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Explaining the environmentally-sustainable consumer behavior: a social capital perspective
Marigold G. Castaneda, Carmelita P. Martinez, Rodilina Marte and Banjo Roxas

Abstract
Purpose - The purpose of this study is to examine the effects of social capital within a community on the adoption of consumer eco-behaviour or environmentally sustainable behaviour of consumers. The authors draw on the behavioural perspective model (BPM) of consumer behaviour and social capital theory in arguing that social capital shapes a consumer’s knowledge of environmental issues and pro-environmental attitudes, which in turn influence a consumer’s perceived capability to engage in eco-behaviour. Design/methodology/approach – This study uses partial least squares approach to structural equation modelling of survey data involving 1,044 consumers in the Philippines. It involves testing of a measurement model to examine the validity and reliability of the constructs used in the study. This is followed by testing of the structural models to test the hypothesised relationships of the constructs.
Findings – The results suggest the substantive influence of social capital on environmental knowledge, pro-environmental attitudes and eco-capability. Both knowledge and attitudes have positive effects on eco-capability, which in turn positively shapes eco-behaviour.
Research limitations/implications – Future studies can examine how social capital as a multi-dimensional construct impacts context-specific consumer behaviour.
Practical implications – Social and environmental marketing may focus on social network activation to encourage eco-behaviours of consumers.
Social implications – Findings highlight the role of social capital within one’s community as a resource channel to encourage environmentally responsible consumer behaviour.
Originality/value – The study extends the BPM by offering a social capital view as a more nuanced explanation of consumer eco-behaviour.

Keywords Attitudes, Environment, Social capital, Consumer behaviour, Sustainable development, Sustainable consumption

Introduction
Over the past 40 years, the worldwide clamour for solutions to address the worsening state of the natural environment has grown louder and bolder. Since the 1970s, there have been attempts to develop policies and frameworks on a global scale to promote a more sustainable economic growth amid diminishing resources in a rapidly degrading natural environment. International summits, agreements, protocols and programs, such as the United Nations Conference on the Human Environment (known as the Stockholm Conference) in 1972, the World Commission on Environment and Development, popularly known as the Brundtland Commission in 1983, the Agenda 21 of the Earth Summit in 1992 and the World Summit on Sustainable Development in 2002, all echoed the global concern
about the negative impacts of economic development on the capacity of the ecological environment to sustain life for the next generations. Their overarching strategic aim is the promotion of sustainable development – a development path which addresses the needs of the present without depriving future generations of the opportunity to also meet their needs (WCED, 1987).

Since then, the concept of sustainable development has become a common theme that significantly influenced not only government’s economic development policies worldwide, but also the supply and demand sides of economic and business activities. On the supply side, businesses and industries face increasing pressure to adopt measures, such as the triple bottom line approach (Elkington, 1997), to mitigate their negative impacts on the natural environment. On the demand side, consumers are increasingly becoming more environmentally conscious in their consumption of goods and services which led to what is now popularly known as sustainable consumption (Jackson and Michaelis, 2003; Seyfang, 2006; OECD, 2008). Sustainable consumption is considered a key element in the global campaign towards a more equitable pattern of development to reverse the negative impacts of human activities on the planet. It underscores the optimal utilisation of goods and services to meet basic human needs and sustain life in ways that are less harmful to the natural environment (OECD, 2008). At the core of sustainable consumption and the focus of this study is understanding how and why consumers engage in behaviours that are deemed environmentally sound and sustainable. Previous studies have noted the effects of laws and government regulations (Stern, 2000; Wong et al., 1996), industry standards and practices (Wong et al., 1996), marketing campaigns (Chan, 1998), knowledge of environmental issues (Liberty and Hongjuna, 2010; Fraj-Andres and Martinez-Salinas, 2007a, 2007b), financial capability (Hedlund, 2011), consumer values and attitudes (Upham, 2012; Hartmann and Apaolaza-Ibanez, 2012), among others, on the adoption of various forms of pro-environment consumer behaviour. Underpinning these studies is the assumption that an environmentally sustainable behaviour is driven by a range of intrinsic and extrinsic factors. In this study, we highlight the key role of social capital in the adoption of ecologically sustainable behaviour or eco-behaviour. We broadly define social capital as the nature and quality of social relationships, ties and engagements of an individual within a community (Putnam, 1995; Coleman, 1988; Woolcock and Narayan, 2000).

Eco-behaviour refers to consumer decisions and actions that are directly related to the consumption of products and services in ways that are less harmful to the ecological or natural environment. Drawing on social capital theory (Putnam, 1995; Coleman, 1988) and the behavioural perspective model (BPM) of consumer behaviour (Foxall et al., 2011; Foxall, 1992, 1999, 2013), the main argument in this study is that the social capital of consumers can either hinder or facilitate the adoption of eco-behaviours. Social capital theory suggests that consumers are embedded in a rich and complex tapestry of formal and informal relationships, whereby social interactions are governed by social norms and structures and have the potential to improve the efficiency of society by facilitating coordinated action and social cohesion (Putnam, 1993; Coleman, 1988; Jin and Shriar, 2013). Arising from a consumer’s social capital are resources, such as information as well as norms and expectations about acceptable and unacceptable behaviour. We argue in this study that social capital is an important element of the “consumer situation or setting” enshrined in the BPM (Foxall et al., 2011; Foxall, 1992, 1999), which suggests that consumer decisions and actions are largely influenced by the relative openness of the setting in which the behaviour occurs and the information and utilitarian reinforcement available or promised by
the setting (Foxall et al., 2011). This study aims to investigate whether social capital as a situational element influences the adoption of eco-behaviour, and if it does, how. As shown in Figure 1, social capital influences the adoption of eco-behaviour through the mediating mechanisms of knowledge of environmental issues, pro-environmental attitudes and perceived personal capability of consumers to engage in environmentally sustainable consumption-related choices and actions (i.e. eco-capability). This model suggests that engagement and interaction of consumers with others in their community (i.e. social capital) can enrich their knowledge about the different issues and problems afflicting the ecological environment. Community norms, standards and social expectations that advocate pro-environment values and actions are more likely to shape positive consumer attitudes towards the ecological environment. In turn, consumers with more knowledge about environmental issues and positive attitudes towards protecting and preserving the ecological environment are more likely to have a heightened level of perceived self-efficacy or sense of personal effectiveness (i.e. eco-capability) that they are able to and can contribute towards sustainable consumption. Consumers with higher levels of perceived eco-capability are more likely to engage in eco-behaviour.

