



## Eco-label credibility and retailer effects on green product purchasing intentions



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### ABSTRACT

Eco-labels offer an identifiable marketing tool to convey a product's environmentally friendly and socially desirable characteristics to final consumers. Furniture offers a prime example of the opportunities and challenges to the expansion of green products. This study examined how eco-label credibility and retailer type affect green purchasing intentions (GPIs). Data from a sample of final consumers collected across 124 cities in China were analyzed using a Bayesian approach. Consumers who purchase furniture at supermarkets exhibited a lower GPI compared with consumers at other furniture retailers, *ceteris paribus*. Consumer perceived credibility of eco-labels, past green purchase, awareness of green furniture, level of education, and whether there is an elder family member in household were all found to positively affect consumers' GPI. Eco-labels may bring market opportunities for green furniture manufacturers but these are limited by effective communication and product outlets. It is intrinsic for green furniture manufacturers to choose retailers with a positive reputation among final consumers to improve credibility and potentially expand market share.

### 1. Introduction

A 'green' product might be defined as one constituted of materials and associated with production practices along its entire life cycle recognized for being socially and environmentally responsible. Durif et al. (2010) and Dotson (2015) point to three specific characteristics to label a green product: (1) practices involved in its manufacturing and transportation do not bring significant negative environmental effects, (2) labor workers involved in its production and supply-chain are treated fairly, and (3) the product is recyclable at the end of its life cycle. Growing consumer awareness of the environmental and social impacts associated with product consumption facilitates penetration and market share expansion of green-labeled products. For instance, sales of organic food worldwide have experienced an average annual increase of 20% since 1990 (Rex and Baumann, 2007), about four times the growth rate of conventional foods (Ottman et al., 2006). It has been projected that the global market value of green product sales will be worth \$3.5 trillion by the year 2017 (Global Industry Analysts Inc., 2011).

However, there seems to be growing skepticism among final consumers about claimed environmental and social credentials of labeled green products. Final consumers often rely on eco-labels to

identify green products (Atkinson and Rosenthal, 2014; McCluskey, 2000) and concerns about the misuse of eco-labels has been reported in developed economies (D'Souza et al., 2006). For instance, over half of final US consumers have expressed a level of distrust of products' environmental messages as conveyed by eco-labels (Nielsen, 2011). Similar reservations about eco-labels have been reported in developing economies. For example, Rahbar and Wahid (2011) surveyed consumers in Malaysia and found a generalized lack of credibility in the information disclosed by eco-labels. Studies conducted in China point to a sizable segment of final consumers who questions the credibility of eco-labels used in the country (Cheng, 2013; Cui and Yin, 2012; Yang, 2015).

This study aimed to examine final consumers' stated-choices to green products in the context of a developing economy. Specifically, we aimed to (a) examine consumer perceived credibility to eco-labels, (b) explore the impacts of perceived eco-label credibility and product outlets on green purchase intentions (GPIs), and (c) simulate potential market shares of intended green furniture consumption at different product outlets. Empirically, this research relied on face-to-face final consumer interviews in China. Furniture was selected as a consumer product representative of the potential opportunities and challenges of green product eco-labeling. Furniture related environmental and social

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impacts occur at different supply-chain stages, ranging from the legality of raw materials to the process of making and distributing finished products (Li et al., 2012). China was chosen for empirical implementation as it is one of the world's biggest consumer markets with strong prospects for the expansion of green product supply. Approximately 58 million of China's 440 million households replace furniture in any given year (Hong Kong Trade Development Council, 2015) and this number is expected to increase along with China's growing urbanization (National Bureau of Statistics of China, 2016). Domestic consumer demand for green furniture is also expected to grow with rising living standards and increasing final consumers' concerns over environmental impacts of their purchases.

The remainder of this paper is structured as follows. The following section reviews the literature on consumer perceived credibility of eco-labels and factors affecting green product purchase behavior and preferences. Section three provides a theoretical framework that served as our foundation to elicit consumer GPIs using a choice-based stated preference experiment. Description of data collection and analytical methods are provided in section four. In the Results and Discussion sections, we present findings and compare them with past studies. The paper concludes with suggestions for Chinese green furniture marketing with implications relevant to other countries.

## 2. Literature review

The literature to-date suggests that consumers' perceived credibility toward certifying agencies and their labels is not uniform. The existence of a large number of eco-labels issued by private- and public-sector certifiers is often detrimental to the credibility of green products claimed benefits (Bhaskaran et al., 2006). Consumer credibility of eco-labels varies among certification agencies and across domestic markets (Sønderskov and Daugbjerg, 2011). For instance, a study conducted in the US found that wood products consumers perceived eco-labels issued by non-government organizations as the most trustful compared to private certification companies and federal government agencies (Ozanne and Vlosky, 2003). Government-issued eco-labels were found to be more trustworthy than corporations' in Singapore (Atkinson and Rosenthal, 2014). Government involvement in eco-labeling systems can help improve consumer perceived credibility toward eco-labels (Sønderskov and Daugbjerg, 2011). For instance, government-issued certification in China garners higher credibility than those from other agencies. A consumer study conducted in the Chinese province of Jiangsu reports that government inspections and green certification of food can substantially increase consumer trust of food safety (Cui and Yin, 2012). Besides certification agencies, consumers are also concerned about environmental or social claims pledged through eco-labels (Aguilar and Vlosky, 2008). The information disclosed through an eco-label might be perceived as incomplete, misleading or as one that cannot fully capture a product's green attributes, ultimately resulting in little value added to consumers (Atkinson and Rosenthal, 2014; Teisl, 2003).

