# SHORT TERM ACTIVITY ADAPTATION DECISION OF MOBILE PROFESSIONAL: GENDER DIFFERENCES ON TRAVEL IMPACT OF SMART PHONE ADOPTION

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## Abstract

Understanding individual travel behaviour in urban space is essential for transportation planning. Considering that most of travel is a derived demand from the need to engage in activities, hence predicting individual responses, particularly gender role on short term activity adaptation decision is effective in understanding the relationship between travel behaviour and daily activity. In the information era, widespread adoption of smartphones, which is the result of convergence of Information and Communication Technology, potentially influences activities of mobile professionals. They use smart phone as a tool to improve the productivity and to assure the efficiency of their "travelling" as a part of their daily mobile work. Result of survey, which consists of interviews and simulation using stated adaptation in the Greater Jakarta Area provides basic pattern of response by gender that occur when information was received during implementation of activities. The proposed rule is a potentially valuable concept to predict changes in planned activity schedules as a function of unexpected event.

***Key Words:*** *Activity Adaptation, Gender, Mobile Professional, Smart phone, Travel behaviour*

## Abstrak

Memahami perilaku perjalanan individu perkotaan sangat penting bagi perencanaan dan kebijakan transportasi perkotaan. Mengingat sebagian besar perjalanan adalah permintaan yang berasal dari kebutuhan untuk berpartisipasi dalam kegiatan, maka memprediksi respon individu khususnya keputusan adaptasi kegiatan jangka pendek berdasarkan gender, efektif dalam memahami hubungan antara kegiatan sehari-hari dan perilaku perjalanan. Di era informasi, adopsi ponsel cerdas, yang merupakan hasil konvergensi Teknologi Informasi dan Komunikasi (TIK), berpotensi mempengaruhi keputusan adaptasi kegiatan dari profesional mobile. Mereka menggunakan ponsel cerdas sebagai alat informasi dan komunikasi sepanjang hari untuk meningkatkan produktivitas dan untuk menjamin efisiensi "perjalanan" sebagai bagian dari kerja *mobile*nya. Survei cross-sectional yang terdiri dari wawancara dan simulasi menggunakan "adaptasi dinyatakan" di wilayah Jabotabek dilakukan untuk memberikan kecenderungan dasar pola respon yang terjadi ketika informasi yang diterima selama pelaksanaan kegiatan sehari-hari berdasarkan gender. Aturan yang diusulkan adalah konsep yang berguna untuk memprediksi perubahan dari jadwal kegiatan yang direncanakan sebagai fungsi dari kejadian tak terduga.

***Kata Kunci:*** *Adaptasi kegiatan, Gender, Perilaku Perjalanan, Ponsel cerdas, Profesional Mobile*

# INTRODUCTION

Information and communication technologies (ICTs) have pervaded nearly all aspect of daily life, influencing where and how we work, learn, shop, play, live, and travel. The International Telecommunication Union estimates there are nearly 7 billion mobile subscriptions worldwide (ITU, 2014). Indonesia has 297 million mobile phone subscribers in 2013 which is around 108% of the total population (Suryo, 2014). Interestingly, most people have more than 1 SIM card or handset. Up to date, new ICT developments have facilitated the transmission of large quantities of information at high speed and accuracy at relatively low cost, through the emergence of the smart phone, which is a contemporary kind of mobile phone that integrates a number of technologies for advanced computing ability and connectivity (Charlesworth, 2009). Smartphone is facilitated with Built-in applications and internet access, digital voice services, text messages, e-mail, web browsing, camera, MP3 player and video viewing. Google/IPSOS (2011) reported that 89 per cent of users use it throughout the day. Thus, technological and social characteristics of this device make the users potentially change their behaviour; in particular on how, when and where people choose to use their time to conduct activities, more than the previous ICT devices have done. Of all mobile phone subscriptions globally, 25-30 percent (around 1.9 billion) are associated with smart phones (Erricson, 2014). In Indonesia, the number of smart phone users is continuing to rise up to 23% share (over 68 million users) in 2013 (Suryo, 2014).

