International Journal of Psychosocial Rehabilitation, Vol. 23, Issue 01, 2019
ISSN: 1475-7192

A Priminalry Determination of Factors Effecting Female Travel Demand, Pattern, and Behavior in the Kingdom of Saudi Arabia

Nawaf Alshabibi

Abstract--- *This study aims to priminalry identify and determine factors effects female travel pattern, demand, and behavior in the Kingdom of Saudi Arabia. The study came to assess the royal act by the king to allow females to drive private cars in the Kingdom. The study proves in literatures worldwide that many studies came to demonstrate and distinguish between male and female driving pattern, demand, and behavior. Data of the study has collected through a Delphi technique by a panel of expert working in several private and governmental sectors in the eastern province of the kingdom of Saudi Arabia. A questionnaire of 77 questions has developed for data collection and interviewing 125 experts. Coding style has been used in Excel spreadsheet for data extraction and analysis. The data has been summarized in tables to present the percentages of responses. The study summarize a group of priminalry factors effect in female driving pattern, demand, and behavior in the Kingdom of Saudi Arabia in different aspects such as economic, social, environmental, planning, organizational, transportation, and traffic regulation.*

Keywords--- *Environment, Social, Economic, Demographic, Planning, Female Driving Demand Pattern and Behavior, Kingdom of Saudi Arabia.*

I. INTRODUCTION

After World War II, passenger vehicle has become a dominant mode of transportation and had the ability to access majority of activities in United State, Europe, and East Asia in parallel with asphalted roadway distribution. The people had the ability to mobile between urban and suburban safely, easily, and quickly. They had the ability to live in suburbs and access commercial activities for work in CBDs. By that time, King Abdulaziz Bin Abdulrahman Al-Saud has unified major tribes traveling in deserts looking for food and suitable locations for living in 1932 [1]. Majority of tribes and families have been unifies under one nation called the kingdom of Saudi Arabia, and traveling on feet and animals as a major modes of transportation available. In 29th of May 1933, the king has signed the first contract for oil drilling on lands of the kingdom, and the first oil filed has discovered in fourth of March 1938 [1]. With that discovery, motor vehicle were able to exist and move on lands of the Kingdom of Saudi Arabia. The first private vehicle has been arrived to the kingdom before that in Riyadh in 1923 [1]. However, discovery of first oil field in 1938 allowed that existence and distribution of private vehicles to be available for everyone. At the beginning, motor private vehicles were unacceptable by public that used to travel on foot and animals in hot weather for years and years. Acceptance has come with the advantages of private motor vehicle include faster movement, comfort, and the ability to travel for longer distance in vast extensive area of the kingdom. The ability to mobile and access

Nawaf Alshabibi, Assistant Professor of Urban Transportation Planning and Traffic Engineering, Urban and Regional Planning Department, College of Architecture and Planning Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia.
E-mail: nalshabibi@iau.edu.sa

Received: 10 Nov 2018 | Revised: 20 Dec 2018 | Accepted: 02 Jan 2019

different activities by population of urban and rural areas in the kingdom has become one of the fundamental rights to male drivers. Different activities in the cities and regions have distributed to be accessible by a certain specific mean of transportation in Saudi Arabia with oil foundation. After that, private vehicle has become a dominant in Middle East and The Kingdom of Saudi Arabia.

In The Kingdom of Saudi Arabia, Private vehicles was restricted to females by law and society. It became a major controversy issue on the table to rise and fall over the years. In the last decade, the females in The Kingdom of Saudi Arabia had a multiple trials to drive a private vehicle inside and outside urban areas. The issue raised for last time before the royal decision by King Salman to allow female driving in 26th of September 2017. The royal act also allowed the issuance of the first female driving license in 24th of July in year 2018. Over the years of motor vehicle dominancy, car manufacturers in the United States recognize the needs to distinguish between male and female travel demand, pattern, and behavior. For instant, Volvo Carmaker Company in 2004 designed a car that is suitable for females but marketed to both sexes. "If you meet female expectations, you exceed male expectations" [2]. The upcoming part of this study summarizes and reviews studies and literatures that emphasize on the differences of travel demand, pattern, and behavior around the world between male and female. This study aim for A Priminalry determination of factors effecting female travel demand, pattern, and behavior in the kingdom of Saudi Arabia to assist the Royal act of female driving in 2018.

