

## Does ICT facilitate or impede rural youth migration in Indonesia?

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### Abstract

Resource Scarcity and Rural  
Development (2)

It is common for rural Indonesian youths to migrate to cities or foreign countries to obtain jobs or educational opportunities. Losing these young villagers leads to decreases in vital rural development. Indonesia contains the largest population of Internet users even though the rate of Internet penetration is below Southeast Asian averages. Recent academic studies have revealed that Information and Communication Technology (ICT) impacts youth migration intentions. However, this discussion can be divided into two categories, as follows: 1) ICT facilitates emigration by providing increased opportunities for users to obtain information about the living conditions in target locations or by facilitating communication with people in their distant home villages. 2) ICT impedes emigration by enabling more active communication and providing increased opportunities for users to obtain information about available jobs within the village. However, there is insufficient evidence from Southeast Asian countries to support either position. This study therefore conducted a questionnaire survey in the village of Tumpukrenteng in Malang Regency, Indonesia to analyze the interrelationship between ICT use and migration intentions. A total of 60 people emigrated from Tumpukrenteng in 2015. However, 61 people immigrated into the village during the same period. After obtaining data from 142 youths under 25 years of age, we found that approximately 25% of respondents had migration intentions. There was no clear difference between the migration intentions of those who were Internet users and those who were not. However, a logistic regression analysis revealed that the migration intentions of Internet users were influenced by age, experience, Internet use frequency, degree of happiness, and frequency of communication.

### Keywords

Migration; Youth; ICT; Indonesia; Questionnaire survey

### 1. Introduction

It is common for rural Indonesian youths to migrate to cities or foreign countries to obtain jobs or educational opportunities. The rural-urban link has driven this movement. Before there was Internet access in these areas, many held the opinion that televised media influenced villagers to migrate to urban areas (Farre & Fasani, 2013). Major cities on the island of Java (e.g., Jakarta, Surabaya, and Jogjakarta) have been favorable destinations for these migrants. There were 3,496,000 international emigrants as of 2017 (Bank Indonesia, 2017).

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There is concern that the loss of young villagers will result in decreased vital rural development through the subsequent deterioration of human resources. For such youths, Information and Communication Technology (ICT) is essential for everyday life across the world. Broadband and mobile Internet access has enabled youths to obtain vast amounts of global information and has facilitated communication with individuals in distant locations. In addition, recent academic studies have revealed that ICT impacts migration intentions (Dekker & Engbersen, 2014; Vilhelmson & Thulin, 2013). However, this discussion can be divided into two categories, as follows: 1) ICT facilitates migration, and 2) ICT impedes migration. However, there is insufficient evidence to support either position. Furthermore, studies on the interrelationship between ICT and migration have targeted Western nations. There have been relatively few studies of this subject in the context of rural areas in developing countries. This study therefore examined the impacts of ICT on the migration of rural Indonesian youths with a focus on migration intentions. This study provides insight for government consideration regarding ICT infrastructural development to promote rural sustainability.

### **1.1. Literature Review**

There is a long history of study on both intranational and international migration. Previous literature indicates that migration is influenced by a variety of determinants, including value-expectancy (De Jong, 2000), life-course events (Kley & Mulder, 2010), residential satisfaction (De Jong, 2000), information (Demiralp, 2010), social capital (Prayitno et al., 2014), gender (Papapanagos & Sanfey, 2001), and education (De Jong, 2000). Some migration studies have considered the different phases of migration. De Jong et al. (1985) and Godri & Feleky (2014) found that migration intentions led to migration behavior. Kley (2011) developed a model of stages for the migration process, which consists of three phases (i.e., considering, planning, and realizing, with the term “goal intention” placed between the considering and planning phases). Following these discussions, migration intention is considered an essential factor throughout the migration process (De Jong et al., 1985; De Jong, 2000; Kley & Mulder 2010).