Smart phone market itself started out in the business segment (Nielsen, 2012; RIM, 200j3) and, especially, so-called mobile professionals are important beneficiaries here. Mobile professionals could be characterized as individuals over the age of 20, employed full time in professional occupation, who spends 20 per cent or more of their total working time away from their work environment (Ablondi and Elliot, 1992). Smart phones have grown to become an absolute necessity for them in order to keep up with their busy schedules and manage their work load in a highly dynamic, competitive, and time critical business environment (Dzartevska, 2009). Mokhtarian (2009) stated, "The more one travels, the more useful, and used, a mobile phone becomes." The more used a smartphone, the more potential it influences travel behaviour. To capture the travel impact of smartphone usage clearly, this research targets a dynamic mobile professional who has already used a smart phone to perform their daily operational activities. Annan (2003) stated that there is a gender divide, with women enjoying less access to information technology than men and boys.

The travel impacts of ICT are numerous and complex. To get focused, the scope of ICT devices have been limited to smartphone, because they are devices with both fairly high market penetration and variety of capabilities. Mokhtarian and Tal (2013) classified the impact on the basis of term of decision including short term decision about a given trip; on medium-term decisions for instance auto ownership, and on long-term decision e.g. lifestyle and location decisions. This paper is focused on the short-term decisions of relevance, specifically trip and activity generation, destination, route choices, and the choices of execution time and duration, using short term activity adaptation decision concept. Most of travel behaviour is the result of implementation of a particular set of activities, thus the activity based approach was advocated to analyze and predict travel behaviour, resulting from such interrelated activity decisions. Joh (2004) investigated activity (re)scheduling behaviour and argued that the adaptation may involve changing the duration of activity, changing the sequence in which activities are conducted, and adapting the composition of activity program by inserting or deleting activities.

Understanding mechanism of individual travel behaviour in urban space is essential for urban transportation planning and policy. Considering that most of travel is a derived demand from the desire to engage in activities at certain locations, hence understanding the relationship between travel behaviour and daily activity engagement is effective in predicting individual responses, particularly short term activity adaptation decision. Spitzner et al (2007) argued that men and women are affected transport differently, especially as men rarely assume responsibility for most of the care economy (housework, shopping, providing and caring for oneself and the family, etc); they rarely need to combine these activities with gainful employment and thus have more time at their disposal than women.

This paper is organized as follow. First section provides theoretical background, a literature review which contains: sociology of technology adoption by gender, nature of mobile professional's work, and activity adaptation decision. And then, the research methodology presented the research design and expected outcomes, followed by the result and discussion, and conclusion.

# THEORETICAL BACKGROUND AND HYPOTHESIS

### Smart phone Adoption and Gender Differences

As they are used literally by everybody, smartphone create a new aspect in which all human beings are equal, i.e. irrespective of age, gender, cultural background, wealth, income or hierarchical position/level managerial. Rahmati et al (2012) found and suggested clear usage differences based on SES levels, but not based on gender. Smatphone, as mobile phone is usually described as a highly egalitarian technology (Geser, 2006) that has been adopted similarly by both genders (as well as by populations differing in age, income, education and ethnic origin). While both genders are rather similar in the quantitative intensity of usage, they still differ significantly in the qualitative patterns and purposes of use (Geser, 2006).

In several countries, women use it more heavily than men – for instance for voice calls as well as for text messages (ITU, 2014). In 2010, Bulger segmented Smartphone owners by gender; the male population dominated the marketplace. But in early 2011, that trend shifted rather dramatically and women started adopting smartphones in greater numbers. Females, who had once made up significantly less than half of the smartphone owner segment, were now accounting for just over half the segment (Bulger. 2011)

### Activity Scheduling, Coordination and Activity (re) Scheduling

Doherty and Clark (2008) argued that the way people adapt their activity-travel decision in response to external inference is rooted in the process of rescheduling their live across time and in relation to others. During the recent decades, the decision-making process of activity scheduling has become dynamic and influences the daily travel pattern. While some activities are planned far in advance and form the initial schedule structure, other scheduling decision are made closer to the execution of activity or even impulsively. Rescheduling may be triggered by factors for instance time pressure, schedule conflict, congestion charging, real time information about traffic, weather and event cancellation (Guo et al, 2012) . Coordination of our activities and movements with others has taken on increased importance. Effective coordination minimizes uncertainty regarding

interdependent activity, when and where common resources will be accessed or consumed, and where transition between activities will take place.

