THE DEVELOPMENT OF A THEORETICAL MODEL TO INVESTIGATE FACTORS ASSOCIATED WITH ENVIRONMENTALLY SIGNIFICANT CHOICE BEHAVIOUR IN THE SOUTH AFRICAN MAJOR HOUSEHOLD APPLIANCE MARKET: AN INTEGRATIVE CONCEPTUAL APPROACH

Nadine C Sonnenberg* & Alet C Erasmus

OPSOMMING

Literatuur dui onteenseglik daarop dat huishoudlike toerusting 'n belangrike impak het op die volhoubaarheid van natuurlike hulpbronne. Binne die Suid-Afrikaanse konteks, waar water en elektrisiteit skaars is, is hierdie onderwerp veral van belang. Die aankoop en langtermyn-gebruik van huishoudelike toestelle het veral implikasies ten opsigte van die energiesektor, wat tans onder toenemende druk is om aan die groeiende verbruikersvraag in die land te voldoen. Met stygende huishoudelike inkomstes, veral van voorheen benadeelde Suid-Afrikaners, kan 'n toenemende aantal huishoudings nou vir die eerste keer groot huishoudelike toestelle bekostig. Daarbenewens het die Suid-Afrikaanse regering in 2000 aangekondig dat alle Suid-Afrikaners geregtig is op toegang tot basiese dienste, insluitend elektrisiteit, wat die aankoop van elektriese toestelle nou vir baie meer huishoudings moontlik maak. Maatreëls wat verbruikers kan aanspoor om energie-besparende en omgewingsvriendelike produkeienskappe tydens verbruikers se besluitnemingsprosesse te prioritiseer het dus groot waarde, en soortgelyke navorsing is reeds in ontwikkelde lande gedoen. Die impak van demografiese veranderlikes, lewenstyl en interne motivering, wat verskeie sosiaal-sielkundige aspekte insluit, is gevolglik reeds breedvoerig in bestaande literatuur aangespreek. Verskeie teoretiese benaderings is ook reeds toegepas, veral in terme van individue se interne motivering om omgewingsvriendelike gedrag te openbaar. Empiriese bevindinge wat 'n oorsprong binne die konteks van ontwikkelde lande het kan egter nie sondermeer na die Suid-Afrikaanse verbruikersmark veralgemeen word nie, veral nie as die land se unieke, diverse populasiesamestelling in ag geneem word nie. Verbruikers se vermoëns, byvoorbeeld hulle kennis, vorige ervaring en vermoë om omgewingsvriendelike produkeienskappe te identifiseer en te beoordeel, asook eksterne faktore binne die Suid-Afrikaanse konteks, mag verbruikersbesluitneming noemenswaardig beïnvloed, veral wanneer duur, hoë-risiko produkte, soos elektriese huishoudelike toestelle, aangekoop word.

Gebaseer op 'n kritiese oorsig van bestaande empiriese navorsing en teoretiese benaderings wat binne die Westerse konteks in ontwikkelde lande gedoen is, het hierdie manuskrip ten doel om 'n geïntegreerde, multi-dimensionele konseptuele raamwerk saam te stel, wat gepas sou wees vir toekomstige ondersoeke na faktore wat kan bydra om omgewingsvriendelike besluitneming en aankoopgedrag in die Suid-Afrikaanse (en moontlik ander ontwikkelende lande se) kleinhandelsektor aan te moedig wanneer verbruikers elektriese huishoudelike toestelle aankoop.

— ***Ms NC Sonnenberg****
Department of Consumer Science
University of Pretoria
Tel: +27 (0)12 420 3775
Fax: +27 (0)12 420 2855
Email: nadine.sonnenberg@up.ac.za
* Corresponding Author

— ***Prof AC Erasmus***
Department of Consumer Science
University of Pretoria
Tel: +27 (0)12 420 2575
Fax: +27 (0)12 420 2855
Email: alet.erasmus@up.ac.za

INTRODUCTION

South Africa's rapidly expanding economy and increased consumer spending have secured its position in the BRICS (Brazil, Russia, India, China and South Africa) alliance, which constitutes the fastest growing emerging markets in the world (National Statistics Offices of the BRICS Group, 2013). BRICS' status represents important social and economic benefits for South Africa, but it also requires recognition of the profound environmental impact of ongoing economic growth (World Wide Fund for Nature (WWF), 2012). The energy sector in particular is a major concern: South Africa's energy supply is largely dependent on

coal, which has led to its ranking as the leading carbon dioxide emitter in Africa and the twelfth largest in the world (Niez, 2010; U.S. Energy Information Administration (US EIA), 2013). Escalating energy demands, which overextended the existing infrastructure and capacity, eventually culminated in the 2008 energy crisis (Inglesi & Pouris, 2010; Niez, 2010). Blackouts in key sectors and steep electricity tariff increases brought the reality of energy shortages in the country right to the doorstep of South African households (US EIA, 2013). Amidst growing awareness and regulatory initiatives to address the imbalance between supply and demand, several challenges accompany the suggested measures to ensure continuity of energy provision in the country, specifically in terms of minimizing its environmental impact while ensuring sustained economic growth, and continuing with the provision of electricity to previously disadvantaged communities (Inglesi & Pouris, 2010; Niez, 2010).

Since the South African government's declaration in 2000 that all South Africans should have access to basic services, which include water and electricity, an electrification rate of 75% was achieved by 2009, with 88% urban and 55% rural populations connected to the grid (Niez, 2010; Nieftagodien & Van der Berg, 2007). However, 3,4 million households still need to be connected and electrification remains a national priority to redress past inequalities (Niez, 2010). In terms of energy supply per person, South Africa's rating exceeds that of many other developing countries. It is estimated that South Africans with access to the grid consume approximately 50% of Africa's total electricity supply, although they only represent 5% of the continent's population (Winkler, 2006). In a recent economic survey, South Africa is criticized for having among the highest greenhouse gas emissions per unit of GDP in the world, and has achieved less decoupling of real GDP and CO2 emissions than most countries (OECD, 2013). In terms of residential electricity demand, it is therefore crucial to focus on those decisions that have the most significant impact on a household's energy consumption, which include households' purchase and use of major household appliances.