Figure 1. The conceptual model of the study

This study has three major contributions to the sustainable consumption literature.

1. First, it addresses a lacuna in the literature on how social capital as a social context or community setting influences the adoption and development of pro-environment consumer behaviour (Jin and Shriar, 2013; Kusakabe, 2012; Thoyre, 2011). The social context remains a large yet ignored research space in the literature in terms of explaining how and why consumers take or do not take into account the ecological impacts of their decisions and actions (Lee, 2011).

2. Second, the study offers a more nuanced explanation on how social capital impacts adoption of eco-behaviour, that is through the mediating effects of environmental knowledge, pro-environmental attitudes and perceived eco-capability (Thoyre, 2011). This study elucidates the dynamic interplay between the extrinsic (i.e. social capital) and intrinsic (e.g. knowledge and attitudes) elements of consumer behaviour in the context of sustainable consumption.

3. Finally, this study extends the ambit of social context or situation enshrined in the BPM by arguing that the wider social environment, particularly the community where consumers reside, has significant influence on the adoption of eco-behaviour. The rest of the paper is organised as follows. We begin with a discussion of the theoretical underpinnings of the conceptual model of this study as well as the development of
hypotheses. This section is followed by a discussion of the empirical study and results. The final section is the discussion of findings, managerial and public policy implications and conclusion.

**Theoretical background and hypothesis development**

**BPM of consumer behaviour**
The BPM of consumer behaviour developed by Foxall et al. (2011) suggests that the behaviour of consumers is influenced not only by one’s values, attitudes, personalities and other cognitive factors but also by the context or situation in which consumers are embedded. Foxall et al. (2011) calls this situation as the setting in which the behaviour occurs and the information and utilitarian reinforcement available or promised by that setting. The BPM suggests that the behavioural setting or the social and physical environments in which the consumer is embedded presents a wide range of stimuli or reinforcements that signal a choice situation (Foxall et al., 2011). These stimuli or reinforcement mechanisms include:

- utilitarian reinforcement or the direct and functional benefits of certain behaviours;
- informational reinforcement or those cognitive and symbolic benefits of behaviour, such as social consequences (e.g. social acceptance, status and self-esteem); and
- the monetary and non-monetary benefits arising from engaging in certain behaviours.

Foxall et al. (2011) suggest that consumers engage in a learning process when they are confronted with these stimuli from various settings. In effect, individuals engage in certain consumer behaviour and choices after having learned from these stimuli or reinforcements. In the current study, we focus on social capital within a community where consumers reside. We argue that community social capital is a rich social setting or situational context that can influence the extent to which consumers choose to behave or not to behave in an ecologically sustainable manner. In the succeeding sections, we demonstrate the mechanisms through which social capital as an element of this social context promotes the adoption of eco-behaviour among consumers.

**Social capital theory**
The tenet of social capital theory (Bourdieu and Wacquant, 1992; Coleman, 1988) suggests that consumers are embedded in a complex tapestry of social relationships and structures. These institutionalised networks of social relations and structures (Bourdieu and Wacquant, 1992) shape the norms, standards and reciprocal expectations among consumers who reside in a community. Norms of trust and reciprocity arising from these social relations can improve the efficiency of a community by facilitating coordinated actions (Lehtonen, 2004). Putnam (1993) explains that social relations and the norms governing these networks of social ties have positive effects on the overall productivity of a community. Social capital theory suggests that consumer behaviour is largely formed by these social norms and expectations through social processes over time (Bourdieu and Wacquant, 1992; Kusakabe, 2012). Furthermore, consumers may find some reference groups and individuals within their communities influential in their consumption decisions and actions in three main ways (Gupta and Ogden, 2009):
1. First, social capital that is embedded in reference groups and individuals provides information that enriches the knowledge of consumers and their ability to cope with the environment (Gupta and Ogden, 2009).
2. Second, consumers may engage in some publicly visible behaviour or avoid others to reap the benefits or escape from the punishments mediated by the reference groups and individuals.
3. Third, consumers may adopt or develop some values and behaviours consistent with their reference groups and individuals in their communities to bolster their self-concept or image.

Gupta and Ogden (2009) call these influences of reference groups and individuals, informational, utilitarian and value expressive influences which can exert conformity pressures on consumers to adopt, alter or develop certain behaviours. The nature and quality of social relationships are considered a facet of social capital because they enable individuals to find better ways of achieving certain goals which are otherwise unachievable without such social linkages and ties (Coleman, 1988). Form of social capital also enables an individual to expand or access other forms of capital, such as physical, financial and human capital (Coleman, 1988). Thoyre (2011) explains that social networks and relationships form part of an individual’s capital in four ways, namely:

1. diffusion and mobilisation of resources and information through an intricate network of social linkages;
2. enforcement of shared norms through sanctions that make cooperation in collective endeavours more attractive;
3. establishment of social trust which facilitates less costly and less risky social interactions; and
4. the development of cooperative and civic-mindedness among members of the community.