Ling (2004) proposed a form of coordination that arise as a result of the use of mobile phones as a" coordination-based mobile interaction "and identifies three ways occurrence, namely (1) midcourse adjustment, which refers to the transfer of the journey has started and setting details of the meeting which had previously been agreed upon, (2) interactive coordination, which refers to the progressively setting of the meeting that is certain, (3) softening the schedule, which refers to the potential for increasing the flexibility of schedule compared to occur coordination based on fixed time (Ling, 2004).

Gordon (1989) found that women consistently have shorter work trip than men, regardless of income, occupation, marital and family status, mode of travel. Additionally, he argued that women undertake more non-work trips than men. Valcour and Hunter (2004) stated that women are more family-oriented and are more likely to intersperse their paid work with family related activities than men. When compared to men, women are more reactive and immediately make adjustments to their daily activities as soon as they get important information about their families. If associated with today's modern life, moreover with the emergence of the female mobile professionals, these findings may be different.

From the background, hypothesis of the study is "there are gender differences on travel impact of smart phone adoption, particularly on short term activity adaptation"

## RESEARCH DESIGN

The research objective is to observe the subsequent changes and probabilities of adjustment after receiving the information from Smartphone. This study examined the relationship between mobile interaction using smart phones, short term activity adaptation/activity (re)scheduling, and travel patterns of mobile professionals. The study consists of two stages, preliminary and main study.

Preliminary survey was conducted first to get the first insight about the phenomena. Considering that there is great diversity in the nature of work of mobile professional and their characteristic of technology use, therefore, it is important to recruit the interviewees: 20 mobile professionals from the Greater Jakarta Area (Jakarta, Bogor, Depok, Tangerang, and Bekasi), Indonesia from a range of different professions. Occupation includes a variety professional from a range of consultant, project management, lawyer, journalist, veterinarian, obstetric-gynaecologic, marketing, sales, customer service, managing partner, real estate developer, and government officer. Participants were also pre-screened to represent various level of mobility in term of frequency of mobile, the flexibility of time, flexibility of work place. Semi-structured interviews are conducted in this stage with the aim of obtaining information on the context surrounding the mobile professional activities, for instance: why they make a trip, with whom they visit, what will they do with them, what they do with their mobile phone while travelling, and at a third location, how they use their phones, especially for work purposes, what has changed in their mobile work, as the implications of the use of smart phones, how they plan and make an activity-travel schedule, and how they execute the agenda (including how they reschedule the agenda). Preliminary surveys consisted of mostly open questions. We found typical day of nature work, purpose of usage, characteristic of usage and what had been changed in their mobile work as implicaTION of their smart phone usage. All of interviews were conducted in Indonesian. Interviews were transcribed and analyzed for the identification and sorting of

themes and core concepts at several levels of specificity. Data obtained from an preliminary interview indications are used as a basis to create the next stage of the study.

The main survey, which is the next stage of this study, is conducted using questionnaire with a larger number of mobile professionals, representing proportional pursued gender, profession proportion grouped by similar properties of mobile work (e.g. mobile based field work includes project consultants, city planners, contractors, distinguished group with mobile work whose location cannot be predicted, e.g. journalists, lawyers, sales, account representative, veterinarian). Participant were provided with a specific scenario to know the response if they face the specific situation during the execution of activity-travel agenda.
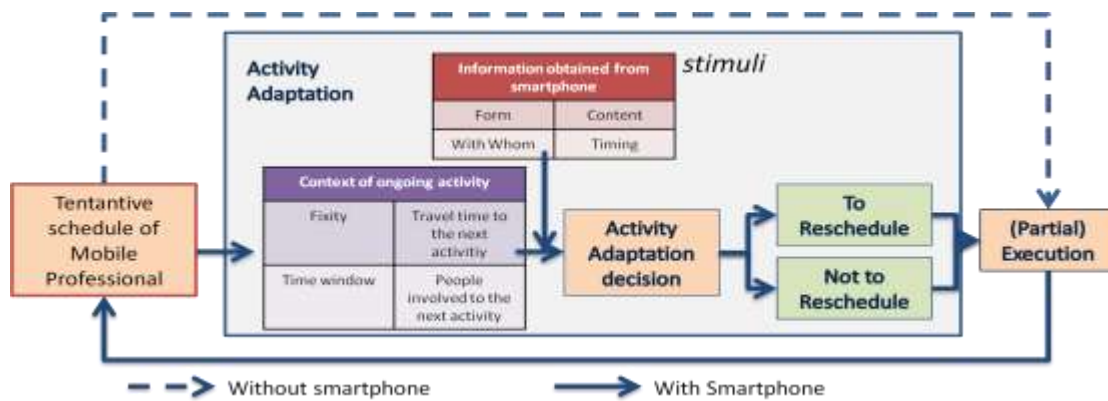