Due to the fact that major household appliances are durable commodities with an expected service life of at least ten years, such purchases are made infrequently. Appliances chosen therefore have long-term implications that are not easy (or cheap) to fix once a household discovers that it does not function or perform as expected (e.g. excessive electricity or water consumption) (Erasmus *et al*., 2005). Household appliances have several environmental implications apart from electricity and water consumption, for example, the impact of raw materials used on the environment and premature replacement that contribute to waste and pollution (Laitala *et al*., 2011; McCollough, 2009). In addition, households' actual use of appliances is considered the most energy-demanding phase of the product's life cycle (Berkholz *et al*., 2013). Consumer research regarding the acquisition of major household appliances in the South African context seems appropriate, given the 16% growth estimate that is forecasted for the country's appliance industry between 2012 and 2016, as a result of the escalating needs of an aspiring middle-class, many of whom are acquiring appliances for the first time to erase a so-called asset deficit (Nieftagodien & Van der Berg, 2007; PricewaterhouseCoopers (PwC) & Economist Intelligence Unit, 2012).

A household's decision to purchase an appliance with a low energy rating and other eco-friendly features reflects environmentally significant behavior (henceforth referred to as ESB) because, as pointed out by Stern (2000), it represents an action that has a clearly defined impact on either the availability of natural resources or the composition and dynamics of natural systems. Over the past decade, research has focused on various antecedents of ESB, including demographic variables, lifestyle profiles, individual factors such as motivation, as well as various socio-psychological constructs (Oreg & Katz-Gerro, 2006; Iyer & Kashyap, 2007; Wagner, 2003:19-23). Apart from the apparent significant influence of gender (Iyer & Kashyap, 2007; Zelezny *et al.*, 2000), findings pertaining to the influence of other demographic variables remain inconclusive (Bodur & Sarigöllü, 2005; Wagner, 2003:23). Internal motivational factors and various social-psychological constructs such as values, attitudes and beliefs, seem to be more influential in predicting ESB (Oreg & Katz-Gerro, 2006). Over time, scholars have applied an amalgamation of models, such as Ajzen's (1991) Theory of Planned Behaviour and Schwartz's (1977:221-279) Norm-Activation Theory of Altruism, in their investigation of a variety of behaviours including recycling (Oom do Valle *et al*., 2005), green consumerism and

consumers' purchase behaviour (Follows & Jobber, 2000; Tanner *et al*., 2004; Vermeir & Verbeke, 2006).

Notwithstanding the relevance of underlying motivational constructs, most researchers contributing to this body of work have concluded that environmental intent does not inexorably lead to actual behaviour (Whitmarsh, 2009; Zabkar & Hosta, 2013), and that various other causal factors warrant further consideration (Barr, 2007; Stern, 2000). In particular, investigations of complex and expensive purchases, such as major household appliances, may require assessment of a broader scope of factors (Stern, 2000; Jackson, 2005). Most of the existing theoretical frameworks and empirical evidence neglect contextual determinants that shape consumers' choices (Foxall, 1999; Stern, 2000; Wagner, 2003:65), particularly in emerging economies such as South Africa, where consumer populations are complex and culturally diverse (Bodur & Sarigöllü, 2005; Burgess & Steenkamp, 2006; Essoussi & Merunka, 2007). With the above in mind, this paper draws on existing empirical evidence to propose that models attempting to explain ESB should go beyond underlying motivational factors, to incorporate situational forces and personal capabilities, such as knowledge and experience (Tanner *et al*., 2004; Vermeir & Verbeke, 2006). This paper presents a theoretically founded argument that is concluded with a multi-dimensional,
integrative conceptual framework for much needed future investigations of consumers' ESB in the context of an emerging economy such as South Africa.

THEORETICAL BACKGROUND

In a report compiled for the Sustainable Development Research Network, Jackson (2005) identifies two approaches towards an understanding of ESB. The first set of approaches models behaviour as a function of internal processes and characteristics (e.g. attitudes, personal norms and values), whereas the second set of approaches views behaviour as a function of processes, constraints and incentives external to the individual. Some frameworks have also attempted to integrate these internal and external perspectives. One of the earliest examples of a more integrative approach is Lewin's (1951:238) person-situation-field theory, which postulates that behaviour in any given situation is influenced by a number of factors, which may include the situation itself, the individual's internal motivation, as well as cognition and the person's ability to perform the behaviour in question (Fiske & Taylor, 2010:5).

Therefore, in adopting a more integrative approach, this discussion awards particular attention to three broad categories of causal variables that may impact on an emerging consumer's ESB in the major household appliance sector: (1) internal motivational constructs that culminate in terms of pro-environmental intent; (2) situational factors that may impact on such behaviour, as well as (3) knowledge, experience and the ability to assess the energy saving- and eco-friendly features of major household appliances.

