-identity revisited. *Journal of the National Medical Association 95*(5): 383–386.

Baker J, Ozaki R. 2008. Pro-environmental products: marketing influence on consumer purchase decision. *Journal of Consumer Marketing 25*(5): 281–293.

Bansal P. 2003. From issues to actions: the importance of individual concerns and organizational values in responding to natural environmental issues. *Organization Science 14*(5): 510–527.

Berger I, Corbin RM. 1992. Perceived consumer effectiveness and faith in others as moderators of environmentally responsible behaviours. *Journal of Public Policy and Marketing 11*(2): 9–89.

Bord R, O'Connor R. 1997. The gender gap in environmental attitudes: the case of perceived vulnerability to risk. *Social Science Quarterly 78*(4): 830–840.

Brewer G, Stern P. 2005. *Decision Making for the Environment: Social and Behavioural Science Research Priorities*. National Academies Press.

Carù A, Cova B. 2007. *Consuming Experience*. Oxon: Routledge.

Conner M, Armitage C. 1998. Extending the theory of planned behaviour: a review and avenues for further research. *Journal of Applied Social Psychology 28*(15): 1429–1464.

Cova B, Cova V. 2002. Tribal marketing: the tribalisation of society and its impact on the conduct of marketing. *European journal of marketing 36*(5/6): 595–620.

DOI: 10.1002/cb

Dagher G, Itani O. 2012. The influence of environmental attitude, environmental concern and social influence on green purchasing behaviour. *Review of Business Research 12*(2): 104–111.

Dalli D, Romani S. 2012. Mediterranean shoes conquer the world: global branding from local resources – the Camper case. In Penaloza L, Toulouse N, Visconti L (eds). *Marketing Management: A Cultural Perspective*. Routledge: London/New York; 43–59.

Dunlap R, Xaio C. 2007. Validating a comprehensive model of environmental cross-nationality: a U.S-Canadian comparison. *Social Science Quarterly 88*(2): 471–493.

Dunlap R, Scarce R. 1991. The polls-poll trends: environmental problems and protection. *Public Opinion Quarterly 55*(4): 651–672.

Dunlap R. 1994. International attitudes towards environment and development. In Helge B, Geaorge P (eds). *Green Globe Yearbook of International Co-operation on Environment and Development*. Oxford University Press: Oxford; 115–126.

Ellen P, Wiener J, Walgren C. 1991. The role of perceived consumer effectiveness in motivating environmentally conscious behaviours. *Journal of Public Policy and Marketing 10*(2): 102–117.

Epstein S. 1973. The self-concept revisited. *American Psychologist 28*: 404–416.

Fraj E, Martinez E. 2006. Environmental values and lifestyles as determining factors of ecological consumer behaviour: an empirical analysis. *Journal of Consumer Marketing 23*(3): 133–144.

Ghimire D, Mohai P. 2005. Environmentalism and contraceptive use: how people in less developed settings approach environmental issues. *Population and Environment 27*(1): 29–61.

Guber D. 1996. Environmental concern and the dimensionality problem: a new approach to an old predicament. *Social Science Quarterly 77*(3): 644–662.

Han H, Hsu L, Lee J. 2009. Empirical investigation of the roles of attitudes toward green behaviours, overall image, gender, and age in hotel customers' eco-friendly decision making process. *International Journal of Hospitality Management 28*(4): 519–528.

Harris W. 2005. *Rethinking the Mediterranean*. Oxford University Press Inc.: New York.

Haytko D, Matulich E. 2008. Green advertising and environmentally responsible consumer behaviour: linkages examined. *Journal of Management and Marketing Research 7*(1): 2–11.

Ishaswini, Datta S. 2011. Pro-environmental concern influencing green buying: a study on Indian consumers. *International Journal of Business and Management 6*(6): 124–133.

Kalafatis S, Pollard M, East R, Tsogas M. 1999. Green marketing and Ajzen's theory of planned behaviour: a cross-market examination. *Journal of Consumer Marketing 16*(5): 441–460.

Kim Y, Choi S. 2005. Antecedents of green purchase behaviour: an examination of collectivism, environmental concern and PCE. *Advances in Consumer Research 32*: 592–599.

Koger S, Winter D. 2010. *The Psychology of Environmental Problems: Psychology for Sustainability*. Psychology Press: Taylor and Francis Group, LLC.

Kotler P. 2011. Reinventing marketing to manage the environmental imperative. *Journal of Marketing 75*(4): 132–135.

Krause D. 1993. Environmental consciousness: an empirical study. *Journal of Environment and Behaviour 25*(1): 126–142.

