The Impact of New Technologies on Consumers Beliefs: Reducing the Perceived Risks of Electric Vehicle Adoption

Mauricio Featherman, Ph.D.
Scholarly Associate Professor
Department of Management, Information Systems, and Entrepreneurship
Carson College of Business
Washington State University
Pullman, WA 99164, USA
Email: featherman@wsu.edu

Shizhen (Jasper) Jia
Department of Management, Information Systems, and Entrepreneurship
Carson College of Business
Washington State University
Pullman, WA 99164, USA
Email: shizhen.jia@wsu.edu

Christopher B. Califf, Ph.D.
Associate Professor
Department of Decision Sciences
College of Business & Economics
Western Washington University
Bellingham, WA 98225, USA
Email: califfc@wwu.edu

Nick Hajli, Ph.D.
Associate Professor
School of Management
Swansea University
Swansea, UK
Email: nick.hajli@swansea.ac.uk

The Impact of New Technologies on Consumers Beliefs: Reducing the Perceived Risks of Electric Vehicle Adoption

Abstract

Consumers who decide to adopt complex, radically innovative products simultaneously can hold very different belief structures that, for example, capture concern for future losses, and beliefs of future gains, as well as the desire to coalesce with referents. This research develops a model of how consumers decide their next electrified vehicle. Based on the Theory of Reasoned Action (TRA) and Risk-Benefit Models, the electric vehicle (EV) purchase decision is modeled as primarily based on beliefs of the perceived benefits and the perceived risks of technology adoption and social influences. Further, beliefs of a manufacturer's expertise and trustworthiness were found to reduce consumer risk concerns and strengthen consumer conviction that the benefits of technology were attainable. Structural equation modeling of survey data confirm the proposed consumer decision model, and our contention that technology adoption can be better understood by specifically exploring discordant consumer beliefs of the post-purchase consequences. The results of our research provide a new understanding of salient consumer risk and benefit beliefs when consumers face new technologies that represent a paradigm shift. Results also provide insight for technology firms that need to constantly develop new strategic marketing actions designed to increase demand for their complex technological products.

Keywords: *Consumer beliefs; perceived risks; perceived benefits; electric vehicle; new technology; theory of reasoned action; decision making*

1. Introduction

Consumers are facing new technologies which expose the consumer to risks and benefits of adoption (Paluch and Wünderlich, 2016; Phillips and Hallman, 2013). Electric vehicles (EVs) are an important and novel technological innovation that is expected to disrupt the automotive industry and benefit the environment (Rezvani et al., 2015). For example, a 2015 study suggests that approximately 60% of carbon pollution from the transportation industry is due to passenger vehicles and that EVs represent a worthwhile means to lower such carbon emissions. [1] Likewise, the 2020 Electric Vehicle Outlook, an annual report published by BloombergNEF, estimates that EVs will comprise 10% of global passenger vehicle sales by 2025, 28% by 2030, and 58% by 2040. [2] Given the potential societal benefits of electrified passenger cars, light-duty trucks, and cargo trucks, as well as the anticipated consumer demand to adopt EVs, it is important for researchers and practitioners to understand how consumers and businesses evaluate EVs and formulate their purchase decision model.

Previous research on EV adoption suggests that consumers may view purchasing an EV as an environmentally conscious decision and that the purchase decision is often dependent on several socioeconomic factors, such as income, education, government policy, and fuel prices (Sierzchula et al., 2014). A review of the literature on EV adoption has identified four factors that represent the main reasons consumers purchase EVs: (1) technical factors, such as vehicle performance, recharging time, or safety, (2) contextual factors, such as finding a charging station outside the home, (3) cost factors, i.e., how much money a car costs, and (4) individual and social factors such as environmental awareness or political beliefs (Rezvani et al., 2015). However, much of the research on adoption does not consider the psychological processes underlying evaluation and choice. Therefore, an opportunity exists to build and test a more psychology-driven behavioral decision model of EV adoption based on widely recognized behavioral factors that drive decision-making.

[1] https://www.nrdc.org/experts/luke-tonachel/study-electric-vehicles-can-dramatically-reduce-carbon-pollution
[2] https://bnef.turtl.co/story/evo-2020/page/3/1

This paper aims to propose and empirically validate a base risk-benefits-social influence modeling of consumer pre-purchase decision-making regarding technology adoption. The scales are tailored to the EV product category; however, the general risk-benefit-social influence modeling is believed to generalize to other consumer technologies and purchase decisions. Consumers often consider both positive and negative valenced beliefs of the perceived consequences associated with adopting complex technology, for example, time savings *benefits* due to the elimination of oil changes and the *risk* of time losses due to unexpected recharging. Because adopting an EV is likely to cause an array of both positive and negative consequences, we develop a new research paradigm and model.

Our research model is grounded in the Fishbein approach (1963, 2008), which guides how to identify which decision criteria are the salient considerations deliberated within an individual's decision model. Our model departs from the Fishbein approach in that it does not funnel all beliefs of future consequences into a summary attitude measure. We expect that funneling all beliefs of negative consequences into one summary variable loses predictive validity when divergent, contrary beliefs cancel or suppress others. To increase insightfulness of the estimated decision model, the research model examines the influence of both the positive consequences of adoption, which we term perceived benefits, as well as the negative consequences of adoption, which we term perceived risks. Accordingly, we seek to answer the first research question: *How do the perceived benefits and risks of adoption influence individuals' EV purchase evaluations and behaviors?*

In addition to identifying the perceived benefits and risks, which drive EV adoption, it is important to identify risk-reducing factors for complex technologies. Reducing consumer concerns and fears associated with adopting an EV is useful research. Because adopting an EV often requires behavioral and home electrical infrastructure changes, and in turn, considerable pre-purchase research, we expect that the EV's product quality and the manufacturer's (aka vendor's) reputation are salient influences that consumers consider during pre-purchase deliberations, which may reduce the perceived risks of EV adoption. Moreover, consumer beliefs about a vendor's trustworthiness, as well as their engineering and

operating expertise, may also reduce consumer risk concerns. Therefore, the second research question guiding this study is, *do beliefs of an EV vendor's expertise and trustworthiness exert a benefits-increasing and risk-reducing effect?*

The rest of the article is organized as follows: First, we review the foundational theory that informs our research. Next, we present a brief discussion of the major constructs of the research model, followed by the presentation of the research model and theoretical grounding for each hypothesized model relationship. The methodology is presented, followed by the presentation of the research results. The findings are summarized and discussed, with research and practical implications offered. This research concludes with a note of limitations and recommendations for future research for consumer adoption of complex technological products, and specifically for the EV marketplace.

2. Literature Review

2.1 Theoretical Foundation/Contextualization of the Research Model

The reference paradigm for our research is the Fishbein expectancy-value modeling of attitude (Fishbein, 1967, 2008) and the Theory of Reasoned Action (TRA) (Fishbein and Azjen, 1975). The belief-affect-intention model is central to marketing research (Holbrook, 1978), and therefore our research results will be easily comparable to other reports. TRA is based on a person's attitude toward a product or object, or behavior is based on a set of beliefs that the individual considers about the results of engaging with that object. Attitudes naturally predict stated intention to perform a behavior in the future, and as a result, actual behavior (Fishbein, 1967). Before we review these models, it should be noted that Fishbein, along with more recent research on contextualizing Information System (IS) research (see Hong et al. 2013), emphasize the need to not only rely on an overarching foundational theory but also to identify a salient set of variables that are contextually and phenomenon-specific, so that a research phenomenon can be best understood.

Information systems researchers have begun to investigate different factors that individuals consider when deciding to purchase and adopt an EV. EV purchase comprises many levels of adoption, both the vehicle, maintenance, sharing 100% of your driving history, etc. Prior research into EV adoption has been based on such adoption theories as the Theory of Planned Behavior (TPB), the value-belief-norm (VBN) theory, the diffusion of innovation (DOI) theory, the rational choice theory, and the Unified Theory of Acceptance and Use of Technology (UTAUT).

For example, Egbue and Long (2012) investigate barriers to wide consumer adoption of EVs using the TPB research structure (Ajzen, 1991). Survey results from a university town identified that several socio-technical factors (e.g., pricing, environmental awareness, safety) hinder individuals from purchasing EVs. In related research, Lane and Potter (2007) combined TPB and VBN theory (Stein et al., 1999) to investigate what factors contribute to customer adoption of low-carbon cars. By adding situational factors, Lane and Potter divided customers into three different classes: engaged, not-engage, and reject users. The researchers utilized a mixed-method design and found that factors like performance, government environmental regulations, and high-cost influence consumer perceptions and purchase behaviors of low carbon cars. In related research, Kaye et al. (2020) combined the TPB and UTAUT (Venkatesh et al., 2003) research models to investigate prior acceptance of highly automated cars in European countries. Reported results include that residents of France are more likely to accept automated cars as compared with other countries.

Technology adoption literature has produced many widely applied insightful information technology (IT) acceptance theories, such as the Technology Acceptance Model (TAM), Uses and Gratification Theory (U&G), Social Cognitive Theory (SCT), Multiple Criteria decision-Making model (MCDM), and the Technology Readiness Index (TRI). Related to the current research context, prior findings include Koul and Eydgahi (2018), who utilized TAM (Davis, 1989) to explore the adoption of driverless car technology. The TAM research model relationships held for the driverless car technology. Also, to investigate Internet banking adoption, Boateng et al. (2016) applied the SCT (Bandura, 1991), which

accounts for human behavioral changes, as the major theoretical foundation. Collecting survey data from China, they found that trust, social features, and compatibility have significant influences on intention to use an Internet banking system.

As discussed, there are many research paradigms that can be utilized to examine why consumers would accept or reject innovative auto-motive technology, and the current study is anchored on the TRA. Several reasons account for our reliance on TRA as our broad theoretical lens. First, compared with other technology acceptance models, TRA is appropriate due to its focus on measuring the strength of social influences affecting the purchase decision. Subjective norms represent beliefs about whether key players would approve or disapprove of behavior, and behavioral motivation to gain referents approval. A second justification for using TRA is that previous IS research has widely applied this theoretical foundation to investigate innovative technology adoption, including EV adoption (see review by Lai, 2017). This research, therefore, follows prior research traditions to investigate how consumers perceive and react to EV purchase. Third, TRA as a general model can be utilized to produce customized research scales to more carefully investigate how individuals perceive and interact with a typical IT (Tarhini et al., 2015).

To further reinforce why our research model includes social influence, we cite recent research that demonstrates that consumer purchase decisions for expensive hybrid EVs are affected by beliefs about how important referents would react to their purchase decision (e.g., Belgiawan et al., 2013, Rai and Nath, 2014, Gadenne et al., 2011). Gadenne et al. (2011) attribute their findings that consumers are often driven to seek approval and higher social status within friends and family relative social groups. As a result, we expect consumers will remain heavily considerate and influenced by referent's opinions and approval. Because many individuals don't have personal experience driving an EV, it is essential for consumers to gather information from their trusted referents.

Our research model is based on TRA however evolves to provide an original contribution. Unlike TRA, we do not funnel all the beliefs about the positive and negative consequences of purchasing an EV into a summary attitude variable. The main reason for segmenting positive and negatively valenced

beliefs into separate variables is to avoid the suppression of discordant beliefs. For many consumers, the purchase of an EV is their most expensive purchase, which has multi-year consequences to personal lifestyle and finance. Therefore, we expect that consumer's purchase decision models are influenced by a wide array of sometimes discordant beliefs. As a result, we prefer to examine purchase criteria at a more granular level, measuring beliefs of perceived risks and benefits individually, rather than funnel often contradicting beliefs into one summary attitude measure. Multi-attribute decision models, such as will be presented here, have been shown to capture consumer beliefs (Pras and Summers, 1978) at a more insightful level. Disaggregating belief structures allows accurate multi-attribute modeling of the judgment process (Slovic and Lichtenstein, 1971, Rabin, 1998, Wallenius et al., 2008).

In line with TRA, we argue that individuals' intention to purchase an EV is dependent on their attitude towards the EV, which is influenced by salient beliefs about it. This view is consistent with the risk-benefit model (Machina, 1987). Accordingly, we argue that negative beliefs result in perceived risks, while positive beliefs increase individuals' perceived benefits (Sarkar, 2011). Besides, Venkatesh et al., (2007) proposed that "the study of key antecedents and various interventions are key indicators of scientific progress and practical applicability of technology adoption research as it deepens our understanding of the phenomenon and provides levers for managerial action." (p. 270). We believe novel insights such as our decomposed risk-benefit research model can be derived from developing new scales and more granular research models. As individuals are becoming more accustomed to paying attention to the role of risk during business transactions, it is reasonable to believe the risk-benefit model can provide novel contextual explanations in the topic of innovative technology adoption (Hansen et al., 2014, Featherman & Hajli, 2016).

Therefore, we seek to understand consumer beliefs about both potential negative consequences (perceived risks) and positive consequences (perceived benefits) of technology adoption. The theoretical basis for this modeling is provided next.