II. LITERATURE REVIEW

The literature review showed that researchers have been analyzing gender based travel behaviors for several decades. Indeed, there is an abundant amount of researches about gender disparities in terms of travel behaviors, travel patterns and modal choice. There are even researches about the factors affecting the choice of the purchased vehicle type and the correlation between this type and purchaser gender. Abolfazl Mohammadian in 2004 wrote a paper showing that female preferences for the purchased car are different from male preferences. The paper found that women prioritize practicality and safety, and they tend to choose vehicles with better safety features and more storage space [3]. Since this study focuses on the factors influencing the female travel demand and driving behavior in the Kingdom of Saudi Arabia, the literature review focused on the correlation between gender and travel patterns. In addition, the factors influencing female mode preferences, between the private car and the other transport modes, has identified in this section. Several studies stated that, there is a gender related disparities in term of travel behaviors in general travel patterns, modal choice, and car use. The study of Ng and Acker in 2018 found that gender significantly affects the transportation mode choice in eight studied cities: Auckland, Dublin Hanoi, Helsinki, Jakarta, Kuala Lumpur, Lisbon and Manila [4]. Moreover, based on the analysis of these eight cities, it has found that women have more similar travel characteristics to other women in different cities. Whereas, these characteristics differ from men's characteristics within the same city. Thus, the study reinforces the fact that gender plays a more considerable role in affecting travel behaviors than other factors such as built environment, existing transport services, age and income [4]. In another research, Sánchez and González in 2016 found that there is a difference in travel patterns between women and men, despite the similarity in roles at work and at home [5]. Thus, it is clear that there is a consensus about the gender disparities in terms of travel behaviors.

Received: 10 Nov 2018 | Revised: 20 Dec 2018 | Accepted: 02 Jan 2019

The studies showed that men differ from women in terms of travelled distances and trip purposes. For example, Sánchez and González found that women have higher household responsibility related trips than men [5]. They also found that the largest differences between the genders has found in home to work trips. In their case study, they found that men have higher work related trips and their travelled distances to work are 40% higher than the distances travelled by women [5]. According to this study, women try to reduce the distance between home and work and time spent in commuting. The study also found that commuting time difference between genders is less important than the differences in travelled distances [5]. In another study conducted to report woman issues in transportation published in 2004. The study has found clearly through a data collected that there a gender differences between male and female travel demand, pattern, and behavior. The study included several differences such as number of trips, trips purposes, trips types, trips distribution, crashes rate, and crashes severity [6]. The study tested and compared multiple factors effects on travel behavior and pattern of male and female such as community design and neighborhood characteristics [6].

According to that, travel behaviors differences between women and men in general have emphasized. The literature shows that there are also travel behaviors differences between women and men within the same household. These differences are due to household related factors. For example, the women mostly carry out household responsibility trips, shopping, picking up children from school, medical trips to hospital, and visiting friends and families [5]. In this point, the gender based disparities within the same household and its factors have explored.