Motivational constructs and pro-environmental intent

Intervention programs, policies and green marketing campaigns often rely on internal motivational constructs to instill a sense of moral obligation among individuals to take appropriate action (Stern 2000; Zelezny & Schultz, 2000). Several studies have assessed the relevance of Ajzen's (1991) Theory of Planned Behaviour and Schwartz's (1977:221-279) Norm-Activation Theory of Altruism to explain one's underlying motivation for pro-environmental behaviour (Oom do Valle *et al*., 2005; Tang *et al*., 2011; Wall *et al*., 2007). The Theory of Planned Behaviour postulates that the immediate antecedent of an individual's planned and deliberate behaviour is intentions to perform the behaviour. These intentions are determined by attitudes toward the behaviour, social pressure or subjective norms surrounding the behaviour and the perceived control of factors that may facilitate or inhibit the behaviour (Ajzen, 1991; Wall *et al*., 2007). The Theory of Planned Behaviour is classified as an expectancy value theory, which assumes that choices are based on expected outcomes (Jackson, 2005). The Theory of Planned Behaviour therefore acknowledges personal utility and self-interest as underpinning motives for ESB (Bamberg & Möser, 2007; Wall *et al*., 2007). Norm-Activation Theory, on the other hand, postulates that altruistic behaviour, such as ESB, is guided by moral considerations and pro-social motives (Jackson, 2005) and occurs in response to the interrelationship of personal norms, awareness of consequences, and ascription of responsibility (Oom do Valle *et al*., 2005; Wall *et al*., 2007). Based on the argument that ESB encompasses

a combination of self-interest and pro-social motives, researchers have since amalgamated these models (Oom do Valle *et al*., 2005; Oreg & Katz-Gerro, 2006; Schuler & Cording, 2006; Wall *et al*., 2007).

Combining the Theory of Planned Behaviour and Norm-Activation Theory to explore the underlying motivational constructs contributing to pro-environmental behaviour in an emerging context seems particularly relevant, since emerging consumer populations are often characterized by a mosaic of Western and more traditional cultures (Bodur & Sarigöllü, 2005). While Western cultures tend to assign a more central role toward individual decision-making, traditional cultures demonstrate a more collectivistic orientation (Burgess & Steenkamp, 2006; Kim & Choi, 2005). This may impact on the significance of constructs such as personal (moral) and social norms, as well as construct associations that are specified in existing conceptual frameworks.

Bamberg and Möser's (2007) meta-analytic structural equation model, which is based on an analysis of 46 independent studies applying the Norm-Activation model, Theory of Planned Behaviour or similar models, highlights certain key issues in the configuration of motivational factors as illustrated in Figure 1.

Awareness of environmental problems, in conjunction with internal attribution, contributes to the formation of moral norms as postulated in the original Norm-Activation model (Oom do Valle *et al*., 2005; Wall *et al*., 2007). Although feelings of guilt are not included in the original Norm-Activation model or Theory of Planned Behaviour, it is acknowledged in Bamberg and Möser's (2007) model. The model proposes that internal attribution triggers emotional reactions such as guilt, which then elicits some sense of moral obligation (i.e. moral norm) to compensate for environmentally irresponsible behaviour (Bamberg *et al*., 2007; Bamberg & Möser, 2007; Hunecke *et al*., 2001). Disparity between an individual's own behaviour and the behavioural standard of a reference group (i.e. subjective norms) could also cause feelings of guilt (Bamberg *et al*., 2007; Bamberg & Möser, 2007). Subjective norms are therefore related to moral norms, both indirectly via guilt and directly when the social group's standards are internalized as an individual's own moral norms. Subjective norms subsequently fulfill an indirect role, whereas moral norms emerge as a third, independent predictor of intention to act in an environmentally significant manner, along with attitude and perceived behavioural control, in accordance with the original Theory of Planned Behaviour (Bamberg & Möser, 2007).

To date all nine variables included in Bamberg and Möser's (2007) meta-analytic structural equation model (i.e. awareness of environmental problems, internal attribution, feelings of guilt, social norms, moral norms, attitude, perceived behavioural control, intention and ESB) have not been attended to simultaneously in an emerging context. Their relevance when promoting environmentally significant choice behaviour in the major household appliance product context is therefore not certain. Research is needed to determine the relevance and impact of these constructs in emerging contexts. One study, for example, concluded that collectivistic orientations in emerging economies positively influence individuals' beliefs about self-efficacy, which in turn increase consumers' tendency to purchase green products (Kim & Choi, 2005). To the contrary, other studies argue that the more difficult, time-consuming, or expensive a given type of behaviour is, i.e. the higher the risk involved and the less of a necessity or tangibly rewarding it is, the weaker the dependence of the behaviour on motivational variables (Stern, 1999; Stern, 2000; Tanner *et al*., 2004). Thus, even though individuals may have developed a sense of moral obligation and intent to purchase appliances with energy saving and other eco-friendly features, their eventual evaluation and product choice may be influenced strongly by situational factors that are beyond the intrinsic personal domain (Barr, 2007; Steg & Vlek, 2009; Stern, 2000).

Situational factors in emerging markets and the relevance of an integrative approach

Low correlation consistency between consumers' actual observed choices and assumed motivational determinants (Jackson, 2005; Follows & Jobber, 2000), challenges much of the conventional thinking and singular approaches to theory that have dominated contemporary consumer behaviour research (Foxall, 1999; Wagner-Tsukamoto & Tadajewski, 2006). In an emerging economy such as South Africa, empirical verification of consumers' environmental thinking and decision-making may be deterred when local context and experience of consumption are overlooked. Multiple situational factors related to social, economic and political circumstances may

influence a consumer's decision to engage in ESB (Haron *et al*., 2005; Stern, 2000). For example, financial incentives, available technology and growing regulation concerning the environmental impact of manufacturing may persuade consumers to purchase green products. In addition, the influence of situational factors is often determined by certain personal capabilities such as literacy and experience, which in turn are associated with demographic characteristics such as income and age (Barr, 2007; Stern, 2000). These factors may mediate the relationship between motivation and behaviour (Steg & Vlek, 2009; Thøgerson, 1994). Another key element, distinguished in ESB literature, is that consumers' pro-environmental intent is frequently moderated by habits embedded in contextual conditions (Jackson, 2005; Steg & Vlek, 2009; Stern, 2000).