As mentioned above, information is an essential factor behind migration intention (Demiralp, 2010). Precise information about the migration destination lowers the risk of migration and ensures a better quality of life once the move has been completed. Information is conveyed through communication. Thus, the Internet plays a role in migration as a tool of long-distance communication and a way of connecting with people with whom one is not otherwise acquainted. Many migration scholars have been paying attention to this since the 2000s. Much of the relevant literature has pointed out that the Internet facilitates migration through its integration into the decision-making process (Dekker & Engbersen, 2014; Vilhelmson & Thulin, 2013; Thulin & Vilhelmson, 2014). The Internet enables migrants to more efficiently communicate with the people and places they have left behind (Dekker & Engbersen, 2014) and supports the ability to work from home, thus allowing more freedom when choosing a place of residence (Ettema, 2010). However, Cooke and Shuttleworth (2018) focused on a different aspect of ICT’s impacts on migration intentions, and criticized the above studies for mainly reporting on the positive impacts. Cooke and Shuttleworth (2018) discussed how Internet access could actually influence people to remain in their home communities. Thus, there is a current debate about the impacts of ICT on migration.

Migration has been a critical issue in the rural areas of developing countries. There are studies that have focused on this subject (De Jong et al., 1985; De Jong 2000). However, the theoretical and empirical contributions of past studies focusing on the impacts of ICT on migration have primarily involved developed countries. Studies focusing on Asian countries (especially those that are developing) (Aker et al., 2011) and rural areas (Moon et al., 2010) are scarce, but have reported that the Internet facilitates migration intentions. ICT is widely available in developing countries, where it influences everyday life, especially among young people. This is also the case in rural areas. If ICT facilitates the migration of young villagers to urban areas, it may lead to severe human resource shortages in both agricultural and community activities (Muta'ali, 2013). There have been rapid improvements in connectivity even in the rural areas of developing countries. Thus, further focus must be placed on the impacts of ICT on migration intentions.

## **2. Material and Methods**

### *2.1. Study village*

Indonesia is known to contain the most extensive population of Internet users even though the Internet penetration rate was only 51% as of 2017; this is under the regional average (53%) among Southeast Asian countries (We are social, 2017). The latest national statistics for the period of 2010-2015 indicated a significant gap between urban and rural areas regarding Internet penetration (Statistics Indonesia, 2016a).

Our study area was Tumpukrenteng village, which is located in the northern part of Turen District in Malang Regency, Indonesia. It is approximately 90 km south of Surabaya City, which is the second largest city in Indonesia. Tumpukrenteng is located approximately 26 km from the center of Malang City. Farmland dominates village land use. As of 2015, the population of Tumpukrenteng was 5,105, which was nearly the same as the previous year (Statistics Indonesia, 2016b). The village contained 1,057 households. In 2015, 60 people migrated from the village, while 61 people migrated into the village. The village's age composition is as follows: 0-19: 24.7%; 20-34: 24.0%; 35-49: 25.6%; 50-64: 15.1%; and 65+: 10.6% (Statistics Indonesia, 2016b). Approximately 50% of the workforce in Tumpukrenteng consists of farmers and peasants, while farmland occupies approximately 70% of the total village area. Rice is the main agricultural product, but fruits (e.g., papaya), corn, and sugarcane are also produced. The second most common village occupation is industrial work, with approximately 371 villagers working in various private factories. The village is also well-known for its precast industries (e.g., house pillars and drainage installments). Tumpukrenteng is a typical Indonesian rural village, thus containing the following characteristics: 1) a majority of the villagers are engaged in farming, 2) the number of young villagers has increased, 3) and the Internet has become popular even though Internet access is not as developed as in urban areas.

### *2.2. Survey Design*

This study analyzed the interrelationship between ICT use and migration intentions. Onitsuka et al. (2018) revealed a significant gap even among digital natives who were born

after 1980 (Palfrey & Gasser, 2008) in the same village. Such studies considered that there was a demarcation at 25 years of age in which the majority of younger inhabitants used the Internet while the majority of older inhabitants did not. This study mainly focused on Internet use as a factor affecting migration intentions. A survey by Kley and Mulder (2010) targeted individuals aged 18-29 in Germany to examine whether life-course events triggered migration. Their survey design considered marriage and cohabitation as events taking place between 25-30 years of age. However, Indonesian first marriages occurred at 24 years of age on average as of 2010, while German first marriages occurred at 33.2 years of age on average as of 2014. Considering this significant gap, this study assumed that life-course events occur earlier in Indonesia than in Germany. We therefore chose individuals aged less than 25 years for the purpose of this study.

