

Daydreaming or potential feasibility in the future? Belgrade has the potential to be in the next few decades (2030-40) closer to the technological cities. To achieve such an ambitious goal, it is a lot of investment in all aspects of development. Beginning in the infrastructure, transport, environment, quality of land planning, making better laws and regulations, construction technology modern buildings that are more energy efficient, the implementation of digital systems and monitoring of all segments of development, pollution, large investments in technology systems. The impact on the movement of climate change in cities to a large extent has a society, and that anything could change in the future, it is necessary to include more technological innovation that can have a positive impact on improving the current situation. The sudden use of energy in the world has raised concerns about supply and exhaustion of energy and resources, as well as a heavy impact on the environment: ozone depletion, global warming, climate change. Transport in urban areas is one of the leading polluters, a strategic city should direct a change in the automotive industry to eradicate polluting fuels and to move on cars driven by electric power. Eko buses that do not cost a lot more than just old buses can also contribute less to air pollution. Hyperloop trains that should work in the coming period, can greatly change the way population movement and transport of a large population in a short time and certainly brings benefits in the economic and the ecological sphere. Now is the time to plan the future.

This paper is dedicated to my professors.

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ID 1673 | A CLOSER LOOK INTO HOW LAND-USE, SOCIAL NETWORKS AND ICT INFLUENCE LOCATION CHOICE OF SOCIAL ACTIVITIES

Vishnu Baburajan¹; João António de Abreu e Silva¹

¹Instituto Superior Técnico

vishnu.baburajan@tecnico.ulisboa.pt ; jabreu@tecnico.ulisboa.pt

ABSTRACT : Technology now enables individuals to travel more flexibly, thanks to ICT and the numerous social networks. The choice of location for social activities has become very flexible, sometimes allowing changes to a previous decision on the move. In addition to this, the characteristics of the residential and

university location also play a vital role in the choice of location for social activities. It would be quite exciting to uncover the behavioral patterns associated with these decisions. Hence, this study pursues the following objectives: 1. to analyze the influence of ICT, social networks and land-use characteristics of the residence and university in choice of location for social travel. 2. To analyze the similarities and dissimilarities in the choice of activities pursued during weekdays and weekends. Students from the two different campuses of Instituto Superior Técnico were presented with an online questionnaire, intended to collect information about the use of ICT and social networks, in addition to the travel characteristics and socio-demographics. Emphasis was made in capturing the characteristics of social networks and ICT usage. Information on the land-use characteristics was later obtained from secondary sources. Factor analysis was initially carried out to extract factors related to use of ICT and social networks, which were to be later used in the model for choice of location. The alternatives considered for location choice include: location within 800 m from the residence, location within 800 m from the university, locations away from home and university and evenly spread locations. The analysis was performed separately for travel during weekdays and weekends, to understand the differences and similarities in behavior during these different time periods. A multinomial logit model was estimated to model this choice. This adds to the literature, the understanding of influence of use of ICT, social networks and land-use characteristics, in the context of social travel.

1 INTRODUCTION

Advancements in technology has made travel more flexibly. This can largely be attributed to the growing popularity of Information and Communication Technology (ICT), smartphone penetration and social networking sites. The use of these can have different effects in travel, such as substitution effects, complementary effects and peer pressure in travel decisions. For example, the use of smartphones might help do away with some of the shopping trips, but might as well induce socializing activities. Social trips are increasingly being scheduled using social network applications (WhatsApp, Viber) and websites such as Facebook. This makes it important to analyze the impact of these in travel decisions. Compared to the past, individuals are now presented with a wide variety of choices. This will have significant effects in the travel patterns of students, especially university students for whom, these provides a conducive environment for a more flexible travel. University students are also important considering the widespread penetration of these gadgets and the ease with which university students get acquainted with these emerging technologies and gadgets, compared to other age groups.