2.2 Perceived Risk-Benefit Decision Models

Risk analysts, policymakers, and risk researchers alike make decisions based on an examination of the risk and benefits from events, products and technology consumption, or performing activities (Gregory and Mendelsohn, 1993; Alhakami & Slovic, 1994; Wilson & Crouch, 2001; Slovic et al., 2007). Likewise, consumers and businesses every day select product offerings that maximize their expected returns and minimize expected losses (Fiegenbaum & Thomas, 1988). However, decision models that include the evaluation of both risks and benefits are not common in consumer behavior research. Research into consumer decision models often focusing on beliefs that form the evaluation of future purchase outcomes and whether the expected benefits will be experienced. Product evaluations are proposed as a set of positive outcomes, operationalized as individual variables.

Notable research that models both gains and losses include Peter and Tarpey (1975), Bhatnagar and Ghose (2004), Forsythe et al. (2006), and Chiu et al. (2014); each research model examined both positive and negative outcomes. A similar risk-benefit tradeoff calculation was proposed by Culnan and Armstrong (1999) to model the decision whether to disclose personal information. The finding was that the perceived benefits outweighed the risks, when individuals disclose the information.

We expect that consumers base purchase decisions on a combination of the hoped-for benefits that are being purchased and the consideration of potentially negative outcomes, i.e., evaluation and estimation of the risks involved. Some consumers may choose not to expose themselves to the financial and usage risks of EVs, while for other consumers, the risks 'do not register', and adoption decisions focus solely on the benefits of adoption. Indeed, a pilot study of this research with respondents ages 20 to 25 indicated that purchase decisions were based on reaping consumption benefits and consumption emotion, on the benefits of expressing an eco-friendly lifestyle, desire for status, and desire for a luxury lifestyle.

For more cautious consumers, the decision to purchase expensive cutting-edge EV technology is an economic decision or a lifestyle decision. For consumers that take a longer period of time to formulate their decision model, there is a high cognitive effort required to learn new purchase decision cues (e.g.,

kWh). This research seeks to draw further the popularity of framing EV consumer decision models as capturing many belief structures, here risks and benefits.

As EV adoption remains in its infancy, many research questions are active. Do consumers primarily focus on the benefits of EV adoption? Do consumers suppress thoughts about EV performance and usage risks in order to enjoy a luxury purchase? Do consumers experience a cue narrowing effect and simplify the purchase decision using a buy quality heuristic? Are consumers in the region of gains or losses, will they take a risk on an upcoming EV company (e.g., Hyundai) or rely on a trusted EV brand (e.g., Nissan and Tesla in the USA)? Are consumers emotional about an EV decision at all, or is it just another vehicle? make the leap of faith and adopt a complex technology? Do consumers simultaneously consider and balance discordant belief structures?

As will be demonstrated, our careful modeling of risk and benefit antecedents to purchase adoption enables a more granular insight into how consumers integrate and prioritize different information cues and beliefs structures regarding the consequences of EV product usage. We choose a risk-benefit base modeling to probe consumer ability to consider discordant beliefs simultaneously and to better tap a wider array of beliefs.

2.3 Perceived Risk

Perceived risk captures consumer evaluations of the likelihood and severity of future negative consequences as a result of a consumption experience (Cox 1967, Jacoby et al., 1971), or the chance of loss multiplied by the magnitude of the loss (Athearn et al. 1989). Perceived risk refers to "the uncertainty that consumers face when they cannot foresee the consequences of their purchase decisions" (Schiffman and Kanuk 2014, p.153). Sometimes purchased products and services do not perform, and there are tangible losses. Consumer behavior research focuses on measuring consumer perceptions, cognitive calculations, and feelings of risk (Loewenstein et al. 2001) because the actual risks are rarely known.

Many purchase decisions include an evaluation of the risk of negative outcomes (Mitchell 1999; Tsiros and Heilman 2005; Featherman and Hajli, 2016). Threats and perceptions of risk are believed to be both felt emotional and deliberated cognitively (Loewenstein et al., 2001; Slovic et al., 2007).

Risk assessments are often hard for consumers and researchers alike to deliberate, and we surmise because consideration of a future loss reduces the simple joy of the consumption process, turning the purchase decision into a chore. Overall, higher risk concerns are shown to motivate information search and learning to reduce the uncertainty of future outcomes resulting from the purchase (Gemünden, 1985). Further, risk assessments are often affected by personal biases (Slovic et al., 1980). Further suppressing any deliberation of dangers and risks, many consumers are shown to be cognitive minimizers (Slovic, 2010), mood-maintenance oriented (Lin et al., 2006), and therefore avoid or shy away from risks of a decision or purchase to maintain their positive mood (Grable and Roszkowski, 2008). This suggests that some consumers often overlook potential losses or problems (and therefore, report suppressed consideration of risk in their purchase decision model), preferring to focus on hedonic benefits and positive consumption emotions. For these reasons, measuring consumer risk concerns are difficult. While some consumers view risk beliefs as a negative force muddying their consumption emotion, others view risk as helpful to slow down purchase commitments. Pre-purchase information search has been demonstrated to increase when consumers perceive risks and potential losses (Gemünden, 1985; Mitra et al., 1999).

Consumers can suffer different types of product performance failures and losses from a product or service purchase, often after years of product ownership. Dimensions of perceived risk identified in the literature include financial, performance, physical, self-image, social, and psychological losses (Jacoby and Kaplan, 1972). Peter and Tarpey (1975) introduced the dimension time risk, and both Belanger et al. (2002), and Featherman and Pavlou (2003) introduced privacy risk for the e-commerce context.

Products differ in their risk profiles. For example, a clothing product may be considered to have a high psychological risk (anxiety, worries related to a bad purchase), high social and self-image risk, but

low financial risk due to a low purchase price. Consumer risk concerns are therefore complex and deserve new conceptualization for technology-based product categories, as shown in Table 1 below.

The EV purchase, in particular, exposes consumers to negative outcomes[3] and personal losses. The potential for each loss is captured by different dimensions of risk, which are defined in table 1 below. The first dimension of perceived risk, **performance risk**, captures beliefs of the EV not performing reliably. While EVs have been in operation for a decade as of this writing, many consumers also may never have seen an EV in their town and therefore may worry about the reliability and performance of the vehicle and the supporting maintenance and charging infrastructure in their region.

The second type of loss we research is **financial risk**. EVs are expensive vehicles, and while they hold the promise of providing many years of service, they do carry a high initial cost and require financing, insurance, and infrastructure upgrades. Consumers also may worry about changing the batteries or motors of the EV in the future and the financial commitment of payment. The third loss we measure is the loss of the privacy of personal information, in this case driving information and all in-car information searches and downloads. Consumers may consider a **privacy risk** when they learn all their driving and route information for each trip is recorded and a driving profile created. Because vehicles are highly computerized and GPS cloud-connected, that details about every driving mile is being recorded. Even before the advent of widespread autonomous driving (which records the driver's geo-location at all times), consumers are increasingly aware that the EV is connected to mapping systems that are recording their every movement.

A fourth risk dimension is **time risk** consumers beliefs of future loses to personal time, such as performing EV maintenance and unplanned EV charging. Consumers are often least forgiving of products that waste their time. Planned or unplanned stops at the public EV charging infrastructure chargers may be perceived as causing repeated, unacceptable time losses. While an unexpected trip to a shopping mall

[3] Future full self-driving capability such as Tesla Autopilot was not included in the current research. The authors acknowledge however, that self-driving vehicles present new threats and benefits.

to charge their EV may not feel like a loss of time, in other cases, the consumer may feel 'stranded' in unexpected locations waiting for their car to charge. As compared to the ubiquitous and fast gas station pit stop, EV charging will often require searching for and driving to EV charging stations, waiting in line for a charge, and the actual recharge time.

{Insert Table 1 about here}

In addition to the more tangible performance, information privacy, time, and financial losses, we also measure emotional dimensions of risk measuring psycho-social-physical safety risks. A fifth risk dimension is **Psychological risk** is experienced as frustrations and loss to ego and peace of mind from EV adoption. We expect EV purchase decision-making to cause some consumers (at varying levels) to experience affective, emotional feelings of danger, which robs the consumer of their peacefulness. As reviewed by Slovic (2010), consumer perceptions of a variety of threats and dangers are often expressed as risk concerns. Some consumers may avoid innovations that require learning, changes to lifestyle, and perceived dangers causing avoidance behavior. For example, some consumers may experience persistent emotional frustration that the sound of the engine does not resemble their preferred 'muscle car.'

Social risk is experienced as a perceived loss of social status if the EV does not perform reliably or is a brand that is discordant with the consumer's reference group. Consumers fear a loss of status within friends and social groups, for example, if the chosen EV brand does not resonate with friends. Consumers may also fear for their physical safety; therefore, we measure the perceived **physical safety risk** of EV adoption. We utilize an item that measures concern for a house fire during recharging[4].

2.4 Perceived Benefits

Consumers often base consumption decisions primarily on the positive consequences of the purchase, the benefits (or value) that they expect the product or service provides in the future (Holbrook and Hirschman 1982, Sarkar 2001, Forsythe et al. 2006, Melewar et al., 2013). Our review of popular EV

[4] A neighbor of the lead author suffered a house fire due to an e-bike's failed electrical recharging system.

review websites identified the most commonly mentioned benefits that EV prospective consumers wanted to obtain.

Perceived benefits of an EV refer to an individual's perception about the advantages that the EV provides, such as an immediate upgrade to personal lifestyle derived from a luxury EV driving experience. Perceived benefits drive higher levels of perceived value for technological innovations (Ray et al., 2019; Kim et al., 2007). With the improvements of battery technology and government vehicle efficiency policy, EVs have emerged as one appealing vehicle choice for consumers (Dijk and Yarime, 2010). Another direct benefit is the current tax incentives that effectively reduce the purchase price. Many governments are encouraging adoption to help reduce greenhouse gas emissions and decrease vehicular noise (Hawkins et al., 2013). From the customer perspective, EVs offer great energy efficiency, reduced operating expense, convenient maintenance, and in general, more economical operating costs (Sierzchula et al., 2014). Also, consumers are reported to rate EV ride quality as comfortable and fashionable due to the innovative technologies inside the cabin (Schuitema et al., 2013). In summary, EVs offer many benefits that consumers appreciate and use as purchase criteria.

We conceptualize the benefits of EV adoption using the dimensions; financial savings, time savings, environmental benefits, eco-lifestyle benefits, sustainability, driving excitement. The eco-lifestyle benefit dimension below is related to the IT Identification concept developed by Carter and Grover (2015).

{Insert Table 2 about here}

2.5 Manufacturer's Corporate Credibility as a Risk-Reducing Factor

The majority of consumer behavior and e-commerce research that includes effects of perceived risk consistently report a small to moderate negative influence on purchase intent (Featherman and Haji 2016) which suggests that consumers are moderately influenced by technology risks when making IT and e-commerce evaluations and usage decisions.

Prior research examines marketing strategies utilized to reduce consumer risk concerns and purchase avoidance. Specific risk-relievers or risk-reducing factors are first presented by Roselius (1971). Factors such a vendor's warrantee, brand image, price, product samples, customer information search, and word of mouth are examples of risk-reducing factors (Shimp & Bearden, 1982; Settle & Alreck, 1989; Murray 1991; Mitchell 1999). A related study of home appliance purchases finds that perceived product quality, perceived technical service quality, and functional service quality reduced consumer perceptions of performance risk and financial risk for an appliance purchase (Sweeney, 1999).

Another risk reliever is the credibility of the company. Corporate credibility is considered to be "the extent to which consumers feel that the firm has the knowledge or ability to fulfill its claims and whether the firm can be trusted to tell the truth or not." (Newell and Goldsmith 2001:235). Newell and Goldsmith (2001) use the dimensions of trustworthiness and expertise to measure Corporate Credibility. Corporate Credibility has been shown to influence how consumers evaluate a brand and perceive advertising claims (Ohanian, 1990). Consumers judge the credibility of a vendor, spokesperson, or service provider using the dimensions of attractiveness, trustworthiness, and expertise (Ohanian, 1990). Relatedly vendor's reputation has been conceptualized as a combination of vendor honesty and expertise (Goldsmith et al., 2000, Lafferty et al., 2002). Consumers are reported as being more accepting of vendor-provided information and more receptive to marketing information when the vendor is believed to be credible (Becerra and Korgaonkar, 2011).

Corporate credibility, corporate reputation, and trust are similar concepts (Ohanian, 1990). Trust in a vendor is an important decision criterion. Trust has been modeled using the dimensions ability (similar to vendor expertise), integrity (similar to trustworthiness), and benevolence (Gefen, 2002). During pre-purchase deliberation, consumers often do not have enough experience with the vendor to judge their likely benevolence; therefore, this research utilizes the corporate credibility dimensions trustworthiness and expertise measuring direct or indirect influences on EV purchase intent.

