



## Do all roses smell equally sweet? Willingness to pay for flower attributes in specialized retail settings by German consumers<sup>☆</sup>



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### ARTICLE INFO

#### Keywords:

Consumer preferences  
Country of origin effect  
Cut flower attributes  
Regionality

### ABSTRACT

The study investigated flower buying behavior and willingness to pay for cut flower attributes by German consumers in physical and online retail settings. A sample of 978 respondents participated in an online survey, including a hypothetical choice experiment. The choice experiment presented rose bouquets produced in Germany, the Netherlands, or in Kenya and considered the attributes “fairly traded” and “freshness guarantee”. In both retail settings German consumers showed the highest willingness to pay for the rose bouquets produced in Germany. Significant statistical differences in estimated mean willingness to pay were found across retail settings and product attributes.

### 1. Introduction

Cut flowers are customary gifts or decor, meant to beautify living environments, for numerous important life occasions, for instance Mother's day, Easter or other religious and cultural holidays (Huang, 2007). Further, psychological, emotional, behavioral, and environmental benefits are attributed to cut flowers (Yue and Behe, 2010). According to the Federal Ministry of Food and Agriculture, the majority of plants and floricultural products sold in Germany are imported. The value of these plant and floricultural products sold in Germany amounted to 2.2 billion € in 2015 (Bundesministerium für Ernährung und Landwirtschaft BMEL, 2016, p. 45). Cut flowers hold the largest share of the import value among ornamental plants, at 43.0%, with the remainder of value being made up of potted plants, nursery products, such as ornamental shrubs and trees, flower bulbs, and a variety of other plants (Bundesministerium für Ernährung und Landwirtschaft BMEL, 2016, p.45).

In Europe, the Netherlands are the most important producer of cut flowers (Van der Vorst et al., 2012; de Keizer et al., 2015). Further, the Netherlands are Europe's most important trade hub for imported cut flowers and other ornamental plants from developing countries (Bundesministerium für Ernährung und Landwirtschaft BMEL, 2016, p.49). In terms of value, cut flowers from the Netherlands and Kenya have the largest share in the German market. In 2016, cut flowers imported from the Netherlands amounted to approximately 891.844.000

€. The trade value for Kenyan cut flowers was 45.364.400 €. Other import countries hold much lower shares (UN Comtrade, 2017).

German cut flower production takes place mainly in western Germany, close to the Dutch border, while smaller production areas are located in southern and northern Germany (Zentrum für Betriebswirtschaft im Gartenbau ZBG, 2014). German consumers spend 37 € per capita annually for cut flowers (Bundesministerium für Ernährung und Landwirtschaft BMEL, 2016, p. 55). Germans buy cut flowers at weekly markets, garden centers, supermarkets, discounters, and specialized flower retail (Gabriel and Menrad, 2013). Specialized flower retail includes physical retailers and online retailers (Rombach and Bitsch, 2016).

E-commerce is widely accepted in Germany, and consequently online cut flower retail is growing (Schettler et al., 2016; Rombach and Bitsch, 2016). According to Rombach and Bitsch (2016), the online flower retail contributes to the competitive situation on the German flower market, as it is gaining market share. Different types of online flower retailers exist in the German marketplace. Online flower retailers may operate entirely virtually (with a warehouse) or as a hybrid with physical and virtual components. Both virtual and hybrid retailers use partnerships with online retailers and discounters, while hybrid online retailers often participate in national and global networks of physical shops. Virtual retailers are often startups, while hybrid retailers often develop from physical retailers and usually have a long horticultural tradition (Rombach and Bitsch, 2016).

<sup>☆</sup> This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sector.

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When buying online, consumers appreciate product range, availability, time saved, and ease of use (Schultz and Block, 2015; Lissitsa and Kol, 2016), which includes agricultural products (Hansen, 2008; Hand et al., 2009) and flowers (Schettler et al., 2016). In physical retail, they appreciate the atmosphere, service, and product quality (Yue and Behe, 2008; Hsiao, 2009). While consumers are increasingly shopping for flowers online, Hsiao (2009) states that online buying can lead to reduced satisfaction, since it lacks social interaction and sensory contact with the product. However, multiple attributes of the product, in addition to the retail type, may influence consumer decision making. Schettler et al. (2016) found that longevity of cut flowers as well as logistics are further critical aspects for consumers buying flowers online. Consumers assumed that the transport to the consumer negatively affected longevity and flower appearance.

Independent of the shopping location, quality assessment and specific product attributes are important when buying flowers. Becker (2000) and Yue et al. (2011a) relate product quality to the moment when consumers obtain information about the flowers' individual attributes while buying or using flowers. Similarly to other products, including food, if consumers are able to correctly identify the quality attributes of the product, they will choose the flower product that provides them with the largest utility (Caswell, 1998). As cut flower consumers may not have comprehensive knowledge of flower attributes, nor of the flower production process, they rely on cues, often labels or product guarantees, indicating quality.

Among product attributes, Caswell and Mojduszka (1996) distinguished search attributes, experience attributes, and credence attributes. Search attributes help the consumer identify product quality before buying and imply that consumers research the product in advance or use the opportunity of a careful examination of flower color or length of stem before buying. Experience attributes, in contrast, allow consumers to evaluate the quality only after buying or consumption, for instance the taste of herbs or eatable flowers. According to Yue et al. (2011a), appearance is an important search attribute that consumers take into consideration when buying flowers, as this attribute becomes apparent during the selection process and does not require prior experience.

