



# Do we have a car for you? Encouraging the uptake of electric vehicles at point of sale



Lindsay Matthews<sup>a</sup>, Jennifer Lynes<sup>b,\*</sup>, Manuel Riemer<sup>c</sup>, Tania Del Matto<sup>d</sup>, Nicholas Cloet<sup>b</sup>

<sup>a</sup> University of Waterloo, Department of Geography & Environmental Management, Canada

<sup>b</sup> University of Waterloo, School of Environment, Enterprise and Development, Canada

<sup>c</sup> Wilfrid Laurier University, Department of Psychology, Canada

<sup>d</sup> My Sustainable Canada, Canada

## ARTICLE INFO

### Keywords:

Consumer behaviour  
Barriers to adoption  
Electric vehicles  
Mystery shopping

## ABSTRACT

This study investigates shopping experiences at dealerships selling electric vehicles (EVs) in Ontario, Canada. In 2014, twenty mystery shoppers were trained and sent into 24 EV-certified dealerships (with a total of 95 shopping experiences) to observe the sales approach towards EVs. Results show that a common barrier for shoppers is the unavailability of EVs at the dealership – including a lack of EV models on site to view or test-drive as well as a three- to four-month waiting period to receive the vehicle once ordered. A multiple regression model was developed to explore which factors influence the likelihood of deciding to purchase an EV. Findings suggest that, controlling for brand, the key success factors are a salesperson's positive attitude and the availability of an EV on site. It is important for future policy makers to acknowledge the influential role of market intermediaries, such as dealerships, in the adoption of EVs. The research findings demonstrate a potential for government agencies to work with dealerships and/or salespeople to improve EV uptake by encouraging the presence of floor models and vehicles for test-driving on site, and by increasing the accuracy of information being provided to customers.

## 1. Introduction

It has been argued that electric vehicles (EVs) may be the catalyst to start the next socio-technical transition towards a low carbon transportation future (Steinhilber et al., 2013). While scientific and technological advancement in developing low- or no-greenhouse gas (GHG) EVs has been accomplished, a meaningful societal transition to EVs has yet to occur (Struben and Sterman, 2008). To meet the targets of the Paris declaration presented at COP21, a meaningful reduction of GHG emissions of 40% by 2030 (1990 baseline), global EV stock would need to exceed 100 million EVs by 2030 (UNFCCC, 2015). The International Energy Agency (IEA) calls for even higher targets with a goal to have 140 million EVs globally by 2030 (IEA, 2016). This requires a substantial investment in EV-supportive policies as the current global stock of EVs is currently just over 1.3 million vehicles (IEA, 2016).

This study builds on previous research on the socio-technical barriers to consumer adoption of EVs (e.g. Axsen and Kurani, 2012a, 2012b, 2012c, 2013; Egbue and Long, 2012; see Rezvani et al., 2015 for a comprehensive review of studies on consumer adoption of EVs). Specifically, this paper takes an empirical approach to exploring the

consumer experience at the point of sale (i.e. car dealerships) and offers insights into changes that may support increased uptake of EVs. Previous studies on consumer motivations and barriers regarding EV adoption have generally ignored the potential role of retailers in influencing a consumer's decision.

The paper utilizes Axsen and Kurani's (2012a) conceptualization of EV benefits from a functional and symbolic perspective to investigate how (or if) any of the benefits of EVs are being communicated to consumers at the point of sale. The results of this study have important policy implications for both government agencies and industry associations that are attempting to shift the focus of consumers away from vehicles that rely on fossil fuels in order to reduce carbon emissions. To date, most policy has focused on instrumental factors (such as price) to encourage the purchase of EVs (Steg, 2005). Policymakers and retailers can capitalize on an understanding of consumer experience in making EV purchasing decisions to guide policy in ways that better encourage EV adoption.

There are three types of EVs: Battery Electric Vehicles (BEVs), Hybrid Electric Vehicles (HEVs), and Plug-In Hybrid Electric Vehicles (PHEVs). BEVs and PHEVs both require an electric power-source to

\* Corresponding author.