**Figure 1**    Conceptual frame

The purpose of this approach is a simplification to compose the basic patterns of activity change due to the interaction using smart phones. Scenario should be made as real as possible, and in most probable occurrence. The choice of options provided must also be made as close as possible to reality. Within this context, the storyboard is built based on the experiences expressed by the mobile professionals on the preliminary survey (phase 1).

In this approach, some scenario of situations is generated on the storyboard as stimuli that contains "most probably information gained" from smart phone, that requires immediate attention for re-scheduling decision using "what-if" questions around "alternative realities" of the situation context. Each participant is asked of a set number of 11 selected "what-if" questions, as showed in Figure 2. Combination of scenario, adaptation decision chosen (estimated by researcher), and travel impact regarding decision is shown on Table 1.
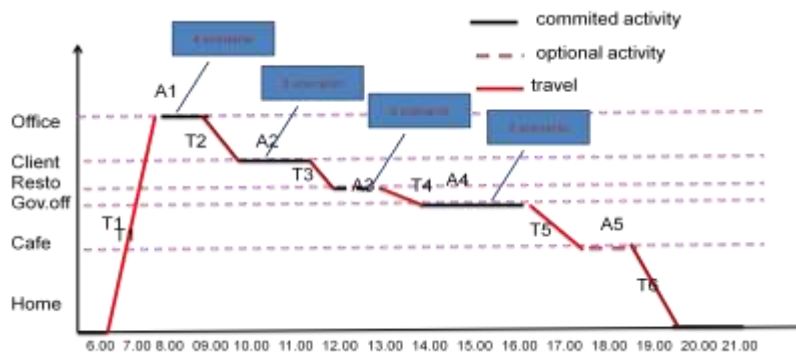


Figure 2. Time-Space Graph of Short term Activity Adaptation Simulation

**Table 1** Scenario and Hypothesis travel impact of the activity adaptation decision chosen

| Scenario | Mobile Interaction | Context of On Going and Next Activity | Adaptation Decision (estimated) | Travel Impact |
|---|---|---|---|---|
| 1. | Audio; with Client; update; morning | Committed; time window: 1-2 hours;1 hour travel time, current: with Colleague, next: with Client | Modification of time; delay of the next activity | Changing the timing of trip execution |
| 2. | Audio; with family; emergency; morning | Committed; time window: 1-2 hours; 30 minutes travel time, current: with Colleague, next: with Client | Deleting the whole upcoming activity | Reduction the number of trip |
| 3. | Text; with web; update; morning | Committed, time window: 1-2 hours, 30 minutes travel time; current: with Colleague, next: with Client | Route modification | Route modification |
| 4. | Audio; with Client; update; morning | Committed; time window: 1-2 hours, 30 minutes travel time; current: with Colleague; next: with Client | Inserting without deleting | Increase the number of trip |
| 5. | Audio; with Friend; new appointment; before lunch | Optional; time window: 1-2 hours; 30 minutes travel time; current: with client, next: none/tentative | Modification of activity space, closer to the next activity | Changing the trip destination, reduction the travel distance |
| 6. | Audio; with Client; new appointment; before lunch | Optional; time window: 1-2 hours; 30 minutes travel time; current: with client, next: none/tentative | Modification of activity space, closer to the next activity | Changing the trip destination, decrease the travel length |
| 7 | Audio; with Client; New Appointment; Lunch time | Committed; time window: 1-2 hours; 1 hour travel time; current: with client; next : with client | Deleting the next activity and inserting new activity | decreasing the travel length |
| 8. | Text; with Client; New Appointment; Lunch time | Committed; time window: 1-2 hours; 1 hour travel time; current: with client; next: with client | Inserting a new activity | Increasing the number of trip |
| 9. | Audio; with Client; update; Lunch time | Committed; time window: 1-2 hours; 1 hour travel time; current: with client, next: with client | Delay the next activity | Modification of Execution Time of departure |
| 10. | Text, with friend, update, After mid day | Optional; time window: 1-2 hours; 1 hour travel time; current: with client; next: with friend | Deleting the next activity | Reducing the number of trip |
| 11. | Text, with family, update, After mid day | Optional; time window: 1-2 hours;1 hour travel time; current: with client; next: with friend | Inserting a new activity | Increasing trip number and modification of departure time |

