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Gender and Generation effects on Perception of Value of Travel Time and Mode Choice

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Abstract

Women and men often do not experience equal mobility opportunities in their societies. Increasingly gender is being recognised to play a significant role in transport planning, particularly for addressing individual mobility needs in urban and rural areas. Recent advances in studying mobility behaviours (e.g., data collection through smartphone apps) also allow capturing data on activities done while travelling, as well as factors enhancing or degrading the people's travel experience. By understanding the link between female travellers' preferences, perceived values and behaviour, as well as experienced barriers, transport systems could be better tailored to women activity and mobility needs by putting the women perspective in centre stage. The objective of this paper is to present how the "Mobility and Time Value" (MoTiV) H2020 project addresses mobility value proposition differences across genders and generations in connection with cultural and social contexts in 8 EU countries.

Keywords: Value Proposition of Mobility, Daily Travel Patterns, Gender Sensitive Design, Mobility Planning, Transport Policy, Mode Choice

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EUROPEAN RESEARCH & INNOVATION PROJECT TO ADDRESS EMERGING NEEDS AND PERSPECTIVE ON VALUE OF TRAVEL TIME TO CONTRIBUTE TO A GENDER-SENSITIVE AND INCLUSIVE DESIGN OF FUTURE MOBILITY SERVICES AND TRANSPORT INFRASTRUCTURE

1. Introduction

Mobility gives access to opportunities that are essential to people's quality of life, and it stimulates employment, economic growth, prosperity and global trade. Despite its importance, research into gender and mobility suggests that essential aspects of mobility are biased towards the travel needs of men, and transport systems in Europe and elsewhere are not geared towards women's needs. This has profound implications for the participation of women in society. Since about 1980, gender is being recognized to play a significant role in transport planning, particularly for addressing individual mobility needs in urban and rural areas (Rosenbloom et al. 1978, Giuliano, 1979, 1983, Polk 2009, Scheiner et al. 2012, Pourhashem et al. 2018,).

In recent decades, many efforts toward understanding gender differences in mobility patterns have been accomplished in theory and practice. Investigating the relationships between changes in needs due to demographic and socio-economic changes and spatio-temporal constraints proposed by Hägerstrand (1970), was one of the most interesting aspects of identifying women's mode choice behaviour that has been researched in last decade.

A growing literature on travel behaviour indicates significant gender differences in mobility and travel patterns where women experience more trips than men in the developed world and in many developing countries (Wachs 1987, Pas 1984, Law 1999, Rosenbloom and Burns 1994, Chapple 2001, Kwan 1999; Hjorthol 2003, 2008; Uteng 2006, 2012, Susilo et al. 2019).

Focus on differences in men's and women's travel patterns has been a characteristic feature in many discussions and the notion of gendered mobility refers to the fact of differences in male and female travellers' behaviour that are many and include: women use public transport more than men, travel shorter distances, have more complex trip chains, more often travel accompanied by children or dependent others, and are more likely to experience obstacles and constraints in terms of physical accessibility, safety, security (Frändberg et al. 2011, IFSTTAR and WIT 2014) or shortage of time (due to traditional care and reproductive roles). Such knowledge is, however, rarely taken into consideration when planning current (and future) transport systems. Lack of accounting for differences in mobility patterns and needs will constrain mobility and in turn limit access to education, employment and other welfare activities affecting wellbeing. Also, if women experience transport as inconvenient, expensive and hard to access, the whole family can suffer e.g. women less able to contribute to household income, poorer choice of schools and extracurricular activities, more limited health visits. Other demographic and socio-economic factors such as income, age, household size and structure, elder-child care responsibilities, ethnicity, employment status, degree of disability, location, class, education and proficiency in use of ICT can cause significant differences among women's mobility patterns and their travel mode choice.

Moreover, some other factors such as personal safety, security and quality of service are important concerns of women's mobility (Li et al. 2004, Vokolkova and Michalek. 2007, Cottrill, and Thakuria 2009, Dupont and Krakutovski 2009, Vaughn 2009, Whitzman et al. 2013). Therefore, taking gender differences into account in travel behaviour should be seen as a barometer of the degree of equality between two groups to identify women's transportation needs and mobility provisions (Dupont and Krakutovski 2009, Meyer 2004, Kalter et al. 2009).

Despite the fact that many researches have been conducted to broaden the scope of gender dimension in transport planning and policies in the EU and national frameworks there has been little attention to explore simultaneously the influence of gender and generational cohort on activity participation, value of travel time and mode choice as a part of travel behaviour. As perceived quality of time influences individual well-being (Mogilner & Norton, 2016), then it is important to understand and reflect on own time use, for instance to adjust own behaviour and to consider alternative choices that would better fulfil travellers' needs, goals, and expectations. Therefore, the objective of this paper is to present how the "Mobility and Time Value" (MoTiV) H2020 project addresses what value of travel time means for women, in relation to their needs, expectations, and lifestyles.

2. The MoTiV Framework

This project introduces an enlarged conceptual framework for the estimation of Value of Travel Time (VTT) based on the idea that each transport mode, or combination of transport modes, provides a different value proposition to the traveller in a specific mobility situation. Time and cost savings represent only one of these factors, not necessarily the one contributing the most to VTT. Depending on the situation, other factors such as increased comfort or well-being may influence traveller's choice more than time and cost, therefore considered more valuable.

The perceived value proposition of a certain travel option may not match the actual value delivered to the traveller. When the actual experience has a lower value than the perceived one, this could affect future mobility choices toward the use of other transport modes in similar situations. Knowledge on barriers and factors playing a role in the traveller's choice is therefore key to align expectations and actual experience.