{Insert Table 3 about here}

2.5.1: Perceived Vendor Trustworthiness

In the marketing domain, vendor reputation, and credibility are studied using the dimensions' trustworthiness and expertise (Erdem and Swait 1998; Sweeney and Swait 2008). Vendor trustworthiness refers to the belief in the ability of a company or venture capital sponsor to provide quality services that are beneficial to its consumers. Vendor trustworthiness includes the concepts of dependability, honesty, reliability, and sincerity (Büttner and Göritz, 2008; Featherman et al., 2010). Previous research suggests that the perceived trustworthiness of a vendor/corporation facilitates individuals' purchasing behaviors (Gefen et al., 2003; Pavlou and Gefen, 2004).

Results suggest that vendor trustworthiness is central to individuals' purchasing behavior and is strongly associated with credibility, which leads to online purchase intention (Büttner and Göritz 2008; Pan and Chiou 2011; Reichelt et al. 2014). For example, Reichelt et al. (2014) applied the theory of reasoned action (TRA) and reports that the perceived credibility of online WOM is influenced by the following three factors: expertise, trustworthiness, and similarity.

Though trust and trustworthiness are similar, distinct differences exist. Trust refers to a relationship between two or more parties, while trustworthiness is defined as a trait or quality of a person (Rotter and Stein 1971) and was extended to organizations (Mayer et al. 1995). Trustworthiness is a generalized expectation that trustees will remain reliable, ethical, dependable, and consistent through observation and evaluation (Hardin 2002; Hosmer 1995). Typically, trustworthiness means how trustworthy the trustee is, and is generally regarded as an antecedent of general trust (Gefen 2002; Mayer et al. 1995). Trust is defined as "a willingness to be vulnerable to another party based on both the trustor's propensity to trust others in general and on the trustor's perception that the particular trustee is trustworthy." A trustee (such as an EV manufacturer) will be seen as trustworthy if they have ability in engineering, manufacturing, and operations, have benevolence or a positive orientation toward the trustor (the customers), and has integrity, or adheres to a set of values deemed acceptable to the trustor (Mayer, Davis & Schoorman, 1995).

Jarvenpaa et al. (2004) report that initial perceptions of vendor trustworthiness can influence trust development. In addition, based on the social exchange theory, Ang and Slaughter (2001) report that different workers (contract vs. permanent) shared different attitudes towards vendor trustworthiness in the context of IS project development. Another example is Gefen's (2002) 's trust framework, where trustworthiness is associated with familiarity and influences purchase behavior.

2.5.2: Perceived Vendor Expertise

Consumers seeking to gain the benefits and consumption emotions of adopting a new technology are exposing themselves to an array of risks due to the real prospect of a failed purchase. Prudent consumers seek to reduce their exposure to risk by learning about the product, the product category, and the vendors. We expect that for expensive, innovative purchases, consumers scrutinize the vendors of the products in the consideration set of product candidates. Prior research identifies that consumers proactively review vendor practices, policies, reputation, and competency and use them as decision criteria (Ohanian, 1990).

Vendor expertise has emerged as a purchase decision criterion and refers to the perceived ability of a company to deliver on its promises (Ohanian, 1990, Goldsmith et al., 2000, Lafferty et al., 2002). A company is more likely to be perceived as a high level of expertise if it possesses competency, knowledge, experience, and skill. Customers are shown to prefer to engage with vendors that are considered to be experienced and knowledgeable (Yale and Gilly 1995). Companies understand that consumer perceptions of expertise can affect the product’s purchase intention, the success of brand extensions, and product loyalty.

Trust researchers examine vendor ability (competency, knowledge, skill, domain expertise) using many of the same dimensions related to expertise (Bhattacherjee, 2001). An ability like vendor expertise (Featherman et al., 2010) reflects the customers' belief that the specific company has the necessary skills, abilities, and characteristics that enable it to perform the intended behavior (Mayer et al. 1995). For example, Gefen and Straub (2004) proposed that online trust is composed of integrity, ability,

benevolence, and predictability. Tan et al. (2008) investigate how to increase citizen's trust towards e-government services and report that a vendor's high-quality website can encourage customers to form a high level of perceived ability and thus can influence trust.

Because we model an EV purchase decision as a risk-taking behavior due to the high initial costs and uncertain reliability (amongst other risks), we expect that consumers with a focus on EV vendor trustworthiness and expertise as a decision criterion, a risk-reducing factor, and a positive influence on beliefs that the EV will produce a set of benefits resulting from usage.

2.6 Social Influence

Consumers are known to seek approval for their important purchases and life decisions. In sociology and consumer behavior research, this process is known as a normative social influence (Fishbein & Azjen, 1975). Further, consumers seek advice about their purchases which is known as an informational social influence (Bearden and Rose, 1990). Consumers are believed to make inferences about what important others would approve of the purchase and to make inferences about what they believe important normative referents (such as family elders) would want them to do in a purchasing decision (Azjen & Fishbein, 1980).

The EV product is innovative, and we expect that many consumers do not understand how to evaluate them effectively. Therefore, we include social influence in our research model as we expect this effect to be magnified for complex technology products such as an EV. We also include social influence to allow model comparison to results generated by prior research based on the Theory of Reasoned Action (Fishbein & Azjen, 1975).

3.0 Research Model and Hypotheses

The research model displayed below is designed to examine consumer belief structures about potential positive and negative consequences of EV ownership. The research model also examines whether beliefs of a vendor's expertise and trustworthiness reduce consumer risk concerns and lead to stronger beliefs of the benefits of EV adoption. The EV category presents a highly computerized, innovative, and complex product that requires many behavioral changes of its consumers. Innovative products often require the consumer to be innovative and accept (or subdue) acknowledged usage risks to reap the benefits of adoption. We expect that a variety of consumer risk concerns are activated for many consumer segments. In general, the research is an example of a parsimonious risk/benefit/social influence decision model, useful to understand consumer decision-making in a high-stakes lifestyle product category. The research model also adds to Trust research as the moderating effects of a manufacturer's credibility (here trustworthiness and expertise) are examined as a risk reliever.

{Insert Figure 1 about here}

We do not contend that the research model is a complete description of the consumer decision-making process. Rather this research seeks evidence to support a risk/benefits/social influence account of the EV adoption decision. Additional likely decision criteria for consumers include price, country of manufacture, customer risk propensity, safety and vehicle performance, emotion, corporate websites, and the test drive experience. We present a strong model of consumer decision-making to capture purchase intent. Our research model (Figure 1) can be supplemented to expand analysis of the human decision-making process for complex technologies.

The hypotheses are presented next in four sections. The first section presents a multi-attribute recording of a set of positive and negative belief structures regarding EV adoption using a risk-benefits-social influence purchase decision model. We hypothesize that purchase intent is suppressed by influences of perceived risk (H1) and that consumer purchase intent is increased when consumers value

and believe the benefits of product consumption will materialize (H2). Consumer beliefs of social influences are also captured to allow a comparison to prior research (H3). The second section of hypotheses tests whether consumer beliefs of corporate credibility (vendor trustworthiness and expertise) exert a risk-reducing effect (H4a, H5a). The third section of hypotheses examines whether corporate credibility increases consumer beliefs that the EV will produce the perceived benefits (H4b, H5b). Finally, the direct effects of corporate credibility on purchase intent are presented (H6a, H6b).

3.1 The Effect of Perceived Risk on Purchase Intent (H1)

The perceived risks of product consumption are shown to reduce purchase intent for a branded product, product categories, and e-services (Mitchell, 1999, Gronhaug et al., 2002; Featherman and Hajli, 2016). Risk perceptions are a threat appraisal and are found to delay purchase decisions to enable further information search and learning (Mitra et al., 1999). We contend that the decision to adopt an EV is risk-inherent for many target markets because the product is radically different, is an expensive technology that requires a large initial expense and behavioral change (charging plan), and possible home infrastructure upgrades.

The research model will estimate to what extent consumer beliefs of EV purchase risks (potential negative consequences, dangers, frustrations, and losses) lead to reduced EV purchase intent. The effect of perceived risk in purchase decision models includes measures of the beliefs (see appendix) of product performance problems (unreliable vehicle), tangible losses to the privacy of driving information, loses to time, and personal finances) and bodily harm (ego frustration, social risks, physical danger – fire hazard). Therefore, we hypothesize:

Hypothesis 1 (H1)*: The perceived risks of EV adoption reduce purchase intention.*

3.2 The Effect of Perceived Benefits on Purchase Intent (H2)

Products provide a stream of benefits from the consumption experience. These perceived benefits are reported by Kim et al. (2008) to have a substantial effect on consumer purchase intent. Similarly, Harris et al. (2016) investigate factors that lead consumers to purchase and install mobile applications, and report that the perceived benefits derived from using the mobile application directly influenced purchase intent for the mobile application. Wang et al. (2013) decomposed perceived benefits into two dimensions: perceived usefulness and perceived enjoyment, reporting that both dimensions increase consumers' purchase intention in the context of e-commerce.

The benefits derived from lifestyle technology products can also be categorized as hedonic and utilitarian (Voss et al., 2003). Chandon et al. (2000) similarly suggest that perceived benefits are a combination of perceived utilitarian and hedonic benefits, both able to increase purchase intentions. Here perceived benefits are conceptualized using themes mentioned by consumers in EV-centered social media and vendor promotional material. In our experimental operationalization of perceived benefits, hedonic benefits include driving enjoyment and eco-pride, the 'pride and satisfaction that I did something to improve my region's environment.' The measures of utilitarian benefits include cost reduction, time savings, and a more active and productive lifestyle. Therefore, we hypothesize:

> ***Hypothesis 2 (H2)****: The perceived benefits of EV adoption increase consumer intention to purchase an EV.*

3.3 The Effect of Social Influence on Purchase Intent (H3)

Consumer behavior is often influenced by how the consumer believes others will react. Consumers seek opinions and approval from important referents, and consumers consider what important others would do in the same purchase decision. Goldsmith, E. B., and Goldsmith, R. E. (2011 p. 119) provide an interesting summary, "We are concerned with what others think of us; our behavior often depends on our social reputations so that the possible disapproval of others has a powerful influence on what we do.

People observe others' behavior and imitate them". The result is that consumers often make the purchase choices and decisions that they think referents would make in the same situation. Consumers also seek referent's advice and guidance as part of their pre-purchase information search, binding them closer to their referents, and reducing purchase errors.

As demonstrated in the TRA (Fishbein & Azjen, 1975), normative beliefs are a critical decision criterion for consumer purchases (Fishbein 1976). Consumers consider what others will think about their decisions, and often make choices they know others would approve of. Subjective norm can be defined as "the person's perception that most people who are important to him think he should or should not perform the behavior in question" (Venkatesh et al., 2003, p. 452). Subjective norms (normative beliefs) are formed by the aggregation of beliefs about groups or individuals that are important to the individual (Grimes & Marquardson 2019). Prior findings demonstrate that social influence communicated in social networks leads to increased purchase intention (e.g., Gunawan and Huarng (2015), Lee and Hong (2016). Finally, in an e-commerce context, social influence effects on e-commerce system adoption were demonstrated to strengthen when risk concerns were salient (Featherman and Hajli, 2016). Therefore, we hypothesize:

Hypothesis 3 (H3)*: Beliefs of social influence increase consumer intent to purchase an EV.*

3.4 The Risk-reducing Effect of Vendor Trustworthiness (H4a)

The EV adoption decision is a consumer micro-level decision with macro-level implications for the environment. Therefore, the identification of product or vendor criteria that potential EV consumers can use as risk-relievers is important from an environmental improvement perspective. The search for risk-relievers is especially important when the consumer has no personal referent that has purchased a similar product.

Vendors believed to be reliable are evaluated as less being risky (Park et al. 2005). Vendor trustworthiness is also reported to reduce consumer risk concerns (Baek et al. 2010) and to increase

purchase intent by reducing the perception of risk (Erdem and Swait 1998). In an e-service adoption setting, corporate credibility was reported as a risk-reducing factor for e-services reliability and security; however, it was not a risk-reducing factor for privacy risk (Featherman et al., 2010). Shimp and Bearden (1982) similarly report that a strong product warranty reduces consumer risk concerns. We expect that consumers are more likely to take a purchasing risk when they believe the vendor is trustworthy (honest, reliable, and sincere). Therefore, we hypothesize:

Hypothesis 4 (H4a)*: Beliefs of vendor trustworthiness reduce the perceived risk of EV purchase.*

3.5 The Risk-reducing Effect of Vendor Expertise (H5a)

We expect that for many consumers, the EV purchase decision represents a significant risk-taking behavior. Consumers may believe the entire product category is risk inherent and focus on the expertise of individual market leaders (White 2005). We expect that consumer beliefs of vendor expertise, as measured by engineering, and operational excellence (amongst other items) will allow consumers to reduce their risk concerns for innovative technology.