The complexity of situational determinants and contextual conditions in which consumers' ESB is negotiated cannot be ignored (Jackson, 2005). While extant consumer behaviour research has been labeled as "de-contextualized", with an over-emphasis on internal attitudinal factors (Foxall, 1999; Wagner, 2003:66-67), Jackson (2005) highlights the inexorable controversy between simplicity and complexity in establishing theoretical frameworks for consumer behaviour. Although multifaceted models seem to offer more extensive conceptual insight than simpler models, they are often "poorly structured for empirical quantification" (Jackson, 2005:23). Some scholars have nevertheless endeavored to combine internal (motivational) and external (situational) perspectives to establish integrative theories of ESB (Jackson, 2005), including the social practices model by Spaargaren and Van Vliet (2000), Stern's (2000) attitude-behaviour-context (ABC) model, Triandis' (1994:208) model of social behaviour, the model of consumer action by Bagozzi *et al.* (2002:97), and contemporary approaches such as Barr's (2007) conceptual framework of environmental behaviour.

Two issues resonate particular interest for emerging contexts, namely to facilitate conditions for individuals to adopt ESB, and enquiry about the ability of consumers in these contexts to act in an environmentally significant manner. The Motivation-Opportunity-Abilities model, proposed by Ölander and Thøgerson (1995), addresses both, in addition to motivational factors based on the assumptions of the Theory of Reasoned Action. As postulated in other integrative theories (Stern, 2000; Triandis, 1994:208), motivation is viewed as a predisposition to act in an environmentally significant manner (Ölander & Thøgerson, 1995; Thøgerson, 1994). The Motivation-Opportunity-Abilities model further postulates that motivation is subject to a consumer's ability to behave in a specific way, as well as the facilitating opportunities that would allow the individual to act on his/her intention, as illustrated in Figure 2.

Personal ability and opportunity therefore moderate the relationship between intention and behaviour. The influence of experience is also recognized in this model since beliefs may

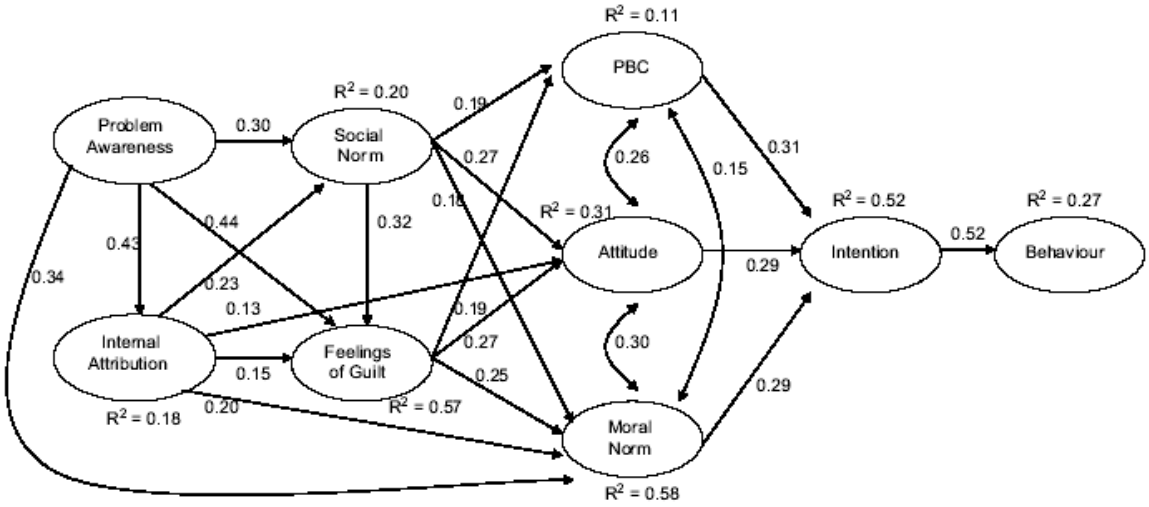

FIGURE 1: META-ANALYTIC STRUCTURAL EQUATION MODEL (Bamberg & Möser, 2007)

change after initial trial and over time, when learning has occurred and the ability to perform the behaviour is mastered (Ölander & Thøgerson, 1995; Thøgerson, 1994). The following sections draw specific attention to the relevance of facilitating opportunities and consumers' ability to engage in environmentally significant choice behaviour in the South African appliances retail sector.

Opportunities for ESB in the South African major household appliance industry

Globally, the pursuit of sustainability and conservation of the environment has become an explicit concern of various stakeholders in the production and supply of major household appliances, including brand leaders in the South African context, such as LG and Samsung (PwC & Economist Intelligence Unit, 2012). Over the past decade, these multi-national firms have undertaken considerable effort to incorporate life cycle assessment (LCA) into their product design strategies, i.e. to replace hazardous substances; to enhance energy efficiency; to improve recyclability and to reduce the use of resources (Mont & Bleischwitz, 2007). Currently, most of the appliances sold in the South African retail sector are imported from Germany, China, the United States, the United Kingdom, Japan and Korea (Finlay & Liechti, 2008), and an estimated 25 different brands are represented in the local major household appliance market (Covary, 2013). Globalization and increased competitiveness have thus contributed to a proliferation of alternatives in the medium- to high-end sector of the market, boasting the latest technological innovations and eco-friendly features.

