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# Determinants of Internet use among migrants in South-East Asia: A case study of internal migrants in Thailand and Viet Nam

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# Determinants of Internet use among migrants in South-East Asia: A case study of internal migrants in Thailand and Viet Nam

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## Introduction

Migrants can gain socially and economically from the Internet. They can use the Internet to find new job opportunities, accommodation and information about the place of destination, even before they arrive. Upon migrants' arrival at their destination, the Internet facilitates the maintenance of existing ties with friends and relatives or the establishment of new contacts (Dekker and Engbersen, 2014). It also allows migrants to stay informed about any societal changes in their places of origin (Kissau, 2008). When a migrant uses the Internet, the benefit derived is two-fold. Due to their interrelated outcomes, it is not only the migrant, but also the origin households that reap benefits from the Internet.

However, the presence of a digital divide can hinder one from achieving these benefits. According to the Organisation for Economic Co-operation and Development (2001), digital divide is “the gap between individuals, households, businesses, and geographic areas at different socio-economic levels with regard both to their opportunities to access ICT [information and communications technology] and to their use of the Internet for a wide variety of activities”. Earlier research focused on the first-order digital divide which relates to inequality in access to the Internet (Scheerder et al., 2017). However, this gap is narrowing, even in developing countries (Alam and Imran, 2015). This can be attributed to rapid economic growth and low-cost access to smart phones. For instance, the percentage of population using internet in the developing world increased from 7.7 per cent in 2005 to 45.3 per cent in 2018 (International Telecommunication Union, 2018). Therefore, examination of the second-order digital divide as it pertains to the inequality in Internet use has recently received greater attention from researchers and policymakers (Cruz-Jesus et al., 2016).

As internal migrants are generally more educated, skilled (General Statistical Office, 2016), and more likely to own smartphones than individuals who are not migrating and stay in rural areas, the first-order digital divide is of less concern. Future inequalities will rather arise from differentiation in usage. Differential use of the Internet leads to different gains as some activities are more “capital enhancing” than others (Madden, 2003). Therefore, the “right” use of the Internet can facilitate upward mobility of migrants.

This paper looks into this aspect by examining what determines Internet use among internal migrants. We separate Internet activities into four types: 1) social interaction; 2) information-seeking; 3) entertainment; and 4) commercial transactions. Using a logit model, we examine if migrants' demographic characteristics, personality traits, and economic background influence their Internet usage. We use a sample of 709 internal migrants from the Greater Bangkok Area in Thailand and Ho Chi Minh City and Da Nang in Viet Nam. Thailand and Viet Nam are excellent examples of transition economies. The countries have registered expanding markets with respect to Internet usage. Mobile phone Internet user penetration in Thailand was estimated at 38 per cent in 2017 and is expected to reach 47 per cent in 2023. For Viet Nam, 35 per cent were mobile users in 2017, a figure that is expected to rise to 48 per cent by 2023 (Statista, 2019a, 2019b). Additionally, the booming production and service sectors have engendered high internal migration rates of 22 and 14 per cent in Thailand and Viet Nam respectively (Chamrathirong et al., 1995; UN-Habitat, 2017). The contribution of these migrants in the form of both monetary and social remittances is vital for the rural economy. Hence, the benefits that internal migrants derive from the Internet will eventually trickle down to their households in rural areas.

We contribute to the literature on determinants of Internet usage by analysing data from South-East Asia. Research in this field has focused on developed countries (Hargittai and Hinnant, 2008; Kim et al., 2011; van Deursen and van Dijk, 2014), or on the first-order digital divide in Africa (Aker, 2010; Hjort and Poulsen, 2019) and Asia (Hartje and Hübler, 2017). Analysing Internet usage among migrants opens new lines of inquiry. As we expect migrants to display

different characteristics and behaviours, the external validity of existing literature might not hold in the case of migrants. Additionally, we use the “Big Five” model to examine the role of personality traits on Internet usage. This is a relatively novel approach and could expand the realm of literature on non-cognitive skills<sup>1</sup> and migration (Jäger et al., 2010; Akgüç et al., 2016). These skills are not only important determinants of individuals’ decision to migrate but also of their migrant life at destination.