Beliefs of vendor expertise can be viewed as signals of vendor competency and provide a risk-reducing effect (White 2005). Indeed, vendor expertise is found to increase levels of perceived quality in business settings (Zhang 2011), and consumer perceptions of design quality. Vendor expertise in manufacturing (experience, knowledge, and skill) is reported to impact final product quality (Zhu et al., 2009). Sweeney (1999) similarly reports that technical, functional, and service quality offered by a vendor reduces the performance and financial risks of purchase.

Vendor expertise has been demonstrated to reduce consumer risk concerns. For example, Coulter and Coulter (2003) found that vendor expertise exerts a negative effect on buyers' perceived risks, especially in purchasing contexts where consumers do not have enough knowledge to understand the specific industry and product offerings fully. Relatedly, Eiser et al. (2009) report that perceived vendor expertise

(rather than a more general measure of vendor trust) has a more significant influence reducing levels of perceived risk in a product purchase. In an e-service adoption setting, corporate credibility was shown to act as a risk-reducing factor (Featherman et al., 2010); however, this research did not specify whether the risk-reducing effect was due to beliefs of vendor trustworthiness or expertise (or both).

We surmise that consumers that notice a vendor's expertise and market leadership in engineering and operations will be able to use these beliefs of expertise as a decision heuristic useful when assessing the riskiness of a vendor's product line. This research then includes an examination of whether consumer beliefs of vendor expertise function as a risk-reducing factor. Therefore, we hypothesize:

Hypothesis 5 (H5a)*: Beliefs of vendor expertise reduce the perceived risk of personal losses.*

3.6 Benefit-Increasing Effect of Vendor Trustworthiness (H4b)

Consumers evaluating an innovative technology product want assurance that the manufacturer is reputable and will warranty their products. Therefore, we expect that while expertise can reduce consumer concerns for tangible losses (privacy, monetary, time), we contend that the more deep-rooted psycho-social risks require beliefs of a vendor's reputation, assurances, and warrantees. Beliefs of a vendor's trustworthiness (honesty, reliability, sincerity) may allow consumers to focus on the benefits of a product purchase, and beliefs that the benefits of purchase will be realized.

Vendor trustworthiness reflects vendors being perceived as being honest, reliable, sincere, trustworthy, and guaranteeing the quality of their product and services. Trustworthy vendors are believed of being capable of providing advertised products and services. When a vendor is considered capable, and warrantees their craftsmanship, the consumer is more likely to believe the benefits derived from purchase will be attainable. Benbasat and Wang (2005) report that consumer trust in a vendor as measured by beliefs of their competence (similar to expertise), benevolence, and integrity (similar to trustworthiness) increased the perceived usefulness of a software service. Similar findings provided by Gefen et al. (2003)

similarly suggest that trust in a vendor (based on the beliefs of vendor integrity, caring, and ability) increases the perceived usefulness of an online merchant.

A company is acknowledged as trustworthy if its management is judged as honest and valid. In the context of e-commerce, the interaction between perceived trustworthiness and perceived benefits is important. For instance, Kim et al. (2008) investigate two important factors in e-commerce settings: trust and satisfaction. By applying three theoretical foundations: TRA, the extended valence framework, and expectation-confirmation theory, Kim et al. (2008) utilized a longitudinal study to formulate a framework to capture the effects of trust and report that perceived trustworthiness was negatively related to perceived risk but also strongly positively associated with perceived benefits. Research into the adoption of self-service technology in a health diagnosis context (Lanseng and Andreassen 2007) also reports that trustworthiness can increase the level of perceived benefits (i.e., expected usefulness and ease of use). Therefore, we hypothesize:

Hypothesis 4 (H4b)*: Vendor trustworthiness increases the perceived benefits of EV adoption.*

3.7 Benefit-Increasing Effect of Vendor Expertise (H5b)

To improve the chances of making a 'safe bet' and choosing products that will provide the desired set of benefits, consumers reduce their consideration set to a company that they feel they can rely upon and is regarded as knowledgeable, experienced, and maintains expertise. We contend that beliefs of an EV vendor's expertise will increase beliefs the benefits will materialize, strengthening the influence of benefit attainment in consumer purchase intent decision models. If the vendor is believed as a market leader with engineering and operational excellence, then we contend that consumers can better focus on the benefits of the purchase, and better appreciate the afforded benefits, resulting in higher levels of perceived benefits.

Empirical research suggests support for the hypothesized effect of perceived expertise strengthening levels of perceived benefits and the importance of perceived benefits in purchase decisions. For example, Frewer et al. (2003) investigated the relationship between trust and perceived benefits/risks in genetically modified food purchases. Using the guidance of the Elaboration Likelihood Model (Petty and Cacioppo, 1986), Frewer et al. (2003) conducted a cross-cultural experiment and reported that vendor expertise has a strong positive influence on perceived benefits.

Additional research identifies three main factors contributing to technology adoption; context factors, decision object factors, and decision entity factors (Li et al. (, 2011). They found that expertise, a decision entity factor, leads to higher perceived benefits (perceived ease of use and perceived relative advantage) of online e-commerce transactions. Therefore, we hypothesize:

Hypothesis 5b (H5b)*: Vendor expertise increases the perceived benefits of adoption.*

3.8 Effect of Trustworthiness on Purchase Intent (H6a)

Vendor trustworthiness is a measure of beliefs a consumer has about a vendor's credibility and reputation for being honest in business transactions (Gefen, 2002). Vendor trustworthiness is expected to be an important precursor for consumer purchase intent decision models when the product purchase is risky. For example, vendor trustworthiness (based on perceived size and perceived reputation) increased consumer intention to transact in e-commerce settings (Jarvenpaa et al., 2000; Pavlou, 2003; Benbasat and Wang (2005).

Belanger et al. (2002) similarly investigated factors that influence purchase intention and information disclosure. They report that trustworthiness combined with the web features security (perceived security risk), privacy (perceived privacy risk), and pleasure influenced purchasing intent and intent to self-disclose information. A related study from So and Sculli (2002) reports that perceived trust can mitigate the negative side of perceived risk in online transactions. The influence of vendor trustworthiness may be

essential for consumers to consider an EV adoption, and therefore we expect these beliefs to be salient. Thus, we hypothesize:

Hypothesis 6 (H6a)*: Beliefs of vendor trustworthiness increase EV purchase intention.*

3.9 Effect of Vendor Expertise on Purchase Intent (H6b)

The extent to which consumer beliefs of EV vendor expertise are considered during EV purchase intent decision making is examined. We expect that beliefs of vendor expertise will be salient for consumers considering EV adoption. Survey items that capture consumer beliefs of vendor ability, knowledge, skill, innovation, and beliefs of their 'genius engineering' are used to measure beliefs of vendor expertise. Related research demonstrates that vendor ability to perform tasks properly (related to expertise) effects beliefs of successful e-commerce outcomes and that vendor ability influences purchase intention (Gefen and Straub 2004).

Ohanian (1991) investigates the relationship between purchase intention and three dimensions of source credibility (expertise, trustworthiness, and attractiveness) and reports that only source expertise (specifically perceived celebrity expertise) has a significant influence on customers' purchase decision making. In addition, Till and Busler (1998) compared the effect of attractiveness and expertise of an endorsed brand and found that customers' perception about the expertise of an endorser can impact (positively or negatively) both purchase behavior attitudes toward the brand. Similarly, Wang and Yang (2010) report that perceived expertise has a positive influence on consumers' purchase intention.

It may take considerable research for consumers to assess and develop beliefs that a vendor has operational expertise. Herbig and Milewicz (1993) suggest that perceived expertise reflects the cumulative effect of past and current corporate behaviors, and report that it takes years for a vendor to be viewed by consumers as being an industry expert. We expect that consumers will be more likely to adopt an EV when the vendor is considered an EV industry expert. Thus, we hypothesize:

Hypothesis 6 (H6b)*: Beliefs of vendor expertise increase EV purchase intent.*

4. Research Methodology

4.1 Context/Data Collection

The research model was tested using data gathered from a survey performed in 2019 pre-COVID19. Data was gathered from US citizens. The sample comprised 164 individuals from the United States (56% are female), mostly young adults in their twenties, a likely current and future target market for a variety of clean EVs. The sample was screened to ensure their current and future country of domicile was the United States. Subjects were asked to evaluate the EV product *category* based on their review of the two most common entry-level EV options that were available at the time of the survey (Nissan Leaf and Tesla Model 3). Subjects residing in other countries reviewed several EV options for their market (and were not included in the current analysis). Subjects were asked to evaluate an EV for adoption in their near future when they could comfortably afford a new vehicle. The purchasing context did not include a comparison of an EV to a gasoline-powered vehicle or to consider hybrid gasoline/electric vehicles, rather to base evaluations on the product *category* represented by the Nissan Leaf and Tesla Model 3.

Subjects were shown product category videos to ensure a base level of understanding about battery-powered EVs. Next, videos of the Tesla and Nissan manufacturing facilities and current EVs for sale were displayed. Videos were chosen not to 'sell' subjects on a brand and gather brand-specific beliefs, but rather to educate them about the product category, their near-future EV purchase options, and to aid them to form product category beliefs. Figure two above displays where the sample resided.

{Insert Figure 2 about here}

4.2 Survey Development/Constructs

The conceptual research model was tested using scales adapted from existing studies and tailored to the EV context (see appendix). The scale to measure vendor expertise and trustworthiness was adapted

from Ohanian (1990), Newell and Goldsmith (2001), and Featherman et al. (2010). New items introduced in this research include trustworthiness items gauging consumer beliefs to what extent they believe EV vendors are hardworking and guarantee the quality of their products. Our conceptualization and measurement of vendor trustworthiness is similar to Bhattacherjee's (2001) concept of integrity, defined as "instilling trustor's confidence in trustee behavior and reduces perceptions of risk" (p. 219). To cast a wider net to capture consumer beliefs of purchase consequences, a measure of the likelihood of future personal losses (perceived risk) is utilized here to capture consumers' subjective evaluations of the anticipated negative consequences of purchasing an EV. The scale (see appendix) is an original contribution, following but expanding on the dimensions and items presented by Featherman and Hajli (2016) and tailored to the EV purchase context. The items to measure perceived benefits were based on prior work by Forsythe et al. (2006). Social influence tap respondent beliefs of what others would recommend to the respondent for the purchase decision. These items were based on the original work of the Theory of Reasoned Action (Fishbein and Azjen, 1975).

4.3 Analysis: Measurement Model

4.3.1 Indicator Reliability and Convergent Validity.

Indicator reliability is a measure of the shared variance of the survey items and the latent variables. The PLS-calculated outer loadings are shown in Appendix table six. A loading relevance test was performed to examine the items with loading <.70. The guidance suggests that problematic indicators should be deleted only if their removal from the PLS model leads to an increase of AVE and composite reliability of their constructs over the 0.5 thresholds (Wong 2016). Convergent validity is tested using the AVE score (Fornell and Larcker, 1981).

Examining each latent variable, Vendor Expertise had an AVE of .660 with all items loading > .7. Similarly, Vendor Trustworthiness had an AVE of .635 with two items with loadings < .7, hardworking

(.665), and trustworthy (.686). The items were retained to allow comparison to prior studies that have used the items (Newell and Goldsmith, 2001) as AVE is already >.6.

Two of the theorized perceived benefits, financial savings (from the home usage of electricity rather than public gasoline refills) and concerns for the privacy of driving records, were not significant for this sample. The purchase benefits with high loadings included the eco-pride and satisfaction that a consumer can achieve from enacting change to improve the local environment (a hedonic benefit). Another item reflected consumer consideration of 'time savings' (a utilitarian benefit). The third item of our scale reflected consumer quest for fun and driving excitement (a hedonic benefit). A further item tapping environmental benefits was not included to keep the scale balanced across the three adopted dimensions. The AVE for perceived benefits was .590, with item loadings ranging from .618 to .754.

The Social Influence scale had an AVE of .612 and attempted to combine two concepts first, the intent to discuss the decision with referents (informational social influence) and beliefs of what important others would think they should do (normative social influence). Purchase intent had an AVE of .626 and examines consumer willingness to purchase, willingness to recommend EV products, and to what extend the consumer had decided that EV ownership was likely.

The Perceived Risk scale had the lowest AVE of .465. The scale is capturing very different dimensions and belief structures, performance concerns, personal losses, and product usage frustrations. We adapted this perceived risk scale from a prior well-established measure (Featherman and Pavlou, 2003, validated in other technology adoption studies (Baptista and Oliveira, 2015). Furthermore, the face validity and discriminant validity of this measurement are excellent. The dimensions salient for this sample include losses to personal *time*, *finances*, and threats to the *privacy* of personal driving information. A measure tapping consumer anticipated psychological frustrations due to recharging difficulties known as *range anxiety* was also included. The outer loadings for the items designed to measure consumer financial risk concerns were < .6 suggesting that for this sample, the financial risks

were not elevated for the purchase scenario. We expect that a consumer in the final decisions of EV choice and adoption would experience greater concerns for potential financial losses.