Levels of consumer eco-label credibility may also be influenced by the retailer where a product is ultimately sold. A retailer is deemed of a higher-than-average reputation when it is regarded to be ethical, honest in disclosing product information, and carries products of good quality (Huang and Li, 2001). Purohit and Srivastava (2001) found that in the US a retailer that garnered a high consumer reputation significantly influenced their evaluation of product quality, else constant. Das (2014) surveyed Indian consumers and also found a related retailer effect on product perceptions.

The literature is ample in reporting the impact of consumer perceived credibility of eco-labels on stated purchasing preferences toward green products. Chen and Chang (2012) found that Taiwanese consumers' trust in eco-labels significantly affected their preferences toward electronic goods. A positive relationship between consumer perceived credibility and intended green products purchase was also

found in Malaysia (Rahbar and Wahid 2011). In Denmark, a positive relationship between consumers' perceived credibility in organic labels and purchases of eco-labeled organic foods was reported by Smed et al. (2013). There are also a number of other studies that support similar findings (e.g. Janssen and Hamm, 2012; Johnston et al., 2001; Smed et al., 2013). However, to our knowledge, the combined impact of perceived credibility of eco-labels and retailers on final consumers' purchasing preferences for green furniture has not been quantified.

Consumers' motivations for seeking green products can influence their choices in addition to perceptions toward eco-labels and retailers. Consumers purchase green products for different reasons, including environmental and self-oriented motivations. For instance, consumers of an ecologically conscious profile are more likely to purchase green products (Moisander and Pesonen, 2002; Roberts and Bacon, 1997; Straughan and Roberts, 1999). Personal health is a major self-oriented motivation behind preferences for green products (Gregory, 2000; Harper and Makatouni, 2002; Zanolli and Naspetti, 2002). Schifferstein and Oude-Ophuis (1998) found that absence of chemicals is a primary reason for Dutch consumers to buy green food in specialized health and natural food stores. Wei et al. (2014) found that health is the top reason among consumers in Beijing to purchase green vegetables. Yiridoe et al. (2005) found that concern for human health and safety is a key factor influencing consumer preferences toward organic food. While the associations between the food product and personal health/safety motivations are apparent, how similar concerns extend to non-consumptive products such as furniture is unclear. The process of furniture manufacturing uses materials (e.g. glues and paints) that contain chemicals that could later be released from finished furniture to the environment (Kwon et al., 2007). One significant chemical is formaldehyde, which is a known carcinogen (Nielsen and Wolkoff, 2010). There are several government regulations at both central and regional levels in China restricting the maximum levels of chemical residues in finished furniture. However, results from annual furniture inspections in China suggest that from 2% to 20% (depending on the surveyed cities and retailers) of the furniture offered in final consumer markets contains formaldehyde at levels above regulated maximums. Purchasing green furniture may reduce the risks of buying a piece of furniture that does not meet government health regulations since green certification programs often require strict standards and auditing processes (Parikka-Alhola, 2008). Such standards and processes could prevent unqualified furniture (e.g. furniture with higher levels of chemical residuals) from being certified as green, thus, may address consumer health concerns and increase final purchases.

Beyond attitudes and motivations, demographic and experiential factors endogenous to a consumer (e.g. age, income, gender, education levels, and past purchase) can significantly affect individual green product preferences (Aguilar and Cai, 2010; Aguilar and Vlosky, 2007; D'Souza et al., 2006; Thompson et al., 2010). Zhang and Yu (2006) found that Chinese consumers' age, education and income levels explain variance in their preferences toward green rice. Wang and Li (2006) found age, gender, marriage status, and occupation all affect behavior toward green product purchases among consumers in Wuhan, China. The significance of past purchases on stated future intentions has also been revealed in numerous studies examining preferences for sustainably produced food and organic personal care products (e.g. D'Souza et al., 2006; Robinson and Smith, 2002).

This research fills a void in the assessment of preferences for green products beyond food by examining preferences toward furniture as a non-consumptive item. The literature suggests that there are many factors affecting consumers' green products preferences and consumption inclusive of concerns about eco-labels and product retailers. However, the impacts of consumers' perceived credibility to eco-labels are not clear in the context of green furniture preferences in developing countries. Moreover, it is not clear how different types of retailer (e.g. supermarkets, furniture franchises) may affect final consumers' green product preferences. By also controlling other likely explanatory

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