Coupled with increased availability of energy efficient and eco-friendly alternatives, the South African government has recently approved a five -year project with a US$13-million budget to implement standards and labeling for appliances sold locally (Covary, 2013). These measures are modeled after the European Union standards for energy labeling, but have been adapted to comply with conditions in the South African emerging market environment (Covary, 2013). The aim of the project is to eliminate inefficient appliances on the market, and to empower consumers to make informed choices when purchasing appliances such as dishwashers, washing machines, dryers, ovens, hobs, stoves, refrigerators and freezers (Covary, 2013; Lazenby, 2012). In addition, several appliance retail outlets in key urban areas offer additional opportunities for ESB through the provision of information by sales personnel and other immediate sources of information, such as the prominence and availability of the product itself, packaging and promotional brochures (Sonnenberg *et al*., 2011). Consumers' preferences are at times highly contingent on context and information presentation factors (Pichert & Katsikopoulos, 2008), which have formed the basis of several environmental intervention campaigns such as those described above. Unfortunately informational efforts have had varied success in promoting ESB and have shown limited effect when challenged by external impediments such as economic constraints (McKenzie-Mohr, 2000; Stern, 1999).

Affordability is frequently referred to in discussions about consumers' acceptance of eco-friendly alternatives (Aertsens *et al*., 2009; Gam *et al*., 2010; Ritch & Schröder, 2012) because eco-friendly alternatives are perceived to be expensive, which discourages pro-environmental choices (Wagner, 2003:186; Van Doorn & Verhoef, 2011). On the other hand, price has diverse connotations for individuals with different demographic and socio-psychological profiles (Thøgersen, 1994; Stern, 2000): for some, the higher cost of a so-called green product will be a constraint, while others may regard it as an indication of superior quality (Stern 1999). These connotations are particularly relevant in terms of the spending and consumption patterns of aspiring middle class consumers in South Africa (Nieftagodien & Van der Berg, 2007; PwC & Economist Intelligence Unit, 2012). Exploratory evidence regarding consumers' evaluation and selection of major appliances in the South African retail sector indicates that price is not the primary concern and that the functionality of appliances fulfills a more important role in consumers' purchase decisions (Sonnenberg *et al*., 2011). Green products should therefore be assessed in terms of all features applicable to conventional alternatives, e.g. brand, functionality and price, and as a result marketers cannot solely rely on consumers' willingness to compromise on non-environmental criteria for the sake of the environment (Gam *et al*., 2010).

In summary, availability, information provision, affordability and competitiveness of major household appliances are important considerations in assessing the opportunities that would allow consumers to act on their pro-environmental intentions in the South African appliance retail sector. Opportunities

have been conceptualized as both a subjective and an objective phenomenon in consumer behaviour literature (Jackson, 2005; Ölander & Thøgerson 1995; Thøgerson, 1994). Subjective views of opportunities closely relate to Azjen's (1991) Theory of Planned Behaviour concept of perceived behaviour control (Jackson, 2005; Thøgerson, 1994). In developing the Motivation-Opportunity-Abilities framework, Ölander and Thøgerson (1995) preferred to conceive opportunities from an objective point of view, i.e. a non-biased, accurate reflection of the situation, as opposed to the consumer's subjective assessment and perception thereof. However, they admit that individuals may perceive the same conditions differently and hence interpret opportunities subjectively and frame their decisions accordingly (Ölander & Thøgerson 1995; Thøgerson, 1994). In this regard, the subjective conceptualization of situational opportunities is important, as consumers may, for example, perceive the availability of eco-friendly, energy saving appliances as low, although many alternatives are available on the market. In addition to the opportunities concept, the Motivation-Opportunity-Abilities model also emphasizes the importance of consumers' ability to engage in ESB, which implies their capability of assessing the environmental impact of their product choices.

Emerging consumers' ability to assess eco-friendly features of major household appliances

Exploratory evidence in the South African context indicates that consumers are often unaware of the environmental consequences of their product choices in the major household appliance category, and are unaware of information that could assist them in their evaluation and realization of purchase decisions that would secure more positive environmental implications (Sonnenberg *et al*., 2011). These findings confirm the importance of the concept "ability" in the Motivation-Opportunity-Abilities framework, which is operationalized in terms of two dimensions, namely, task knowledge and habit (Ölander & Thøgerson 1995; Thøgerson, 1994).

Task knowledge relates to a person's knowledge about how to reach a goal or to behave (Ölander & Thøgerson 1995; Thøgerson, 1994). From an environmental perspective, a consumer should ideally be able to evaluate a product based on a "cradle-to-grave" life cycle analysis (LCA). In terms of major household appliances, LCA may comprise an understanding of the energy, the type and quantity of materials used for the production, transportation and distribution of an appliance, as well as its subsequent usage in terms of energy, water and chemical consumption, and

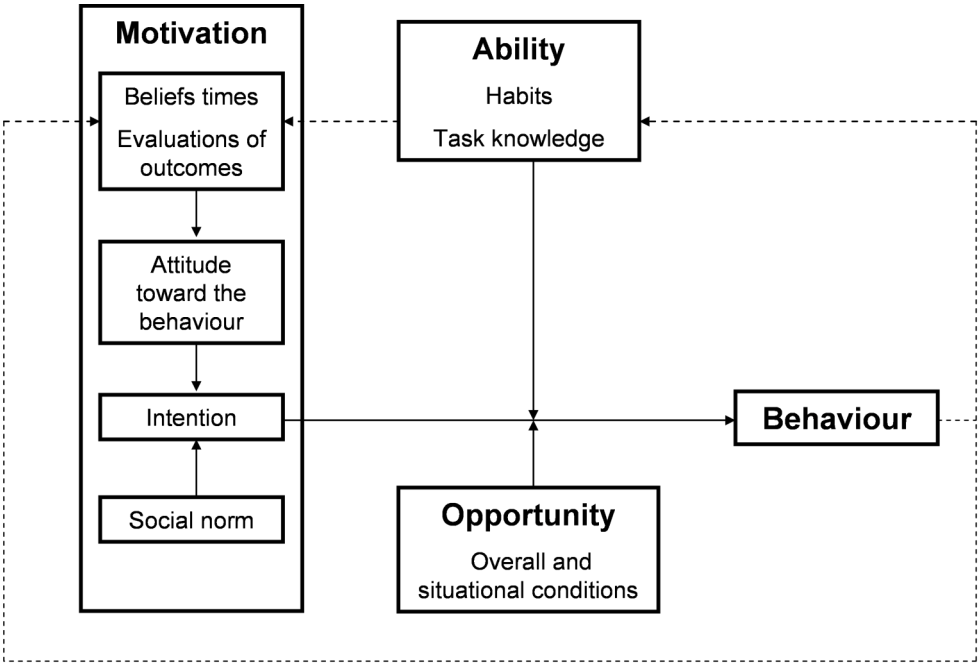

FIGURE 2: MODEL OF RECYCLING BEHAVIOUR (Ölander & Thøgerson, 1995; Thøgerson, 1994)