The studies show that work-trip modal choice differs between women and men within the same household. These differences in the modal choice for work-trips has related to socio-economic demographic variables. Six variables were analyzed in relation with gender by Sánchez and González in 2016, include gender to age, gender to educational level, gender to driver's license, and gender to private transport access, gender to household size, gender and household income, gender and size of town [5]. It was found that factors affecting modal choice include but not limited to age, education level, driver's license, private transport access, household size, household net income, city size by population, [5]. Also, accessibility to public transit has added to these factors [7]. Sánchez and González found that men's modal choice is more resistant to these factors than women's mode choice. Also, men have a remarkably higher preference to private transport than women [5]. Regarding the age factor, Sánchez and González found that women's use of private car increased between 30 and 40 year old in their studied sample [5]. Education level found to alter the gender disparities in terms of modal choice and private car use. In some cases, studies showed that women use to public transport for commuting increases when the educational level is higher. Also, the private car use disparities between men and women are less significant when their level of education is higher [5]. Ownership of driver's license and access private transit mode obviously affect the modal choice and travel patterns. Women who has driver's license rely on the private car in 75% of commuting trips. Men prefer walking or using other private mode than the public transit, even when they do not have access to a private car [5]. Women modal choice influenced by their family size. Sánchez and González found in 2016, that women use private car in 64.2% of their trips if their household size is between one and two members and in 66.5% of their trips when their household size is from three to four members, and in 55.6% when their household size is five to six members [5]. The study has found that household net income affects modal choice of both genders. In their studied sample, Sánchez and

Received: 10 Nov 2018 | Revised: 20 Dec 2018 | Accepted: 02 Jan 2019

González found that women from low-income families use private transport in 53% of their trips. On the other hand, women from higher income families tend to use private modes in 72% of their trips [5]. In some countries, studies have shown that city size by population affects the modal choice. The larger the city size by population, the smaller the percentage of trips performed by private cars by women (57.4%), versus (74.9%) of trips in small cities [5]. One of the reasons is that in large cities, the frequency of public transit use is higher.

Even more, literature shows that several variables affect women's modal choice, travel patterns and private car use. These variables include but not limited to age, work, household composition, number of children, age of children, and time spent in out-of-household activities [7]. Vance, Buchheim and Brockfeld found that gender differences in car use are more noticeable in older ages [7]. Work affects the gender disparities in terms of private car use. However, longer working hours for women narrow the gap in predicted probabilities of car use compared to men [7]. Women's use of private car correlated with their level of household responsibilities. Women combining household and work responsibilities found to have the greater use of private cars [5]. The number of children in the household affects the probability of car use and gender disparities in car use. The studied sample by Vance, Buchheim and Brockfeld showed that the more children the household has, the smaller the gender gap is regarding the probability of car use. Having more children in the household decreases the probability of car use by men in the household and increases the women use [7]. This correlation is not as simple as it seems. Other variables influence degree and direction of this correlation. These variables include but are not limited to number of owned cars per household, children ages and number of adult children with driving licenses in the household, since the household duties could be distributed on all the licenses holders within the household [7].

In the Saudi Arabian context, this could be different cause most of the Saudi cities, usage of public transit is very low or inexistent due to lack of availability of public transport modes. The degree of accessibility to public transit could affect the modal choice as well. Homogenous accessibility to public transit could reduce the effect of community design as a variable on modal choice of women in general [7]. It has clearly stated in several researches that women's car use is different from men's car use [7]. However, what is important to emphasize is that the correlation between gender and car use is far from being direct and simple. The case of Saudi Arabia differs from any other country in terms of female transit mode preferences, travel demand, pattern, and behavior. The reason is that in most of the Saudi cities, the modal choice is very limited or inexistent. In most of the cases, except some major cities like Riyadh and Jeddah, there is no public transportation available. Moreover, due to sociocultural reasons, recently majority of users of public transportation modes are non-Saudi labor. Thus, at the men time using these modes is unacceptable by the society for female users. In other words, women's transit modal choice is very limited in Saudi Arabia. Thus, there is a gap in the literature contributes in the difference of travel demand, pattern, and behavior in Saudi Arabia. The findings of all published researches about gender based transit modal choice and preferences are not applicable to Saudi Arabia, especially when it comes to Saudi women's preferences and transit modal choice.