Hypotheses development

Social capital and environmental knowledge

By facilitating learning, social capital can enrich the knowledge of consumers about the ecological environmental issues that affect their communities. Social capital is a rich source of information about environmental issues and what can be done to address these issues. Thoyre (2011) explains that social capital enables the systematic diffusion of information about community needs and issues as well as the facilitation of collective action towards addressing these community issues. Consumers learn about current issues and problems affecting the ecological environment as they interact with family, friends and neighbours within their communities. Social capital also serves as a mechanism that facilitates the diffusion of information and knowledge which are otherwise inaccessible to consumers in isolation (Thoyre, 2011; Falk and Kilpatrick, 2002). Through social capital, information about environmental needs and issues is spread throughout the community which can trigger collective action (Thoyre, 2011). Social learning theory (Bandura, 1977) suggests that consumers effectively engage in the cognitive process of learning through observation and direct instruction within a social context. Consumers learn by extracting information from others, especially those that they consider to be the role models. Social learning theory highlights the key role of the social context, which in this study is exemplified by social
capital within a community, in facilitating the identification, acquisition and assimilation of information that moulds and enriches the environmental knowledge of consumers. Lee (2011) suggests that social exposure, exchange and comparison are the primary mechanisms that enable individuals to learn how to behave in an environmentally sustainable way. Catney et al. (2013) suggests that social capital forms part of the constellation of various sources of knowledge called community knowledge networks (CKN) (Ormerod and Ross, 2013) that facilitate knowledge creation and sharing within communities. In effect, social capital can promote consumer awareness or knowledge of environmental issues that affect a community. Hence, this study posits that:

H1. Social capital is positively associated with consumers’ knowledge of environmental issues.

Social capital and pro-environmental attitudes
In this study, pro-environmental attitudes refer to the enduring psychological tendency or proclivity of consumers towards a more ecologically sustainable pattern of consumption as a response to the current state of the natural environment. Consumers with pro-environmental attitudes are more likely to be genuinely concerned with the environmental issues affecting their communities. They are also more likely to be committed in finding ways to proactively alleviate the harmful effects of their daily activities on the ecological environment. We argue in this study that social capital can potentially develop and nurture the pro-environmental attitudes of consumers. The social norms and ethical standards shared by individuals in the same social network can be influential in shaping individual beliefs, values and attitudes (Thoyre, 2011). An individual may feel the pressure to observe, adopt or develop some values and attitudes consistent with what is considered socially acceptable and desirable to avoid sanctions through a process called socialisation. The social context shapes consumer attitudes through a wide range of stimuli. These stimuli may take the form of positive and negative reinforcements from family, friends, neighbours and other influential individuals within the social network of a consumer which are more likely to shape one’s attitudes towards the ecological environment. Falk and Kilpatrick (2002) suggest that as consumers interact closely with others within their communities, they enrich the so-called “identity resources”, which shape collective image, norms and attitudes. This view suggests that the formation of pro-environmental attitudes is largely shaped by the extent to which consumers engage with their community and feel that sense of belonging and willingness to act for the benefit of the community. Hence, we argue in this study that:

H2. Social capital is positively associated with consumers’ pro-environmental attitudes.

Environmental knowledge and eco-capability
This study refers to perceived eco-capability in describing an individual’s perceived self-efficacy and sense of personal effectiveness in being able to engage in behaviours that are consistent with sustainable consumption. Axelrod and Lehman (1993) suggest that consumers’ beliefs about what they can and cannot do are important elements in explaining consumption choices. Perceived self-efficacy represents perception or self-evaluation on whether one has the capability and resources to engage in a behaviour that results in the achievement of some goals (Axelrod and Lehman, 1993; Rice, 2006). This study’s concept of
eco-capability captures a consumer’s notion of self-control or personal effectiveness such that one’s efforts can actually make a difference in addressing some environmental issues. (Rice, 2006). Bandura’s (1977, 2002) classic notion of self-efficacy suggests that consumers with high levels of perceived eco-capability are more likely to engage in eco-behaviours. Berger and Corbin (1992) suggest that perceived eco-capability plays a key role in influencing whether consumers will respond to environmental issues and problems in their consumption decisions.

We argue in this study that a consumer’s knowledge of environmental issues has a significant role to play in shaping one’s perception of eco-capability. Zhao et al. (2014) suggests that environmental knowledge has frequently been assumed to be the main motivator of green consumer behaviour. According to human capital theory (Becker, 1994; Lee, 1970; Crook et al., 2011), the acquisition of knowledge develops an individual’s capacity to adapt to the changes in one’s circumstances and improves one’s skill set towards greater productivity. Following this vein of argument, we advance the view that knowledge about environmental issues enables consumers to decipher what can and cannot be possibly and practically done to address these issues, at least from an individual consumer’s point of view. Given their environmental knowledge, consumers can gauge the changes to their consumption behaviour which they can adopt to address certain environmental issues affecting their communities. Hence, we posit in this study:

H3. Knowledge of environmental issues is positively associated with high levels of eco-capability.

Pro-environmental attitudes and eco-capability

The primordial role of attitudes in predicting behaviour is enshrined in the theory of planned behaviour (Ajzen, 1988) which argues that attitudes shape behavioural intentions which then leads to actual behaviour. In Ajzen’s (1988) model, perceived behavioural control (conceptually akin to eco-capability) is a key construct that shapes the behavioural intention. An individual is unlikely to pursue or enact one’s behavioural intentions without a sense of personal control over the behaviour regardless of one’s favourable cognitive predisposition towards the behaviour. In this study, we argue that pro-environmental attitudes can reinforce an individual’s sense of personal effectiveness that one has the capability to contribute towards environmental sustainability even as a consumer. Pro-environmental attitudes have been shown to positively influence a person’s sense of individual responsibility (Rice, 2006). A sense of personal responsibility to act on environmental issues can activate a dormant sense of self-efficacy that they can do something about these issues. It can also reinforce and strengthen further one’s sense of personal effectiveness that one’s efforts can make a difference in the wider community. Pro-environmental attitudes can potentially empower an individual to search for ways to equip oneself with resources and capabilities that are perceived to be important in aligning one’s consumer choices and lifestyles with that of sustainable consumption. Hence, we posit in this study that:

H4. Pro-environmental attitudes are positively associated with high levels of eco-capability.

