

Autonomous Vehicles: A Value Proposition for Emerging Markets—The Case of Kuwait [†]

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Abstract: The advancements in autonomous driving technology are triggering a worldwide disruption to the transportation industry. In the state of Kuwait where people enjoy high financial power, there is a market for introducing a wide range of high-tech vehicles with various levels of autonomous driving. This study follows a qualitative approach based on focus groups and semi-structured interviews with individual and corporate customers, including mainly taxi, food, parcel and cargo companies. It explores the most appealing autonomous features to those segments based on Osterwalder's Value Proposition Canvas. Results indicate that individual drivers, taxi companies and domestic cargo delivery companies perceive potential values in buying level-3 autonomous vehicles (AVs), which provide conditional automation that enables the vehicle to drive itself under the supervision of the human driver. On the other hand, respondents see appealing market opportunities for level-4 driverless vehicles in controlled areas belonging to the oil sector, as well as those at marine ports and airports.

Keywords: autonomous vehicles (AVs); electric vehicles (EVs); artificial intelligence (AI); machine learning (ML); value proposition canvas



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1. Objectives

This study explores the appealing value propositions that autonomous vehicle (AV) dealers in Kuwait could offer to two distinct segments: individual and corporate customers. Here, we strive to formulate who will benefit most from the various levels of autonomous driving suggested by the American National Highway Traffic Safety Administration (NHTSA), starting with level 0: no automation; level 1: basic assistance is provided to the driver; level 2: driver assistance is provided with both accelerating, braking and steering; level 3: conditional automation which enables the vehicle to drive itself under the supervision of the human driver; level 4: high automation where the vehicle is fully autonomous and can drive itself without a human driver, but in limited controlled areas; and level 5: full automation under all conditions and a human driver is not needed to operate the vehicle [1–5].

2. Methodology

The research used both primary and secondary data, with a focus on primary data collection and analyses. Semi-structured in-depth interviews were conducted with individual customers including owners of high-end electric vehicles with advanced autonomous driving features. In addition, focus groups were conducted with members from car showrooms and dealerships. Secondary data were used to write the literature review and develop the conceptual framework. This research followed the deductive approach. The technology acceptance model (TAM) and Osterwalder's Value Proposition Canvas were used in the

conceptual framework. All interviewed people were made aware of the research objectives and the various levels of vehicle automation.

3. Results

According to the analysis of the qualitative data, participants welcomed normal cars with internal combustion engines (ICEs) and with basic autonomous features. Smart cruise control, self-parking, traffic jam pilot and crash protection features received the highest level of excitement. Some Chinese car dealers stated that in non-luxury categories, these autonomous features were among the most successful selling points they used to break into the brand-loyal Kuwait car market. For high-tech electric vehicles (EVs), the owners said that they loved the technology associated with level-3 AVs, but they would not trust higher levels of autonomous driving under the current road conditions. Similar indications were given by other respondents regarding taxis and food and parcel delivery companies. However, many respondents see the potential value for level-4 driverless vehicles in controlled areas in the industrial sector, such as in oil fields, logistics and warehousing areas, marine ports and airports.

4. Implications

The study has important practical implications. Kuwait could obtain great benefits by utilizing autonomous vehicles in the transportation industry. The “transport-as-a-service” (TaaS) business model will have disruptive implications in the industrial sector, particularly in controlled areas [2–8]. This covers unmanned small delivery services and large cargo-loading semi-trucks. According to the “Rethinking Transportation” think tank, over 50% of all driving will be by autonomous EVs in 20 years. Tesla indicated that the value of its stock is totally reliant on its EV self-driving capabilities [9–14].

5. Originality Value

Even though Kuwait represents an emerging market for high-tech electric and autonomous vehicles, there is a scarcity of research in this context [15–18]. The study uses a flexible qualitative approach that can be refined when new data emerge. It explores attitudes and behavior of the target market and the fundamental sought values in autonomous driving for both individual and corporate customers. These include functional, social, emotional and supporting values.

6. Contributions

This study opens new horizons for future research to investigate the development of smart cities in emerging markets and their role in the wider adoption and spread of autonomous vehicles. Connectivity and smart transportation systems are enablers of the successful deployment of autonomous driving. AV technology will likely reduce congestion and crashes on roads, which will reduce energy consumption and pollution [3,10,19]. In addition, future studies could quantitatively examine the influence of gender, age, income and other demographic variables on the value proposition for different segments of the market.

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