the eventual disposal of the product (Mont & Bleischwitz, 2007). In an emerging context such as South Africa, where a substantial segment of the consumer population has had limited product experience and exposure to the array of products in the white goods market, the practical implementation of LCA may be somewhat unrealistic. Even beyond the borders of emerging contexts, more experienced consumers in industrially developed countries find it difficult to assess products in terms of the cradle to the grave principle, since it is complex, time-consuming and impractical to perform in the retail setting for every product purchased (Mont & Bleischwitz, 2007; Wagner-Tsukamoto & Tadajewski, 2006). For these reasons Wagner (2003:188-190) suggests that ESB entails a more selective practical application of LCA in the real life context, depending on the amount and type of information available and consumers' prior knowledge.

In the past, various measures have been used to operationalize conceptually distinct dimensions of knowledge. Alba and Hutchinson (1987) propose that consumer knowledge can be operationalized in terms of two different but related dimensions, namely, familiarity and expertise. While familiarity encompasses the amount of product-related experiences that the consumer has accumulated over time, expertise indicates someone's ability to perform product-related tasks. Alba and Hutchinson (1987) further hypothesize that product familiarity increases expertise (i.e. ability and task performance). Amongst others, cognitive effort is reduced through repetition, to the point where it becomes habit, e.g. repeat purchases in which information search and processing is nearly automatically and effortlessly performed (Steg & Vlek, 2009; Wagner, 2003:175-178). These assumptions closely relate to the ability dimension in Ölander and Thøgerson's (1995) Motivation-Opportunity-Abilities model, focusing on the interpretation of recycling behaviour that relies to a large extent on habit formation and task knowledge.

Changes in favour of ESB often require the termination of established habits or routines (Jackson, 2005; Steg & Vlek, 2009; Stern, 2000) and the development of task knowledge, which is particularly relevant in terms of the actual long-term use of major household appliances. However, because major household appliances are expensive, are purchased infrequently, and have long-term functional and performance consequences, habitual processes will not really be relevant during this type of purchase decision, which requires more analytic consumer information processing. A consumer's ability to process analytically depends on his/her underlying motivation (Alba & Hutchinson, 1987; Aertsens *et al*., 2009). A highly motivated environmentally concerned individual is hence more likely to gather information about eco-friendly features of an appliance. Time pressure, information complexity and other contextual constraints may, however, inhibit analytic processing, which is particularly relevant when a consumer is not really familiar with a product (Alba & Hutchinson, 1987). In this regard, product class knowledge is an important aspect to consider, since it facilitates a consumer's ability to assess the environmentally-related attributes of a product and to search for relevant information (Aertsens *et al*., 2009; Bruck, 1985).

Brucks' (1985) categorization of product class knowledge in terms of subjective knowledge, objective knowledge and prior experience has been extensively applied in various studies (e.g. Aertsens *et al*., 2009; Berger *et al*., 1994; Moorman *et al*., 2004; Raju *et al*., 1995). Objective knowledge represents a measure of what consumers actually know, i.e. the amount, type or organization of stored memory (Aertsens *et al*., 2009; Brucks, 1985; Moorman *et al*., 2004; Raju *et al*., 1995). Subjective knowledge, on the other hand, refers to consumers' perceptions of how much they know and represents their degree of confidence in their own knowledge (Aertsens *et al*., 2009; Brucks, 1985; Moorman *et al*., 2004; Raju *et al*., 1995). Although different, both types of knowledge would be relevant in consumers' search for information to facilitate the decision-making process, and their evaluation and choice of major household appliances. Low levels of subjective knowledge may for example influence consumers' reliance on extrinsic attributes (e.g. price) and dealer opinions (Aertsens *et al*., 2009; Brucks, 1985). Conversely, objective knowledge facilitates consideration of more product attributes, with increased emphasis on intrinsic performance-related features and the search for more applicable information (Aertsens *et al*., 2009; Brucks, 1985; Raju *et al*., 1995).

Consumers' ability is also influenced by their product-related experience. The Motivation-Opportunity-Abilities model assumes that experience increases a consumer's ability (Ölander & Thøgerson 1995; Thøgerson, 1994).

In particular, the amount of purchasing or usage experience of a product will improve product class knowledge (Brucks, 1985; Raju *et al*., 1995). Through familiarity, the consumer's ability to differentiate between products is enhanced as a result of increased cognitive structure. Furthermore, the consumer's ability to remember, elaborate and analyze information in terms of relevance and significance in evaluating and selecting a particular product is also augmented (Alba & Hutchinson, 1987; Wagner, 2003:51).

In summary, the theoretical background presented in this paper indicates that a broader integrative approach is needed to establish a comprehensive understanding of specific ESB's as well as factors that would be influential to instigate change. Motivational factors are seen to have a significant influence, but a person's ability and other situational influences may ultimately determine whether an individual's intent is shaped into ESB. In this regard, the importance of amalgamating empirical findings to advance new conceptual and theoretical frameworks that would endorse pro-environmental action is evident (Zelezny & Schultz, 2000; Stern, 2000).