Each question consists of two consecutive activities. The following is a sample stated adaptation survey question:

"…What if you get the information through an application of traffic service on your smart phone about a traffic jam on the route to the next activity? What do you probably do?" (Scenario 3)

The behavioural response to such a situation is recorded as "stated adaptation" and the basic pattern of activity as well travel executed is then analyzed. Survey on Phase 2 was conducted on 2 ways: paper based with face 2 face (F2F) survey and online survey (https://www.surveymonkey.com/s/Mobile_Prof_2014) in similar item of question.

Figure 3 Example of Online questionnaire display (in Indonesia)

To improve the respond rate, every respondent gets a souvenir as well as a chance of winning a smartphone as the lucky draw. With this scheme, there are 34 respondents completed the online questionnaire (internet based survey/self-administered), while 62 respondents completed the paper based survey. Respondents were recruited with purposive snowball technique.

## RESULT OF SURVEY AND DISCUSSION

The survey was conducted on 106 respondents (20 for preliminary (phase 1), and 96 for main survey (phase 2), from mobile professional-smart phone users in the Greater Jakarta area (Jakarta, Bogor, Depok, Tangerang, Bekasi), with a variety of professions. The professions selected are based on a pre-screening that respondents are actually the target of research, i.e. more than 20% of the working time is out of office, as well as smart phone adopter. On Stage 1 (preliminary survey) time consumed to interview was around 45 minutes to 1 hour; while on Stage 2 (main survey) respondent spent around 20-25 minutes in average to complete the questionnaire. That is why we had to find balance between sample size and duration of completing the questionnaire. The profile of the respondents on stage 2 is given in Table 2.

All of the respondents experienced the higher dynamic of activity scheduling by using smartphone. They always consider all the information gathered via smart phone which is relevant with the next agenda. Mobile professional has to manage and balance the time spent for travel and activity, participate in activities planned and consider the real time information they have.

**Table 2** Profile of Respondents

| Profile | % | Profile | % | Profile | % | Profile | % |
|---------|---|---------|---|---------|---|---------|---|
| **Gender** | | **Residence** | | **Level of Managerial** | | **Max. location to visit** | |
| *Male* | 65% | *Jakarta* | 26% | *Top* | 33% | *2 places* | 22% |
| *Female* | 35% | *Bogor* | 13% | *Midle* | 67% | *3 places* | 47% |
| **Age** | | *Depok* | 17% | **Expenditure/month** | | *>3 places* | 31% |
| *21-30* | 6% | *Tangerang* | 10% | *< IDR 5 milln* | 3% | **Smart phone Ownership** | |
| *31-40* | 40% | *Bekasi* | 34% | *IDR 5-20 milln* | 51% | *1-5 years* | 18% |
| *41-50* | 43% | **Location of mobile work** | | *>IDR 20 milln* | 46% | *>5 years* | 82% |
| *>50* | 11% | *Jakarta* | 100% | **Mode to work** | | **Number of SIM card** | |

| Profile | % | Profile | % | Profile | % | Profile | % |
|---------|---|---------|---|---------|---|---------|---|
| **Education** | | *Bogor* | 60% | *Motorcycle* | 11% | *Only 1* | 13% |
| *Bachelor* | 56% | *Depok* | 22% | *Car* | 97% | *>1* | 87% |
| *Master* | 40% | *Tangerang* | 53% | *Public transport (road)* | 11% | **Number of Smart phone** | |
| *PhD* | 4% | *Bekasi* | 63% | *Public transport (rail)* | 8% | *Only 1* | 13% |
| | | | | | | *>1* | 87% |