However and in parallel to this study, in September 2017 a study by [8] conducted to evaluate women's intention to drive from one side, and the economic, social, environmental and traffic safety potential consequences of permitting women to drive from other side. The goal of the study will met in two phases before and after female driving in Saudi Arabia. The first phase of the study has completed and leaded to interesting results. The study found

that most women (70%) currently use private cars with a personal driver [8]. Most women who use private cars are married and come from a household with high income. Women tend not to pay for the costs of cars purchasing themselves, but rather the head of the household fulfill this. Although, the study found that women tend to cover other costs (personal driver, operation and maintenance) themselves, and most women in Saudi Arabia feel the need to change their current mobility patterns. The study result found that it is obvious that there is a correlation between all social, economic, environmental factors and the gender related disparities in driving demand, travel, and behavior [8].

According to the literature review, the patterns and degrees of gender differences in car use is unacceptable to generalize universally cause it varies from country to another and from culture to culture [7]. This confirmed by a research presented by Wei-Shiuen Ng and Ashley Acker in 2018 International Transport Forum held in Paris, France. The authors stated that women's travel behavior might change between developed and developing cities [4]. The authors underlined that understanding gender disparities in travel behaviors contributes in improving gender equity [4]. Ng and Acker also stated that women's travel behavior might change between developed and developing cities [4]. This reinforces the importance of conducting a study about female driving in Saudi Arabia, given the particularity of its demographic, sociocultural and socio-economics local context. In societies where there is gender similarity in roles at work and at home, several studies show that, there is a difference in travel patterns, demand and behavior, between women and men [5]. Thus, in the Saudi society where these roles are clearly distinguished, the differences between women and men's travel patterns, demand, and behavior are most likely to be happening for sure. Consequently, the need for a similar study in Saudi Arabia is pressing due to the royal order and the important changes in the Saudi Society including but not limited to female driving.

The previous arguments explain why this research has conducted about women driving in the Kingdom of Saudi Arabia. Since women driving is recently happening in Saudi Arabia, published research about the factors influencing their driving is rare or inexistent. Thus, this paper is filling a gap in the literature, and take in consideration the sociocultural characteristics in Saudi that are completely different from those in North America, Europe and other parts of the world. Therefore, it is necessary to conduct this research in order to come up with findings that could help decision makers in tailoring appropriate transportation and mobility policies to fulfill the Saudi society needs. Determination of factors effecting female travel demand, pattern, and behavior is very essential and fundamental at this time in the Kingdom of Saudi Arabia.

III. DATA COLLECTION

The data of this study have been collected by conducting Delphi method for data collection. A questionnaire has been developed and sent to a panel of experts at different entities and sectors in the eastern province of the kingdom of Saudi Arabia. The questionnaires has included seven major sections classifying the factors effecting female travel demand, pattern, and behavior with 77 factors in a 77 questions. The sections has included:

- Environmental Factors.
- Social Factors.

Received: 10 Nov 2018 | Revised: 20 Dec 2018 | Accepted: 02 Jan 2019

- Economic Factors.
- Planning Factors.
- Traffic Regulation Factors.
- Transportation Factors.
- Organizational Factors.

A scale from One to Five has been used in the questionnaires to determine the level of acceptance where one is highly acceptable and five is highly unacceptable. A total of 125 questionnaires has been sent to five different private and public departments with 25 experts in each department. These departments has included The Saudi American Oil Company, The municipality of Dammam, The municipality of Khobar, Amana (Municipality) of the Eastern Province in Saudi Arabia, and the traffic department in Dammam and Khobar. The panel of expert at each department included 25 experts interviewed to state his opinion in the questionnaire regard the factors effecting female travel demand, pattern, and behavior in the Kingdom. The questionnaires has been distributed at first of September 2018, and has been collected at fifth of January 2019 by a group of five associated surveyors at each targeted departments. The questionnaire has included basic information about the expert such as age, gender, position, and contact information. After the questionnaires has collected, experts answers has been extracted using coding method and transferred to an excel spreadsheet. The data has been transferred to the coding excel spreadsheet and grouped to summarized similar opinions in tables to present the percentages.