Our findings indicate that the “gender gap” in Internet use is non-existent among internal migrants. Also, higher education and openness to new experiences positively influence the likelihood of Internet use for almost all activity types. Contrary to existing literature, we establish that, for migrants, the economic background is not a vital determinant of Internet use.

## Conceptual framework and literature review

Most research in mass communication makes use of the knowledge gap hypothesis (Bonfadelli, 2002). It is argued that “when infusion of mass media information into a social system increases, segments of the population with higher socio-economic statuses tend to acquire this information at a faster rate than lower status segments, adding the value judgement that more education is better” (Tichenor et al., 1970). However, unlike traditional technology, Internet users are not mere receptors of information. They need to consciously and actively navigate through large information to gain benefits. Hence, when isolated from other factors, socioeconomic status and education levels are insufficient to understand usage patterns.

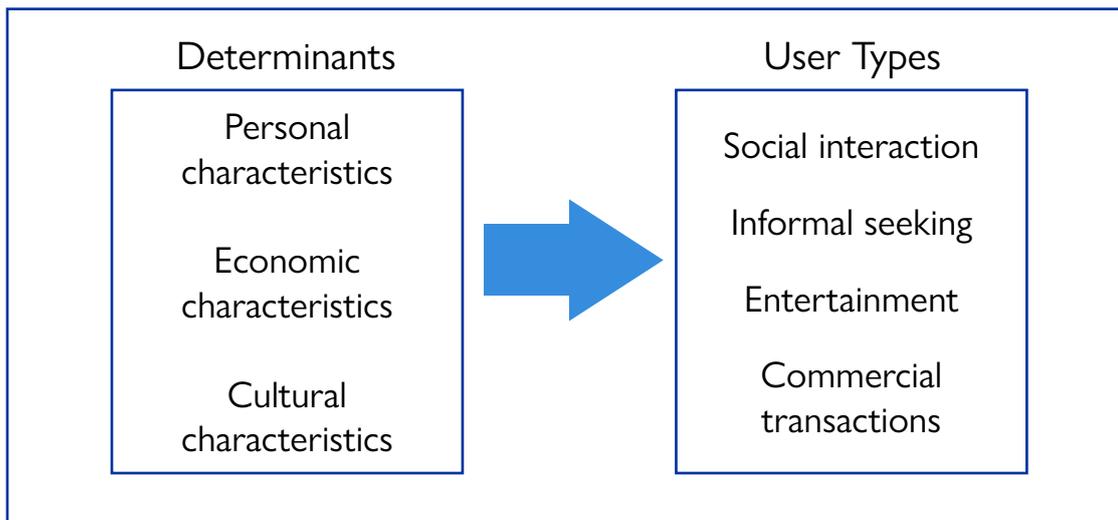
This has recently led to a shift from the knowledge gap hypothesis to the usage gap hypothesis (van Deursen and van Dijk, 2014; Cruz-Jesus et al., 2016). The usage gap hypothesis acknowledges that, while some Internet activities provide more opportunities to users to better their career, education, and societal inclusion, others can be plain entertaining (Zillien and Hargittai, 2009). As our paper aims to understand what determines Internet usage, we employ the usage gap hypothesis. Following Büchi, Just and Latzer (2016), we categorize Internet use into four categories:

1. Social interaction: to communicate with friends and family members through social media and other apps, such as Facebook, WhatsApp, Skype, line and Viber.
2. Information-seeking: for collecting information on such areas as jobs and health, or by reading news.
3. Entertainment: to watch movies, videos or to listen to music.
4. Commercial transactions: for business transactions and online shopping.

To ascertain the determinants of Internet usage, we follow Meinrath et al. (2013) who propose three sets of determinants: personal characteristics, economic characteristics and cultural characteristics.

<sup>1</sup> “Non-cognitive skills comprise personality traits, attitudes and motivations” (Zhou, 2016).

Figure 1. Conceptual framework



Source: Own depiction following Büchi et al., 2016; and Meinrath et al., 2013.

