



Title: Attitudes towards Electric Vehicle in Kuwait: A Mixed Method Approach
40th EBES Conference-Istanbul

Presenter: Dr. Sumayya Banna

Assistant Professor at Arab Open University (AOU)

Email: sumayya@aou.edu.kw

Authors of the article are:

Dr. Andri Ottesen

Assistant Professor at Australian University (AU)

Email: a.ottesen@ack.edu.kw

Dr. Basil Alzougool

Associate Professor at Arab Open University (AOU)

Email: balzougool@aou.edu.kw

Agenda for Today's presentation



Background
problem

Literature
Review---brief

Research
Methodology

Research Data
analysis

Research
Results/output

Conclusion



Acknowledgement

Acknowledgement:

Special thanks to London School of Economics and Political Science – Middle East Center which supervises this study. Special thanks to the LSE Ethical Committee that gives ethical guidance for this research and special thanks to Kuwait Foundation for Scientific Advancement for funding this research, AND

The Kuwait Foundation for Advancement of Science (KFAS) for providing a grant to fund this research.



KFAS

This research has been funded by The Kuwait Foundation for Advancement of Science (KFAS)

KFAS is already running a renewable energy program to evaluate the performance of Electric vehicles in Kuwait and to better understand technical requirements for the design of EVs so that they can be used in hot climatic conditions that require heavy use of air-conditioning, which is a factor strongly associated with EV battery depletion, and thus the range EVs can drive and therefore their appeal to consumers in Kuwait.

<https://www.kfas.org/what-we-offer/scientific-research/research-grants>



General information about Kuwait

GDP per capita - USD
32,000 (ranked 28th
globally)

Population- 4,207,083
(1.67% annual growth)

Strategic developmental
goals of the national
development plans 2035:
sustainable diversified
economy – away from oil-
based economy

Kuwait has a rich and
relatively open economy
with crude oil reserves of
nearly 6 percent of world
reserves.

Petroleum accounts for
over half of GDP, 92 percent
export revenues and 90
percent of government
income (Giris and Ramadan,
2018).



An Overview of EVs Landscape in Kuwait

Nearly 99 percent of the country's electricity is produced using carbon-based resources (oil and gas, non-renewable sources) as opposed to renewable sources such as solar, wind or hydropower (International Renewable Energy Agency 2020).

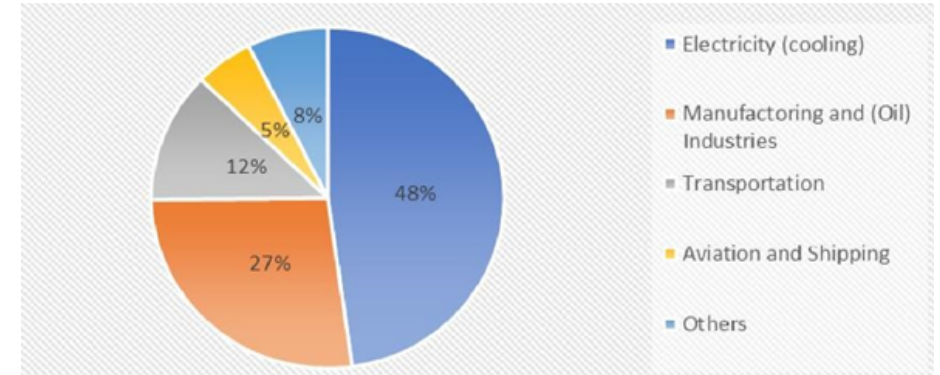
According to the 2035 Sustainable Vision of Kuwait, Kuwait aims to have 15 percent of its energy needs supplied by solar power, up from 0.7 percent today.

Kuwait seeks to avoid emission of greenhouse gases equivalent to 7.4% of its total future emission on 2035 through its national efforts.

This will be translated in its new, to be prepared, low-emissions development strategy 2050 in accordance with the requirements of the Paris climate agreement and based on the principle of a circular carbon economy.

An Overview of Evs Landscape in Kuwait

- Currently nearly 12 percent of CO2 emission comes from ground transport
- This number though must be compared to the total greenhouse emission per capita in comparison to other nations.



GCC	Metric Ton	Europe	Metric Ton
Qatar	38.8	Germany	8.5
UAE	22.9	Poland	8.4
Kuwait	22.6	Italy	5.6
Bahrain	21.6	Spain	5.6
Oman	18.6	UK	5.5
Saudi Arabia	18.0	France	4.8
Average	23.8	Average	6.4

