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Secondary wood manufactures' willingness-to-pay for certified wood products in Italy

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ABSTRACT

In recent decades forest certification systems have emerged to address the management of forest ecosystems according to the principles of sustainability and environmental protection. This study analyzes the secondary wood manufacturers' attitudes, awareness and willingness-to-pay for certified and local wood materials in Italy. A structured questionnaire was submitted by email to a sample of 1520 secondary wood manufacturers, having a response rate of 8% (121 manufacturers). The results show that the main factors that influence the consumption/choice of secondary wood manufacturers are the durability of wood products and the personal knowledge of the seller. In addition, the results show that 29.7% of respondents would be willing to pay a mean premium price of 2.40% for certified wooden planks, while 19.0% of them are willing to pay a premium of 2.68% for certified wooden panels. With regard to local wood materials, the results show that 23.1% of respondents would be willing to pay a mean premium price of 2.95% to buy local wooden planks, and 20.7% of them a premium of 4.13% for local wooden panels. The results of this study can contribute to the forest certification knowledge base in order to support decision makers (owners and wood manufacturers) in their strategic business decisions.

1. Introduction

In the early 1990s forest certification emerged as a response to the deforestation and degradation of natural resources occurring in many developing countries (Vogt et al., 1999; Rametsteiner and Simula, 2003).

Forest certification systems - such as the Forest Stewardship Council (FSC), the Program for the Endorsement of Forest Certification (PEFC), the Sustainable Forestry Initiative (SFI), and the Indonesian Ecolabelling Institute (LEI) - have emerged to address the management of forest ecosystems according to the principles of sustainability as defined by the Brundtland Report “Our Common Future” in 1987 (Cha et al., 2009; Paletto et al., 2014).

The penetration rate of certified wood materials into consumer markets was initially slow (Vlosky et al., 2003), but its diffusion has been constant and continuous. In order to satisfy increasing consumer demand for environmentally friendly products, different labels have been developed to inform consumers about the environmental concerns and ethical behavior of companies (Aguilar and Vlosky, 2007). In this context, wood product certification has been introduced to indicate certified origin in sustainably managed forests in order to satisfy an increasing demand for “eco-friendly” products as society's response to global environmental issues (Perera and Vlosky, 2006). The certification of wood products is more complicated than the certification of forests because sometimes wood products are composed of timber or wood pulp from many different forests (Teisl et al., 2001). Therefore, an independent third party must ensure that current forest management practices follow some environment management standards, e.g. Criteria and Indicators of Sustainable Forest Management (Secco and Pettenella, 2006). In recent decades the certification of both forests and wood materials has spread to many parts of the world. The global diffusion of wood product certification is due to the fact that many manufacturers believe that offering certified wood products will allow them to gain competitive advantages over their non-certified peers (Anderson, 2003). The potential economic advantages for manufacturers that offer certified wood materials can be analyzed considering the environmentally-friendly behavior of consumers (Anderson Jr and Cunningham, 1972; Berkowitz and Lutterman, 1968) and consumers' willingness-to-pay for “eco-friendly” or “green” products (Reizenstein et al., 1974; Vlosky et al., 1999; Aguilar and Vlosky, 2007).

From a methodological point of view, the value of sustainable origin of wood materials can be estimated using Contingent Valuation (CV), analyzing consumers' willingness to pay (WTP) a premium price for a wood product with such certification (Ozanne and Vlosky, 1997;

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Table 1
Wood manufactures' WTP for certified wood products.

Authors and year	Country	Wood product	Type of wood manufacture	WTP%
Milland Fine Timber Ltd. (1990)	United Kingdom	Tropical timber	Carpentry	5.3%
			Cabinet-making	
			Furniture factories	
Vlosky et al. (2003)	United States	KD FAS red oak	Wood manufacturers	3.1%
		KD n.1 common red oak		3.1%
		Red oak furniture grade veneer unclipped		3.4%
		Southern pine 3/4″ industrial grade particleboard		3.1%
Lee et al. (2007)	South Korea	Certified wood products	Sawmills	13.6%
			Furniture factories	10.4%
			Chipboard panels manufacturers	3.0%
Notaro et al. (2008)	Italy	Sawn	Sawmills	2.5%
Estep et al. (2013)	United States	Wooden building products	Wooden home builders	4.6%
Shukri and Ainol Mardhiah (2014)	Malaysia	Certified wood products	Carpentry	3.2%

Source: Paletto et al. (2017a,b).

Veisten, 2007). A price premium refers to the additional amount of money an individual is willing to pay to buy a product that guarantees a minimum standard for environmental stewardship (Aguilar and Vlosky, 2007). Consumers' willingness-to-pay premiums for certified forest products are important for compensating additional costs incurred in the implementation of a certification program, such as preparation for certification, auditing, compliance and the establishment of a Chain-of Custody (CoC). In literature, many studies on consumer demand and WTP for different environment-friendly wood products have been published since the mid-1990s. Conversely, few studies have investigated the WTP a premium price for a certified wood product from primary and secondary wood manufacturers (Ozanne and Vlosky, 1997, 2003; Veisten, 2002, 2007; Lee et al., 2007; Cha et al., 2009).