Personal characteristics include sociodemographic variables. Existing empirical evidence recognizes gender as the most important determinant in this case (Zillien and Hargittai, 2009; Antonio and Tuffley 2014; Blank, 2017). A gender gap exists not only in access to the Internet but also in usage. Though the access gap is narrowing, the usage gap is still a matter of concern (Dholakia, 2006). On the one hand, women are more likely to use the Internet to access information related to health and travel or to communicate with friends and family. Men, on the other hand, use Internet for entertainment (Liff and Shepherd, 2004; Chong, 2013). Men also use the Internet much more than women (Hargittai and Shafer, 2006). This can be attributed to time and role conflicts, gender stereotypes, and women's negative perception of their online abilities (Tsai and Lin, 2004; Colley and Maltby, 2008). Age is another important factor. Literature finds that age is negatively related to Internet use (Blank and Groselj, 2014; van Deursen and van Dijk, 2014). While younger individuals use the Internet for entertainment and social media, the older generation is still skeptical of the medium (van Deursen and Helsper, 2015).

Additionally, we include variables on education and personality traits to acknowledge the influence of both hard and soft skills on individual decision-making (Bowles et al., 2001). It has been established that highly educated Internet users engage in information-seeking at a higher rate, while lower educated individuals comparatively utilize the Internet for entertainment (Madden, 2003; Pearce and Rice, 2013). Hamburger (2002) posits personality as one of the most important predictors of Internet behaviour. In this paper, we use the Big Five model proposed by Costa and McCrae to capture personality (1992, 1997). It states that human personality can be broadly characterized according to five factors: openness, conscientiousness, extraversion, agreeableness, and neuroticism. An individual scoring high on openness is creative, active, and enthusiastic about new jobs (Rolland, 2002). A conscientious individual is efficient, responsible, and hardworking (Wichert and Pohlmeier, 2010). Extraversion is associated with people who seek to establish new contacts and are generally talkative (Schäfer, 2016). Agreeableness indicates care and selflessness, whereas neuroticism represents emotional instability (Wichert and Pohlmeier, 2010). There is no consensus in literature on the relationship between personality traits and total Internet use. While Landers and Lounsbury (2006) find that only agreeableness, conscientiousness, and extraversion are significant predictors, Tuten and Bosnjak (2001) show that openness and neuroticism exhibit the strongest association with Internet use. With regard to specific Internet usages, open people use the Internet for entertainment and information (ibid). Individuals with low conscientiousness and openness engage in quick and effortless information-seeking, while

extrovert and open individuals prefer thorough and broad information-seeking (Heinström, 2005). Also, extraversion is only positively linked to use of the Internet for entertainment when users are male (Hamburger and Ben-Artzi, 2000).

Economic characteristics are also considered important determinants of Internet usage patterns. Haight et al. (2014) postulate that once the access barrier is crossed, economic variables do not impact usage patterns. However, there is no consensus on this point. Studies also find that people with higher income tend to use the Internet for more informational and economically benefiting activities compared to their low-income counterparts (Pearce and Rice, 2013; van Deursen and van Dijk, 2014).

Overall, we expect to find a homogeneous distribution of migrants under the various usage categories because internal migrants tend to be younger and more educated (Ray and Espinova, 2011). Also, activities such as social interaction require individuals to be open to new experiences and knowledge. Migrants are generally more open and extroverted (Jokela, 2009). Therefore, we expect to find most migrants in this category. We are unclear about our expectations with respect to economic characteristics because migrants illustrate diverse economic profiles. Given the differences between Thailand and Viet Nam, and the higher restrictions on the Internet in Viet Nam than in Thailand (Freedom House, 2018), we believe this would lead to higher Internet usage by Thai migrants for all categories.

## Data and methodology

### Data

This paper uses information on 709 internal migrants from the Greater Bangkok Area in Thailand and Ho Chi Minh City and Da Nang in Viet Nam. The cross-section data was collected in 2018 for a migrant tracking survey under the project “Thailand Vietnam Socio Economic Panel” (TVSEP). The survey used information from a 2017 household survey conducted in the provinces of Thua Thien Hue, Ha Tinh, and Dak Lak in Viet Nam, and Ubon Ratchathani, Buriram, and Nakhon Phanom in Thailand to track migrants. As the household data is representative of the rural households in both the countries (Liebenehm et al., 2018), we expect the migrant sample to also be relatively representative of the internal migrants.<sup>2</sup> According to the 2009 Vietnamese census, 63 per cent of the internal migrants move to Ho Chi Minh City (General Statistical Office, 2011). In Thailand, over 80 per cent of the internal migrants migrate to Bangkok and its surrounding areas in search of job opportunities (National Statistics Office, 2008). Therefore, the areas form ideal case studies to examine Internet usage among migrants in these countries.