This study's survey design involved three hypotheses, as follows: h1) Internet use affects migration intentions, h2) life quality or gratification affects migration intentions in the study area, and h3) demographics affect migration intentions. For h1, this study focused on Internet use (i.e., Internet use frequency, Internet use experiences, and the importance of the Internet as an explanatory variable). Reports indicate that satisfaction with one's living conditions or social capital affects migration intentions. For h2, we therefore focused on the factors of happiness, sociability, communication, and social capital. This study employed indexes used by Wellman et al. (2001) to measure communication both inside and outside Tumpukrenteng. In addition, a series of questions developed by Williams (2006) were used to measure social capital both online and offline. For h3, we focused on gender, age, income, and educational level, which have frequently been indicated as factors influencing migration intentions. The image in Figure 1 shows this study's hypotheses.

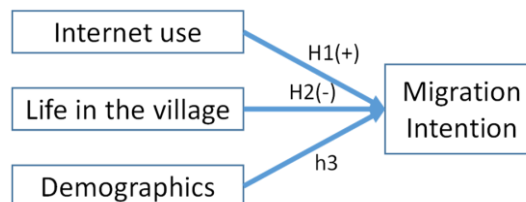


Figure 1. Study hypotheses

Table 1 displays the question used in this study to measure migration intention as a dependent variable. In a later statistical analysis, the answer "1 Inside the village" was considered as indicating no migration intention, and thus resulted in a score of "0." The answers "2 Neighborhood village", "3 A city in another place", and "4 Wherever my workplace will be" were considered as indicating migration intentions, and thus resulted in scores of "1." We also prepared a follow-up question to ascertain the reasons respondents selected their answers.

Table 1. Question used to measure migration intention as a dependent variable

Question	Answer
Where do you want to live in the future?	1 Inside the village
	2 Neighborhood village
	3 A city in another place
	4 Wherever my workplace will be

### 2.3. Data Collection

This study used data from a questionnaire survey which the authors carried out in Tumpukrenteng village from November to December of 2015. The survey was initially used to target inhabitants less than 40 years of age to determine multiple stages of the rural digital divide (Onitsuka et al., 2018). However, this survey incorporated data regarding future migration intentions. It was therefore considered useful to analyze the interrelationship between migration intention and ICT use. Survey respondents were randomly selected from a map of the village indicating the location of houses. For distribution and collection, the authors of this study worked with four students to ensure that each of the selected houses was visited for the purpose of explaining the questionnaire. Answers could also be ascertained orally if necessary. All respondents were literate. Questionnaire drafts were initially developed in English. The authors jointly worked on the questionnaire until a consensus was reached. The Indonesian co-author translated the questionnaire into Bahasa Indonesia after improvements were made, at which point it was finalized through a test survey. A total of 294 samples were initially collected through the survey. We then determined which samples were from individuals aged 25 years and younger. A total of 142 samples were finally used in this study.

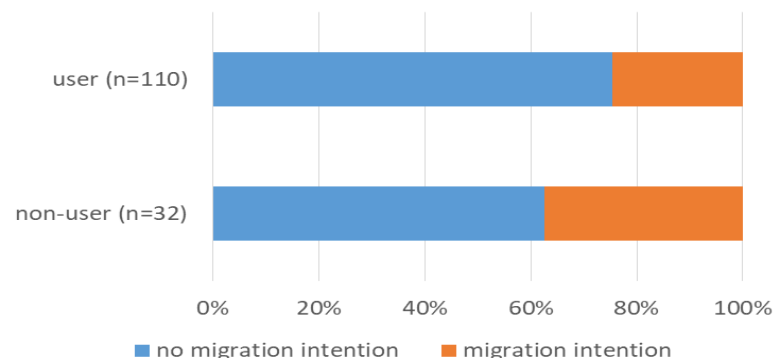
### 2.4. Analysis

This study first analyzed descriptive statistics regarding migration intentions. A cross tabulation was then conducted to examine the interrelationship between migration intention and other demographics (i.e., gender, age, income, and educational level). Finally, we performed a binary logistic regression analysis on the obtained data to find the factors affecting youth migration intentions.