Eco-capability and eco-behaviour
The role of self-efficacy in predicting behaviour is well-established in the social cognitive psychology literature. For instance, the theory of planned behaviour (Ajzen, 1991) explains that self-efficacy (also known as perceived behavioural control) is one of the primordial determinants of behavioural intentions and actions. It determines the intention or choice to act and the amount of effort that an individual exerts in enacting such intention (Bandura, 2002). In this study, we posit that eco-capability represents an individual’s self-efficacy which will ultimately determine one’s decision to engage in environmentally sustainable behaviour. Engagement in ecologically sustainable behaviour entails some changes in individual preferences, habits and practices which may require additional effort as well as resources, such as time. A consumer’s perceived eco-capability will ultimately determine whether such changes are worth pursuing and that one’s efforts will make a difference in addressing some environmental issues or problems. Tabenero and Hernandez (2011) suggest that perception of one’s eco-capability enables a consumer to focus on the goal of addressing an environmental issue and what he or she can do about it, alleviates the perceived difficulty in pursuing such goal, escalates one’s commitment to achieve one’s goal, efficiently allocates personal resources and facilitates the search of better ways to realise such goal. Previous studies have noted the key role of eco-capability in determining whether consumers would choose “green” products (Zhao et al., 2014); recycle their waste (Tabenero and Henandez, 2011); and bring their own bags when shopping (Lam and Chen, 2006). We therefore posit in this study:

H5. High levels of eco-capability are positively associated with eco-behaviour.

Mediating roles of environmental knowledge, pro-environmental attitudes and eco-capability

The foregoing discussion underscores the proposition that social capital does not necessarily have direct impact on the eco-behaviour of consumers. The conceptual model suggests three main mediated relationships in so far as social capital is concerned:

1. The first mediated relationship shows the role of environmental knowledge in the social capital– eco-capability link. Consumers acquire, assimilate and enrich their knowledge of environmental issues from their social capital in the wider community. This knowledge will nurture consumers’ conviction and perceived capability that they can, should and will engage in a more environmentally sustainable behaviour.

2. The second mediated relationship shows the role of pro-environmental attitudes in the social capital– eco-capability link. We argue that attitudes are formed (through positive and negative reinforcements) when consumers interact with others in their community. Pro-environmental attitudes will also strengthen perceptions of self-efficacy or personal effectiveness that one can do something to address certain environmental issues besetting the community.

3. The third and final mediated relationship highlights the role of eco-capability in the social capital– eco-behaviour link. We argue that social capital by itself does not necessarily lead to the adoption of eco-behaviour.

Because of the two major mechanisms discussed above, consumers are able to take advantage of their social capital in shaping their perceived eco-capability, which in turn influences the adoption of eco-behaviour. In effect, we posit in this study that:

H6a. Knowledge of environmental issues mediates the effects of social capital on eco-capability.
H6b. Pro-environmental attitude mediates the effects of social capital on eco-capability.

H7. Eco-capability mediates the effects of social capital on eco-behaviour.

**Methods and data**

A large-scale survey of consumers was conducted in three cities in the Philippines in 2012. Of the 2000-fielded survey questionnaires using field enumerators who conducted a face-to-face interview, 1,328 questionnaires were retrieved. However, only 1,044 questionnaires were deemed complete and were subsequently used in this study. Non-response bias analysis using the survey wave technique (Roxas and Coetzer, 2012) did not show any discrepancy between early and late respondents. The analysis for common method variance using Harman’s (1976) one-factor test and Podsakoff et al.’s (2003) partial correlation with a marker variable technique did not show any evidence of mono-method bias.

In all, 40 per cent of the 1,044 survey respondents are between 18 and 45 years old and the rest are in the age range of 46-65 years old. Male and female respondents are equally represented in the sample. More than half of the respondents in the sample have formal university-level qualifications, while 12 per cent have vocational or technical qualifications. A quarter of the respondents have secondary school diploma and a small fraction (7 per cent) of the respondents have elementary school qualification.

**Measurement**

**Social capital**

We recognise the diverse operationalisation of social capital which is often measured as a multi-dimensional construct (Adler and Kwon, 2002; Woolcock and Narayan, 2000). For purposes of this study, we measured social capital rather broadly to capture the so-called bonding ties (Putnam, 2000) that an individual has established within one’s immediate community. Bonding ties reflect strong ties with family, friends and neighbours who might be in a position to provide various types of support or access to resources to an individual within a community (Ellison et al., 2007; Lehtonen, 2004). We developed six items with a seven-point Likert type of scale (1 – strongly agree to 7 – strong disagree) to describe the nature and extent of engagement of consumers with their family, friends and neighbours in their local communities. A sample item states, “I learn a lot from my neighbours about environmental issues”.

**Environmental knowledge**

This study aims to capture the level of knowledge of consumers about the ecological environment with strong emphasis on environmental issues and problems that affect the communities where consumers reside. We developed eight items with a seven-point Likert type of scale (1 – none at all [. . .] 7 – very extensive knowledge) based on previous studies (Ellen, 1994). A sample item states, “Please indicate the extent of your knowledge about our environment in terms of [. . .] where our garbage finally go”.

**Pro-environmental attitudes**

We adopted seven items with a seven-point Likert type of scale (1 – strongly disagree to 7 – strongly agree) from previous studies (Abdul-Muhmin, 2007; Fray-Andres and Martinez, 2007b; Kim et al., 2012; Lin and Huang, 2012; Gadenne et al., 2011) to measure the pro-environmental attitudes of consumers. A sample item states, “It would mean a lot to me if I could contribute towards environmental protection”.