The sample consists of 387 Thai and 372 Vietnamese internal migrants. The average migrant is 29 years of age and earns USD 8,082 annually. Women constitute 49 per cent of the sample and 47 per cent of the migrants are married. In terms of education, 35 per cent report having completed only lower education, while 65 per cent report completed higher education. Here, lower education refers to primary and secondary education and higher education comprises all intermediate, high school, and universities degrees. Eighty-one per cent of the migrants engage in wage employment. Only 9 per cent are self-employed. The production sector employs 44 per cent of the sample. This includes mostly workers in textiles and construction. A similar proportion of 43 per cent is engaged in the service sector as waiters, shopkeepers and small-scale shop owners.

<sup>2</sup> Not all migrants reported in the household survey 2017 could be tracked. We attribute this to the increased mobility that migrants enjoy within the city as well as in the country.

## Methodology

In order to ascertain the determinants of Internet usage among our migrant sample, we create four usage categories: 1) social interaction; 2) information-seeking; 3) entertainment; and 4) commercial transactions. We use two questions from the interview, firstly, asking internal migrants if they use the Internet for a specific activity and, if so, how they would rank it according to its importance.<sup>3</sup> There are eight activities which we allocate under the four usage categories.

Table 1. Categorization of activities (based on questionnaire) into usage categories

Usage category	Activity
Social interaction	Communication
Information-seeking	Finding information about job opportunities, searching for health/medical information
Entertainment	Watching movies, videos or listening to music
Commercial transactions	Internet transactions, business, finding information about things to sell and buy

Source: Own depiction.

The categories are binary coded. A value of “1” is assigned to the category when the migrant reports using the Internet for this purpose and also ranks this use being “highly important”. This last condition is applied to differentiate between occasional and frequent users. An individual can use the Internet for various activities, and hence be classified as a user under multiple categories.

The logit model is used to econometrically examine the determinants of Internet use for each category. The choice of model is based on the categorical nature of the dependent variable. Our basic regression equation is as follows:

$$Prob(User\ type = 1) = \alpha_0 + \alpha_1 P_i + \alpha_2 X_i + \alpha_3 C_i + \varepsilon_{ij}$$

where *User type* is the usage category being examined.  $P_i$  represents personal characteristics of the migrant such as age, gender, marital status, education, and personality traits. For a detailed review on the construction and validation of these personality traits, please refer to Bühler et al. (2019). Additionally, to capture social capital, we include the total number of friends. Here, the respondent was asked to name friends, other than his/her relatives.  $X_i$  denotes economic characteristics. We include the employment sector and the annual income to account for work hours and living conditions. Lastly,  $C_i$  are cultural characteristics consisting of country controls. While both Thailand and Viet Nam are located in South-East Asia, there are substantial economic, cultural, social, and political differences. For instance, the World Bank classifies Thailand as an upper-middle-income country and Viet Nam as a lower-middle-income economy (2019). Thailand is a constitutional monarchy with relatively free market-driven policies. By contrast, Viet Nam is governed under a one-party system (Gloede et al., 2015).

As the analysis is based on self-reported data, it could suffer from subjective bias of the respondent. Future research could include objective data such as statistics on website visits and app/website use time to lend more robustness to the analysis.

<sup>3</sup> Question 1 – “Do you use the internet for the following reasons?” and, if this is answered in yes, then the respondent answers Question 2 – “How important is this reason for using the internet? Please rank.”

# Results

## Descriptive statistics

Only 46 internal migrants of the total 759 do not have access to the Internet. This highlights the triviality of the first-order digital divide in the case of (internal) migrants. We drop these observations in addition to outliers from the analysis to obtain a final sample of 709 internal migrants consisting of 351 Thai and 358 Vietnamese. Eighty-one per cent of them report visiting the Internet several times a day, while 17 per cent use the Internet only once a day.

