# IMPACT OF TELECENTRE USE ON ECONOMIC INFORMATION LITERACY AMONG VILLAGERS IN INDONESIA

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***ABSTRACT***

*This study aimed to examine the impact of telecentre use on this specific domain of economic information literacy among villagers in Indonesia. It was conducted in Central Sulawesi and involved 267 survey respondents of varying backgrounds. Telecentre usage pattern was operationalized using three variables: technology used, content accessed and telecentre use intensity. The study revealed that each of these variables was related to economic information literacy among the villagers.*

**Keywords:** *Telecentre; technology used; content accessed; telecentre use intensity; economic information literacy.*

## 1. INTRODUCTION

Information and communication technology (ICT) has become a new resource for economic growth. Information is now one of the major inputs for economic and political development, and its use has gradually become more important for companies, communities and individuals to participate successfully in the global economy (Hollifield, 2003).

ICT contributes significantly to the growth of national economies through empowerment and building the capacity of communities

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(Choi and Yi, 2009; Yonah and Salim, 2010). In 2013, ICT utilization was still low in Indonesia, as is seen by low Internet penetration and a low Human Development Index (HDI) measure of 0,684, or at a position of 108 out of 187 countries ranked (UNDP, 2011). Indonesia's low HDI is related to a low ICT Development Index (IDI) measure of 3,83 (BP3TI, 2012). The ICT Readiness ranking shows that IDI, ICT use and ICT skill in Indonesia are still low. Furthermore, ICT adoption varies widely between rural and urban areas; individual Internet usage in urban Indonesia has reached 83,4% but is only16,6% in rural areas (APJII, 2012).

Efforts to decrease this digital divide and provide the infrastructure for and access to ICT in rural areas have been conducted through the Universal Service Obligation program organized by Indonesia's Ministry of Communications and Informatics. One branch of this program focuses on central sub-district Internet services (telecentres). Minimal subsidies are tailored to the ability and willingness of communities to pay a service fee (affordability) and maintain the program (sustainability), in order to encourage a multiplier effect (BP3TI, 2012).

However, the effect of telecentre use on the economic development of rural areas has not been evaluated properly, even though the telecentre is meant as a public service. The author is interested in discussing the impact of the content that is accessed on the economic information literacy of villagers. The proposed research, conducted in the Central Sulawesi Sigi District, aimed to answer the following questions:
1.What are the villagers' telecentre usage patterns?
2.What is the impact of telecentre usage on the economic information literacy of villagers?

The results of this research are expected to provide input for regional planning for the manager of telecentres. This paper is divided into several sections. Part II discusses ICT and economic growth, information literacy and the telecentre. Part III describes the research methods of the current study. Part IV discloses the results of the survey and the analysis. The results are discussed in Section V. Section VI contains the conclusions.

## 2. THEORETICAL FOUNDATIONS

### 2.1 Information and communication technology and economic growth

The term ICT refers to a combination of computer technology with communications technology. In particular, ICT includes hardware components, software and telecommunications equipment (Kaiser, 2004). As the global information intensive economy is expanding rapidly, databases and documents are ideally arranged so knowledge of local conditions and potential ('local geniuses') can be easily accessed on-site. This is a typical and important element in increasing national competitiveness. The knowledge required by the community and businesses to innovate and generate new business is an increasingly important aspect of economic growth in the knowledge-based economy (Depkominfo, 2005).

The role of ICT in opening access to information and knowledge is universally understood by different countries, as evidenced in the Geneva Declaration of principles, 2003: 'the sharing and strengthening of global knowledge for development can be enhanced by removing barriers to equitable access to information for economic, social, political, health, cultural, educational, and scientific activities and by facilitating access to public domain information, including by universal design and the use of assistive technologies' (Principle 3: Access to information and knowledge, 25 PTS).