The results of simulation based stated adaptation which is differentiated by gender on the decision of the selected adaptation activity is shown in Table 3

**Table 3** Activity adaptation decision, frequency and modus by gender

| Scenario | Male, n=62 | | Female, n=34 | | Differences in | | Gender Differences |
|----------|------------|------------|--------------|------------|----------------|------------|-------------------|
| | Modus | % of modus | Modus | % of modus | Modus | % of modus | |
| **1** | A | 51,61 | A | 61,76 | - | 10,15 | not significant |
| **2** | C | 61,29 | C | 55,88 | - | 5,41 | not significant |
| **3** | D | 56,45 | D | 61,76 | - | 5,31 | not significant |
| **4** | **D** | 53,23 | **C** | 50,00 | ✔ | 3,23 | siginificant |
| **5** | B | 64,52 | B | 64,71 | - | 0,19 | not significant |
| **6** | B | 70,97 | B | 82,35 | - | 11,39 | not significant |
| **7** | B | **67,74** | B | **44,12** | - | **23,62** | siginificant |
| **8** | A | **66,13** | A | **47,06** | - | **19,07** | siginificant |
| **9** | **A** | 59,68 | **B** | 47,06 | ✔ | 12,62 | siginificant |
| **10** | **D** | **40,32** | **B** | **79,41** | ✔ | 39,09 | siginificant |
| **11** | **C** | 50,00 | **B** | 47,06 | ✔ | 2,94 | siginificant |

Detailed scenarios and answer are not shown here but, in brief, it is found that the information obtained using smartphone provides a greater possibility to make adjustments to their daily activity. Table 3 shows that from 11 scenarios, 6 scenario result in significantly different responses by gender of the respondents, i.e. scenario no. 4, 9, 10, and 11. Gender of the respondents seems to play an important role in determining the options. Scenario no. 4: "*In the morning, you are at the office, completing routine managerial matters, involving co-workers. Next event is a meeting with your customer (A), in the costumer's office, which can take 30 minutes drive from the current location and suddenly you receive information from your smart phone. What if your client (B) suddenly calls and tells you about some serious problems in the field, with a distance of 2 hours drive and need immediate treatment. Your presence on the field is awaited. What might you do?*" Male respondents choose to "*Perform the planned activity with the client (A), and monitor the client's problems in the field only (B) via smartphone*", while female respondents tend to choose "*delay planned activities with business partner A to the other hours, but still on the same day, and then get to the location of business partner B in urgency.*" In this case it seems that women are more concerned with the state of emergency of the other client, and view it as something urgent and they need to rearrange their schedule with client B as the priority, whereas men are calmer women and not as reactive as women.

Furthermore, on scenario 11 (family-related information), female respondents have strong modus in their response options. On scenario 11: "*Currently at 14:00. You're attending an important meeting with government in the agency office. After this important meeting, you*

*have a tentative activity; you will go home or hang out with your professional community in a cafe within 1 hour drive from the government office. What if a family member sends a message, asking to do some errand such as to buy an object at a shopping centre located less than 30 minutes from the current location of your activities? Its picture is sent via smart phone.?"* Men tend to choose *"Approve the request of the family, leave for the shopping centre after the meeting and notify their friends in the cafe of their late arrival via smartphone",* while women tend to choose *"Approve request of the family, leave for the shopping centre after the meeting and cancel their plan to go to the cafe and then go home"*. When compared to men, women are more reactive and they immediately make adjustments to their daily activities as soon as they get important information about their families. Valcour and Hunter [32] stated that women are more family-oriented and are more likely to intersperse their paid work with family related activities than men. The 4 scenarios which have significantly different reactions show that women and men have some different points of view or concern, and it influences the decision they have made. The other 4 scenario which have significant difference reaction shows that women and men have some difference point of view or concern and it influence the decision they made. However, both genders chose adaptation decisions that changed originally scheduled. Adaptation that occurs and is expressed by the respondents indicates that the adjustment potentially arises with the increasing likelihood of someone receiving additional information relevant to his/her next activity, environmental conditions, travel, family, business partners, and co-workers. The information can be viewed as constraints that must be addressed, or as opportunities for new activities. Simulations with a larger sample size could be considered as a tool to propose a rule of respond pattern due to the adoption of smartphone in various combinations of situation.