4.3.2 Discriminant Validity

Discriminant validity is established when the square root of the average variance extracted (AVE) of each latent variable is larger than any of the off-diagonal correlations between variables. Table four results below suggest that discriminant validity is established for the research variables.

{Insert Table 4 about here}

4.3.3 Variance Explained (Coefficient of Determination R^2)

The amount of variance explained by antecedent variables is measured by the coefficient of determination (R^2). We use the adjusted R^2 value provided by PLS, with results indicating that 13.7% of the variance in perceived benefits is explained by antecedent corporate credibility. Only 6.5% of the variance in perceived risk was explained by corporate credibility. A full 79.5% of the variance in purchase intent was explained by the research model's antecedent variables. Using the threshold values described by Hair et al., 2013, the amount of variance explained for perceived risk and perceived benefits are weak, and the value for purchase intent was strong. The research model was not designed to explain the variance in perceived risk and benefits and rather tested for the moderating effects of corporate credibility as a risk-reliever and benefits-inflator. The parsimonious risk-benefit-social influence decision model was able to account for a majority of the variance in purchase intent for the sample.

Once the reliability and validity were in good standing, we tested the structural model using PLS. The research model has an adequate fit for exploratory research and the low sample size (N=140). NFI for the estimated model is .708, and SRMR is .093 (which misses the .08 threshold for good fit (Hair et al., 2009; Markus 2012). Therefore, the model is considered adequate for exploratory research, though it needs further refinement, increased sample size, and testing.

5.0 Results

Results of the PLS estimation of the research model are presented in table five and figure three below. Supporting H1, consumer perceptions of risk exerted a strong *negative* impact on purchase intent (β= -.443, p=.000), suggesting that the EV category represents a risky purchase decision on many dimensions. Supporting H2, consumer perceptions of product benefits exerted a strong positive impact on purchase intent (β= .481, p=.000), suggesting that consumers simultaneously held beliefs of both positive and negative future purchase consequences. Supporting H3, social influence exerted a moderately strong positive impact on purchase intent (β= .279, p=.016), suggesting that consumers would refer to and be influenced by normative and informational social influence. Supporting H4a and H4b, beliefs of vendor trustworthiness both reduced consumer risk concerns (β= -.246, p=.005) and increased beliefs that the benefits of EV adoption would be achieved (β= .309, p=.000).

Supporting H5a and H5b, beliefs of vendor expertise both reduced consumer risk concerns (β= -.268, p=.002) and increased beliefs that the benefits of EV adoption would be achieved (β= .379, p=.000). The reputation of the EV manufacturer as possessing engineering and operational expertise was demonstrated to reduce consumer risk concerns and also increase the perceived belief strength of the benefits of adoption. This suggests that the vendor claims of product performance and usage are believed more strongly when the vendor is seen as reputable, credible, trustworthy, and an expert in their field. Supporting H6a and H6b, vendor expertise (β= .181, p=.013) and trustworthiness (β= .152, p=.025) were also found to directly influence purchase adoption decisions.

{Insert Table 5 about here}

{Insert Figure 3 about here}

5.1 Additional Exploratory Research

An open-ended question at the end of the research instrument provides additional insight. Prior to survey administration, the research team viewed considerable amounts of manufacturer and social media EV reviews and identified the following dimensions of benefits that consumers value; financial savings, the expression of an eco-identity, environmental concerns, luxury, and driving excitement. To verify whether the perceived modeling was accurate, an open-ended question asked respondents which decision criteria were most important to them if they were faced with this EV adoption decision. We expected the results to be a mix of sought-after benefits, consumer concerns, and other decision criteria. The results are shown below using a word cloud visualization, a list of the top 10 mentioned decision criteria (three tied for 10th place), and a further categorization and aggregation of the listed decision criteria.

{Insert Figure 4 about here}

Consumer search for improved life and lifestyle obtainable by specific derived benefits is only one category of decision criteria for EVs. Results below suggest that other decision criteria are considered by consumers, such as the hedonic driving experience (interior, acceleration, luxury, speed, entertainment system, comfort, and autopilot) more than concerns for the product usage experience being acceptable (safety, recharge infrastructure, charging experience, vehicle, battery, time). Concerns for the affordability are also expressed. The consumers of the sample viewed the entry-level EVs as a luxury product capable of providing hedonic benefits. Interestingly the utilitarian benefits of driving an EV and environmental concerns and eco-benefits were mentioned much less frequently. Other customer segments may similarly express a desire for a luxury experience and seek to justify a luxury purchase as being based on concerns for an eco-friendly lifestyle.

{Insert Figure 5 about here}

{Insert Figure 6 about here}

6. Discussion

In this research, we look at how consumers evaluate lifestyle technologies for purchase. The EV is a luxury product worthy of marketing research but is also a computer on wheels connected to a cloud database and GPS tracking systems, and therefore worthy of Information Systems research. In the pre-COVID fall of 2019, a sample of consumers was asked to provide their evaluation of the entry-level EVs (Nissan Leaf, Tesla Model 3) that were currently popular in their region using the scenario that in the near future, they would be in the market for a new vehicle. The sample viewed videos that explained EV technology and the recharging process in the USA. They were then shown videos of the manufacturing facilities (Nissan in Tennessee, Tesla in California) designed to encourage consumers to consider and evaluate the vendors' manufacturing facilities and capabilities.

After learning about the EV product category, popular entry-level models, and likely usage scenario, subjects completed a survey designed to examine the belief structures believed to be activated during EV purchase decision-making. The research model utilizes a risk-benefit, social influence base model of EV adoption. It is worth noting that the sample's purchase intent decision-making was relatively balanced across their risk and benefit beliefs. Also, the trustworthiness and expertise of an EV manufacturer are demonstrated to be risk-relievers and increase consumer beliefs that the perceived benefits of EV driving and lifestyle would be experienced post-purchase. Smart-PLS structural equation modeling was utilized to calculate path estimates for the proposed decision model. A majority of the variance in the sample's purchase intent decision model was captured (79.5%), suggesting nomological validity for the research model. Research results are discussed below to explain the sample's decision-making processes and decision criteria utilized.

6.1 Explaining consumer Purchase Intent decision making for EVs

Our review of EV consumer trends suggests that EV purchases are a risk-taking behavior in part due to the high prices, radical nature of the innovation, limited public charging infrastructure in many regions,

and the behavioral changes needed to adopt the innovation (i.e., remembering to charge the vehicle). For example, EV usage requires planning and new behavioral routines for recharges (home vs. public), which is a less care-free experience than the 'ingrained norm' ubiquitous gasoline station pit stop. Results presented here provide support for the underlying conceptual framework of the proposed risk-benefit, social influence multi-attribute decision model.

Consumers often un (consciously) weigh the risks and benefits of an action, behavior, or purchase (Bhatnagar and Ghose, 2014). A simple example is that a diner may compare the risks of ordering a different entre from a restaurant's menu rather than stick with the known benefits of the favorite 'go to' entre. If the risks (financial loss from inedible food, psychological - ego frustration loss, health risk - for example, peanut allergens) outweigh the benefits (novelty, adventure, delicious meal), then consumers will typically delay and avoid the purchase. Prior research often compiles these discordant beliefs into an overall attitude toward the purchase (Fishbein, 2008); however, the current research utilizes separate, more granular measures of perceived risks and benefits. When beliefs are likely to cancel each other out, using separate measures rather than one summative measure can provide additional insight (Wilson and Crouch, 2001).

Perceived Risks – The sample expressed concern that EV adoption might be causing losses to consumers' personal time, finances, and the privacy of their driving information. The sample also expressed anticipated psychological frustrations due to recharging difficulties (known in the media as range anxiety). Consumers of this study were mindful of the risks of adoption (β= -.443, p=.000), which suggests that the EV purchase is a risk-taking behavior for the sampling population.

Insights generated from the analysis of risk concerns include consumer expectations that vehicle recharging is compared to their current gas station experience. While the consumer may be at fault for not remembering to recharge their EV, the sample expressed strong anticipated frustration (psychological risk) related to the prospect of wasting time looking for, traveling to, and using public charging stations. Consumers consider it a loss of time to wait an hour to recharge their EVs. Regarding concern for

financial losses, significant financial concerns were found to reduce purchase intent. Consumers have uncertainty about product reliability (for example, how many years the battery and motors will last), high comparative EV sales price, and uncertainty related to unexpectedly high EV maintenance fees contributed to the sample's reported financial concerns. Anecdotally, some consumers noted that Tesla was a niche, expensive, luxury product, and therefore unaffordable. The sample represents younger target markets concerned with price and performance. Vendors, therefore, are encouraged to craft marketing content that explains the total cost of ownership, for example, for ten years.

Consumers of this sample also reported concerns for the privacy of their driving information. Consumers may be recognizing that the GPS-based mapping system and security systems are constantly uploading driving information (route, time of day, speed, etc.) to systems that aggregate the information. In the drive towards autonomous vehicles, consumers are sacrificing their driving history, and this consumer concern is likely to expand for some target markets.

Perceived Benefits - The perceived benefits obtainable by EV adoption influenced EV purchase decisions ($\beta = .481$, $p = .000$). Utilitarian and hedonic benefits are sought by consumers (Chiu et al., 2014; Voss et al., 2003). Consumers were interested in achieving the eco-friendly hedonic benefit of the personal feelings of pride and satisfaction derived from doing 'something to improve my region's environment. Further, consumers highly valued the hedonic lifestyle benefit of ‘driving excitement.’ The benefit of potential financial savings was not salient for consumers, but consumer’s hoped-for benefit of time savings was salient and entered consumer decision models.

Social Influences - Confirming the Theory of Reasoned Action (Fishbein and Azjen, 1975) social influences - opinions of important others, and beliefs of what important others would do if faced with the same decision, significantly influenced consumer purchase decisions ($\beta = .279$, $p = .016$). Younger consumers of this sample were moderately influenced by important friends, parents, and elders and would seek their advice and approval regarding an EV evaluation and purchase decision. We interpret the result as meaning that for younger adults, normative and informational social influences are active; however,

consumers base purchase decisions on their evaluations of the vendor, the product, and the derived risks and benefits.

Effects of Corporate Credibility on Purchase Intent - Consumer beliefs of a vendor's expertise (β= .181, p=.013) and trustworthiness (β= .152, p=.025), together with labeled corporate credibility, directly influence consumer purchase intent decisions. As explained below, vendor expertise and trustworthiness exerted a direct positive influence on purchase decision-making.

6.2 Reducing Consumer Perceptions of Risk

Many purchases are assessed as being risky, meaning that negative consequences are believed to be likely with the possibility of tangible personal losses as a result of a sub-optimal or failed product consumption experience (Mitchell, 1999, Featherman and Hajli, 2016). Prior results suggest that while consumers attempt to reduce their uncertainty of the purchase outcomes, they often attempt to shortcut the process (Cho and Lee, 2006) and use heuristics (Folks, 1988). Consumer beliefs of vendor expertise and trustworthiness may be used as heuristics signaling the vendor is skilled and maintains expertise in operations and engineering. The related concept of a trust heuristic has been theorized (Lewicki and Brinsfield, 2011).

This research examined the role of vendor expertise and trustworthiness as risk-relievers, in effect reducing risk concerns and facilitating EV technology adoption. Prior research suggests that when risk concerns diminish, consumers can better see the benefits of product consumption (Alhakami and Slovic, 1994; Wilson and Crouch, 2001). Vendors that exhibit *expertise* and have a strong reputation built on *trustworthiness* may be perceived by consumers as ensuring quality in product design and highly repeatable manufacturing processes, resulting in quality vehicles and, as a result, reduced usage risks. These findings suggest that EV vendors should continue or expand brand communications that provide assurances to the customer. Specifically, discussing product warrantees (a strategy deployed by Hyundai)

should reduce consumer financial risk concerns. If a consumer believes the vendor is trustworthy because of their product warranty, then financial risk concerns should also not be activated. Consumers are more likely to take the risk of adoption if they believe a strong product warranty will protect them (whether they research this carefully or have a general feeling about the warranty). Relatedly, communicating the honesty and sincerity of the vendor's actions may reduce consumer privacy risk concerns. Similarly, if consumers knew EV vendors were developing the public recharging infrastructure, we expect that perceptions of vendor reliability, sincerity, and trustworthiness would reduce usage risk concerns, and specifically, time risk concerns.

Results indicate that *vendor expertise* also reduces consumer risk concerns. This result replicates and extends prior research (Featherman et al., 2010), which reported a privacy risk reduction. The current research expands that finding and reports that vendor expertise reduces financial, time, information privacy, and psychological risk concerns. Vendor expertise ratings (based on viewing Nissan Leaf and Tesla Model 3) were high (5.92 on a 7-point scale), enabling risk reduction. While radically innovative product categories can be perceived as risk inherent, specific vendors (and thus their products) that exude expertise (e.g., signaled by a clean factory with robotic production lines) may not trigger consumer threat detection and resultant risk concerns.