IV. DATA ANALYSIS

The first part of this study is a basic information about the experts targeted in different private and governmental sectors. The panel of experts included 86.4% of male experts and 13.6% female experts of total 125 experts. Also the panel included 64% of in the age between 25 and 35 years old, 28% in the age between 35 and 45 years old, 5.6% in age between 45 and 55 years old, and 2.4% of experts are between the age of 55 and 65 years old. The panel of experts included 2% with low level of education (secondary school degree), 8% of expert had a diploma in planning and engineering filed, 64% of them had a bachelor degree, 26% of them earned a higher level of education (master and PhD) in the field of planning and engineering. The data show that 70% of the experts are working in governmental sectors (Municipalities), while 24% of them are working in the Saudi American Oil Company (ARAMCO), and 6% of the experts have retired from these sectors. Also, 9.6% of the experts are working in education and health departments, 48% of them are working in planning and engineering departments, 16.4% of them are working in information technology departments, and 26% of them are working in construction departments. Only 2.4 of the experts are non-Saudi, while 97.6% of them are from the Saudi nationality holders. Also the data show that only 8% of the experts are living out of the eastern province of the kingdom of Saudi Arabia, while 12% of them are living in the eastern province. However, 5.6% of the experts are working out of the eastern province of the kingdom, while 94.4% of them are working in the eastern province of the kingdom.

Table 1 below summarizes the percentages distribution of the panel of experts responses to the questions about factors effecting on female driving pattern, demand, and behavior in the Kingdom of Saudi Arabia.

Received: 10 Nov 2018 | Revised: 20 Dec 2018 | Accepted: 02 Jan 2019

V. I. A Panel Of Expert Percentages Of Responses To Factors Effecting Female Driving Pattern, Demand, And Behavior In KSA

Demographic Factors	***Highly Agree***	***Agree***		***Neutral***		***Disagree***		***Highly Disagree***	***Total***
Living in a City with High Population Density	50	34	11		5		0		100
Living in a City with Mid Population Density	19	41	34		4		2		100
Living in a City with Low Population Density	19	22	36		10		13		100
Percentage of Females to Males in The Family	40	39	18		3		0		100
Population Immigration Rate	22	34	30		11		3		100
Daily Birth Rate	25	31	37		6		1		100
Daily Death Rate	19	31	42		6		2		100
Female Workers in The Family	46	38	14		2		0		100
Females Students in Higher Education	42	34	22		2		0		100
Married Females	26	31	37		3		3		100
Divorced Females	32	30	28		5		5		100
Widowhood Females	31	32	30		3		4		100
Social Factors	***Highly Agree***	***Agree***		***Neutral***		***Disagree***		***Highly Disagree***	***Total***
Crime Rate	25	38	26		8		3		100
Child Education and School Delivery	24	44	25		5		2		100
Emergency Cases	42	37	16		3		2		100
Elders and Disabilities	36	42	18		2		2		100
Personal Comfort	29	31	27		8		5		100
Walkability	25	28	33		8		6		100
Female Driving Independency and Interaction with Society	32	29	20		9		10		100
Economic Factors	***Highly Agree***	***Agree***		***Neutral***		***Disagree***		***Highly Disagree***	***Total***
Rate of Private Vehicle Ownership	36	39	21		3		1		100
Cost of Traffic Accidents	36	26	30		4		4		100
Available of Roadway Network And Infrastructure	30	34	28		5		3		100
Private Vehicle Purchasing Costs	34	36	24		3		3		100
Private Vehicle Insurance Costs	31	31	30		6		2		100
Private Vehicle maintenance Costs	25	40	25		6		4		100
Private Personal Driver Costs	37	34	21		3		5		100
License Issuance Costs	24	37	25		10		4		100
Average Female Income	29	39	25		6		1		100
Average Family Income	39	33	23		2		3		100
Traffic Regulation Factors	***Highly Agree***	***Agree***		***Neutral***		***Disagree***		***Highly Disagree***	***Total***
Roadway Lane Width	40	32	19		4		5		100
Roadway Network Capacity	35	34	18		10		3		100
Emergency Roadway Shoulders and Spots	31	31	20		13		5		100
Type of Asphalting Materials	24	38	30		5		3		100
Roadway Construction Condition	22	44	21		8		5		100
Traffic Congestion	39	33	21		6		1		100
Roadway Traffic Safety	40	36	21		3		0		100
Living and Working inside or outside Urban Areas	36	36	23		3		2		100