## CONCLUSION

Mobile professional always turn on their smartphone throughout the day and make them always connected. They use smartphone as an information and communication tool to organize their work at different location, to improve the productivity, to conduct mobile-based coordination and to assure the efficiency of their "travelling". Empirical evidence with respect to the impact of smartphone adoption on activity-travel pattern shows that mobile professionals generally make adjustment during execution of their schedule as they receive real time information via smartphone. This research find that gender characteristic of mobile professional play important role in determining the kind of reaction of information received using smartphone. From 11 scenarios (hypothetical situation) there are 6 significant differences between women and men in their activity adaptation decision.

This paper is a part of on-going research, thus, the use of the method with a larger sample size shall be considered in further research, to gain a better result of capturing the dynamic of activity travel influenced by adoption of smartphone. As the recommendation, in order to complete the research, this study should combine gender analysis with profession, or with the managerial level of the mobile professional. The proposed method is a potentially valuable concept to predict changes in planned activity schedules.

## REFERENCES

Ablondi W., Elliot, T. 1992. Mobile Professional Market Segmentation Study. BIS

Annan, K., Statement to the World Summit on the Information Society, Geneva, 10 December 2003, in Gender equality and empowerment of women through ICT

Bulger, D. 2012. The Male vs. Female Debate Goes Mobile. Compete Pulse. https://blog.compete.com/2011/11/29/the-male-vs-female-debate-goes-mobile/

Charlesworth, A. 2009. The ascent of Smart Phone, Engineering and Technology.

Dzartevska, A. 2009. Developing a mobile learning platform for a professional environment. In H. Ryu & D. IGI Global.

Parsons (Eds.), Innovative Mobile Learning: Techniques and Technologies. New York

Doherty S.T., Clark F. A.2008. "Examining the Nature and Extent of the Activity-Travel Preplanning Decision Process", Transportation Research Record: Journal of the Transportation Research Board, No. 2054,

Geser, H. 2006. Are girls (eve)n more addicted? Some gender pattern of cell phone usage. Sociology in Switzerland: Sociology of the Mobile Phone

Google/IPSOS OTX Media CT. 2011. *The Mobile Movement, Understanding Smart phone Users*, U.S.

Gordon, P., Kumar A. and Richardon, H. W. 1989. Gender differences in metropolitan travel behaviour, *Regional Studies 23*, 499–510.

Guo, J.Y., 2012, A Data Collection Framework for Exploring the Dynamic Adaptation of Activity-Travel Decisions http://onlinepubs.trb.org/onlinepubs/conferences/2012

Ling, R. 2004. The mobile connection (The cell phone's impact on society), Morgan Kaufman publishers

Mokhtarian, P. 2009. If Telecommunication is such a good substitute for travel, why does congestion continue to get worse? Transportation Letters: The mobile International Journal of Transportation Research, 1.

Mokhtarian, P.; Tal, G. 2013. Impacts of ICT on Travel Behavior: A Tapestry of Relationships. J. Rodrigue, T. Notteboom, & J. Shaw (Eds.), The SAGE handbook of transport studies. (pp. 241-261). 55 City Road, London: SAGE Publications, Ltd

Nielsen. 2012. Smart phone Ownership On The Rise In Asia Pacific, Whilst Advertisers Struggle To Engage With Consumers Via Mobile Ads. Nielsen

RIM. 2003. Blackberry Target Market. Overview. Research in Motion Limited. U.S.

Valcour, P. M.; Hunter, L. W. 2005. Technology, organizations, and work-life integration. Managing work-life integration in organizations: Future directions for research and practice. E. E. Kossek, S. J. Lambert, Mahwah, NJ: Erlbaum: 61-84

Suryo, Y. 2014. Facts on Smartphone Users in Indonesia. Canopy Asia