## 3. Results

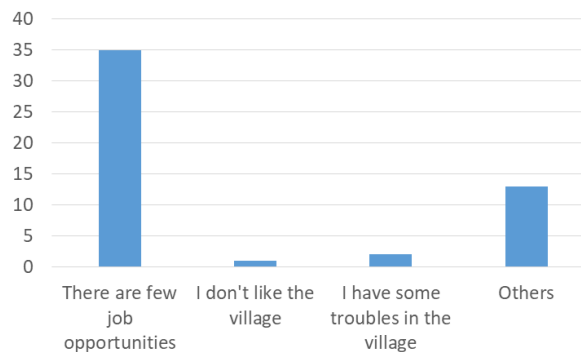
### 3.1. Migration intentions and Internet use

Of the 142 samples, 110 (77.5%) were Internet users and 39 (27.5%) indicated migration intentions. Figure 2 shows the results of the cross-tabulation analysis using Internet use and migration intention. While not statistically significant, a slight difference was observed.



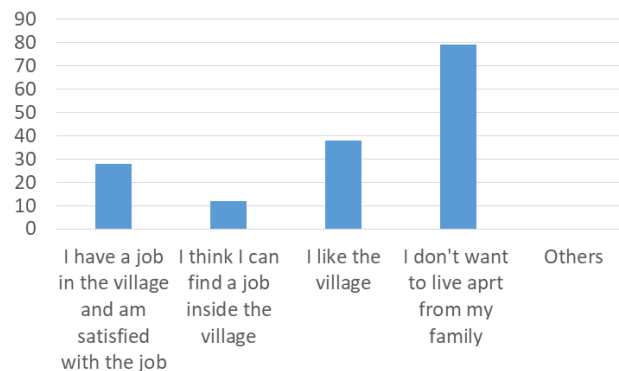
**Figure 2. Differences between Internet users and non-users regarding migration intention**

Analysis of the reasons for migration intentions (Figure 3) indicated that 35 (89.7%) respondents reported job opportunities. Very few respondents answered “I do not like the village” or “I have some troubles in the village.” As for “Others,” the most common answer was “I want to do new things or jobs.”



**Figure 3. Reasons for having migration intentions (n=39) (Multiple answers were allowed)**

Analysis of the reasons for having no migration intentions (Figure 4) indicated that 79 (76.7%) respondents reported not wanting to live apart from family. A total of 38 respondents answered “I like the village.” A total of 28 respondents already had jobs in the village, and 12 respondents were confident they would find jobs there. There were no answers for “Others.”



**Figure 4. Reasons for having no migration intentions (n=103) (Multiple answers were allowed)**

A t-test analysis of the demographics showed that there were no statistically significant differences between migration intentions and gender ( $p = 0.72$ ), income ( $p=0.30$ ), or education level ( $p = 0.93$ ) at the 5% level. However, there was a statistically significant difference between migration intentions and age at the 10% level ( $p=0.06$ ).

### 3.2. Binary logistic regression for Internet users

Our analysis of the interrelationship between migration intentions and Internet use revealed no statistically significant differences. However, this was not sufficient evidence to consider Internet use as a dichotomous issue between the “haves” and “have-nots” (van Dijk,

2006). Further details regarding Internet use should be examined. This study performed a binary logistic regression analysis targeting only Internet users (110 samples). The dependent variable was migration intention (i.e., a score of “1” was given for those with migration intentions, while a “0” was given for those without). We used a forward stepwise selection for the independent variables and sought the best model for explaining the factors affecting migration intentions. Prior to the analysis, 15 samples were removed because they contained missing values for the independent variables. The model we selected is depicted in Table 2.

Table 2. Results of the logistic regression analysis

Independent variable	Estimate	P value	Odds Ratio
Internet use			
Importance of the Internet	3.604	0.006	36.084
Life in the village			
Degree of happiness	-2.990	0.008	0.050
Communication with friends in the village via telephone	-3.274	0.013	0.024
Communication with friends in the village on the Internet	1.460	0.021	4.307
Respondent has someone from whom they can receive practical support	-3.313	0.006	0.036
Demographics			
Age	-0.787	0.014	0.455
Nagelkerke	0.786		

This model obtained a high Nagelkerke value of 0.786, and the independent variables were statistically significant. Among all independent variables, “importance of the Internet” had the highest odds ratio (36.084). The second highest was “Communication with friends in the village on the Internet” (4.307). On the contrary, the other independent variables had negative effects on migration intentions. The variables of “Degree of happiness,” “Communication with friends in the village via telephone,” and “Respondent has someone from whom they can receive practical support” had lower odds ratios (<0.1). It was also revealed that younger respondents had higher migration intentions.