E-mail addresses: [lindsay.matthews@uwaterloo.ca](mailto:lindsay.matthews@uwaterloo.ca) (L. Matthews), [jklynnes@uwaterloo.ca](mailto:jklynnes@uwaterloo.ca) (J. Lynes), [mriemer@wlu.ca](mailto:mriemer@wlu.ca) (M. Riemer), [tdelmatt@uwaterloo.ca](mailto:tdelmatt@uwaterloo.ca) (T. Del Matto), [Nicholas@mysuscan.org](mailto:Nicholas@mysuscan.org) (N. Cloet).

<http://dx.doi.org/10.1016/j.enpol.2016.10.001>

Received 24 July 2015; Received in revised form 28 September 2016; Accepted 2 October 2016  
0301-4215/ Crown Copyright © 2016 Published by Elsevier Ltd. All rights reserved.

recharge whereas HEVs are never charged from the electric power grid and rely on kinetic energy and energy from gasoline (Axsen and Kurani, 2013). BEVs rely solely on battery-stored electricity, as they lack a combustion engine, and PHEVs can be charged through both electricity and gasoline (Axsen and Kurani, 2013). BEVs and PHEVs are more expensive than HEVs due to the increased size and capacity of the batteries. This increase in cost has been cited as an important barrier to the uptake of EVs (Axsen and Kurani, 2013). For the purpose of this study we are defining an EV as any vehicle that plugs in (PHEVs and BEVs), thus excluding HEVs.

## 2. Background

### 2.1. Marketing 'green' energy-related products such as EVs

The marketing strategy for an EV involves numerous components – not just related to advertising and promotion, but also in relation to the design of the vehicle, the channel that is selected for distribution and the way the product is positioned in terms of price. The combination of these factors and how it is directed at a particular target audience is generally referred to as the marketing mix (Harvard Business Essentials, 2006). There are many ways in which the marketing mix can be defined, however, we have chosen to use the “4 C's” (customer solution, communication, convenience and cost) which look at the marketing mix from the buyer's perspective, as opposed to the more traditional “4Ps” (product, price, promotion and place) that are considered from the seller's perspective (Kotler et al., 2011).

The first C, *customer solution* (traditionally referred to as ‘product’) includes the attribute of the product itself and how these attributes are positioned to provide benefits to the target consumer. The second C, *convenience* (place) describes the distribution channels that are used to facilitate purchase, the third C, *communication* (promotion) refers to the promotional strategies that are used – including public relations, direct selling and advertising, while the fourth C, *cost* (price), refers to

the price that the consumer needs to pay to receive the product. Effectively using a marketing mix strategy will presumably lead to an increase in the adoption of a particular product (e.g. Best, 2013; Kotler et al., 2011). Given the emphasis of this study on the consumer experience at the point of purchase, we are focusing on the interaction of communication (how well the attributes of EVs are discussed) and convenience (the availability of EVs and ease of purchase).

There is support in the literature regarding the important role that market intermediaries, such as dealerships, can play in influencing the purchase of green products through product positioning and training of sales associates (e.g. Del Matto et al., 2012; Environics, 2007; Tsarenko et al., 2013). In particular, Tasrenko et al. (2013) found that the influence of retailers was a stronger mediator of environmentally-conscious purchasing decisions than a consumer's own peers. Notwithstanding, there is a paucity of studies that provide empirical evidence as to what type of information is being communicated to the consumer at the point of purchase and how this information is being framed (examples include Anderson and Claxton, 1982; Del Matto et al., 2012; Kaplan, 1999). Notwithstanding, recent research has acknowledged that a universal approach to the marketing of EVs will not resonate with all consumer segments interested in these types of vehicles (Axsen, Bailey and Castro, 2015). This becomes an important consideration at the point of purchase.