### 2.2 Information literacy

The Prague Declaration (UNESCO, 2003) states that information literacy, part of the information needs of a person, is the ability to identify, place, evaluate, organize and streamline information to resolve a problem. Information literacy is required to participate effectively in the information society, and it is also a component of basic human rights. Life-long education in information literacy should continue to be developed.

The UK's Chartered Institute of Library and Information Professionals in 2005 provided a shorter definition of information literacy: information literacy is knowing when and why we need information, where we can find information and how to evaluate it, as well as the appropriate ethical use of information (Amstrong, 2005).

True information literacy allows a person to do a variety of things that relate to information. The benefits of information literacy, according to Hancock, (2004) and Adam, (2009), are: (1) help in making decisions and solving problems, (2) improving a person's ability to be a human learner in a knowledge economy, and (3) creating new knowledge based on understanding.

### 2.3 Telecentres

A telecentre is a centre for the infrastructure and provision of Internet access in the district capital that is funded through the Universal Service Obligation for telecommunications contributions. In contrast to an Internet café, a telecentreis managed as an Internet Service Centrein a sub-district, placed on a permanent basis in a territory of the Universal Telecommunications Service. A mobile telecentre is a central sub-district Internet service that has the ability to move in order to reach out to communities that have not yet gained access to permanent non-profit telecentre services.

The presence of telecentres is expected to speed up the realization of information access in rural areas so as to minimize the digital divide and increase the socioeconomic status of villagers. Because villagers' role in the global information society has long been neglected, they often do not have the capacity to access knowledge and information quickly. Use of relevant information would have many benefits, such as improving agricultural productivity (Lwoga, 2010).

## 3. RESEARCH METHODS

### 3.1 Research model

The variables used in this research were modelled on those in Proenza et al. (2001), who conducted a survey of telecentre use patterns in Latin America. Variables included demographics, technology used, content accessed, use intensity of the telecentre and economic information literacy (see Figure 1). This study adapted the variables by adjusting for the context that exists in villages in Indonesia and in the telecentre studied here. The following hypotheses were formulated on the basis of the available data from previous research.

1. A relationship exists between demographic background (age, gender, education, occupation, income, Internet subscriptions, and personal Internet ability) and telecentre usage patterns (technology used, content accessed, and telecentre use intensity).
2. Economic information literacy is influenced by patterns of use of the telecentre (technology used, content accessed, and telecentre use intensity).

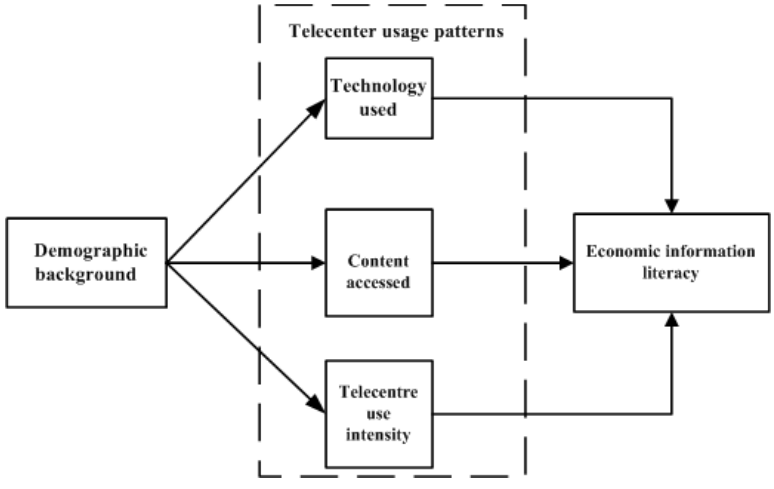


**Figure 1:** Research Model

The object of this research was the telecentre in Sigi District, Central Sulawesi, Indonesia. The sample included members of the community of Sigi District who had ever used the telecentre. Convenience sampling method was used to select respondents who have been using telecenter's services. To test the model questionnaire, we distributed 270 questionnaires. Questions were grouped in three parts: user demographics, telecentre usage patterns (technology used, content accessed, use intensity), and economic information literacy.