In the case of the Tesla Model 3 that the sample viewed, the manufacturer's engineering expertise and genius may be perceived as futuristic art. It is plausible that consumers may feel higher levels of psychological comfort with an EV purchase (captured by reduced threat detection and risk beliefs) when the product is made by a market leader that exudes expertise. Vendor expertise reflects beliefs that the vendor is innovative, knowledgeable, experienced in operations, with genius engineering. Vendor expertise was demonstrated as a strong risk-reliever, therefore, manufacturers are encouraged to further communicating their expertise and skill as important marketing signals that consumers can rely upon to reduce often considerable product usage risk concerns.

6.3 Increasing an EV's Perceived Benefits - vendor trustworthiness and expertise

When evaluating the conferred benefits of a product category, consumers are stating whether they think product consumption provides a set of benefits. We found support for our hypothesis that levels of perceived benefits increase when consumers believe the vendor maintains operational expertise (β= .379, p=.000) and trustworthy business practices (β= .309, p=.000). Beliefs that an EV manufacturer is an expert manufacturer and trustworthy are interpreted as lending credibility to the product offering, such that beliefs of the benefits derived from consumption become more realistic and probable.

As a result of increasing the perceived benefits of the product, adoption becomes a more salient decision criterion (as measured in model path weight). For example, the use of 'driving excitement' or clean technology benefits as a purchase criterion should consider more strongly factor into purchase decision making when the vendor is believed to be an expert engineering and EV manufacturer that provides high-quality vehicles. Similarly, the benefit of time savings over the life of the EV, captured by reduced time spent maintaining the EV, increased when the vendor is deemed trustworthy to stand behind their product by providing a strong product warranty. Consumers of this study believed that reputable market leaders believed to be trustworthy and experts in their field will produce products that provide the desired benefits, which then factor more heavily into purchase decisions.

6.4 Practical and theoretical implications

This research provides insight into consumer decision modeling for a complex, innovative lifestyle product. A base model of EV adoption was generated with empirical evidence provided. The research model and its conceptualizations are provided to facilitate new research into how market segments view and evaluate EV products. The current research provides a research direction and parsimonious research model that manufacturers can tailor and use to understand how their target markets perceive their product offerings and vendor's merits, credibility, and reputation. With an easy to administer marketing research tool, manufacturers can test different marketing communications and examine changes in consumer perceptions of purchasing risks and benefits. Results here suggest that consumer beliefs of vendor

expertise and trustworthiness can reduce their apprehension and risk concerns and encourage product consumption.

6.5 Practical implications

Technology vendors spend a great deal of time perfecting their engineering and operational capabilities and then communicating the specifications of their products. The research model demonstrated here suggests that vendors of complex, innovative products should focus on and feature the firm's trustworthiness and engineering, manufacturing, and operational expertise in product advertisements. Consumers of expensive technologies are not only buying a product that they hope provides a stream of benefits; they are also opening themselves up to the risks of real personal losses resulting from product ownership.

Consumers form their identity in part by purchasing lifestyle technology products. Because technology products are hard to evaluate, consumers seek to engage with reputable vendors and branded products. Results reported here indicate that the credibility of a vendor (as measured by beliefs of their expertise and trustworthiness) facilitates consumer evaluations and purchase decisions. Vendors of complex technology products are invited to use the provided survey instrument to probe consumer beliefs during adoption decision-making to identify which future consequences influence product evaluation and purchase decision making. In particular, the provided research model and framework provide vendors with the perspective and tool to probe consumer beliefs of both benefits and risks. The research model provided here can be useful to industry and public policy members that are seeking change in consumer adoption of clean technologies. For example, if results suggest consumer interest in a product, but the financial risk is salient, the vendor can better communicate the product warrantee in place to quell the concern for financial loss.

6.6 Theoretical contribution

This research offers several original contributions to theory. For e-commerce and technology adoption research, the modeling of consumer beliefs of future positive and negative consequences (risks and benefits) of a complex technology product (rather than a summary measure of brand attitude) is not common. By focusing on the cognitive beliefs of both positive and negative future consequences (here perceived risks and benefits), rather than funnel all beliefs into a global measure of consumer attitude, consumer purchase decision models can be more specific, insightful, and explanatory. We contend that the risk-benefit cognitive modeling is superior (for complex technology products) to measuring the emotional attitude because technology purchases carry an array of potentially negative outcomes in the pursuit of an array of positive outcomes. Consumer belief structures regarding technology products can include many discordant beliefs and therefore require a more nuanced measure. Here consumers held contrasting beliefs simultaneously acknowledging both risks and possible benefits of EV adoption. This finding suggests that future consumer lifestyle technology adoption research may benefit from using a risk-benefits approach where the utility of the product is only one component. Another original contribution is that for each research variable, the scale was either refinement or extension of prior research for the EV context.

Theoretical modeling and results presented here also provide original insight and validation of prior marketing and management literature. Scant research attempts to identify risk-relievers for consumer technologies and rather focus on the benefits of consumption. Here, when consumers believe an EV manufacturer possesses expertise, trustworthiness, and credibility, their purchase intent decision-making is based less on risk concerns and more on beliefs that the technology product will provide the stated benefits. It is important to understand consumer hesitancies and risk concerns regarding technology adoption so that vendors can identify specific risk-relievers for different target markets. Here scales of trustworthiness and expertise are refined for the EV marketplace.

Measuring how consumers evaluate clean technologies is an important contribution from a socio-environmental perspective. Original conceptualizations, modeling, and findings presented here add to the

research stream that seeks to understand which consequences of adoption are salient to consumers. Last, clarifying which EV usage benefits or usage risks contribute the most to purchase intent decision-making for electrified vehicles (EV cars, trucks, e-bikes, etc.) is important at this point in history.

7. Limitations and Future Research

There are several limitations to this exploratory research, which provide suggestions for future research. Subjects shared their beliefs of the consequences resulting from EV purchase (here gains measured by perceptions of positive benefits and losses measured by perceptions of negative losses). Consumers reviewed product usage and category information, two vendor manufacturing plants, and entry-level EV product offerings (Nissan Leaf and Tesla Model 3). The sample can therefore only be expected to have generated an initial decision of "surface credibility" (Tseng and Fogg, 1999) as survey exposure times averaged less than 30 minutes. Subjects may have had prior knowledge about the EV product category; however, further research is needed to replicate and investigate how consumers form beliefs of vendor credibility. Future research could vary the target market, brand, and information presentation to gain insight into consumer formation of beliefs of vendor expertise and trustworthiness and beliefs of these vendor characteristics on subsequent assessments of the risks and benefits of technology consumption.

Future research could also expand the measure of corporate credibility to reflect trust modeling for the e-commerce information systems context. Vendor benevolence is a dimension of trust that can be added to provide a fuller evaluation of how consumers develop trust in a manufacturer and their products. It is important for technology manufacturers to remember that while consumers are buying a product, they are also entering into a customer relationship with a brand and vendor. For example, many image-conscious consumers do not seek to purchase a mobile phone, rather adopt the lifestyle that a particular brand affords. For lifestyle technology products, a wider measurement of trusting beliefs is an important avenue for further research. Future research may consider the trust modeling as noted by Bhattacherjee (2001) to confirm the effects of an EV vendor's ability (here measured as expertise), benevolence, and

integrity (here measured as trustworthiness) to reduce consumer risk concerns and strengthen beliefs that the product will provide the sought-after benefits.

With the popularity of EVs increasing, an adverse environmental impact is looming. The number of used batteries will expand in the next few years (Zeng et al., 2015), suggesting the need to measure consumer awareness and acceptance of recycling options. Increasing levels of battery disposal will lead to severe environmental impacts if this e-waste phenomenon cannot be handled carefully. To avoid haphazard battery disposal and promote eco-friendly recycling, future research could expand and include the battery replacement cycle as a cost of ownership to investigate how consumers want to reduce the environmental impact of EV purchase.

Further, EVs are Internet-enabled products that utilize advanced GPS systems, such that the driving patterns and routes are being captured to improve mapping systems and databases to enable future autonomous driving services. Concerns for the privacy of driving information (privacy risk) may be the next risk dimension that EV vendors should plan to investigate and alleviate. While some consumers worry about their driving patterns being data mined to build individual consumer safety-records and mileage usage logbooks (useful to insurance providers) and route patterns (useful to marketers and location-aware applications), other consumers may worry that the autonomous driving vehicles of the future can be hacked, resulting in compromised driver and vehicle safety. Therefore, additional research defining and probing perceived privacy risk of personal driving information is warranted, perhaps utilizing an expanded construct definition to provide more nuanced insight into consumer beliefs related to the implications of their driving activity being captured every day.

8. Conclusion

The consumer decision to purchase an innovative, expensive lifestyle product can take months and years of deliberation and fiscal savings. When viewed as an innovative, lifestyle technology the EV

presents the consumer with many facets to consider, for example, potential negative outcomes (risk of personal losses) and positive outcomes (benefits) derived from product consumption. Just like an RV (recreational vehicle), before a prudent consumer can confidently purchase an EV, they must learn a considerable amount of new information to facilitate adoption and lifestyle change. To capture the difficult decision-making process, this research put forward a parsimonious base model of EV adoption, which was found to be supported. Future research can tailor and extend the provided model.

Consumers can be hesitant and wary of EV technology, infrastructure, and product offerings. However, we expect that for many consumers, their enduring involvement and reach for driving excitement, eco-friendly status, and luxury lifestyle will encourage them to continue learning about EV innovations and options. EV vendors similarly will continue to learn about consumer hesitancies, concerns, perceived threats, and to identify the benefits and advantages they most covet. For example, here unexpectedly, consumers of this study valued the benefit of driving excitement more than valued the benefit of environmental protection. Consumers are likely to carry strong beliefs about the perceived benefits and risks of EV usage. We expect that many complex consumer technologies are also evaluated using an *extensive array of discordant beliefs*. Practitioners and academic researchers alike are encouraged to adopt and tailor the original scales and research framing presented here to purchasing contexts where the consumer is likely to experience decision conflict and perceive both positive and negative outcomes of technology adoption.

References

Alhakami, A. S., and Slovic, P. (1994). A psychological study of the inverse relationship between perceived risk and perceived benefit. *Risk Analysis*, *14*(6), 1085-1096.

Ang, S., and Slaughter, S. A. (2001). "Work Outcomes and Job Design for Contract Versus Permanent Information Systems Professionals on Software Development Teams," *MIS Quarterly* (*25*:3), pp. 321-350.

Ajzen, I. (1991). The theory of planned behavior. Organizational behavior and human decision processes, *50*(2), 179-211.

Baek, T. H., Kim, J., & Yu, J. H. (2010). The differential roles of brand credibility and brand prestige in consumer brand choice. *Psychology & Marketing*, *27*(7), 662-678.

Bandura, A. (1991). Social cognitive theory of moral thought and action. *Handbook of moral behavior and development*, *1*, 45-103.

Baptista, G., and Oliveira, T. (2015). Understanding mobile banking: The unified theory of acceptance and use of technology combined with cultural moderators. *Computers in Human Behavior*, *50*, 418-430.

Bearden, W. and Rose R. (1990). Attention to social comparison information: An individual difference factor affecting consumer conformity. *Journal of Consumer Research*, *16*, 461-471.

Becerra, E. P., and Korgaonkar, P. K. (2011). Effects of trust beliefs on consumers' online intentions. *European Journal of Marketing*, *45*(6), 936-962.

Belanger, F., Hiller, J. S., & Smith, W. J. (2002). Trustworthiness in electronic commerce: the role of privacy, security, and site attributes. *The Journal of Strategic Information Systems*, *11*(3-4), 245-270.

Belgiawan, P. F., Schmöcker, J. D., and Fujii, S. (2013). Effects of peer influence, satisfaction and regret on car purchase desire. *Procedia Environmental Sciences*, *17*, 485-493.

Benbasat, I., & Wang, W. (2005). Trust in and adoption of online recommendation agents. *Journal of the Association for Information Systems*, *6*(3), 4.

Bhatnagar, A., and Ghose, S. (2004). Segmenting consumers based on the benefits and risks of Internet shopping. *Journal of Business Research*, *57*(12), 1352-1360.

Bhattacherjee, A. (2001). Understanding information systems continuance: an expectation-confirmation model. *MIS Quarterly*, 351-370.

Boateng, H., Adam, D. R., Okoe, A. F., and Anning-Dorson, T. (2016). Assessing the determinants of internet banking adoption intentions: A social cognitive theory perspective. *Computers in Human Behavior*, *65*, 468-478.

Büttner, O. B., & Göritz, A. S. (2008). Perceived trustworthiness of online shops. Journal of Consumer Behaviour: *An International Research Review*, *7*(1), 35-50.

Carter, M., and Grover, V. (2015). Me, myself, and I (T) conceptualizing information technology identity and its implications. *MIS Quarterly*, *39*(4), 931-958.

