

Correlation between the Characteristics of Extension Workers and the Level of Learning Independence Through E-Learning

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Abstract – The objectives of this study were to describe the individual characteristics of extension workers related to their independence in learning through e-learning, to describe the extension workers' level of independence in learning through e-learning, and to analyze the relationship between the extension workers' individual characteristics and the level of learning independence in learning through e-learning. The study was conducted in Cianjur and Bogor Districts, Indonesia, and in the learning area of the Open University of Indonesia in 2019. Respondents were 96 extension workers who were studying at the Open University of Indonesia in 2019 through census techniques, and 160 extension workers in Bogor and Cianjur Districts who were selected using cluster random sampling. Data were analyzed descriptively and inferentially using the Spearman rank correlation test. The results showed that extension workers are generally adults, their average education level was equivalent to high school to graduate education, their work experience as an extension worker was in the high category, and they had strong learning motivation. The extension workers' learning independence characteristics were generally good. Their age had a significant correlation with the initiative level and learning creativity levels; the education level had a very significant correlation with learning initiative and creativity levels and a significant correlation with the self-self-confidence level, and the learning motivation level had a very significant correlation with the learning initiative and creativity levels and a significant correlation with the critical thinking level.

Keywords – *Independent Learning, E-Learning, Extension Workers*

I. INTRODUCTION

The developments of information technology in the last decade have rapidly been adopted in the world of education. The learning process is no longer conducted in the formal conventional method (face to face) between the teachers and the learners but is now conducted through the utilization of media which is commonly known as e-learning. The internet is a highly effective learning medium in the long-distance learning system because the internet has an enormous range without any need for face-to-face interaction and enables easy and fast interaction between the teacher and the learner. These interactions could be synchronous as in chatting, or asynchronous as in the use of emails. Also, the information available on the internet could be used as learning sources that can be utilized in long-distance learning content.

The factors of individual characteristics related to the learning process through e-learning. Allen and Siemen in Mallon (2012) stated that adult learners who use the internet tend to select learning materials that catch their interest. This means that materials irrelevant to their needs will be discarded. Mykota and Duncan (2007) studied the characteristics of learners signed up in an online

course which affects social presence. The study found that the online course was followed by the ability to communicate using a computer and this ability is what made the participants tend to 'attend' the course. This was supported by Suratno (2005) who stated that one of the most important conditions for a learner is having computer skills (especially in using the Internet). Another characteristic of online learners is having high learning independence, being motivated, and is goal-oriented (Ariani, 2012). The study by Diaz (2010) that compared learner characteristics in an online health education course showed that learners who actively participated in the course were older, had more academic experience, and were not people who typically had the time for had fulltime-learning. Therefore, the characteristics of long-distance learners through e-learning that need to be focused on include age, education level, and the availability of time for learning.

Related to learning independence, Zutshi, Mitchell, and Waever (2011) discussed three important things in their study about learning independence, namely the ability to manage oneself especially in time management, critical thinking in learning including understanding other people's opinions (in this case, their teachers or fellow learners), and creative thinking, especially in identifying the main goals of studying and the methods used to reach those goals. Islam (2010) summarized Guglielmino and Guglielmino's opinion that the long-distance learners' readiness for independent learning is characterized by (1) having initiative and persistence in learning, (2) being responsible for their own learning process, (3) being disciplined in learning, (4) having a great sense of curiosity, (5) having a lot of self-confidence, and (5) having the ability to manage their time, manage their learning speed, and plan task completion. These indicate that independent learners are people who enjoy learning and tend to fulfill the planned targets. Knowles (1975) described that learning independence as characterized by the learner's initiative in diagnosing his/her learning needs, formulating learning purposes, identifying learning sources, selecting and carrying out appropriate learning strategies, and evaluating his/her own learning results. Therefore, learners who are highly independent in learning are described as people who are able to control the learning process, utilize various learning sources, have internal motivation, and are able to manage learning time.

Extension activities play an important role in the community. Ban and Hawkin (1985) stated that extension is a form of social influencing that is conducted consciously in which is found the process of communicating information from extension workers to the people to help the people make a proper income and make good choices. In the Law number 16 year 2006 that focused on the agrarian community, extension is defined as a learning process for the main actors and business actors so that they are willing and capable of helping and organizing themselves in accessing various sources of information to improve the quality of their lives. Referring to this definition, the extension workers' role is very important as the party that facilitates the learning process. Extension workers must be smarter than their targets and must be more skillful in using learning sources. This means that extension workers must also continue to learn as long as possible.

