

How Online Social Networks Affect Travel Behavior in Insular Areas? Findings from a Latent Variable Model

Ioanna Kourouniotti¹, Amalia Polydoropoulou¹, Athena Tsirimpa¹

Department of Shipping, Trade and Transport, University of the Aegean, Korai 2a, Chios, 82100, GR.

*Corresponding Author

e-mail: ikouroun@stt.aegean.gr

Abstract sent for presentation at the 4th symposium arranged by European Association for Research in Transportation (hEART)
Delft, The Netherlands, 9-11 September, 2015

Abstract

The invasion of Online Social Networks (OSNs) has modified the way individuals perceive their social relationships such as friendship, information sharing and leisure activities (Kourouniotti et al., 2014; Kamargianni and Polydoropoulou, 2013). According to the American Pew Research Center (2014) people who utilize social media are more likely to create closer and trusting relationships and are more politically and socially active. OSN can create the need to engage in new activities promoted either by their friends or by the groups they belong. On the other hand, OSN usage permits communicating with friends without being physically present. Therefore, the question rises whether OSN usage stimulates or substitutes for trip making.

A new research field has been emerging focusing on how OSNs influence travel behavior (Kladeftiras and Antoniou, 2015; Kourouniotti et al., 2015; Kamargianni and Polydoropoulou, 2014; Kamargianni and Polydoropoulou, 2013). In addition, the relationship between Information and Communication Technologies (ICT) and travel patterns has received a substantial amount of attention but without focusing on the growing segment of social trips (Van de Berg et al., 2011; Mokhatarian et al., 2006). It is highly probable that the effect of ICT on social travel differs from its effect on travel for other purposes, such as work or shopping.

The aim of this paper is to investigate and quantify how OSN usage affects individuals' travel behavior, focusing primarily on social trips. For this purpose, a latent variable model is under development that links the number of social with the OSN usage style.

The methodology is tested with data from a household activity survey conducted in the island of Chios, Greece in 2014, within the context of GreTIA research project (Green Transportation in Island Areas). Chios is the fifth largest Greek island with a relatively high quality of life, as it is the fourth Greek county in terms of savings has the third highest car ownership per capita in the country (Hellenic Statistical Authority, 2011). The sample includes 432 individuals that completed two daily activity dairies and provided information on their socio-economic characteristics, the level of OSN usage and their attitudes towards OSN.

In a previous research conducted by Kourouniotti et al. (2015) a Latent Class Model (LCM) was developed relating the usage OSN with the number of islander's daily social trips. The model, developed using the same data sample, segmented the population in four different OSN style classes. The members of each class shared similar OSN characteristics and presented similar trip making behavior. The results proved that individuals who were indifferent or did not use OSN were more likely to make more social trips. OSN addicted individuals conducted a small number of social trips, thus it was proved that OSN addiction substitutes trips made for social purposes. Hence, it was made clear that there is an impact of OSN usage on trip making behavior. Having in mind the role of OSN on trip making we will compare the results of the LCM model with the latent variable model.

For this purpose a methodological framework has been developed. The number of daily social trips is the dependent variable that needs to be predicted. It is postulated that the average number of social trips conducted by an individual is a function of the socioeconomic characteristics and the attitudes towards OSN usage. The socioeconomic characteristics include age, profession, income and household size. Each respondent was asked to state the level of agreement with a group of indicators that can be used to define a latent variable. In our framework, we use the latent variable "OSN usage" to identify the influence of the level of OSN addiction on the number of social trips based on individual's answers on certain attitudinal questions.

One of the scopes of this research is to prove that, apart from individual's characteristics, attitudinal factors play a determining role in the number of trips conducted for social purposes. More precisely, using the latent variable "OSN usage addiction" we postulate that the attitudes towards OSN usage will affect negatively the choice of conducting social trips.

The innovation of this research covers several topics. First of all, although an increasing body of researchers has attempted to explore how OSN influences individuals' personalities and psychologies, the investigation the relation between

OSN usage and travel behavior still remains a new and rapidly growing research field. In addition, an innovation of this study is the incorporation of a latent variable in a continuous choice model. It is interesting to explore how OSN related attitudes of insular areas inhabitants are reflected on their trip making behavior, since their activity patterns are quite different from urban regions. Finally, the findings of this study are expected to assist transport policy makers when making decisions for rural and/or island areas with similar characteristics.

Acknowledgments

This research has been co-financed by the European Union (European Social Fund – ESF) and Greek national funds through the Operational Program "Education and Lifelong Learning" of the National Strategic Reference Framework (NSRF) - Research Funding Program: THALES. Investing in knowledge society through the European Social Fund.

References

Hellenic Statistic Authority (2015).

<http://www.statistics.gr/portal/page/portal/ESYE>. Page last assessed on the 26th March 2015

Kamargianni M. and A. Polydoropoulou (2013). "Does Social Networking Substitute for or Stimulate Teenagers' Travel? Findings from a Latent Class Model". Presented at the International Choice Modeling. Australia.

Kamargianni, M., and A. Polydoropoulou (2014). "Social Networking Effect on Net Generation's Trip Making Behavior. Findings from a Latent Class Model." Presented at the 93rd Annual Meeting of the Transport Research Board (TRB), Washington D.C., 12-16 January, 2014.

Kladeftiras, G. and C. Antoniou (2015). "Social networks' impact on carpooling systems performance: Privacy vs. efficiency". Presented at the 94th Annual Meeting of the Transport Research Board (TRB), Washington D.C., 11-15 January, 2015.

Kourouniotti, I., Polydoropoulou, A., Tsirimpa, A. and M. Kamargianni (2015). "Social Networks and Trip Behavior in Insular Areas- A Latent Class Model Application". Paper accepted for presentation at the International Choice Modeling Conference, Austin, Texas, 2015.

Mokhtarian, P.L., I. Salomon, and S.L. Handy (2006). "The Impacts of ICT on Leisure Activities and Travel: A Conceptual Exploration." *Transportation*, 33, pp. 263–289.

Pew Research Center (2014). "Who uses social networking sites." Pew Research Center, <http://www.pewinternet.org/files/2013/12/who-uses-sns.png>. Last accessed on 28 Mach, 2015.

Van den Berg, P., T. Arentze, and H. Timmermans (2011). "Involvement in Clubs or Voluntary Associations, Social Networks and Activity Generation: A Path Analysis". Presented at 90th Annual Meeting of the Transportation Research Board, Washington, D.C., 2011