PROPOSED CONCEPTUAL FRAMEWORK

As stated by Jackson (2005), "A good conceptual model requires a balance between parsimony and explanatory completeness." In an effort to achieve this balance, the conceptual framework depicted in Figure 1 is an adaptation of existing models based on existing literature, and is meant to direct investigations of environmentally significant choice behaviour of consumers in an emerging market, such as the South African major household appliance retail sector. The proposed model incorporates a combination of motivational constructs derived from Bamberg and Möser's (2007) meta-analytic structural equation model, as well as the construct associations proposed in Ölander and Thøgerson's (1995) Motivation-Opportunity-Abilities model.

In line with theoretical insights of Stern (2000), the proposed conceptual framework proposes that motivational factors create a predisposition for consumers to act in an environmentally significant manner. As suggested by Ölander and Thøgerson (1995), motivational factors are encapsulated by consumers' intentions. Although Ölander and Thøgerson's (1995) inclusion of the motivational component in the original Motivation-Opportunity-Abilities model was based on the Theory of Reasoned Action, they acknowledge other possibilities such as Schwartz's (1977:221-279) Norm-Activation model. Acknowledging these arguments and deducing that ESB inevitably encompasses a combination of self-interest and pro-social motives (Oom do Valle *et al*., 2005; Oreg & Katz-Gerro, 2006; Schuler & Cording, 2006; Wall *et al*., 2007), the motivational component of the proposed model incorporates Bamberg and Möser's (2007) meta-analytic structural equation model, with inclusion of all the norm-activation constructs as well as those proposed in Theory of Planned Behaviour, except for perceived behaviour control. Perceived behavioural control refers to an individual's belief regarding the relative difficulty to behave in a specific manner (Ajzen, 1991; Tang *et al*., 2011). Thøgerson (1994) reasons that opportunities, operationalized rationally from an objective point of view, influence perceptions of how difficult particular behaviours would be and thus forms the basis of perceived behaviour control.

Although Ölander and Thøgerson (1995) prefer the objective measurement of opportunities, they also concur with other theoretical insights (e.g. Foxall, 1999; Wagner, 2003:15), namely, that consumers interpret and derive meaning from "objectively given" conditions in a highly subjective manner and that the subjective perception of opportunities corresponds with Azjen's (1991) concept of perceived behavioural control. Azjen (2002) in fact suggests that measures of perceived behavioural control should be extended to include items that assess self-efficacy (i.e. confidence in one's ability to perform a behaviour) as well as controllability (i.e. people's beliefs that they have control over the behaviour). Azjen (2002) argues that these measures may include internal factors such as knowledge and skills, as well as factors that are external to the actor. Research by Tang *et al*. (2011) and Tonglet *et al*. (2004) implemented these measures and confirmed that self-efficacy is the requisite ability to execute ESB and that controllability involves perceived situational opportunities for an individual to act in a pro-environmental manner. This is congruent with the so-called ability and situational opportunities, depicted in the Motivation-Opportunity-Abilities model, which mediate the intention-behaviour relationship.

Based on the above, the situational opportunities concept in the proposed framework (Figure 3) is regarded as an objective measure of subjective perceptions, specifically incor-

porating consumers' views on the availability, affordability and competitiveness of eco-friendly alternatives in the South African major household appliance market, as well as the accessibility of information relating to appliances' environmental implications. In terms of a person's ability to perform ESB, Ölander and Thøgerson (1995) highlight the importance of task knowledge and habits. Since the proposed framework focuses on infrequent decisions relating to the purchase of major household appliances, habit has been excluded from the model, although its importance is acknowledged in terms of other types of ESB. Ability is further adapted to address emerging consumers' objective and subjective knowledge of the product category, which ideally, should include LCA in comprehensively assessing the environmental impact of a product. Although objective product class knowledge may provide more accurate indications of a consumer's ability to evaluate product alternatives, subjective measures of knowledge are also included, due to its influence on consumers' decision-making processes and their search for information (Aertsens *et al*., 2009; Brucks, 1985). The ensuing behaviour may reflect selective application of LCA and the eventual choice of product, with a prioritization of energy saving and eco-friendly features that have significant short- and long-term implications for the environment.

In conclusion, feedback is inevitable as it reflects the influence of experience after initial trials (i.e. product- and time-related familiarity), which will alter consumers' abilities to perform the behaviour, their subjective perceptions of the situational opportunities surrounding the behaviour and their subsequent motivation to engage in such behaviour (Ölander & Thøgerson, 1995; Thøgerson, 1994). Clearly, further research and empirical verification of the proposed construct associations are required, and recommendations are made in the section to follow.

CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

As a rapidly expanding economy with increasing consumption patterns, and an ecological footprint that is symptomatic of high income industrialized countries (WWF, 2012), South Africa is compelled to deal with environmental issues more explicitly and with a sense of urgency in the near future. The demand for major household appliances is expected to increase even further as middle income South African households' disposable income continue to escalate, and more consumer populations gain access to electrical supply as a result of electrification programmes. These trends have serious implications for the environment and its natural resources. Based on the theoretical background presented in this paper, an