In terms of the four usage categories, 495 people use the Internet for social interaction, 167 for information-seeking, 176 for entertainment, and 257 for commercial transactions. This is in line with our expectations.

## Determinants of Internet usage

We execute the logistic model for each usage category, separately. This allows for comparison between migrants who use the Internet for the specific use and their non-user counterparts. For an easier understanding, Table 2 shows only the marginal effects obtained in the regressions.

Table 2. Determinants of Internet usage (marginal effects)

Variables	Social interaction	Information-seeking	Entertainment	Commercial transactions
<b>Personal characteristics</b>				
Age	.0091	.0119	.0505**	.0297*
Age squared	-.0002	-.0001	-.0009***	-.0004*
Gender (female)	.1310***	.0825***	.0309	.0985**
Marital status (married)	-.0092	-.0779	-.1317***	-.1233***
Close friends	.0367***	.0229**	.0324***	.0265**
Completed lower education	-.0466	-.1436***	-.1025***	-.1900***
Openness	.0326*	.0741***	.0600***	.0879***
Conscientiousness	.0021	-.0142	-.0010	-.0043
Extraversion	.0463**	.0141	.0219	-.0101
Agreeableness	.0106	.0247	-.0045	.0310
Neuroticism	.0450*	.0246	.0292*	.0189
<b>Economic characteristics</b>				
Employed in production sector	-.0277	-.1497***	-.0034	-.1003
Employed in service sector	.0192	-.0158	.0563	.0267
Annual income USD PPP	-1.98e-06	2.56e-06	2.91e-06	6.29e-06**
<b>Cultural characteristics</b>				
Country (Thailand)	.1394***	.0445	.0753*	.1292**
<b>Total observations</b>	<b>709</b>	<b>709</b>	<b>709</b>	<b>709</b>

Note: Significance levels – \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. ( ) denotes reference category for the binary variable. Viet Nam is the counterfactual of Thailand.

Source: Own calculations.

Column 1 shows the findings for social interaction. Among personal characteristics, gender is highly significant. Females are 13 percentage points more likely to use the Internet for social interaction. Also, having a higher number of friends is a positive determinant in this case and with every additional friend, the probability of being online for social interaction increases by almost

4 percentage points. Contrary to expectations, we observe no relationship between age and Internet usage for this category. In case of personality traits, we find that migrants scoring high on openness, extraversion and neuroticism are more likely to engage in social interaction on the Internet. While economic characteristics are not significant, we see that Thai internal migrants are 14 percentage points more likely to use the Internet for social interaction compared to Vietnamese.

Column 2 presents the results for information-seeking. Being a female increases by 8 percentage points the probability of using the Internet to look for information online. In contrast, a married individual is 8 percentage points less likely to use the Internet under this category. Having a lower education is negatively associated with this type of usage, implying that higher education would increase the probability of the migrant using the Internet for information-seeking by 14 percentage points. Also, a unit increase in the level of openness increases the likelihood of using the Internet in this case by 7 percentage points. In terms of economic characteristics, the engagement of the migrant in the production sector lowers the likelihood of Internet usage for information-seeking by 15 percentage points.

Column 3 shows the results for entertainment. In case of personal characteristics, both variables capturing age are significant. We find that age is positively related to Internet use for entertainment. However, the relationship is not linear and as the migrant becomes older, they are less likely to access the Internet for this use. Also, being married decreases the probability of using the Internet in this category by 13 percentage points. The higher the number of friends, the higher is the probability of using the Internet. A migrant with a lower education is 10 percentage points less likely to use the Internet under this type of usage. Migrants who use the Internet for entertainment score higher on openness and neuroticism. Economic characteristics show no significance. Furthermore, Thai respondents are 8 percentage points more likely to use the Internet for entertainment than Vietnamese ones.

The last column shows results for commercial transactions. We notice that the relationship between age and this type of usage is not linear. The use of the Internet for commercial transactions such as online shopping, trading and banking increases with age but declines as the migrants get older. Also, females are 10 percentage points more likely to use the Internet for this specific usage. Having a higher number of friends is again positively significant. However, lower education hinders the use of the Internet for commercial transactions, decreasing the probability of use by 19 percentage points. Being open increases the probability of using the Internet for commercial transactions by 9 percentage points. The total income variable is only significant in this case and positively relates to the usage type, though the effect is very small. This is not unexpected as commercial transactions require money to materialize. Also, Thai respondents are more likely to use the Internet for this activity than their Vietnamese counterparts.