The MoTiV project builds on latest methodological approaches for collecting mobility behaviours via smartphone Woorti App. The use of smartphones for collecting mobility and activity behaviour over a rather long period and from a large number of subjects, allows in-depth behavioural analysis that was not possible with traditional survey methods such as paper travel diaries or telephone surveys.

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This knowledge will be derived from travellers in a bottom-up approach using Woorti app. The dataset will consist of data gathered in at least 8 different European countries thanks to the contributions of ~ 5.000 participants involved in the data collection. To gain an understanding of traveller's reasons for his/her travel choices and identify behavioural mobility patterns, it is estimated that participants will be involved for a minimum of 2 weeks in the data collection process which make dataset suitable for a comprehensive analysis.

The Value Proposition of Mobility is the value embedded in individual mobility choices. It implies a range of expectations associated to mobility behaviour, which are tightly connected to motivational factors. The MoTiV project will propose a refined model for describing motivational factors influencing travel choices. It will be also analysed in relation to other relevant variables (e.g. location, time of day, weather) to identify behavioural mobility patterns. Once knowledge on the motivational factors is gathered, it is possible to go further and explore possibilities to enhance VTT by considering options for optimal time allocation and transport mode(s) fulfilling individual expectations.

Apart from other expected impacts, MoTiV was designed to investigate in detail how cross-cultural, generational and gender differences influence individuals' habits on the travel mode choice behavior. (see Figure 1). This includes analysis of mobility value proposition differences across genders and generations in connection with cultural and social contexts in 8 EU countries. To better evaluate how women choose the travel mode, the results will be extended by focusing on assessing women's experiences and specific transport requirements, by the mean of an exploration of their own perception of their mobility constraints and needs. Women's perception and attitudes about ICT and new mobility services that already exists in the transport systems and that women already experienced will be explored to understand, if these types of solutions could improve their mobility or to what extent it could constitute new constraints and inequality sources on their daily mobility behaviour in particular travel mode choice.

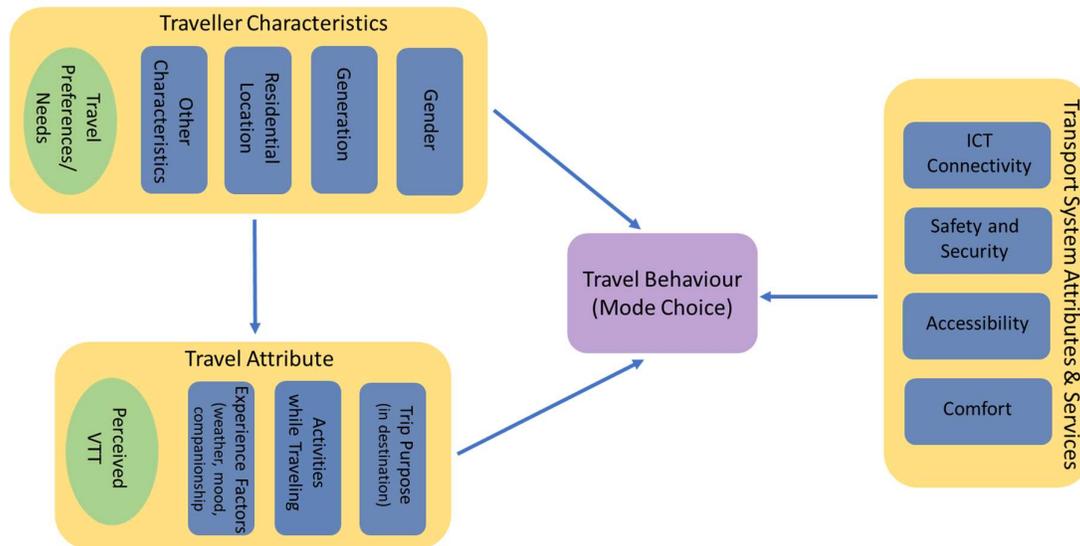


Fig. 1 (a) Factors mediating between individuals' characteristics, travel attributes and transport systems attributes on individuals travel behaviour on mode choice.

Conclusion

Value of travel time is highly variable, including a small portion of travel with very high time values, to a significant portion of travel with little or no cost, since travellers enjoy the experience and would pay nothing to reduce it (Kováčiková et. al. 2017). The MoTiV project introduces a broadened definition and methodology for estimating VTT, acknowledging the shift away from a purely economic view of VTT and the incorporation of behavioural aspects such as personality, preferences, and expectations in its assessment.

To do so, the MoTiV conceptual framework builds on Sheth (1971) model that will support to investigate motivational factors behind systematic transport mode choices. These factors will be analysed thanks to a European-wide mobility and behavioural pattern dataset to be collected through Woorti App during the project. This dataset will allow, among others, comparisons across gender, age, and geographical contexts. The dataset also will incorporate "qualitative" input from travellers (e.g. "purpose of trip") that will be used to derive the general mobility context, activities carried out while travelling, to what extent ICT and transport services/infrastructure supported such activities, and overall satisfaction/dissatisfaction either at the onboarding stage for each mode in general, or at trip leg-level, or in a combination of both. A Multinomial Logistic model (MNL) will be applied for estimating effects of introduced variables on individual's modal choice using mobility behavioural data gathered from 5000 participants across Europe.

Findings from this study will also supposed to provide an evidence-based support and in-depth understanding of effective factors such as perception VTT security, safety and risk of violence in women and men decision-making process about travel mode choice and activity participation. These findings could have important implications for urban and transport planners, policy makers and authorities to implement more gender sensitive designs in urban mobility plans and to prepare inclusive transport policies which tailored to women's needs and travel preferences and ensure a large as possible integration of all parts groups of citizens of the population in the society, aiming at closing the exiting equity gap.

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