This has changed the way people travel. With the increasing use of smartphones and internet, individuals can now request taxi online through services such as Uber, Cabify, Lyft, etc. With most of the public transportation systems across the globe developing mobile applications and websites that provide information to make travel convenient, individuals can now use public transportation better. In yet another instance, the widespread popularity of social networking sites, now enable individuals to plan social trips easier and in groups. The location choice is now being increasingly made using these mobile applications. Individuals make decisions en-route making it difficult to understand location choice and specifically that of social activities. This is because, the location of workplace or university is usually predefined and thus, the importance of social travel. This paper, focusses on the influence of ICT, social networks and land-use on the location choice for social activities.

The objectives of the study are, 1. to analyze the influence of ICT, social networks and land-use characteristics of residence and university in choice of location for social travel, 2. to analyze the similarities and dissimilarities in the choice of activities pursued during weekdays and weekends. The analysis is carried out using data from around 500 students from two different campuses of Instituto Superior Técnico. Data was then processed and the location choice had the following four levels, viz., located within 800m from the residence, location within 800m from the university, locations away from the residence and university and evenly spread locations. Factor analysis was initially carried out to extract factors related to the use of ICT and social networks. These factors were later used in the specification for the location choice model. Considering the nominal nature of the variable, a multinomial logit model was estimated separately for choice during weekdays and weekends.

Exploratory analysis indicated difference in choice between weekdays and weekends. To understand this further, models were estimated and the factors influencing the choice were identified. It can be seen that socio-demographics (age, gender, etc.), land-use characteristics (road capitation), social networks

3 DATA DESCRIPTION

For the study, data corresponding to use of ICT, social networks, travel data and socio-demographics of students from two campuses of Instituto Superior Técnico (Alameda and Tagus Park) was collected using an online survey. Though data was collected from around 700 students, after accounting for incomplete records, data from only around 500 students could be used for the analysis. Land-use data from secondary sources were later linked to this data.

The common practice is to evaluate the destination choice using a single day activity diary. This could sometimes lead to underestimating of recreational trips. Individuals seldom undertake recreational trips on a regular basis and hence by collecting a single day activity diary and estimating models using this data could lead to potential underestimation of recreational trips. To overcome this, in this study, individuals were asked about destinations to which social trips were made in the past week, separately during weekdays and weekends. We believe, this will help address this potential underestimation to a great extent.

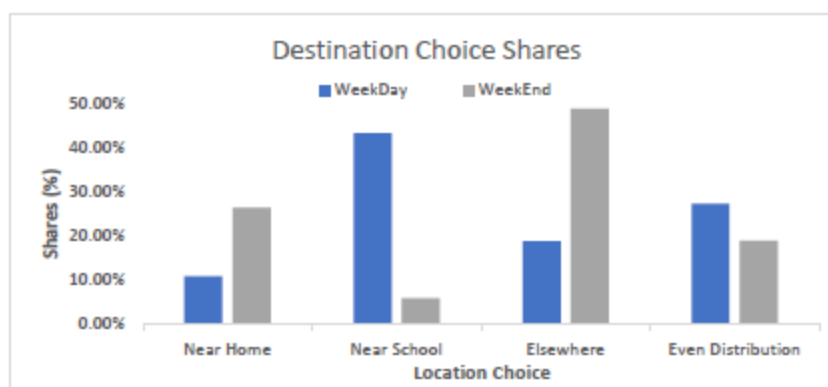


Figure 1 Shares of Destination Choice

The above figure illustrates the location choice shares in Lisbon, among students. Unlike the conventional approach, we have adopted a different definition for location choice. The main rationale for the following definition is that most of the activities by university students are anchored around the university and school, during weekdays. It can be observed that, most of the activities are pursued around the university (school) during the weekdays, whereas during weekends, most of the activities are undertaken at locations other than residence or university.

4 METHODOLOGY

The first objective of the study is to identify the influence of land-use, ICT and social networks on the location choice of university students from the two campuses of Lisbon. To achieve this, variables depicting land-use characteristics, use of ICT and social network were collected. Some of these variables were later reduced to factors using factor analysis to ensure parsimony and ease of use and in the estimation of models for location choice and to make behavioral insights. As has been mentioned previously, an alternative definition has been adopted for location choice variable. Considering the nominal nature of the variable, multinomial logit model has been used.