#### 4. Discussion

This study examined the effects of the Internet on the migration intentions of rural youths in the village of Tumpukrenteng, Indonesia. In this section, we discuss our results and provide insight into future political challenges. Descriptive statistics of the questionnaire survey revealed that approximately 25% of respondents had migration intentions. This indicates that most inhabitants do not necessarily intend to migrate. Previous studies have indicated that Internet use affects migration intentions (Dekker & Engbersen, 2014). However, this study revealed no clear difference between the migration intentions of Internet users and non-users. This may be attributed to both the small sample size (22.5%) of Internet non-users and variations in Internet use. Most respondents wished to migrate for job opportunities. Besides, Hidayat et al. (2011) indicated that job opportunity is not the only reason why villagers migrate to other areas, and the amount of income also matters. Responses of “I do not like the village” or “I have some troubles in the village” were not common. This supports the idea that youths with a high sense of community do not wish to migrate. However, many consider migrating to improve their livelihoods. Without assured village job opportunities,



more youths may consider migration in the future. Many respondents had no migration intention due to a strong sense of community that displaced worries over job opportunities. This implies that job availability is essential, but that sense of community and intimate family relationships may be more important to those who choose to remain in the village. Migration intentions are dependent on life priorities, income, family relationships, and sense of community.

This study also analyzed the effects of Internet use on migration intentions by focusing on Internet users. Village life and demographics were also considered as potential factors influencing migration intentions. A binary logistic regression analysis revealed that the migration intentions of Internet users were influenced by age, experience, Internet use frequency, degree of happiness, and communication frequency. Younger respondents (i.e., those aged 25 years and younger) had stronger migration intentions. The likelihood that an increasing number of village youths will have migration intentions is concerning. This will likely lead a shortage in the village labor force. Although Indonesia is a country in which the population is growing even in rural areas, aging and the lack of human resources may become critical issues. Another possible insight is that younger villagers will develop a sense of community as they mature. Future studies should consider this question. Besides, villagers who frequently used the Internet while giving it increased importance in their lives tended to have higher migration intentions. This implies that increased or advanced Internet use may affect migration intentions. In that regard, this study supports the insight provided by previous studies. That is, Internet use facilitates migration intentions (Dekker & Engbersen, 2014; Vilhelmson & Thulin, 2013). For instance, those with migration intentions tended to also use the Internet for intracommunity communication. This result follows the findings of past articles; the Internet enables youths to obtain more outside information (Demiralp, 2010). This study also confirmed that less happiness in everyday village life leads to migration intentions. In conjunction with the results indicating that some respondents reasoned that migration would provide them with a better or different life, lack of happiness or satisfaction in the village most likely leads to migration intentions.

Finally, we propose policy recommendations for the future of Internet use in rural areas in developing countries. The Indonesian government currently prioritizes the installment of ICT infrastructure throughout the nation (i.e., the *Palapa ring*). The Internet may play essential roles in improving everyday life at the individual level. However, the government should carefully consider the fact that the Internet could facilitate the out-migration of youths from rural areas. Jobs or educational opportunities will be sought after while a majority of youths will retain a sense of community or close family ties. In the current era of technological “leapfrogging,” the government should be careful to improve both accessibility and positive outcomes for Internet use in rural communities, especially regarding the economic and social aspects.

## 5. Conclusion

This study examined the effects of the Internet on the migration intentions of rural Indonesian youths. Past studies regarding the impacts of ICT on migration have mainly targeted developed countries at the global level. This study confirmed the results of these studies in the context of a rural village in a developing country. The study village (Tumpukrenteng, Indonesia) is an example of a typical rural Indonesian village, but there was



a relatively small number of villagers with migration intentions (approximately 25%). Some studies have reported that there are rural villages in more serious conditions. Future studies are needed to confirm this study's findings by examining other rural villages with inhabitants who have increased migration intentions.

### **Acknowledgements**

This study was financially supported by the Graduate School of Global Environmental Studies, Kyoto University. The authors appreciate the support of Tumpukrenteng village officials, the cooperation of those who responded to the questionnaire survey, and Meriko Candra Iwana, a student of Brawijaya University, for his active support of this study. We would like to thank Editage ([www.editage.jp](http://www.editage.jp)) for English language editing.

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