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Eco-capability
This construct is measured by five items with a seven-point Likert type of scale (1 – very incapable to 7 – very capable) to describe the degree to which consumers perceive that they have the capability and resources to engage in eco-behaviour. We draw on previous studies (Liberty and Hongjuna, 2010; Tabenero and Hernandez, 2011; Hopper and Nielsen, 1991; Berger and Corbin, 1992) in the scale development process to measure this construct. A sample item states, “Do you think you are capable of doing consistently in your daily life the following: saving electricity and water?”

Eco-behaviour
Twelve items were developed with a seven-point Likert scale to measure the pro-environment consumer behaviour of respondents to this study. Previous studies (Fraj and Martinez, 2007a; Newell and Green, 1997; Lin and Huang, 2012; Gadenne et al., 2011; Shepherd et al., 2005; Berger and Corbin, 1992) informed the development of these items. Only 7 out of the 12 items were found useful after conducting factor analyses as shown in the next section.

Control variables
Previous studies (Newell and Green, 1997; Barber et al., 2010) have shown that knowledge, attitudes and eco-behaviour vary according to the characteristics of consumers. In this study, we accounted for age, sex and education in explaining the eco-behaviour of consumers.

Data analysis
To test H1 to H7, we used partial least squares (PLS) approach to structural equation modelling aided by the software WarpPLS v.4 (Kock, 2013). Given the main objective of the current study (i.e. relationship estimation rather than predictive modelling), sample size of 1,044, 10 latent variables, 33 indicators, factor loadings (minimum of 0.80) and factor inter-correlations (minimum of 0.31), the use of PLS-based SEM in testing the current study’s measurement and structural models is deemed plausible (Marcoulides and Saunders, 2006). We followed a two-stage data analysis (Anderson and Gerbing, 1988) where we first developed and tested a measurement model to examine the validity and reliability of the constructs. This is followed by the development and testing of the structural models to test the hypotheses.

The development and testing of the measurement model involves exploratory and confirmatory factor analyses to determine the underlying structure of the data. The results of exploratory factor analysis show eight clusters of items which describe social capital, environmental knowledge, eco-capability, attitudes (with two sub-clusters) and eco-behaviour (with three sub-clusters). We proceed with confirmatory factor analysis to test the goodness of fit (GoF) between the data and the emergent measurement model. As shown in Table I, the items under social capital, environmental knowledge and eco-capability loaded highly on their respective constructs. The measurement model shows that attitude is a higher-order construct comprising an individual’s belief about the desirability of pro-environmental consumer behaviour and willingness to engage in such behaviour. Eco-behaviour is also considered a higher-order construct comprising three facets, namely waste avoidance, waste reduction and energy conservation.
We also examined the psychometric properties of the items and their relevant constructs. The significant loadings of items in their respective constructs suggest that there is evidence supporting the convergent validity of the constructs. The constructs also demonstrate acceptable levels of item homogeneity, item consistency, reliability and of 0.70) of Cronbach’s alpha, composite reliability coefficients (CRC) and Joreskog’s rho (Bagozzi et al., 1991; Fornell and Larker, 1981; Hair et al., 2006; Kock, 2013). The means, standard