Descriptive analysis was used for the sample data. Univariate and bivariate analysis were used to analyze the collected data.

### 3.2 Variable measurement

The following variables were recorded in this research: Demographics: age, gender, education, occupation, most recent income/allowance, Internet subscriptions, personal ability (measured by computer and Internet skill, and English fluency).

1. Technology used: news portals, blogs, discussion forums, government sites, corporate sites, e-commerce sites, social media, email, search engines, video sharing sites, encyclopedias, file sharing sites, e-libraries.
2. Content accessed: Information about news, jobs, business opportunities, entertainment, travel, sports, celebrities, health, fashion, beauty, cooking, software, scholarships; online businesses; music/movies/videos; games.
3. Telecentre use intensity: frequency, duration, telecentre services (Internet access, typing, computer rental services, document scanning, photo printing, file printing).
4. Economic information literacy: economic issues relating to the international, national and local levels. The questions about economic information literacy were tested with 30 initial questions. The 30 preliminary questions were divided into 10 questions relating to international economic issues, 10 relating to national economic issues, and 10 relating to local economic issues. After the initial questionnaires were collected, the results were grouped in three categories of difficult, medium and easy questions. Each economic issues category in the final questionnaire contained six difficult questions, six medium questions and six easy questions (see Appendix).

The variables and indicators in the list above were adapted from the study of Proenza et al. (2001). The current research included economic as well as non-economic content in order to elucidate telecentre usage patterns in terms of overall access to content. Non-economic content is not necessarily unrelated to economic information literacy. For example, many users play games online that relate to economic activities such as earning selling points.

## 4. ANALYSIS

This section includes descriptions of the research data obtained from the questionnaire. Out of 270 questionnaires, 267 were returned (a response rate of 98%).

Table 1 shows that the highest number of respondents were under 20 years of age (all respondents: average = 19.57; SD = 7.67). Male respondents made up 56.30% of the total. Nearly half (46.82%) of respondents had completed high school. Regarding occupation, the majority of telecentre users were students (77.53%). While the majority of respondents (60.7%) had an income of less than IDR 500,000 (average = IDR 762,000; SD = IDR 1,068), this is likely because the majority of respondents were students. The majority of respondents (68.2%) did not subscribe to the Internet.

**Table 1:** Demographic Variables

| | n | % |
|---|---|---|
| *Age (years)* | | |
| < 20 (youth) | 173 | 64.79 |
| ≥ 20 (older) | 94 | 35.20 |
| *Gender* | | |
| Male | 153 | 57.30 |
| Female | 114 | 42.70 |
| *Education completed* | | |
| Elementary school and junior high school | 110 | 41.19 |
| Senior high school | 125 | 46.82 |
| Bachelor, master, or doctoral degree | 32 | 11.99 |
| *Occupation* | | |
| Student | 207 | 77.53 |
| Non-student | 60 | 22.47 |
| *Income (IDR *000)* | | |
| < 500 | 162 | 60.67 |
| 500–1.000 | 65 | 24.34 |
| > 1.000 | 40 | 24.98 |
| *Internet subscriptions* | | |
| Yes | 85 | 31.80 |
| No | 182 | 68.20 |

Results of the analysis on technology used, telecentre use intensity and content accessed can be seen in Tables 2, 3 and 4.