Competence building of extension workers is stated in the Minister of Administrative and Bureaucratic Reform's Decree number 2 year 2008, which states that it is conducted through formal education and training programs. However, from the extension workers' point of view, there is a situation where the extension workers face difficulties in increasing the capacity of their theoretical knowledge because most of their work is done in the field. The opportunity available nowadays is for the extension workers to utilize the internet both formally through online learning and having the initiative to search for the multitude of knowledge available on the internet, or through e-learning. In the era of information technology, extension workers as learners do not only compile the learning results from training programs or conventional learning methods but can also conduct the learning process through the network. These learning activities require a lot of effort from the extension workers as the learners. Learning independence in the e-learning context is the main factor required by extension workers so that they could achieve good learning results.

The current situation is that many extension workers do not actively utilize their access to the internet. The results of studies about cyber extension showed that extension workers are relatively unprepared to utilize the cyber extension information system (Zahron, 2013). The unpreparedness of the agricultural/extension human resources in anticipating the development of information technology and digital communication is an obstacle in the application and utilization of cyber extension. Not all extension workers have the ability to search for, trace, or even download information from various sources and process it into information they need to convey to the farmers. Meanwhile, Elian *et al.* (2014) found that the extension workers' performance is still poor in accessing cyber extension, and they still have a low utilization rate of cyber extension materials that can be used in extension. These study results indicate that extension workers do not yet have complete learning independence through the utilization of e-learning.

This article is written to analyze the characteristics of extension worker individuals about their learning independence through e-learning, analyzing the extension workers' learning independence rate through e-learning, and analyzing the relationship between the characteristics of extension worker individuals and their learning independence level through e-learning.

II. STUDY METHOD

This study used a quantitative approach supported by qualitative information to enrich the study result description. The study design was explanatory research, with the aim to describe the causality relationship between the study variables through hypothesis testing. The quantitative approach was done by the survey method based on a questionnaire formulated to collect data, while the qualitative information was collected through the Focus Group Discussion (FGD) approach with a group of extension workers.

The study loci were Cianjur and Bogor Districts and the learning area in the Open University in 2019. Cianjur District was chosen because it had many farmers who have developed various horticultural products and can use the internet (Prawiranegara, 2015). Bogor District was selected because it had quite a large number of independent extension workers who were active and have been established by the local government (BKP5K Bogor, 2015). The Open University was chosen because in this institution there several extension workers who are undergoing the e-learning process. The population in this study was extension workers who participated in the Open University's Agribusiness Bachelor Program and the government employees, non-permanent employees, and independent agricultural extension workers in Bogor and Cianjur Districts. The samples for this study were extension workers who participated in the learning process at the Open University in 2019 using the census method (96 people) and 160 extension workers in Bogor and Cianjur Districts who were selected using cluster random sampling. The total samples in this study were 256 people, consisting of 91 government employees agricultural extension workers, 97 Non-permanent employees agricultural extension workers, and 68 independent agricultural extension workers. Data were collected by distributing questionnaires both by email and interviewing extension workers directly at the study locus. Primary and secondary data were collected from the questionnaires, in-depth interviews, field observations, and desk study of documents from various related institutions. The data collected were tabulated and analyzed descriptively inferentially using the IBM SPSS Statistics version 22 program.

III. RESULTS AND DISCUSSION

The Individual Characteristics of the Extension Workers

The respondents' individual characteristics related to the extension workers' learning independence studied reviewed in this study were age, formal education level, work experience level, and learning motivation. Table 1 presents the distribution of respondents based on the individual characteristic variables.

Table 1. The distribution of respondents based on the individual characteristic variables related to learning independence through e-learning in 2019

Variable	Average Score of the Extension Worker Group			Total Average	Category
	Government employees	non-permanent employees	Independent		
Age group	2.91	3.04	2.56	2.84	Mid-adult
Formal education level	3.65	3.78	3.00	3.48	High
Work experience level	2.68	2.24	1.93	2.28	High
Learning motivation level	2.70	2.75	2.34	2.60	High

Notes: $N = 256$, Government employees = 91 respondents; non-permanent employees = 97 respondents; Independent = 68 respondents

Age category: elderly (1.00-1.49); middle-aged (1.50-2.49); mid-adult (2.50-3.49); young adult (3.50-4.00)

Formal education level: very low (1.00-1.49); low (1.50-2.49); intermediate (2.50-3.49); high (3.50-4.00)

Work experience: low (1.00-1.49); intermediate (1.50-2.49); high (2.50-3.49); very high (3.50-4.00)

Learning motivation level: low (1.00-1.49); intermediate (1.50-2.49); high (2.50-3.49); very high (3.50-4.00)