Chandon, P., Wansink, B., & Laurent, G. (2000). A benefit congruency framework of sales promotion effectiveness. *Journal of Marketing*, *64*(4), 65-81.

Chiu, C. M., Wang, E. T., Fang, Y. H., and Huang, H. Y. (2014). Understanding customers' repeat purchase intentions in B2C e-commerce: the roles of utilitarian value, hedonic value and perceived risk. *Information Systems Journal*, *24*(1), 85-114.

Cho, J., and Lee, J. (2006). An integrated model of risk and risk-reducing strategies. *Journal of Business Research*, *59*(1), 112-120.

Cox, D. F. (1967). Risk taking and information handling in consumer behavior. Boston: Harvard University Press.

Coulter, K. S., & Coulter, R. A. (2003). The effects of industry knowledge on the development of trust in service relationships. *International Journal of Research in Marketing, 20*(1), 31-43.

Culnan, M. J., and Armstrong, P. K. (1999). Information privacy concerns, procedural fairness, and impersonal trust: An empirical investigation. *Organization Science, 10*(1), 104-115.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340. https://doi.org/10.2307/249008

Dijk, M., and Yarime, M. (2010). The emergence of hybrid-electric cars: Innovation path creation through co-evolution of supply and demand. *Technological Forecasting and Social Change, 77*(8), 1371-1390.

Egbue, O., and Long, S. (2012). Barriers to widespread adoption of electric vehicles: An analysis of consumer attitudes and perceptions. *Energy policy, 48*, 717-729.

Eiser, J. R., Stafford, T., Henneberry, J., & Catney, P. (2009). "Trust me, I'm a scientist (not a developer)": Perceived expertise and motives as predictors of trust in assessment of risk from contaminated land. *Risk Analysis: An International Journal, 29*(2), 288-297.

Erdem, T., & Swait, J. (1998). Brand equity as a signaling phenomenon. *Journal of Consumer Psychology, 7*(2), 131-157.

Featherman, M. S., and Pavlou, P. A. (2003). Predicting e-services adoption: a perceived risk facets perspective. *International journal of Human-Computer Studies, 59*(4), 451-474.

Featherman, M. S., Miyazaki, A. D., and Sprott, D. E. (2010). Reducing online privacy risk to facilitate e-service adoption: the influence of perceived ease of use and corporate credibility. *Journal of Services Marketing*.

Featherman, M. S., and Hajli, N. (2016). Self-service technologies and e-services risks in social commerce era. *Journal of Business Ethics, 139*(2), 251-269.

Fiegenbaum, A., and Thomas, H. (1988). Attitudes toward risk and the risk–return paradox: prospect theory explanations. *Academy of Management Journal, 31*(1), 85-106.

Fishbein, M. (1976). A behavior theory approach to the relations between beliefs about an object and the attitude toward the object. *In Mathematical Models in Marketing* (pp. 87-88). Springer, Berlin, Heidelberg.

Fishbein, M. (2008). A reasoned action approach to health promotion. *Medical Decision Making*, *28*(6), 834-844.

Fornell, C., and Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39-50.

Forsythe, S., Liu, C., Shannon, D., and Gardner, L. C. (2006). Development of a scale to measure the perceived benefits and risks of online shopping. *Journal of Interactive Marketing, 20*(2), 55-75.

Gadenne, D., Sharma, B., Kerr, D., and Smith, T. (2011). The influence of consumers' environmental beliefs and attitudes on energy saving behaviours. *Energy policy*, *39*(12), 7684-7694.

Gefen, D. (2002). Reflections on the dimensions of trust and trustworthiness among online consumers. *ACM SIGMIS Database: the DATABASE for Advances in Information Systems*, *33*(3), 38-53.

Gefen, D., & Straub, D. W. (2004). Consumer trust in B2C e-Commerce and the importance of social presence: experiments in e-Products and e-Services. *Omega, 32*(6), 407-424.

Gemünden, H. G. (1985). Perceived risk and information search. A systematic meta-analysis of the empirical evidence. *International Journal of Research in Marketing*, *2*(2), 79-100.

Goldsmith, R. E., Lafferty, B. A., and Newell, S. J. (2000). The impact of corporate credibility and celebrity credibility on consumer reaction to advertisements and brands. *Journal of Advertising*, *29*(3), 43-54.

Goldsmith, E. B., and Goldsmith, R. E. (2011). Social influence and sustainability in households. *International Journal of Consumer Studies*, *35*(2), 117-121.

Grable, J. E., and Roszkowski, M. J. (2008). The influence of mood on the willingness to take financial risks. *Journal of Risk Research, 11*(7), 905-923.

Grimes, M., & Marquardson, J. (2019). Quality matters: Evoking subjective norms and coping appraisals by system design to increase security intentions. *Decision Support Systems, 119*, 23-34.

Gunawan, D. D., & Huarng, K. H. (2015). Viral effects of social network and media on consumers' purchase intention. *Journal of Business Research* (68:11), pp. 2237-2241.

Hair, J. F. (2009). Multivariate data analysis.

Hair, J. F., Hult, G. T. M., Ringle, C. M., and Sarstedt, M. (2013). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Thousand Oaks: Sage.

Hansen, J. M., Saridakis, G., and Benson, V. (2018). Risk, trust, and the interaction of perceived ease of use and behavioral control in predicting consumers' use of social media for transactions. *Computers in Human Behavior, 80*, 197-206.

Hardin, R. (2002). *Trust and trustworthiness*. Russell Sage Foundation.

Harris, M. A., Brookshire, R., & Chin, A. G. (2016). Identifying factors influencing consumers' intent to install mobile applications. *International Journal of Information Management, 36*(3), 441-450.

Hawkins, T. R., Singh, B., Majeau‐Bettez, G., and Strømman, A. H. (2013). Comparative environmental life cycle assessment of conventional and electric vehicles. *Journal of Industrial Ecology, 17*(1), 53-64.

Herbig, P., and Milewicz, J. (1993). The Relationship of Reputation and Credibility to Brand Success. *Journal of Consumer Marketing* (14:5), p. 10.

Holbrook, M. B. (1978). Beyond attitude structure: Toward the informational determinants of attitude. *Journal of Marketing Research, 15*(4), 545-556.

Holbrook, M. B., and Hirschman, E. C. (1982). The experiential aspects of consumption: Consumer fantasies, feelings, and fun. *Journal of Consumer Research, 9*(2), 132-140.

Hong, W., Chan, F. K., Thong, J. Y., Chasalow, L. C., and Dhillon, G. (2013). A Framework and Guidelines for Context Specific Theorizing in Information Systems Research. *Information Systems Research* (*25*:1), pp. 111-136.

Hosmer, L. T. (1995). Trust: The Connecting Link between Organizational Theory and Philosophical Ethics. *Academy of Management Review* (*20*:2), pp. 379-403.

Jacoby, J., Olson, J. C., and Haddock, R. A. (1971). Price, brand name, and product composition characteristics as determinants of perceived quality. *Journal of Applied Psychology, 55*(6), 570.

Jacoby, J., and Kaplan, L. B. (1972). The components of perceived risk. *ACR Special Volumes*.

Jarvenpaa, S. L., Shaw, T. R., and Staples, D. S. (2004). Toward Contextualized Theories of Trust: The Role of Trust in Global Virtual Teams. *Information Systems Research* (*15*:3), pp. 250-267.

Jarvenpaa, S. L., Tractinsky, N., and Vitale, M. (2000). Consumer Trust in an Internet Store. *Information Technology and Management* (*1*:1-2), pp. 45-71.

Kaye, S. A., Lewis, I., Forward, S., and Delhomme, P. (2020). A priori acceptance of highly automated cars in Australia, France, and Sweden: A theoretically-informed investigation guided by the TPB and UTAUT. *Accident Analysis and Prevention, 137*, 105441.

Karahanna, E., & Straub, D. W. (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly* (*27*:1), pp. 51-90.

Kim, H. W., Chan, H. C., and Gupta, S. (2007). Value-based adoption of mobile internet: an empirical investigation. *Decision Support Systems, 43*(1), 111-126.

Kim, D. J., Ferrin, D. L., and Rao, H. R. (2008). A trust-based consumer decision-making model in electronic commerce: The role of trust, perceived risk, and their antecedents. *Decision Support Systems*, *44*(2), 544-564.

Koul, S., and Eydgahi, A. (2018). Utilizing technology acceptance model (TAM) for driverless car technology adoption. *Journal of Technology Management and Innovation*, *13*(4), 37-46.

Lafferty, B. A., Goldsmith, R. E., and Newell, S. J. (2002). The dual credibility model: The influence of corporate and endorser credibility on attitudes and purchase intentions. *Journal of Marketing Theory and Practice*, *10*(3), 1-11.

Lai, P. C. (2017). The literature review of technology adoption models and theories for the novelty technology. *JISTEM-Journal of Information Systems and Technology Management*, *14*(1), 21-38.

Lee, J., and Hong, I. B. (2016). Predicting Positive User Responses to Social Media Advertising: The Roles of Emotional Appeal, Informativeness, and Creativity. *International Journal of Information Management* (*36*:3), pp. 360-373.

Lewicki, R. J., and Brinsfield, C. (2011). Framing trust: trust as a heuristic. *Framing matters: Perspectives on Negotiation Research and Practice in Communication*, 110-135.

Lin, C. H., Yen, H. R., and Chuang, S. C. (2006). The effects of emotion and need for cognition on consumer choice involving risk. *Marketing Letters*, *17*(1), 47-60.

Loewenstein, G. F., Weber, E. U., Hsee, C. K., and Welch, N. (2001). Risk as feelings. *Psychological Bulletin*, *127*(2), 267.

Machina, M. J. (1987). Decision-making in the presence of risk. *Science*, *236*(4801), 537-543.

Mayer, R. C., and Davis, J. H. (1999). The Effect of the Performance Appraisal System on Trust for Management: A Field Quasi-Experiment. *Journal of Applied Psychology*, (*84*:1), p. 123.

Mayer, R. C., Davis, J. H., and Schoorman, F. D. (1995). An Integrative Model of Organizational Trust. *Academy of Management Review* (*20*:3), pp. 709-734.

Melewar, T. C., Alwi, S., Liu, M. T., Brock, J. L., Shi, G. C., Chu, R., and Tseng, T. H. (2013). Perceived benefits, perceived risk, and trust. *Asia Pacific Journal of Marketing and Logistics*.

Mitchell, V. W. (1999). Consumer perceived risk: Conceptualizations and models. *European Journal of marketing*. February.

Mitra, K., Reiss, M. C., and Capella, L. M. (1999). An examination of perceived risk, information search and behavioral intentions in search, experience and credence services. *Journal of Services Marketing*.

Murray, K. B. (1991). A test of services marketing theory: consumer information acquisition activities. *Journal of Marketing*, *55*(1), 10-25.

Newell, S. J., and Goldsmith, R. E. (2001). The development of a scale to measure perceived corporate credibility. *Journal of Business Research*, *52*(3), 235-247.

Ohanian, R. (1990). Construction and Validation of a Scale to Measure Celebrity Endorsers' Perceived Expertise, Trustworthiness, and Attractiveness. *Journal of Advertising* (*19*:3), pp. 39-52.

Ohanian, R. (1991). The Impact of Celebrity Spokespersons' Perceived Image on Consumers' Intention to Purchase. *Journal of Advertising Research* (*31*:1), pp. 46–54.

Pan, L.-Y., and Chiou, J.-S. 2011. "How Much Can You Trust Online Information? Cues for Perceived Trustworthiness of Consumer-Generated Online Information," *Journal of Interactive Marketing* (*25*:2), pp. 67-74.

Park, J., Lennon, S. J., and Stoel, L. (2005). On-Line Product Presentation: Effects on Mood, Perceived Risk, and Purchase Intention. *Psychology and Marketing* (*22*:9), pp. 695-719.

Pavlou, P. A. (2003). Consumer Acceptance of Electronic Commerce: Integrating Trust and Risk with the Technology Acceptance Model. *International Journal of Electronic Commerce* (*7*:3), pp. 101-134.

Pavlou, P. A., and Gefen, D. (2004). Building Effective Online Marketplaces with Institution-Based Trust. *Information Systems Research* (15:1), pp. 37-59.

Paluch, S., and Wünderlich, N. V. (2016). Contrasting risk perceptions of technology-based service innovations in inter-organizational settings. *Journal of Business Research, 69*(7), 2424-2431.

Peter, J. P., and Tarpey Sr, L. X. (1975). A comparative analysis of three consumer decision strategies. *Journal of Consumer Research*, *2*(1), 29-37.

Petty, R. E., and Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In *Communication and Persuasion* (pp. 1-24). Springer, New York, NY.

Phillips, D. M., and Hallman, W. K. (2013). Consumer risk perceptions and marketing strategy: The case of genetically modified food. *Psychology and Marketing*, *30*(9), 739-748.

Pras, B., and Summers, J. O. (1978). Perceived risk and composition models for multi-attribute decisions. *Journal of Marketing Research*, *15*(3), 429-437.