**Table 2:** Used Technologies

| | Average[a] | SD | Rank |
|---|---|---|---|
| Search engine | 4.13 | 0.88 | 1 |
| Social media | 4.03 | 1.03 | 2 |
| Video sharing site | 3.46 | 1.14 | 3 |
| Email | 3.42 | 1.14 | 4 |
| File sharing site | 2.98 | 1.24 | 5 |
| Encyclopaedia | 2.97 | 1.26 | 6 |
| Blog | 2.91 | 1.07 | 7 |
| News portal | 2.52 | 1.08 | 8 |
| E-commerce site | 2.45 | 1.22 | 9 |
| Discussion forum | 2.35 | 1.14 | 10 |
| E-library | 2.33 | 1.07 | 11 |
| Government site | 2.32 | 1.14 | 12 |
| Company site | 2.17 | 1.15 | 13 |

*Note: a = Likert items with 5 levels (1 = never; 5 = very often)*

**Table 3:** Telecentre Use Intensity

| | Average | SD |
|---|---|---|
| Frequency (times) | 6.40 | 4.15 |
| Duration (hours) | 1.90 | 1.12 |
| Services | | |
| 1. Internet access | 4.12 | 0.82 |
| 2. File printing | 3.11 | 1.26 |
| 3. Computer rental | 2.48 | 1.34 |
| 4. Photo printing | 2.43 | 1.18 |
| 5. Typing services | 2.10 | 1.11 |
| 6. Document scanning | 2.07 | 1.09 |

**Table 4:** Content Accessed

| | Average[a] | SD | Rank |
|---|---|---|---|
| Music/film/video | 3.50 | 1.13 | 1 |
| Entertainment | 3.14 | 1.19 | 2 |
| Sports information | 2.92 | 1.20 | 3 |
| Health information | 2.83 | 1.19 | 4 |
| Games | 2.82 | 1.31 | 5 |
| Online news | 2.72 | 1.09 | 6 |
| Celebrity information | 2.69 | 1.26 | 7 |
| Fashion information | 2.52 | 1.34 | 8 |
| Travel information | 2.48 | 1.19 | 9 |

| | | | |
|---|---|---|---|
| Cooking information/recipes | 2.44 | 1.21 | 10 |
| Software | 2.40 | 1.23 | 11 |
| Beauty information | 2.40 | 1.35 | 12 |
| Scholarship information | 2.24 | 1.19 | 13 |
| Business opportunities information | 2.12 | 1.25 | 14 |
| Online business | 2.03 | 1.18 | 15 |
| Job vacancies | 1.83 | 1.06 | 16 |

*Note: a = Likert items with 5 levels (1 = never; 5 = very often)*

## 5. RESULTS AND DISCUSSION

### 5.1 Demographics of telecentre respondents

This research found that the usage patterns of the telecentre in the Sigi community were influenced by demographic factors. This finding corresponds to the results of research by Wahid, (2005) and Mtega and Malekani, (2009). In terms of age, telecentre users were predominately adolescents and adults, a finding that is consistent with previous research in Malaysia showing that telecentre users are mostly between 13 and 39 years of age (Razak, 2009; Bashir et al., 2011). Similar trends have been found in research in Latin America and the Caribbean (Proenza, et al., 2001) and Tanzania (Mtega and Malekani, 2009)

The majority (57.30%) of telecentre users were male, a finding similar to that in the research of Proenza et al. (2001) and Bashir et al. (2011). Telecentre users in Sigi were people of low to moderate income. This was consistent with research conducted by Bashir et al. (2011). In contrast, Maitrayee, (2009) found that users of telecentre stended to have higher incomes. The finding that the majority of telecentre users were educated at a high school or college level was consistent with the research of Proenza et al. (2001) and Maitrayee, (2009)

In terms of personal ability, the current research found that the users were quite proficient in English, computer use and the Internet. Previous research by Razak, (2009) and Bashir et al. (2011) found that the majority of telecentre users had expertise in the use of computers and the Internet.

### 5.2 Usage patterns of the telecentre by villagers

In accordance with the findings of research conducted by Rachmawaty, (2013) the current research found that people who visited the telecentre often used search engines and social media. Respondents also sometimes used video sharing sites, email and file sharing sites. In terms of content accessed, the most rarely content accessed was games.