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Standardised factor loadings and coefficients of validity and reliability</th>
<th>Second-order construct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social capital (FCVIF = 1.35)</td>
<td>AVE = 0.66; α = 0.89; ρ = 0.92; CRC = 0.93</td>
<td>n/a</td>
</tr>
<tr>
<td>Learn from friends about environmental issues</td>
<td>0.80</td>
<td>n/a</td>
</tr>
<tr>
<td>Learn from friends about eco-products</td>
<td>0.83</td>
<td>n/a</td>
</tr>
<tr>
<td>Neighbours value environment</td>
<td>0.83</td>
<td>n/a</td>
</tr>
<tr>
<td>Neighbours engage in eco-practices, such as recycling</td>
<td>0.81</td>
<td>n/a</td>
</tr>
<tr>
<td>Learn from family about environment</td>
<td>0.82</td>
<td>n/a</td>
</tr>
<tr>
<td>Doing recycling at home</td>
<td>0.80</td>
<td>n/a</td>
</tr>
<tr>
<td>Knowledge of environmental issues (FCVIF = 1.11)</td>
<td>AVE = 0.72; α = 0.93; ρ = 0.95; CRC = 0.95</td>
<td>n/a</td>
</tr>
<tr>
<td>Source of drinking water in our city</td>
<td>0.85</td>
<td>n/a</td>
</tr>
<tr>
<td>Source of power supply in our city</td>
<td>0.89</td>
<td>n/a</td>
</tr>
<tr>
<td>Where our garbage finally go</td>
<td>0.87</td>
<td>n/a</td>
</tr>
<tr>
<td>Climate change</td>
<td>0.98</td>
<td>n/a</td>
</tr>
<tr>
<td>Global warming</td>
<td>0.97</td>
<td>n/a</td>
</tr>
<tr>
<td>State of forests in the country</td>
<td>0.82</td>
<td>n/a</td>
</tr>
<tr>
<td>Endangered species</td>
<td>0.81</td>
<td>n/a</td>
</tr>
<tr>
<td>Carbon emissions</td>
<td>0.80</td>
<td>n/a</td>
</tr>
<tr>
<td>Eco-capability (FCVIF = 1.29)</td>
<td>AVE = 0.69; α = 0.88; ρ = 0.02; CRC = 0.92</td>
<td>n/a</td>
</tr>
<tr>
<td>Recycling</td>
<td>0.81</td>
<td>n/a</td>
</tr>
<tr>
<td>Saving electricity and water</td>
<td>0.90</td>
<td>n/a</td>
</tr>
<tr>
<td>Buying eco-friendly products</td>
<td>0.84</td>
<td>n/a</td>
</tr>
<tr>
<td>Convince others to adopt environmental practices</td>
<td>0.84</td>
<td>n/a</td>
</tr>
<tr>
<td>Support government programs</td>
<td>0.86</td>
<td>n/a</td>
</tr>
<tr>
<td>Pro-environmental attitudes (FCVIF = 1.89)</td>
<td>AVE = 0.80; α = 0.80; ρ = 0.90; CRC = 0.90</td>
<td>n/a</td>
</tr>
<tr>
<td>Desirability of eco-behaviour (FCVIF = 1.62)</td>
<td>AVE = 0.64; α = 0.91; ρ = 0.94; CRC = 0.94</td>
<td>n/a</td>
</tr>
<tr>
<td>Sense of satisfaction</td>
<td>0.90</td>
<td>n/a</td>
</tr>
<tr>
<td>Contribute towards environmental protection</td>
<td>0.93</td>
<td>n/a</td>
</tr>
<tr>
<td>Sense of achievement</td>
<td>0.88</td>
<td>n/a</td>
</tr>
<tr>
<td>Willingness to engage in eco-behaviour (FCVIF = 1.53)</td>
<td>AVE = 0.71; α = 0.80; ρ = 0.91; CRC = 0.84</td>
<td>n/a</td>
</tr>
<tr>
<td>Willing to pay higher prices</td>
<td>0.80</td>
<td>n/a</td>
</tr>
<tr>
<td>Willing to boycott</td>
<td>0.83</td>
<td>n/a</td>
</tr>
<tr>
<td>Willing to switch or change to brands</td>
<td>0.86</td>
<td>n/a</td>
</tr>
<tr>
<td>Willing to talk to other people</td>
<td>0.87</td>
<td>n/a</td>
</tr>
<tr>
<td>Eco-behaviour (FCVIF = 1.95)</td>
<td>AVE = 0.81; α = 0.88; ρ = 0.90; CRC = 0.90</td>
<td>n/a</td>
</tr>
<tr>
<td>Waste avoidance (FCVIF = 1.62)</td>
<td>AVE = 0.75; α = 0.80; ρ = 0.00; CRC = 0.88</td>
<td>n/a</td>
</tr>
<tr>
<td>Use biodegradable soaps or detergents</td>
<td>0.91</td>
<td>n/a</td>
</tr>
<tr>
<td>Read labels of products</td>
<td>0.95</td>
<td>n/a</td>
</tr>
<tr>
<td>Buy recycled or eco-friendly products</td>
<td>0.94</td>
<td>n/a</td>
</tr>
<tr>
<td>Waste reduction (FCVIF = 1.02)</td>
<td>AVE = 0.91; α = 0.90; ρ = 0.95; CRC = 0.95</td>
<td>n/a</td>
</tr>
<tr>
<td>Reuse or recycle papers, bottles, etc.</td>
<td>0.96</td>
<td>n/a</td>
</tr>
<tr>
<td>Segregate garbage</td>
<td>0.96</td>
<td>n/a</td>
</tr>
<tr>
<td>Energy conservation (FCVIF = 1.85)</td>
<td>AVE = 0.74; α = 0.80; ρ = 0.85; CRC = 0.85</td>
<td>n/a</td>
</tr>
<tr>
<td>Minimise use of electricity</td>
<td>0.86</td>
<td>n/a</td>
</tr>
<tr>
<td>Buy energy-efficient products</td>
<td>0.86</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Notes: AVE = average variance extracted; α = Cronbach’s alpha; ρ = Joreskog’s rho; CRC = composite reliability coefficient; n/a = not applicable; PLS regression, bootstrapping, 100 resamples, 7 iterations
deviations and inter-correlations of the constructs and two control variables are shown in Table II.

To test H1 to H7, we developed and tested two structural models as shown in Figure 2. The first structural model (Model A) is a full mediation model, whereby:

Table II. Descriptive statistics and inter-correlations of variables (N= 1044)

![Table II](image)

Figure 2 The structural models

![Figure 2](image)

Notes: \( \beta \) = standardised path (beta) coefficient; \( f \) = Cohen’s (F) measure of effect size: small = 0.02, medium = 0.15, large = 0.35; Q2 = Stone – Geisser Q-squared coefficient: valid model if Q2 > 0; **p < 0.01; *p < 0.05
1. environmental knowledge and attitudes both fully mediate the effects of social capital on eco-capability; and
2. eco-capability fully mediates the effects of social capital on eco-behaviour.

This model also suggests that eco-capability fully mediates the effects of environmental knowledge and attitudes on eco-behaviour, although this is not the focus of the current study. The second structural model (Model B) suggests that the mediated relationships shown in the previous model are partial only. This model suggests that:

- social capital has direct effects on eco-capability that cannot be accounted for by environmental knowledge and attitudes; and
- social capital has direct effects on eco-behaviour that are unaccounted for by eco-capability.

To determine which model has a better fit with the data, we examined the GoF index (Vinzi et al., 2010), the average path coefficient (APC), the average $R^2$-squared (ARS) and average variance inflation factor (AVIF) values (Kock, 2013; Vinzi et al., 2010). The APC, ARS and AVIF show the average strength and significance of the relationships of the variables in the model, the predictive power of the exogenous variables to explain the variations in the endogenous variables and the level of multicollinearity which can undermine the validity of the model, respectively (Kock, 2013).

The results show that the partially mediated model (Model B) has the best fit with the data because it has higher ARS which indicates that it captures well the variations in the dependent variables (i.e. eco-capability and eco-behaviour). It also has a low AVIF value which indicates that multicollinearity does not appear to be a concern in the model. The GoF global index (Vinzi et al., 2010) of 0.488 suggests large effect size (Wetzels et al., 2009), which indicates the overall predictive validity of the model.