Overall, interesting patterns arise across the four types of usage. In case of personal characteristics, there exists a positive relationship between age and the Internet being used for entertainment and commercial transactions. However, the relation is not linear implying a decreasing level of usage as the migrant becomes older. This non-linearity of age is also documented by Büchi et al. (2016). Our results for gender resonate with the literature for social interaction but those for information-seeking and entertainment are contradictory. Women are more likely to use the Internet as a tool for communication compared to men (Dholakia, 2006; Zillien and Hargittai, 2009; van Deursen and van Dijk, 2014). Being married is negatively associated with almost all types of usage. A married individual could have less time available due to increased responsibilities, including with respect to children. Thus, free time is used for personal interactions and increased household chores. Having higher social capital is positively significant in all cases. Interestingly, lower education is negatively related to almost all types of usage. The literature postulates that people with higher levels of education employ the Internet for productive activities (Hargittai and Hinnant, 2008). However, in this case study, we notice the importance of higher education for all

types of usage. The results also highlight the importance of non-cognitive skills for Internet use. Openness, indicating if the migrant is open to new experiences, positively influences all activity types. Extraversion is only significant in case of social interaction, while higher neuroticism is more prevalent when the Internet is used for less economically productive activities of social interaction and entertainment. Economic characteristics are only important in case of commercial transactions. Furthermore, in line with our expectations, Thai internal migrants are more likely to use the Internet under almost all types of usage.

## Conclusion

“When the internet matures it will increasingly reflect known social, economic and cultural relationships of the offline world, including inequalities” (van Deursen and van Dijk, 2014).

Internet use has been increasing worldwide. However, this does not imply that all individuals can take advantage of the Internet in the same way. Rather this inequality in usage patterns can affect the attainment of the Sustainable Development Goals by widening the gap between the “haves” and the “have nots”. Therefore, it becomes pertinent to understand what determines the type of Internet usage among individuals. This question assumes even more importance in case of migrants, including those who have migrated internally from rural to urban areas as their life outcomes are closely related to those in their households.

Based on data on 709 internal migrants from Thailand and Viet Nam, this paper has examined the determinants of Internet usage among internal migrants in South-East Asia. We find that female internal migrants are more likely to engage in all Internet activities, except entertainment. Age positively influences the likelihood of using the Internet for entertainment and commercial transactions. Also, lower education levels are negatively associated with all activities, except social interaction. With regard to personality traits, openness positively influences all activity types. A higher degree of extraversion leads to increased use of Internet for social interaction and higher neuroticism is associated with less economically productive activities of social interaction and entertainment. Unlike Viet Nam, which has several Internet restrictions, being a Thai positively relates to engagement in all activities, except information-seeking. Interestingly, economic variables such as the migrant’s job profile and income are not very significant.

Our findings highlight the importance of both cognitive and non-cognitive skills. We show that higher education is a key determinant of Internet use except for social interaction. This highlights the importance of investment in higher education of migrants. Also, personality traits such as higher degrees of openness and extraversion are needed to encourage Internet usage. This can be done, for instance, through the implementation of early childhood development programmes that are known to help developing these characteristics. The efficiency of these programmes can be enhanced by inclusion of ICT literacy and skills. Thus, there is a need for promoting social competences and people’s capacity to lifelong independent learning support (German Advisory Council on Global Change, 2019). In this context, literature refers to the third-order digital divide suggesting a gap on individual capacity to translate Internet access and use into favourable outcomes (van Deursen and Helsper, 2015). In addition, existing restrictions on the Internet hinders its use for all types of activities, thereby calling for a barrier-free Internet use. On a positive note, there is no visible “gender gap” in the type of Internet usage in the sample. Therefore, it is possible to use the Internet to engage migrant women in more productive activities. Lastly, economic variables are not significant, which suggests that Internet use is independent from the economic position of the migrant.

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