Received: 10 Nov 2018 | Revised: 20 Dec 2018 | Accepted: 02 Jan 2019

Availability of Natural Views	25	29	27		12		7		100
Availability of Guiding Signs	27	50	15		8		0		100
Availability of Directing Signs	22	50	21		6		1		100
Availability of Organizing Signs	24	51	19		5		1		100
Availability of Roadway Marking	22	48	21		7		2		100
Availability of Traffic Signals	31	43	18		6		2		100
Urban Transportation & Planning Factors	***Highly Agree***	***Agree***		***Neutral***		***Disagree***		***Highly Disagree***	***Total***
Urban Horizontal City Expansion and Growth	40	37	20		1		2		100
Dominancy of Private Vehicle and Dependency	39	36	24		1		0		100
Roadway Hierarchy and Design	30	35	28		5		2		100
Daily Rush Hours Distribution	49	30	15		6		0		100
Transportation Land Use Budget of City Land Use	31	35	26		8		0		100
Traffic Congestion	41	36	18		4		1		100
Concentration of Commercial Activities	37	34	24		4		1		100
Urban Land Use Pattern	25	32	36		6		1		100
Urban Land Use Form	26	40	24		8		2		100
Mobility and Accessibility to Public Transportation	33	32	23		7		5		100
Parking Availability	39	32	20		8		1		100
Urban Land Use Structure	28	29	36		7		0		100
Decentralized Fragmented Urban Land Use Pattern	26	22	44		7		1		100
Organizational Factors	***Highly Agree***	***Agree***		***Neutral***		***Disagree***		***Highly Disagree***	***Total***
The Royal Act to allow Female Driving	67	22	9		2		0		100
Availability of Female Driving Schools	59	27	11		2		1		100
The Vision of the Kingdom 2030	42	30	21		3		4		100

License Issuance Procedures	41	43	1		3		2		100
Saudizing Taxi Drivers	44	30	18		6		2		100
Saudizing Female Workers in Commercial Activates	50	26	2		3		1		100
Requirements of fee Payment by Non-Saudi Workers	49	32	16		2		1		100
Subsidize Female Projects	49	35	15		1		0		100
Deployment of Females in Military Sectors	50	26	17		4		3		100
Female Working Independency	33	26	2		7		9		100
Female Traveling Independency	37	27	2		10		6		100
Environmental Factors	***Highly Agree***	***Agree***		***Neutral***		***Disagree***		***Highly Disagree***	***Total***
Levels of Pollution	10	9	3		45		6		100
Temperature Levels	19	33	17		23		10		100
Foggy weather	80	15	4		1		0		100
Humidity Levels	40	30	15		15		5		100
Dusty Wind	70	20	8		2		0		100
Rainy Weather	66	24	3		7		0		100
Snowing Weather	40	35	23		3		2		100
Windy Weather	49	30	19		1		2		100
Topography	42	18	32		8		2		100
Existence of Torrents	35	33	2		9		3		100
Vegetation Levels	28	34	18		17		2		100

Table 1 above presents percentages distribution of experts responses to factor effecting female driving pattern, demand, and behavior in Saudi Arabia. The next part of this study present the priminalry determination of these factors based on the panel of expert's agreements.