Source: Climate Watch 2019

Literature Review... An Overview of EVs Landscape in Kuwait

- There is a growing body of research on EV-adoption, mainly relating to settings in European, American and Australian markets (Vilchez et al. ,2017, Thiel et. al , 2012), Axsen and Kurani ,2013) EV-adoption in Kuwait and the GCC is limited for various reasons. These include:
 - A. Kuwait has a very hot climate which has important implications for how vehicles are used, and for vehicle suitability, compared to countries in Northern Europe. there is an infrastructure issue in Kuwait due to bad road conditions during severe rains in the winter season and high rates of accidents. During the summer season, the temperature reaches over 50C degrees in Kuwait.
 - B. The minimalist tax system in Kuwait means that relative to countries in Northern Europe, very low taxes are levied on the purchase of gasoline for automobiles or on the use of road infrastructure.
 - C. Kuwaiti families tend to have drivers, which is important given car owner preferences may be distinct from car driver preferences – EV drivers and owners tend to be treated as analogous elsewhere. Kuwait has the highest vehicle ownership rate in the MENA region. Kuwait is recognized as one of the most lucrative markets for largest automobiles in the MENA (Middle East and North Africa Region).
 - D. there is an urgent need to diversify the economy away from oil-based revenues.



Brief Literature review...

- Ottesen and Banna (2018) found that financial factors, battery-charging infrastructure, and battery-related concerns remain major obstacles to widespread electric vehicles market penetration in Iceland.
- Ottesen and Banna (2021) concluded that there are three potential new car buyers' segment:
 - 1) 'Value Seeker' group which is not likely to become an early adopter of EVs in the GCC region.
 - 2) 'Performance Seeker', which includes mainly younger men who prefer speedy EVs
 - 3) 'Safety Seekers', who are mainly younger women with environmental consciousness and prefer to drive EVs and prefer low maintenance as determining factors for EV adoption in the GCC region in the future.
- Therefore, the present study aims to fill the gap in literature by adding more knowledge on this phenomenon.



Research Methodology

- a mixed method approach (collected quantitative and qualitative data) is applied to achieve the study objective.
- A large-scale questionnaire survey-the qualitative data
 - The first part =demographic characteristics of the respondents (11 item, gender, age, education, household income, employment, nationality, and numbers of cars owned by the households.
 - The second part of the survey consists of in-depth questionnaires (2 items for open and 18 items closed types of questions) to achieve the purpose of the study.
 - The respondents= at least 18 years old and car drivers to participate in this study.
 - The data collection stage started in February 2022 until May 2022.
 - The random sampling technique was used to collect data, with many questionnaires distributed to the targeted respondents.



Data analysis and results

- The data obtained from the study were analysed using various statistics in the SPSS program. Descriptive statistics (i.e., frequencies and percentages) were computed.
- 640 drivers participated in this study.
- After removing 132 questionnaires (i.e., those who do not have or drive a car),
- a total of 472 questionnaires were analysed

Research results...Demographic data

- males **(50.4%)** and females **(49.6%)** completed the questionnaire equally.
- Approximately half of participants **(47%) belong to the age range of 26 to 39 years**, while more than third of them (35.6%) belong to the age range of 18 to 25 years.
- More than half of respondents were single (57.6%), while approximately fifth of them (18.2%) were married with three kids or more.
- Approximately two thirds **(60.8%) of participants were Kuwaiti**.
- More than half of respondents (54.9%) have a bachelor's degree. More than a quarter of participants own two cars (29.4%) or five cars and more (28.6%). More than third of participants (37.3%) were employed in the private sector while approximately third of them (32.2%) were employed in the public sector.
- Approximately **third of participants (29.4%) worked in other private services** and more than quarter of them (26.5%) worked in government and ministries sector and more than fifth of them (21.6%) in the middle management level.
- The monthly income of more than half of **participants (53.6%) was less than 1000 KD**.