Rabin, M. (1998). Psychology and economics. *Journal of Economic Literature*, *36*(1), 11-46.

Rai, V., and Nath, V. (2014, June). How the Interaction of Supply and Demand Shapes Patterns of New Technology Adoption: Plug-In Electric Vehicles in California. *In Energy and the Economy, 37th IAEE International Conference, June 15-18*, 2014. International Association for Energy Economics.

Ray, A., Bala, P. K., and Dasgupta, S. A. (2019). Role of authenticity and perceived benefits of online courses on technology based career choice in India: A modified technology adoption model based on career theory. *International Journal of Information Management, 47*, 140-151.

Reichelt, J., Sievert, J., and Jacob, F. (2014). How Credibility Affects Ewom Reading: The Influences of Expertise, Trustworthiness, and Similarity on Utilitarian and Social Functions. *Journal of Marketing Communications* (20:1-2), pp. 65-81.

Rezvani, Z., Jansson, J., and Bodin, J. (2015). Advances in consumer electric vehicle adoption research: A review and research agenda. *Transportation Research Part D: Transport and Environment, 34*, 122-136. doi:10.1016/j.trd.2014.10.010

Rotter, J. B., and Stein, D. K. (1971). Public Attitudes toward the Trustworthiness, Competence, and Altruism of Twenty Selected Occupations, *Journal of Applied Social Psychology* (*1*:4), pp. 334-343.

Sarkar, A. (2011). Impact of utilitarian and hedonic shopping values on individual's perceived benefits and risks in online shopping. *International Management Review*, *7*(1), 58-65.

Schiffman, L., and Kanuk, L. (2014). *Consumer Behavior, Global Edition*. Pearson Higher Ed.

Schuitema, G., Anable, J., Skippon, S., and Kinnear, N. (2013). The role of instrumental, hedonic and symbolic attributes in the intention to adopt electric vehicles. *Transportation Research Part A: Policy and Practice*, *48*, 39-49.

Sierzchula, W., Bakker, S., Maat, K., and Van Wee, B. (2014). The influence of financial incentives and other socio-economic factors on electric vehicle adoption. *Energy Policy*, *68*, 183-194.

Slovic, P., Fischhoff, B., and Lichtenstein, S. (1980). Facts and fears: Understanding perceived risk. In *Societal risk assessment* (pp. 181-216). Springer, Boston, MA.

Slovic, P., Finucane, M. L., Peters, E., and MacGregor, D. G. (2007). The affect heuristic. *European Journal of Operational Research*, 177(3), 1333-1352.

Slovic, P., and Lichtenstein, S. (1971). Comparison of Bayesian and regression approaches to the study of information processing in judgment. *Organizational behavior and human performance*, *6*(6), 649-744.

Shimp, T. A., and Bearden, W. O. (1982). Warranty and other extrinsic cue effects on consumers' risk perceptions. *Journal of Consumer Research*, *9*(1), 38-46.

So, M. W., and Sculli, D. (2002). The Role of Trust, Quality, Value and Risk in Conducting E-Business, *Industrial Management and Data Systems* (*102*:9), pp. 509-513.

Sweeney, J. (1999). The Role of Perceived Risk in the Quality-Value Relationship: A Study in a Retail Environment. *Journal of Retailing*, *75*(1).

Sweeney, J., and Swait, J. (2008). The Effects of Brand Credibility on Customer Loyalty. *Journal of Retailing and Consumer Services* (*15*:3), pp. 179-193.

Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., and Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human ecology review*, 81-97.

Tarhini, A., Arachchilage, N. A. G., and Abbasi, M. S. (2015). A critical review of theories and models of technology adoption and acceptance in information system research. *International Journal of Technology Diffusion (IJTD)*, *6*(4), 58-77.

Tan, C. W., Benbasat, I., and Cenfetelli, R. T. (2008). Building Citizen Trust Towards E-Government Services: Do High Quality Websites Matter? *Proceedings of the 41st Annual Hawaii International Conference on System Sciences (HICSS 2008)*: IEEE, pp. 217-217.

Till, B. D., and Busler, M. (1998). Matching Products with Endorsers: Attractiveness Versus Expertise. *Journal of Consumer Marketing* (15:6), pp. 576-586.

Tsiros, M., and Heilman, C. M. (2005). The effect of expiration dates and perceived risk on purchasing behavior in grocery store perishable categories. *Journal of Marketing*, 69(2), 114-129.

Venkatesh, V., Morris, M. G., Davis, G. B., and Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly* (*27*:3), pp. 425-478.

Venkatesh, V., Davis, F., and Morris, M. G. (2007). Dead or alive? The development, trajectory and future of technology adoption research. *Journal of the Association for Information Systems*, *8*(4), 1.

Voss, K. E., Spangenberg, E. R., and Grohmann, B. (2003). Measuring the hedonic and utilitarian dimensions of consumer attitude. *Journal of Marketing Research*, *40*(3), 310-320.

Wallenius, J., Dyer, J. S., Fishburn, P. C., Steuer, R. E., Zionts, S., and Deb, K. (2008). Multiple criteria decision making, multi-attribute utility theory: Recent accomplishments and what lies ahead. *Management Science*, *54*(7), 1336-1349.

Wang, X., and Yang, Z. (2010). The Effect of Brand Credibility on Consumers' Brand Purchase Intention in Emerging Economies: The Moderating Role of Brand Awareness and Brand Image. *Journal of Global Marketing* (23:3), pp. 177-188.

Wang, Y.-S., Yeh, C.-H., and Liao, Y.-W. (2013). What Drives Purchase Intention in the Context of Online Content Services? The Moderating Role of Ethical Self-Efficacy for Online Piracy. *International Journal of Information Management* (33:1), pp. 199-208.

Wilson, R., and Crouch, E. A. (2001). *Risk-benefit analysis*. Harvard University Press.

Wong, K. K. K. (2016). Mediation analysis, categorical moderation analysis, and higher-order constructs modeling in Partial Least Squares Structural Equation Modeling (PLS-SEM): A B2B Example using SmartPLS. *Marketing Bulletin*, 26.

Zhu, Y., You, J., Alard, R., and Schönsleben, P. (2009). Design quality: a key to improve product quality in international production network. *Production Planning and Control*, *20*(2), 168-177.

Zeng, X., Li, J., and Liu, L. (2015). Solving spent lithium-ion battery problems in China: Opportunities and challenges. *Renewable and Sustainable Energy Reviews, 52*, 1759-1767.

Tables

Table 1. Dimensions of Perceived Risk

Dimension of Perceived Risk	**Definition for EV Purchase** The combined evaluation of the likelihood and severity of negative consequences and personal losses resulting from EV purchase. The following dimensions are measured.
Performance Risk	Anticipated potential for EV driving performance and reliability problems.
Financial Risk	Anticipated potential for financial losses resulting from the initial purchase and maintenance.
Privacy Risk	Anticipated potential for losses to the privacy of personal driving information.
Time Risk	Anticipated potential for loss of time due to difficulty recharging the EV.
Psychological Risk	Anticipated potential for frustration and loss to ego and peace of mind resulting from the frustrations, worries, and stresses of EV ownership and usage.
Social Risk	Anticipated potential for loss of perceived social status within personal social groups.
Physical Safety Risk	Anticipated potential for injury to personal health resulting from home EV charging.

Table 2. Definitions of Each Dimension of Perceived Benefits

Dimension of Perceived Benefits	**Definition for EV Purchase** The evaluation of likelihood of positive consequences and personal gains resulting from an EV purchase.
Time savings	Cognitive belief that product adoption and usage will cause the consumer to save time related to usage. For the EV context time savings include extinction of gas station visits, and time spent performing auto maintenance such as oil changes. EV's require less maintenance.
Financial savings	Cognitive belief that product adoption will cause financial savings over the life of the vehicle.
Environmental savings	Cognitive belief that product adoption will improve the environmental cleanliness of the driver's region by reducing use of oil, gasoline that cause harmful emissions.
Sustainability	Cognitive belief that product adoption can contribute to an energy-independent country, by reducing reliance on oil imports.
Driving Excitement	Affective beliefs that product adoption will add joy to the consumer's daily life
Eco Pride and Satisfaction	Affective beliefs that product adoption enables a form of self-expression that is permanently satisfying and identity related.

Table 3. Dimensions of EV Manufacturer's Corporate Credibility

Dimension of Corporate Credibility	**Definition for EV Purchase** Beliefs of the EV manufacturer's reputation for honesty, reliability, trustworthiness and expertise in engineering, manufacturing, and operations.
Vendor expertise	Beliefs that the EV manufacturer is knowledgeable and experienced, skilled, qualified and innovative demonstrating genius engineering.
Vendor trustworthiness	Beliefs that the EV manufacturer is honest, reliable, sincere, dependable, and guarantees the quality of their product.

Table 4. Latent Variable Correlations

Latent Variable Correlations	Vendor Expertise	Perceived Benefits	Purchase Intent	Perceived Risk	Social Influence	Vendor Trustworthiness
Vendor Expertise	**0.813**					
Perceived Benefits	0.379	**0.768**				
Purchase Intent	0.543	0.756	**0.811**			
Perceived Risk	-0.267	-0.149	-0.509	**0.682**		
Social Influence	0.276	0.592	0.519	0.140	**0.782**	
Vendor Trustworthiness	0.748	0.309	0.441	-0.246	0.111	**0.797**

Table 5. Results

Hypotheses		Beta and p-values	Sig?
H1	The perceived risks of EV adoption reduce purchase intent	(β= -.443, p=.000)	Yes
H2	The perceived benefits of EV adoption increase purchase intent	(β= .481, p=.000)	Yes
H3	Social influences increase EV purchase intent	(β= .279, p=.016)	Yes
H4a	Vendor Trustworthiness decreases the perceived risks of EV adoption	(β= -.246, p=.005)	Yes
H4b	Vendor Trustworthiness increases the perceived benefits of EV adoption	(β= .309, p=.000)	Yes
H5a	Vendor Expertise decreases the perceived risks of EV adoption	(β= -.268 p=.002)	Yes
H5b	Vendor Expertise increases the perceived benefits of EV adoption	(β= .379, p=.000)	Yes
H6a	Vendor Trustworthiness increases EV purchase intent	(β= .152, p=.025)	Yes
H6b	Vendor Expertise increases EV purchase intent	(β= .181, p=.013)	Yes

Figure Legends

Figure 1. Research Model

Figure 2 Location of the sample during data collection

Figure 3 Model Estimation Results

Figure 4 What decision criteria would you use to evaluate and EV?

Figure 5 EV decision criteria most often mentioned

Figure 6 Categorization of mentioned purchase criteria

Appendix

	Vendor Trustworthiness (Chronbach's Alpha = .914, Composite Reliability = .912, AVE = .635)	PLS Outer Loading
1	Dependable	.909
2	Honest	.674
3	Reliable	.767
4	Sincere	.792
5	Trustworthy	.668
6	Guarantees the quality of their products	.925

	Vendor Expertise (Chronbachs's Alpha = .920, Composite Reliability = .920, AVE = .660)	PLS Outer Loading
1	An expert	.723
2	Knowledgeable	.745
3	Innovative	.854
4	Genius Engineering	.726
5	Qualified	.836
6	Skilled	.962

	Perceived Risk (Chronbach's Alpha .813, Composite Reliability = .812, AVE = .465)	
1	I would sometimes *forget to charge my EV* and then I would *lose time having to find recharging stations* that take at least an hour for a recharge.	.969
2	There will be *hidden costs* with owning an EV.	.558
3	*Driving outside of my town* with my EV would *add frustration and stress to my life* if I have difficulty recharging (range anxiety).	.639
4	Because of the advanced GPS and computer systems inside the EV, your *personal driving information may no longer be private.*	.597
5	The EV I would consider purchasing is *expensive* even after tax rebates, so there is the *risk of losing money* if the EV does not last many, many years.	.538

	Perceived Benefits (Chronbach's Alpha .807, Composite Reliability = .810, AVE = .590)	
1	A benefit to me from buying an EV would be the *pride and satisfaction that I did something to improve my region's environment.*	.754
2	I would *save time* by never again waiting while my car receives an oil change	.618
3	If I purchased an EV and was the driver, *my friends and I could share a fun, innovative new lifestyle together*	.690

	Social Influence (Chronbach's Alpha .822, Composite Reliability = .816, AVE = .612)	
1	I would discuss any EV purchasing decision with my *parents or elders* to *seek their advice and approval*	.605
2	I would discuss my EV purchasing decision with *important friends* to seek their *advice and approval*	.626
3	People who are important to me, would think that I should choose an EV for my next automobile	1.037

	Purchase Intent (Chronbach's Alpha .852, Composite Reliability = .852, AVE = .658)	
1	I would be willing to buy an EV.	.797
2	I would recommend EVs to friends or relatives.	.841
3	I am already comfortable with EVs and have decided that owning an EV is in my future.	.793