Freshness guarantees need to be set in the context of search and experience attributes. Rihn et al. (2014) indicated that the desire for freshness certification stems from the consumer's lack of ability to correctly inspect the flowers and estimate its postharvest longevity while shopping. The consumer's ability to evaluate freshness varies, depending on familiarity, experience and knowledge about flowers (Yue et al. (2009) in Rihn et al. (2014)). A freshness guarantee is a retailer's promise to replace the product should postharvest longevity be insufficient, with the intention of minimizing consumer risk and preventing dissatisfaction (Dennis et al., 2005; Rihn et al., 2014).

Credence attributes, e.g., certification indicating fairly traded products, country of origin or organic production cannot be evaluated even after the product is bought or consumed (Yue et al., 2011a; Michaud et al., 2013). Consumers rely on product information or labels, provided by a certification body, usually a government agency or another organization consumers trust to discern credence attributes (Caswell and Mojduszka, 1996; Moser et al., 2011). Consumers recognize certified flowers through a label printed on the packaging or via communication from florists. In the European Union, Regulation (EU) No 1169/2011 requires food products to provide the country of origin – however, cut flowers are not mentioned in the regulation. As cut flowers are not well researched with respect to country of origin, the present study draws on prior research focusing on other consumer goods.

The country of origin can have positive or negative effects on consumers during product selection. Prior studies show that consumers distinguish between different countries of origin (Pecotich et al., 1996; Hyllegard et al., 2005; Bowe et al., 2013; O'Cass and Siahtiri, 2013; Cheah et al., 2016), and that this attribute strongly affects consumers' quality perception (Koschate-Fischer et al., 2012; Lagerkvist et al.,

2014). This “country-of-origin effect” is anchored in cognitive images and attitudes individual consumers hold towards the country where the product was produced (Elliott and Cameron, 1994; Loureiro, and Umberger, 2003). Accordingly, a product with a certain country of origin can be perceived as high in quality, or the contrary, depending on consumers' perception and heritage (Klößner et al., 2013). Accordingly, German consumers are hypothesized to perceive flowers produced in Germany as superior in quality or more trustworthy than flowers from other countries. This perception can be modified by previous experience, but also through advertisements, and other product information sources (Wächter et al., 2003; Verlegh et al., 2005). For buying flowers online, certification is particularly important because the product may not be physically inspected. However, up to now, the majority of studies on consumer preferences and willingness to pay (WTP) focused on physical flower retail, especially in the case of Germany.

The present study aims to estimate consumers' WTP for cut flower attributes using hypothetical buying situations, i.e., choice experiments, in two distinct settings, in online retail and in physical retail. More precisely German consumers' WTP for price, country of origin, fair trade certification, and freshness guarantee are investigated. The comparison of WTP estimates between online retail and physical retail determines whether consumers show different preferences for cut flower attributes when buying in different retail settings. Based on prior studies comparing different retail settings (Darley et al., 2010; Yue and Behe, 2008), consumers are expected to have heterogeneous preferences and their WTP for cut flower attributes is expected to vary significantly between the two locations. Identifying differences in WTP for cut flower attributes benefits cut flower retailers, producers, and consumers, and supports informed decision making, in which product attributes should be emphasized and marketed.

## 2. Consumer preferences and WTP for ornamental plants and cut flowers

Hudson and Griffin (2004) and Yue et al. (2011b) identified plant origin as an important product attribute for flowers. In both studies, consumers showed a higher WTP for ornamental plants produced in their state or country compared to other origins. Hudson and Griffin (2004) estimated consumers' WTP for cut flowers bouquets using a mail-based survey in Mississippi (U.S.) and found that participants preferred multi-colored bouquets over plain colored bouquets. In addition, participants showed higher WTP for flowers grown in Mississippi (Hudson and Griffin, 2004). Similarly, Yue et al. (2011b) carried out experimental auctions in Minneapolis and St. Paul with various ornamental plants and flowers and found consumers preferred plants being labelled as native to the U.S. over plants labelled as invasive. Several recent studies exploring consumers' preferences and WTP for country of origin of agricultural food products, such as meat, oil, wine, coffee provided further evidence that consumers usually favor the product with country of origin where they reside (Van Loo et al., 2011; Menapace et al., 2011).

Michaud et al. (2013) explored French consumers' WTP for environmental attributes of cut roses, exploring the WTP for the “Fair Flowers Fair Plants” (FFP) labelling and carbon footprint labelling through real choice experiments. FFP labelling considers environmental issues and fair production. Consumers were asked to actually pay for the roses they preferred. French consumers had a distinctly higher WTP for roses with a carbon footprint label (Michaud et al., 2013). Despite the French consumers' comparatively low WTP for the FFP-label, Michaud et al. (2013) suggested that labels and certification play an essential role when buying flowers. In addition, in Germany, flower labels indicating fairly traded show an increasing market share in recent years. Since 2011, the turnover for cut flowers with the “Fairtrade” label grew from 29.69 million € to 118.83 million € in 2014 (Statista, 2016).

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