We further tested the validity of Model B by examining the significance and effect sizes of the mediated paths (Preacher and Hayes, 2008). As shown in Table III, all the direct (i.e. social capital → eco-capability and social capital → eco-behaviour), the indirect (i.e. social capital → environmental knowledge/attitudes → eco-capability → eco-behaviour) and total effects (i.e. direct and indirect effects) are significant. The indirect effects have medium to large effect sizes (Cohen, 1992), which suggest that these effects are substantially relevant in explaining the partial mediating roles of the relevant variables shown in Model B.

However, the effect sizes of the significant indirect effects of environmental attitudes and knowledge on eco-behaviour are rather low. This particular finding highlights the strong mediating effects of eco-capability. Overall, based on the foregoing results in so far as social capital is concerned with respect to eco-behaviour, there is empirical evidence to support the claim that Model B fits the data better than Model A.

Based on these results, there is empirical support to H1 and H2 such that social capital is positively and significantly associated with higher levels of environmental knowledge and attitudes. Social capital explains 16 and 18 per cent of the variations in environmental knowledge and attitudes, respectively, with medium effect sizes (i.e. $f^2$ values of 0.16 to 0.18). There is also empirical evidence supporting H3 and H4 such that both environmental knowledge and attitudes are positively associated with higher levels of eco-capability. Approximately, 31 per cent of the variations in eco-capability are accounted for by social capital, environmental knowledge and attitudes. The effect sizes of these three variables on
eco-capability range from medium to large. H5 is also well supported as shown by the significant and positive relationship with large effect size between eco-capability and eco-behaviour. Approximately, 64 per cent of the variations in eco-behaviour are accounted for by eco-capability. H6a-H6b and H7 are all partly supported by the data, given that the partially mediated model (Model B) explains the data better than the fully mediated model (Model A).

Table III. Testing of direct and indirect effects

<table>
<thead>
<tr>
<th></th>
<th>Direct effects</th>
<th>Indirect effects</th>
<th>Total effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>Effect size$^a$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>Social capital $\rightarrow$ knowledge/attitudes $\rightarrow$ eco-capability</td>
<td>0.22**</td>
<td>0.15</td>
<td>0.22**</td>
</tr>
<tr>
<td>Social capital $\rightarrow$ knowledge $\rightarrow$ eco-behaviour</td>
<td>0.22**</td>
<td>0.22</td>
<td>0.22**</td>
</tr>
<tr>
<td>Social capital $\rightarrow$ attitude $\rightarrow$ eco-behaviour</td>
<td>0.22**</td>
<td>0.27</td>
<td>0.22**</td>
</tr>
<tr>
<td>Social capital $\rightarrow$ eco-capability $\rightarrow$ eco-behaviour</td>
<td>0.22**</td>
<td>0.13</td>
<td>0.22**</td>
</tr>
<tr>
<td>Attitudes $\rightarrow$ eco-capability $\rightarrow$ eco-behaviour</td>
<td>0.22**</td>
<td>0.04</td>
<td>0.22**</td>
</tr>
<tr>
<td>Knowledge $\rightarrow$ eco-capability $\rightarrow$ eco-behaviour</td>
<td>0.67**</td>
<td>0.10</td>
<td>0.67**</td>
</tr>
</tbody>
</table>

Notes: $\beta$ = path (total) coefficient; $^a$Cohen's $f^2$ (Cohen, 1992); **significant at $p < 0.01$; *$p < 0.05$

The Stone–Geisser Q2 is a measure of predictive validity which shows that the proposed structural model can best reproduce the observed values from the survey data set (Geisser, 1975; Stone, 1974). The Q2 values in Model B are greater than 0, which suggest that the model has acceptable predictive validity (Geisser, 1975; Stone, 1974). The results also suggest that older and female consumers with higher levels of education tend to be more pro-environment in their behaviour. However, their effect sizes are relatively small to be of significant consideration in interpreting the model.

Discussion, conclusions and implications for future research
Drawing on the BPM of consumer behaviour (Foxall et) and social capital theory (Putnam, 1995; Coleman, 1988; Woolcock and Narayan, 2000), this study sets out to investigate the mechanisms through which the social context influences consumer’s adoption of ecologically sustainable behaviour or eco-behaviour. The BPM suggests that consumer choices and behaviour are largely influenced by the situations in which a consumer is embedded. Social capital theory suggests that consumers are embedded in a complex network of social relationships which are sources of both normative pressures on and support to individual choices and behaviour, thereby facilitating collective action towards some socially accepted goals.

This study posits that a key element of the social context or situation enshrined in the BPM is the social capital of consumers found in the communities where they reside. We argue that in as far as eco-behaviour is concerned, the BPM should cast a wider net in its operationalisation of consumer situation to include the social context found in the immediate community of consumers.

This study posits further the argument that the influence of social capital on eco-behaviour is rather more complex than what the social capital literature would suggest. In this study, we developed and tested a structural model that shows the mechanisms through which social capital leads to the adoption of eco-behaviour among a sample of consumers from a developing country, the Philippines. In this model, we demonstrate that social capital indirectly influences eco-behaviour in three main ways. First, a consumer’s social capital in one’s immediate community allows consumers to acquire and develop knowledge about
environmental issues. This H1 is well supported by the survey data. This particularly finding suggests that consumers engage in social learning (Thoyre, 2011; Falk and Kilpatrick, 2002) as they interact with their network of family, friends and neighbours within their immediate community. This finding is consistent with previous studies on the role of social capital, particularly of bridging social ties (Catney et al., 2013; Gupta and Ogden, 2009) in enabling individuals to accumulate resources, such as knowledge, through their network of social relationships.