There are numerous examples of government-based conservation programs that rely on market intermediaries, such as retailers, as key stakeholders to deliver conservation campaigns. These campaigns, however, rarely take into account the influence of the salesperson on consumer purchasing decisions (Del Matto et al., 2012). Common tools used for these campaigns include point-of-purchase displays and in-store coupons for energy efficient products. While these initiatives might be effective for smaller ‘low-involvement’ decisions such as lightbulbs, durable products such as vehicles – a ‘high-involvement’ decision such as a vehicle purchase – can be strongly influenced by a range of factors including the information provided by a salesperson

**Table 1**  
Summary of motivations and barriers driving EV adoption.

Motivations	Barriers
<p><b>Private</b></p> <p><b>Functional</b></p> <ul style="list-style-type: none"> <li>Lower operating costs (Axsen and Kurani, 2012a; Graham-Rowe et al., 2012; Krupa et al., 2014)</li> <li>Reliable (Lane and Potter, 2007; Axsen and Kurani, 2012a)</li> <li>Performance (Steg, 2005; Lane and Potter, 2007; Burgess et al., 2013)</li> <li>Fun to drive (Axsen and Kurani, 2012a)</li> <li>Tax incentives (Krupa et al., 2014; Lane and Potter, 2007)</li> </ul> <p><b>Societal</b></p> <ul style="list-style-type: none"> <li>Reduce air emissions (Noppers et al., 2014; Axsen and Kurani, 2012a)</li> <li>Reduce climate change (Krupa et al., 2014; Axsen and Kurani, 2012a)</li> <li>Environmental factors (Burgess et al., 2013)</li> <li>Reduce oil use (Axsen and Kurani, 2012a)</li> </ul> <p><b>Symbolic</b></p> <p><b>Private</b></p> <ul style="list-style-type: none"> <li>Social status (Steg, 2005; Axsen and Kurani, 2012a)</li> <li>Attainment of group membership (Axsen and Kurani, 2012a)</li> <li>Self-identity (Axsen and Kurani, 2012a)</li> <li>Perceived as ethical (Heffner et al., 2007)</li> <li>Perceived as independent (Heffner et al., 2007)</li> <li>Perceived as intelligence (Heffner et al., 2007)</li> <li>Self-expression (Steg, 2005)</li> <li>Represents ones beliefs (Steg, 2005)</li> <li>Enhanced social position (Steg, 2005)</li> </ul> <p><b>Societal</b></p> <ul style="list-style-type: none"> <li>Inspire other consumers (Axsen and Kurani, 2012a)</li> <li>Political statement (Axsen and Kurani, 2012a)</li> </ul>	<ul style="list-style-type: none"> <li>Safety (Egbue and Long, 2012; Lane and Potter, 2007; Oliver and Rosen, 2010)</li> <li>Trade-offs between efficiency, size and price (Egbue and Long, 2012)</li> <li>Upfront costs (Egbue and Long, 2012; Carley et al., 2013; Lane and Potter, 2007)</li> <li>Limited electric range (Jensen et al., 2013; Egbue and Long, 2012)</li> <li>Long charging times (Carley et al., 2013)</li> <li>Lack of at home charging stations (Axsen and Kurani, 2013)</li> <li>Limited extent of public charging infrastructure (Caperello and Kurani, 2012; Egbue and Long, 2012; Graham-Rowe et al., 2012)</li> <li>Lack of qualified maintenance specialists (Cahill et al., 2014)</li> <li>Toxicity from batteries and other electronic components (Hawkins et al., 2013; Notter et al., 2010)</li> <li>Safety concerns for pedestrians and cyclists due to operating noise reduction (Graham-Rowe et al., 2012)</li> <li>Potential for overburdening the electrical power grid (Ahn et al., 2011; Aultman-Hall et al., 2012)</li> <li>Perceived as a “tree-huggers” (Heffner et al. 2007).</li> <li>Perceived as “political radicals or ineffectual idealists” (Burgess et al., 2013)</li> <li>EV owners may be perceived has having limited mobility needs (Graham-Rowe et al., 2012)</li> </ul>

Adapted from Axsen and Kurani (2012a).

Download English Version:

<https://daneshyari.com/en/article/5105843>

Download Persian Version:

<https://daneshyari.com/article/5105843>

[Daneshyari.com](https://daneshyari.com)