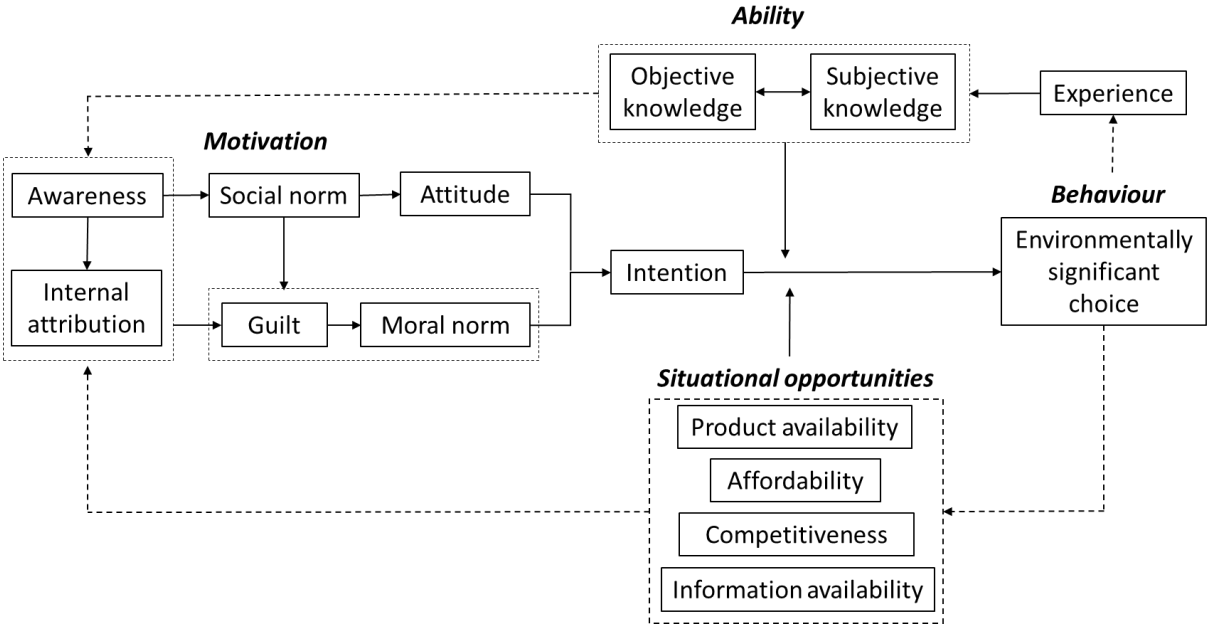

FIGURE 3: CONCEPTUAL FRAMEWORK FOR THE INVESTIGATION OF ENVIRONMENTALLY SIGNIFICANT CHOICE BEHAVIOUR RELATING TO MAJOR HOUSEHOLD APPLIANCES

integrative multi-dimensional approach is advocated for research in the South African market, which not only underlines a Third-world emerging context, but also encapsulates motivational constructs, as well as knowledge and situational determinants, in the execution of the more complex, expensive and significant act of acquiring major household appliances with positive environmental outcomes. Within the field of Consumer Science that is concerned with the well-being of consumers and that strives to facilitate, educate and inform consumers, the empirical verification of this conceptual framework would be significant in terms of efforts to indicate and explicate the interrelationship of factors that contribute to environmentally significant choice behaviour in the South African major household appliance sector.

Verification of the proposed framework requires careful consideration of the units of analysis and the selection of appropriate research methods that are adapted for the unique challenges of consumer behaviour research in the South African context. Sampling in emerging contexts is often complex and challenging due to the lack of sampling frames (Burgess & Steenkamp, 2006), which poses particular problems when representative data is required. Representative data regarding South African consumers is further complicated by the diverse composition of the population. South Africa's level of income inequality is, for example, among the highest in the word. As stated in a recent consumer report: "The top 10% of the country's earners take away 101 times the earnings of the bottom 10% of the population" (PwC & Economist Intelligence Unit, 2012). Averages do not account for the differences in a population and it is therefore argued that in the quest for the preservation of the country's natural resources and ecosystems, focus must be drawn to those with increased spending power and whose share in the average ecological footprint may be proportionally higher than the less affluent, who are inevitably also not in a position to change their behaviour that easily. The relevance of access to a wide variety of products in densely populated urban areas may also be considered. Several prominent appliance retailers in the South African context have outlets in all the major urban centres, offering a wide range of imported appliances specifically targeted at the middle to higher income consumer segments. By focusing on these stores and using a store intercept approach, valuable insight can be gained from consumers who are in the process of acquiring appliances from product assortments that feature the most up-to-date technological innovation and that offer facilitating opportunities for environmentally significant choice behaviour.

In terms of methods, ESB research within the South African context may benefit from existing data collection and analytical techniques, as well as from validated scales in the environmental and consumer behaviour literature. As an example, several scale items have been developed for internal motivational factors such as the awareness of environmental consequences (Bamberg *et al*., 2007; Heath & Gifford, 2006), guilt (Bamberg *et al*., 2007), social norms (Oom do Valle *et al*., 2005; Wall *et al*., 2007), moral norms (Thøgerson, 2006), attitudes (Bodur & Sarigöllü, 2005; Wall *et al*., 2007) and intention (Heath & Gifford, 2006; Wall *et al*., 2007). However, such scales would have to be adapted to comply with conditions that prevail in the South African market and the specific behaviour under investigation. They will also have to be validated for use in South Africa. Furthermore, response bias is an issue frequently highlighted in the measurement of constructs related to pro-environmental behaviour (Bamberg & Möser, 2007; Mohr *et al*., 2001). When responding to survey questions, respondents may want to appear thoughtful and concerned. Since the cost of answering questions is lower than the cost of actual behaviour, surveys probably overestimate consumers' willingness to engage in ESB (Mohr *et al*., 2001). Although this effect may not be eliminated altogether, attention could be directed toward the wording and order of questionnaire items in an effort to minimize response bias.

In terms of assessing consumers' environmentally significant choice behaviour, choice modeling and conjoint analysis may be of particular value. By using these techniques, the analysis of consumer evaluations of different combinations of product attributes is possible (Hair *et al*., 2006:464; Mazzocchi, 2008:347), with specific focus directed toward their evaluation of environmental attributes relative to other non-environmental criteria. A prioritization of energy saving and eco-friendly features in consumers' evaluation and selection of major household appliances may point to ESB with long-term environmental implications.

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