Second, consumers’ pro-environmental attitudes are also formed and nurtured when their network of social ties expects and exerts pressures on individuals to be more concerned and engaged with environmental issues and actions. This H2 is strongly supported by the empirical evidence in this study. Consistent with the social capital literature discussed previously, bridging social ties are sources of normative structural pressures that impact on consumer choices and behaviour. These social norms define and reinforce acceptable behaviour and discourage or penalise those that do not meet the unwritten social standards and code of conduct in the community. As a result, consumers’ attitudes toward environmental sustainability are influenced by the positive and negative reinforcements emanating from the wider community.

Third, knowledge of environmental issues and pro-environmental attitudes do not directly lead to adoption of eco-behaviour. A consumer’s perceived eco-capability or personal effectiveness needs to be activated and reinforced by knowledge and attitudes before an individual adopts and engages in eco-behaviour. These hypotheses (i.e. H3 and H) are strongly supported by the data from the sample used in this study. One of the main tenets of social capital theory is that social ties can empower an individual to engage in some behaviour that leads to collective action to address a common goal (Lehtonen, 2004). Similarly, BPM underpins the utilitarian, informational and symbolic reinforcement mechanisms of a situation on consumer choice and behaviour (Foxall et al., 2011). The findings lend support to these two propositions such that social capital increases a consumer’s perceived eco-capability by enriching one’s knowledge and shaping one’s positive attitude toward environmental sustainability. In turn, consumers are more likely to engage in eco-behaviour when they believe that they have the capability and resources to do so.

The findings also highlight the mediating roles of environmental knowledge, attitudes and eco-capability in the social capital– eco-behaviour link. The empirical evidence partly supports the relevant H6 and H7), given that the partially mediated model fits the data better than the fully mediated model. This finding also suggests that there are other mechanisms unaccounted for in this study that would explain the effects of social capital on eco-behaviour. Nevertheless, the findings of partial mediation lend support to one of the main objectives of the study, which is to offer a more nuanced explanation on how the social context influences the eco-behaviour of consumers. The findings in this study have a number of significant managerial implications for green marketers or companies that market product or services that are positioned as clean and green or ecologically friendly. The study’s findings point to a new mechanism to influence consumer’s choice and behaviour towards sustainable consumption. Consumer behaviour is driven not only by internal stimulus, such as personality, values and self-image, but also by the social context. Hence, influencing the social context requires green marketers to exert marketing stimuli on various elements of the social context to trigger the behavioural change process suggested by the conceptual model of this study. For instance, green marketers can take advantage of
social networking media to promote their clean and green brands with the view of “crowding out” the social network of target consumers which will likely influence the latter’s knowledge and attitudes about the brands. In effect, marketers can promote their brands to their target consumers indirectly by marketing to family, friends and neighbours, who comprise the bridging social network of the target consumers. Marketers can also tailor fit their promotional and sales campaigns to address either the cognitive or attitudinal characteristics of their target consumers. Marketing campaigns may focus on enriching consumer knowledge or appealing to consumer’s attitudinal proclivity towards the brand with the ultimate view of influencing their self-confidence towards consumption of clean and green or eco-friendly products. Finally, green marketers may promote their products and services by appealing to the proclivity of target consumers to adhere to social pressures. Marketing campaigns may highlight some social norms and community practices that promote sustainable consumption.

There are also a number of public policy implications of the findings in this study. Implementation of government programs and campaigns towards sustainable development, such as solid waste management, may follow a social activation approach. This approach aims to change current community norms and expectations about an ecological issue or problem and challenge the community to engage into action. Rather than appealing to individuals, a campaign is targeted to the wider community to influence social norms and standards by highlighting what is acceptable and beneficial for the community and what is not. The activation of ecologically sound community norms and expectations will eventually result in the development of eco-behaviour of residents in the community following the process implied by the conceptual model proposed in this study. The collective efforts of individuals in communities that are aligned with sustainable development should also be recognised as a key element of government campaigns. Positive reinforcement mechanisms should be put in place to further strengthen community norms and standards that promote ecological awareness and action. Government programs also need to focus on reinforcing and affirming the self-efficacy of consumers. These programs can emphasise that all consumers can contribute one way or another in terms of environmental preservation and protection. Programs may highlight the message that even small actions in everyday life can make a difference in promoting a more sustainable pattern of consumption and contribute towards sustainable development.

The study has a number of limitations which point to some areas for future research. The quantitative and survey research design of this study do not capture the deeper nuances of the formation and effects of social capital on individual behaviour. The findings can be enriched by a triangulated approach to data gathering by gathering qualitative data through interviews to tease out richer information. The study’s focus on bridging ties as a facet of social capital is also a limitation in so far as the operationalisation of, for example, multi-layered and multi-dimensional construct is concerned. Future studies may focus on a more comprehensive operationalisation and measurement of social capital and its effects on consumer eco-behaviour. Surveys that require respondents to reveal some socially desirable or undesirable behaviours are prone to a number of response biases brought about by recency, halo and bandwagon effects as well as social desirability bias. Future studies should explore how these response biases impact the quality of the survey data. Finally, the phenomena described in the conceptual model (e.g. the development of social capital, knowledge accumulation, attitude formation and changes in behaviour) do not exist in a
vacuum. Future studies should aim to capture the changes in these variables over time to establish causation.

The social context in which an individual is embedded is a key determinant of consumer behaviour. An ecologically sustainable consumer behaviour can be influenced by an individual’s social capital in one’s immediate community. The norms of behaviour as well as resources emanating from social capital will influence a consumer’s cognitive and attitudinal proclivities to engage in behaviours that demonstrate sustainable consumption. An ecologically sustainable consumer behaviour should, therefore, be viewed as a multifaceted phenomenon driven by both individual and social stimuli.

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