Laroche M, Begeron J, Barbaro-Forleo G. 2001. Targeting consumers who are willing to pay more for environmentally friendly products. *Journal of Consumer Marketing 18*(6): 503–520.

Lee K. 2008. Opportunities for green marketing: young consumer. *Marketing Intelligence and planning 26*(6): 573–586.

Lee K. 2009. Gender differences in Hong Kong adolescent consumers' green purchasing behaviour. *Journal of Consumer Marketing 26*(2): 87–96.

Manget J, Roche C, Münnich F. 2009. Capturing the green advantage for consumer companies. The Boston Consulting Group.

Moser G, Uzzell D. 2003. Environmental psychology. In Weiner I, Millon T, Lerner M (eds). *Handbook of Psychology*. John Wiley and Sons Inc.: Hoboken, NJ; 419–446.

Mostafa M. 2007. Gender differences in Egyptian consumer's green purchase behaviour: the effects of environmental knowledge, concern and attitude. *International Journal of Consumer Studies 31*(3): 220–229.

Mostafa M. 2009. Shades of green: a psychographic segmentation of the green consumer in Kuwait using self-organizing maps. *Expert Systems with Applications 36*(8): 11030–11038.

Neal M, Finlay J, Tansey R. 2005. My father knows the minister: a comparative study of Arab women's attitudes towards leadership authority. *Women in Management Review 20*(7): 478–497.

Nunnally J. 1978. *Psychometric Theory*. McGraw-Hill: New York, NY.

Nyborg K, Howarth R, Brekke K. 2006. Green consumers and public policy: on socially contingent moral motivation. *Resource and Energy Economics 28*(4): 351–366.

Oreg S, Katz-Gerro T. 2006. Predicting pro-environmental behaviour cross-nationally values, the theory of planned behaviour, and value-belief-norm theory. *Environment and Behaviour 38* (4): 462–483.

Paetz A, Dutschke E, Fichtner W. 2012. Smart homes as a means to sustainable energy consumption: a study of consumer perceptions. *Journal of Consumer Policy 35*(1): 23–41.

Rettie R, Burchell K, Barnham C. 2014. Social normalisation: using marketing to make green normal. *Journal of Consumer Behaviour 13*(1): 9–17.

Roberts J. 1996. Green consumers in the 1990s: profile and implications for advertising. *Journal of Business Research 36*(3): 217–231.

Sirgy M. 1982. Self-concept in consumer behaviour: a critical review. *Journal of Consumer Research 9*(3): 287–300.

Sparks P, Shepherd R. 1992. Self-identity and the theory of planned behaviour: assessing the role of identification with "green consumerism". *Social Psychology Quarterly 55*(4): 388–399.

Stern P. 2000. Toward a coherent theory of environmentally significant behaviour. *Journal of Social Issues 56*(3): 407–424.

Stern P, Dietz T, Abel T, Guagnano G, Kalof L. 1999. A value-belief-norm theory of support for social movements: the case of environmentalism. *Human Ecology Review 6*(2): 81–98.

Stone G, Branes J, Montgomery C. 1995. ECOSCALE: a scale for the measurement of environmentally responsible consumers. *Psychology and Marketing 12*(7): 595–612.

Straughan R, Roberts J. 1999. Environmental segmentation alternatives: a look at green consumer's behaviour in the new millennium. *Journal of Consumer Marketing 16*(6): 558–575.

Tlaiss H, Kauser S. 2011. The impact of gender, family, and work on the career advancement of Lebanese women managers. *Gender in Management: An International Journal 26*(1): 8–36.

Todd A. 2004. The aesthetic turn in green marketing: environmental consumer ethics of natural personal care products. *Ethics and the Environment 9*(2): 86–102.

Vermillion L, Peart J. 2010. Green marketing: making sense of the situation. *Proceeding of the Academy of Marketing Studies 15* (1): 68–72. Allied Academies International Conference.

Weigel R, Weigel J. 1978. Environmental concern the development of a measure. *Environment and Behaviour 10*(1): 3–15.

Wigfield A, Eccles J. 2000. Expectancy–value theory of achievement motivation. *Contemporary Educational Psychology 25*(1): 68–81.

Wigfield A. 1994. Expectancy-value theory of achievement motivation: a developmental perspective. *Educational Psychology Review 6*(1): 49–78.

Yam-Tang E, Chan R. 1997. Purchasing behaviours and perception of environmentally harmful products. *Marketing Intelligence and Planning 16*(6): 356–362.

Zelezny L, Chua P, Alrich C. 2000. Elaborating on gender differences in environmentalism. *Journal of Social Issues 56*(3): 443–457.

DOI: 10.1002/cb