The second objective relates to the identification of similarities and dissimilarities in location choice, between weekday and weekend. As can be observed from the exploratory analysis in Figure 1, there is a significant difference in the choice of destination, between weekdays and weekends. This analysis will try to understand the factors contributing to this difference. This could be due to some socio-demographic factors, land-use, use of ICT, social networks or simply due to the difference in availability of time. This can be identified by estimating separate models for weekdays and weekends.

Multinomial logit model has been widely used in travel demand models, in modelling choice of mode, route, destination, to name a few. The models are based on the principles of utility maximization. The simplicity in use, estimation and interpretation have resulted in widespread use of MNL. Interested readers

are advised to refer to the following { (Ben-Akiva & Lerman, 1985) and (Koppelman & Bhat, 2006)} for more information related to MNL.

5 MODEL ESTIMATION AND DISCUSSION OF RESULTS

As has been mentioned in the third sections, four levels are considered in the analysis for location choice, which includes within 800 meters from residence, within 800 meters from university, elsewhere and even distribution of locations. Location within 800 m from the residence has been considered as the base alternative. Considering the need to analyze the factors contributing to the difference in choice preferences between weekends and weekdays, separate models for location choice has been estimated.

Table 1, given below presents the estimation results of the analysis. The coefficients and the statistical significance of the estimated variables have been presented. As a convention, symbolic representation of the statistical significance has been used. Further, some of the variables have been included, even when not statistically significant, to avoid instances of false negativity.

The goodness-of-fit measures have been summarized below the coefficients. In this particular analysis, it can be observed that the rho-squared values are 0.17 and 0.16 for Week Day and Week End respectively. Alternative specific coefficients have been estimated for the models.

5.1 WEEK DAY

Gender has a negative effect, indicating that men are less likely to prefer locations close to the university, in comparison to areas around the residence. This is the same for students of age between 30 and 40. Considering the need to pursue work after studies, students who are employed full time have lesser priority for choosing locations close to university. When close friends reside nearby, the location for social activities is more likely to be around the residence, as social activities are usually dependent on close friends.

In an effort to probably reduce the inconvenience associated with travel, students belonging to large families are more likely to pursue activities near the residence. This could possibly be because the activities are could also be family events. When close friends stay in the neighborhood, the preference is similar to that of pursuing activities near university. As expected, with increase in road capitation, the likelihood of pursuing activities in other localities decreases.

Again, gender has a negative effect on consider locations evenly distributed. This could be because women are less likely to travel during weekdays considering their responsibilities at home. The same is the case with students who are full time employees. And this could possibly be because of their inability to pursue social activities during week days at locations away from their residence. The residual time available after mandatory activities (university and work) will be limited.

5.2 WEEKEND

It is worth mentioning that, close friends living in the neighborhood has an effect in the choice of location of for social activities during weekends. The choice of a location near the university has a negative preference. This is probably because, with more close friends within the locality, it might be convenient to pursue social activities within the neighborhood. In this case, the role of use of instant messenger is interesting. The variable indicates decreasing levels of instant messenger use during weekdays and weekend. Decreasing use of instant messenger use during weekdays has a positive influence in social activities near university during the weekend thus indicating the role of instant messenger as a substitute for social activities during weekend or as scheduling mechanism for social activities (scheduling for activities during weekend, during weekdays). And, with decreasing use of messenger during weekend, there are fewer social activities during weekend near university, which probably indicates the use of instant messengers in scheduling. With more number of acquaintances, there will be fewer social trips during weekends. With increasing access to vehicles, there will be more social trips in areas near university.

With close friends staying in the locality, there is lesser probability of students pursuing social trips at any other place, other than near university and residence. This could probably be because, social activities undertaken by individuals are dependent on close friends. With them in your locality, the need for pursuing the same away from residence is not necessary. However, if the friends are within the same municipality, away from the locality, it can be seen that, individuals are more likely to pursue these activities elsewhere.