Usage patterns in terms of content accessed and technology used were different between younger and older telecentre visitors. Online news and news portal were accessed more often by older users than by youths. Differences based on gender were also found, with men more likely to access entertainment than women. This finding accords with research conducted by Proenza et al. (2001), as do the current findings on telecentre use intensity in terms of frequency. Information related to health, fashion and cooking/recipes was predominately accessed by women.

In terms of educational background, those who were non-university and the university of much the same. Information about job vacancies was accessed more often by students than by non-students, a finding consistent with the research of Proenza et al. (2001). For technology used, non-students made greater use of company sites, while students were more likely to access telecentre services, such as typing.

### 5.3 The Impact of Telecentre Usage Patterns on Economic Information Literacy among Villagers

Technology used and content accessed were both related to economic information literacy at the 0.01 significance level. Details are shown in Tables 3 and 4. Telecentre use intensity was correlated with economic information literacy at the 0.01 significance level.

## 6. CONCLUSION

Certain conclusions can be drawn on the basis of the results of the current research.

### 6.1 Telecentre usage patterns

Search engines and social media were the most-used technologies in the telecentre. Men were more likely to access entertainment information than women and to have greater telecentre use intensity in terms of

frequency. Few differences were found between non-university and university educated users, but students were more likely to access job information than non-students. Non-students often used company sites, while students frequently used telecentre services such as typing.

**Table 5:** Correlation of Technology Used With Economic Information Literacy

| Technology used | Economic information literacy |
|---|---|
| Email | 0.25* |
| Blog | 0.24* |
| File sharing site | 0.23* |
| News portal | 0.22* |
| Company site | 0.22* |
| Encyclopaedia | 0.18* |
| E-library | 0.18* |
| Government site | 0.16* |
| E-commerce site | 0.16* |
| Discussion forum | 0.14 |
| Video sharing site | 0.14 |
| Search engine | 0.06 |
| Social media | 0.04 |

*Note : *p<0.01*

**Table 6:** Correlation of Content Accessed With Economic Information Literacy

| Content accessed | Economic information literacy |
|---|---|
| Online news | 0.31* |
| Online business | 0.30* |
| Entertainment | 0.29* |
| Job vacancies | 0.27* |
| Business opportunities information | 0.27* |
| Celebrity information | 0.25* |
| Travel information | 0.24* |
| Sports information | 0.20* |
| Health information | 0.19* |
| Fashion information | 0.18* |
| Software | 0.15 |
| Beauty information | 0.13 |
| Cooking information/recipes | 0.12 |
| Scholarship information | 0.12 |
| Music/film/video | 0.09 |
| Games | 0.09 |

*Note: *p<0.01*

### 6.2 The impact of content accessed on economic information literacy among villagers

The results of the analysis show that certain used technologies were significantly correlated with economic information literacy. These included: news portals, blogs, government sites, corporate sites, e-commerce sites, email, and file sharing sites, encyclopedias and e-libraries. Content accessed that was significantly correlated with the level of economic information literacy was online news, job vacancies, entertainment, and information about business opportunities, celebrities, travel, sports, health, fashion and online business website.

As for the intensity of telecentre use in terms of frequency, a higher frequency of telecentre use was related to higher levels of economic information literacy. The duration of telecentre use had no significant relationship with economic information literacy.

### 6.3 Research limitations and recommendations

As with other research, this study had certain limitations:

1. This research utilized the questionnaire survey method so haven't been able to express things that are deeper, which can only reveal associations and not causality. Further research should be accompanied by interviews.
2. This study examined 12 used technologies and 16 different types of content accessed. Further research can add other indicators.
3. Further research could investigate the effect of exposure to media other than the Internet on economic information literacy.

### 6.4 The implications

The results of this research provide some implications for programs designed to improve information technology literacy in Indonesia. This may help government telecentre programs better address the gap in ICT between urban and rural areas. The study also gives an overview of the demographics of telecentre users, usage patterns, and the influence of telecentre usage patterns on economic information literacy in a local village community.

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