VI. Study Results, Summary And Contribution

The study results include a priminalry determination by grouping factors effecting female driving demand, pattern, and behavior in the Kingdom of Saudi Arabia according to the 125 expert's responses to the questionnaires. The study result shows where the panel of experts highly agree or agree on the effective factors. Also, the factor has considered priminalry significantly effective to female driving whenever it has more than 65% agreement as a threshold (highly agreed or agree) on experts responses. In the demographic dimension, the study shows that experts has agreed on the effectiveness of high population density, percentage of females to males in family, number of female workers in Family, and females in higher education. In the social dimension, the experts has an agreement on the effectiveness of child education, emergency cases, and the number of elders and disabilities. In the economic dimension, it was found that rate of private vehicle ownership, private vehicle purchasing cost, private personal driver costs, average female income, and average family income are effecting factor on female driving. While in traffic regulation dimension, the study found that lane width, roadway capacity, road construction condition, road traffic congestion, road traffic safety, living and working inside or outside urban areas, all kind of traffic signs, roadway traffic marking and signals are effective factors. In urban transportation planning dimension, the study found that urban horizontal growth, roadway hierarchy and design, urban land use budget, dependency on private vehicle, daily rush hour distribution, centralization of commercial activities in the city, land use form, mobility and accessibility to public transportation, and parking availability, are effecting factors on female driving demand, pattern, and behavior in the Kingdom of Saudi Arabia. The study also found based on expert responses that majority of factors in organizational dimension are effecting female driving except female independency in working and external traveling. In addition, the study shows that fog, humid, dust, rain, snow, winds, and torrents are effective factors on female driving in the environmental dimension.

The author found the result of the study in association to the panel of expert's responses is highly reasonable and anticipated. The result of the study assess decision makers in governmental and private sectors to plan for transportation. Also, the result of the study female individuals in families what are priminalry factors that has to be considered when they decide to drive their personal vehicles. The study also support academic faculties and researchers to investigate and calibrate different transportation models associated to female driving. However, a separate study has to be conducted in order to identify highly correlated factors out of these factors identified and determined in this study. This study just a beginning step into studying female driving demand, pattern, and behavior in the Kingdom of Saudi Arabia.

Acknowledgment

Author of this study would like to thank the contacted representative surveyors in governmental and private departments in Kingdom of Saudi Arabia for the highly valuable contribution. Also the author would lie to thank the panel of expert at the different departments for their cooperation in response to this study. Finally author

would like to thank sixth icmir2019 Malaysia, Kuala Lumpur providing the opportunity to present and publish the valuable findings of this study.

REFERENCES

[1] Al-Rasheed Madawi, The History of Saudi Arabia, University of London, Cambridge Univerity Press, United Kigdom, 2002.
[2] Peters Deike, Gender and Sustaibable Urban Mobility, Thematic study prepared for Global Report on Human Settelments, Univeristy of Southren California, Los Angeles, California, United Sates, http://www.unhabitat.org/grhs , 2013.
[3] Mohammadian, A. K, Gender Differences in Automobile Choice Behavior, Research on Women's Issues in Transportation, Vol.2 (pp. 41-48). Washington, D.C. Transportation Research Board of the National Academies, 2004.
[4] Ng, W.-S., & Acker, A, Understanding Urban Travel Behaviour by Gender for Efficient and Equitable Transport Policies, International Transport Forum (pp. 1-20), Paris, France, OECD/ITF, 2018.
[5] Sánchez, M. I., & González, M. E, Gender Differences in Commuting Behavior, Women's greater sensitivity, XII Conference on Transport Engineering, CIT 2016, (pp. 67-72). Valencia, Spain, 2016.
[6] Transportation Research Board, Research on Women Issues in Transportation, Report of a conference, Conference Proceedings 35, Volume 1, Conference overview and Plenary papers. Washington DC, United Satet of America, 2006.
[7] Vance, C., Buchheim, S., & Brockfeld, a. E, Gender as a Determinant of Car Use, Evidence from Germany, Research on Women's Issues in Transportation, Vol. 2 (pp. 59-67). Washington, D.C., Transportation Research Board of the National Academies, 2005.
[8] Alqarawi & Kamargianni, She Drive KSA, Phase 1 Survey Report, A National Research Project About the Impact of Woman Driving on Sustainable Development and Traffic Safety in The Kingdom of Saudi Arabia, 2018.

Received: 10 Nov 2018 | Revised: 20 Dec 2018 | Accepted: 02 Jan 2019