For students aged between 20 and 30, any location is equally preferable. This can be associated with the greater flexibility associated with this particular age group. They also may not have family to take care and hence can plan travel easily. With more close friends in the close vicinity, there could be fewer social trips in other locations. And with more close friends within municipality, social trips are more likely to be pursued in other locations. With decreasing use of social media during weekdays, lesser social trips are pursued in areas away from residence during weekends. This could be because individuals might resort to use of social media during weekends.

	Variable	Week Day	WeekEnd
Near University	Constant	4.48***	-.33
	Age is between 30 and 40	-1.31640***	
	Gender	-.69***	
	Full Time Employee	-3.07***	
	Close friends stay nearby	-.58***	-.31*
	Decreasing use of instant messenger during weekday		.44*
	Decreasing use of instant messenger during weekend		-.34
	Number of acquaintances		-.18
	Access to vehicle 3-6 times a week		.88
Elsewhere	Constant	3.35***	.39
	Household size	-.15*	
	Close friends stay nearby	-.59***	-.24**
	Close friends stay within the same municipality		.28***
	Road capitation	-1785.87***	
Even Distribution	Constant	2.90***	-.68
	Gender	-.37	
	Age is between 20 and 30		.54*
	Full Time Employee	-1.39***	
	Close friends stay nearby	-.39***	-.20*
	Close friends stay within the same municipality		.28**
	Decreasing use of social media during weekday		-.15*
	Number of observations	459	
	Initial log-likelihood	-636.31	
	Final log-likelihood	-526.95	-534.05
	Rho-squared value	0.17	0.16
Note: ***, **, * ==> Significance at 1%, 5%, 10% level			

Table 1 Estimated Coefficients of Models for WeekDay and WeekEnd

6 SALIENT FINDINGS AND CONCLUSION

This study analyzed the location choices of students from Lisbon. As has been mentioned previously, the destination choice of the individuals have been defined based on the distance from the residence and the university. This is considering the fact that the location of these mandatory activity locations play a crucial role in deciding the locations of social activities.

It can be inferred from the analysis that the factors influencing the location choice of students during weekdays and weekends are different. This is both, in terms of the variables that influence and also based on the coefficients of these variables, when present in both cases. In terms of socio-demographic variables influencing these decisions, it can be observed that age, gender, employment status and household size plays a critical role in location choice. Further, the access to vehicles are important in the case of social activities during weekends. For trips during weekdays, presence of close friends in close neighborhood is a contributing factor. Whereas for trips during weekends, presence of close friends within the municipality

and use of social media and instant messengers also influence the location choice. Only the land use characteristics such as road capitation, emerged to be significant in this study.

It would be important to understand this behavior further, with the use of variables that can capture the land-use characteristics in more detail. This could possibly be the reason for the comparatively poor performance of the proposed models and hence needs to be explored. It would also be important to use other discrete choice models.

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ID 1744 | CHALLENGES FOR THE FUTURE OF SMART CITIES FROM A GENDER PERSPECTIVE

Angelique Trachana¹; Ana Maria Martin Castillejos¹; Sofia Melero-Tur¹

¹Universidad Politécnica De Madrid

angelique.trachana@upm.es ; am.martin.castillejos@upm.es ; sofia.mtur@upm.es

1 SPACE AND GENDER

The finding, on the one hand, that the future of cities will have important social and economic consequences due to an urban design implemented by information and communication technologies and, on the other hand, the gender perspective as the principle chosen to support social and economic progress based on equality in Europe (Horizon 2020, article 15), prompts us to propose a study that integrates a gender analysis and research around parameters and variables of the innovative design of the city's public space.

The question about the ways in which the genre of the subject modifies the conceptions and representations of (public) space is an indispensable question. In a previous publication we made reference to the more performative and interactive feminine behaviour in comparison with the typical ontological metaphysics of the masculine "fact" and the authorship (Trachana, 2012: 121-122) The current work of the woman is diluted in the family, in the group. Its essential condition is that of an off-centered