The knowledge of attitudes, awareness and preferences of all actors of the forest-wood chain - primary wood manufacturers (sawmills), secondary wood manufacturers (carpentry), and consumers - is a fundamental prerequisite for developing a forest certification system at national and local level. In the context of certification of wood products, the geographic origin of wood is also a key factor in defining local supply chain (LSC) strategies and creating added value along the supply chain (Paletto et al., 2017a,b). This research field is little investigated; a limited number of studies have analyzed consumers' attitudes about purchasing local or national wood products over foreign wood products (Winterhalter and Cassens, 1993; Donovan and Nicholls, 2003; Estep et al., 2013; Wright, 2013), and no studies have analyzed secondary wood manufacturers' attitudes and awareness. Consumers and manufactures' attitudes towards the origin of wood materials is related to the country-of-origin (COO) effects on product evaluations (Verlegh et al., 2005; Liu and Johnson, 2005; Sharma, 2011). In literature, many authors highlighted that product's COO potentially could have direct and indirect effects on product evaluations: first, COO may activate knowledge that affect the interpretation of other product attribute information; second, COO may provide a heuristic basis for inferring the quality of the product without considering other attribute information (Hong and Wyer, 1989). In particular, Han (1989) and Johansson (1989) show that COO influences evaluations by signaling product quality, while Maheswaran (1994) shows that consumers use COO as stereotypical information in making evaluations and the impact of COO is influenced by consumers' level of expertise. Therefore, the COO effect is rooted in consumers' images of the quality of specific products marketed by enterprises of their territory. Consequently, it would possible to find COO effects at different scales: from local to national.

Starting from these considerations, this study focuses on the secondary wood manufacturers' attitudes towards certified and local wood materials in Italy. Secondary wood manufacturers are those that use primary wood products (e.g., lumber, veneer, plywood) as inputs for remanufacturing semi-finished and finished products. We have focused on secondary wood manufacturers because they are a key actor of the Italian forest-wood chain in order to implement the principles of the National Bioeconomy Strategy. The aims of the study are: (1) to investigate the attitudes and opinions of secondary wood manufacturers about forest certification and local wood materials; (2) to identify the WTP of buyers (secondary wood manufacturers) for purchasing certified wood materials; (3) to identify the WTP of buyers (secondary wood manufacturers) for purchasing local wood materials rather than non-local wood materials.

2. Literature review

Since the mid-1990s, many studies have investigated consumers' WTP for several certified wood products in North America (Ozanne and Vlosky, 1997; Jensen et al., 2004; Andersen and Hansen, 2004; Kruger, 2010; Elliott, 2014), in Europe (Pajari et al., 1999; Veisten, 2002; Ladenburg and Martinsen, 2004; Veisten, 2007), and in Asia (Shukri and Muhamad, 2007; Lee et al., 2007; Cha et al., 2009; Yamamoto et al., 2014). The main objective of these studies was to analyze whether consumers' WTP could cover the additional costs associated with the wood product certification process. These studies highlighted a wide range of values - from 1% to over 45% - due to the type and price of wood products, and geographic setting (Giacovelli et al., 2015). In a literature review, Veisten (2009) pointed out that only a segment of the market - approximately one-third of consumers in countries in North America and Europe - will pay premiums for eco-labeled wood products. Besides, Veisten (2009) highlighted that demographic characteristics of respondents do not have a clear relationship with ecological values, while psychographic characteristics (e.g., personality, knowledge, attitudes) of respondents are a better predictor of eco-oriented consumer behaviors.

Conversely, few studies have investigated wood manufacturers' WTP for certified wood products (Table 1). A first study was conducted in 1990; Milland Fine Timber Ltd. investigated the willingness of 160 UK forest companies to pay an environmental premium in order to buy timber from tropical forests managed in a sustainable way. This study estimated an average WTP premium of 5.3% (Milland Fine Timber Ltd., 1990). Vlosky et al. (2003) analyzed the WTP of primary solid wood manufacturers (n = 270) for four different wood products (KD FAS red oak, KD no. 1 common red oak, red oak furniture grade veneer unclipped), obtaining a price ranging between 92 US$ and 1600 US$ in all regions of the United States. These authors estimated a mean WTP for the four wood products of between 3.05% and 3.44%. Another study in the United States showed that 77% of the sample of wooden home builders were willing to pay an average premium price of 4.6% for the purchase of certified wood products (Estep et al., 2013).

Recently some studies investigating the WTP of wood manufacturers have been conducted in Asia. Lee et al. (2007) showed that 69% of the