Question	Categories	N=472	%
How much more would you pay for an electric vehicle that is environmentally friendly than gasoline cars?	0%	83	17.6%
	1%-5%	72	15.3%
	6%-10%	117	24.8%
	11%-20%	98	20.8%
	21%-29%	48	10.2%
	30% & more	54	11.4%
How much more would you pay for an electric vehicle that is much quicker than normal gasoline car or about (0-100 in 4 seconds)?	0%	78	16.5%
	1%-5%	75	15.9%
	6%-10%	103	21.8%
	11%-20%	104	22.0%
	21%-29%	58	12.3%
	30% & more	54	11.4%
How much has the gas/fuel have to increase so you would seriously start thinking about buying electric vehicle.	500% and above	14	3.0%
	400%-499%	12	2.5%
	300% -399%	19	4.0%
	200%-299%	50	10.6%
	100%-199%	97	20.6%
	50%-99%	108	22.9%
	Less than 50%	83	17.6%
	Indifferent/I do not care about Electric cars	89	18.9%
I would change my mind towards buying electric vehicle if the government regulate and control the costs of electric cars to be _____.	30% cheaper costs than gasoline cars	135	28.6%
	10% cheaper costs than gasoline cars	108	22.9%
	The same costs as gasoline cars	92	19.5%
	10% higher costs than gasoline cars	58	12.3%
	Indifferent/I do not care about Electric cars	79	16.7%
I would change my mind towards buying Electric car if there were public and free fast charging station every _____.	Less than 10km	85	18.0%
	10km-25km	143	30.3%
	26km-50km	110	23.3%
	51km-75km	41	8.7%
	76km & more	23	4.9%
	Indifferent/I do not care about Electric cars	70	14.8%
I would change my mind towards buying electric vehicle if there a fast lane only for EV on the major highways (such as on the 30 and 40 highway)	No	96	20.3%
	Yes	272	57.6%
	Indifferent/I do not care about Electric cars	104	22.0%
I would change my mind towards buying electric vehicle if there were public and free parking spaces almost at the same capacity as handicap space.	No	119	25.2%
	Yes	259	54.9%
	Indifferent/I do not care about Electric cars	94	19.9%
Would you buy an electric vehicle in Kuwait within the next 3 years?	off course NOT	71	15.0%
	Unlikely	149	31.6%
	Very likely	186	39.4%
	Certainly	66	14.0%
How safe do you think electric vehicle are in Kuwait- Fire and Car Crash?	Very Dangerous	30	6.4%
	Dangerous	44	9.3%
	Neutral	201	42.6%
	Safe	99	21.0%
	Very Safe	98	20.7%
If you have an electric vehicle, would you be able to charge electric vehicle in residential areas in Kuwait	Very impossible	81	17.2%
	Impossible	73	15.5%
	Neutral	134	28.4%
	Possible	63	13.3%
	Very possible	121	25.6%

Research Results...

A quarter of participants (24.8%) would pay 6%-10% more for an EV that is environmentally friendly than gasoline cars, while, more than fifth of them (20.8%) would pay 11%-20% more. More than fifth of participant would pay 6%-10% (21.8%) and **11%-20% (22.0%) more for an EV that is much quicker than normal gasoline car or about (0-100 in 4 seconds).**

Approximately, **quarter of participants (22.9%) and more than fifth of them (20.6%) would seriously start thinking about buying EV if the gas/fuel prices increase between 50% to 99%** and 100% to 199% respectively, while 18.9% of them did not care about EC.

More than quarter of participants (28.6%) would change their mind towards buying EV if the government regulate and control the costs of these cars to be 30% cheaper than gasoline cars, whereas more than fifth of them (22.9%) would change their mind if the cost 10% cheaper than gasoline cars.

Approximately, **third of participants (30.3%) would change their mind towards buying EV if there were public and free fast charging station every 10km to 25km,** while approximately, quarter of them (23.3%) would change their mind if there charging station every 26km to 50km.

More than half of participants (57.6%) would change their mind towards buying EV if there was a fast lane only for EV on the major highways (such as on the 30 and 40 highway). More than half of participants (54.9%) would change their mind towards buying EV if there were public and free parking spaces almost at the same capacity as handicap space.

More than half of participants (53.4%) would buy an EV within the next 3 years. Of those, 14% would buy it certainly and 39.4% very likely. 41.7% of participants thought that EVs are safe in relation to fire and car crashes, and 39% of them would be able to charge EV in their residential areas in Kuwait.

•

Research results: open-ended question:

“Your comments and feedback about Electric vehicle in Kuwait.”

- Over 59 percent have concerns about the environment and proposed phrases such as “green, preserving, Eco-Friendly, air pollution, Carbon gas emission reduction, greenhouse gases, health improvement, cancer free.”. ...labelled as “enviornmentalists”
- Almost over 55 percent expressed their interest in **functionalities and features of EV** such as smooth driving, powerful engine, speed, comfort, safety, and rechargeable and recyclable batteries.
- **Nearly 50 percent of respondents pointed out obstacles and expressed their worries about EV phenomena in Kuwait in terms of speed limits, less popularity, not suitable due to hot summer season, lack of government plan and policies, lack of EV dealerships and worrying about the costs for maintenance, lacking shaded areas designed for EV, lack of quality of roads, no culture of environmental awareness among people in Kuwait.**



Research results: open-ended question:

“What is the first word that comes to your mind when you hear " Electric Vehicle in Kuwait.”

- Over 70 percent of the sample had positive vibes towards electric vehicle (EV) by expressing words such as **“fun, amazing, wow, great, good, awesome, new, exciting, happy, future etc.”**.
- The findings showed that although most of the respondents cared about the environment and were willing to buy electric cars in the future, they had concerns regarding **its lack of practicality due to hot and dry weather conditions and lasting batteries for EV in Kuwait.**

Conclusion

- The suggested strategies (Governments, marketing, managerial):
- The Kuwait market needs to be ready before the introduction of electric cars.
- The old automobile industry should be gearing up for transformation.
- The fossil fuel price should spike
- Government must call for a change in individual transportation attitudes and habits.
- The automobile sector should be drifting gradually towards EV from renewable resources. These cars are energy efficient, generating less greenhouse gas emissions and reduced noise.