Source: 2020 processed data

The respondents aged 57-68 years old were categorized as elderly (1.00-1.49), 45-56 years old middle-aged (1.50-2.49), 33-44 years old mid-adult (2.50-3.49), and 21-32 years old young adults (3.50-4.00). The average age of the respondents was 33-44 years old, meaning that the respondents as e-learning learners tended to be adults who have passed the age of students at a conventional university. This was supported by the fact that the people who enrolled in the e-learning activities tended to be working adults (Sadjati *et al.*, 2011). However, they were not yet considered old. Concerning the utilization of the internet, the respondents' age was still classified as people who are capable of actively searching for the information they need through their access to the internet. This was in line with the results of the study by Elian *et al.* (2014) who stated that age had a negative and very significant correlation with the frequency and duration of internet use. This means that the younger the person, the more active he/she is in utilizing the internet for the learning process.

The respondents' education was classified as high, on average having academy or university-level education, at 59.8% of the respondents being in this category. The respondents with senior-high-school or the equivalent level education were 35.2%. This condition is expected because there are certain academic requirements for extension worker to improve their careers. The educational requirement for extension workers is currently a minimum education of bachelor level. In the study by Anwas (2012), it was found that formal education is the most dominant effect in utilizing mass media. At the moment, the most accessible mass media are those accessed through the internet; therefore, it can be said that extension workers with higher education are believed to be capable of mastering the process of learning through the internet, through searching for information they need from various sources on the internet.

The respondents' work experience as an extension worker was classified as high, having worked approximately 11-15 years. Experience is important as the extension workers as online learners will generally search for learning materials that are suitable for their job needs. The respondents' learning motivation level was categorized as high, indicated by their reason for learning via the internet. On average, the respondent chose three reasons out of the four choices provided, but the majority chose that they learned through the internet to help find up-to-date information (chosen by 83.6% of the respondents). This was in line with Cetrone (2008) who stated that learning motivation for adults would be related to their interests that are beneficial for their lives.

The Extension Workers Learning independence Level through E-Learning

There were five sub-variables of the learning independence level of extension workers through e-learning analyzed in the present study. These sub-variables were the learning initiative level, the learning creativity level, the discipline level, the critical thinking level, and the self-confidence level. Table 2 presents the distribution of respondents based on the learning independence level through *e-learning*.

Table 2. The distribution of respondents based on their perception of learning independence through e-learning

Variable	Average Score of the Extension Worker Groups			Average Score	Category
	Government employees	non-permanent employees	Independent		
Learning initiative level	2.95	3.12	2.82	2.96	Good
Learning creativity level	2.77	3.00	2.71	2.83	Good
Critical thinking level	2.99	3.30	2.94	3.08	Good
Learning discipline level	3.37	3.33	3.16	3.29	Good
Self-confidence Level	2.82	2.99	2.68	2.83	Good

Notes: $N = 256$. Government employees = 91 respondents; non-permanent employees = 97 respondents; Independent = 68 respondents

Category: poor (1.00-1.49); intermediate (1.50-2.49); good (2.50-3.49); very good (3.50-4.00)

Source: 2020 processed data

The extension workers' learning initiative was classified as good (an average score of 2.96), which could be explained when they were preparing the equipment required to study the information they need from the internet. A percentage of 53.13% of the respondents stated that they always make sure beforehand that the equipment they need such as their cellphone, laptop, or computer was in good condition. The respondents also often identified beforehand the materials they needed from the internet (stated by 44.92% of the respondents), and determined their learning goals beforehand (stated by 40.63% of the respondents), so they would know exactly what they are searching for on the internet. This shows that the extension workers had good learning initiative and seriously wish to find information about the materials they need from the internet. This was supported by Anwas *et al.* (2009) who stated that the extension workers' initiative was strongly required especially in utilizing various media available in the current free-information era. The extension workers' initiative in learning needs to be strengthened so that they could use various learning sources without being dependent on the teacher or waiting for orders from their superiors, or waiting for the moment the information is needed by their extension targets.

Extension workers had a good creativity level (an average score of 2.83) especially in searching for varied learning sources. A percentage of 50.78% of the respondents stated that they often searched for learning materials from various sources that they trust could provide accurate and up-to-date materials. Those learning sources vary, including websites, blogs, Facebook, Instagram, and Youtube. The government website, Cyber Extension, and Facebook were favorite sites for the extension workers as presented in Figure 1. This was because Cyber Extension is a site run by the Department of Agriculture, and extension workers are strongly suggested to actively participate in using this site, while Facebook is a site that is very easy to use to communicate in the written context or for sharing pictures/videos.

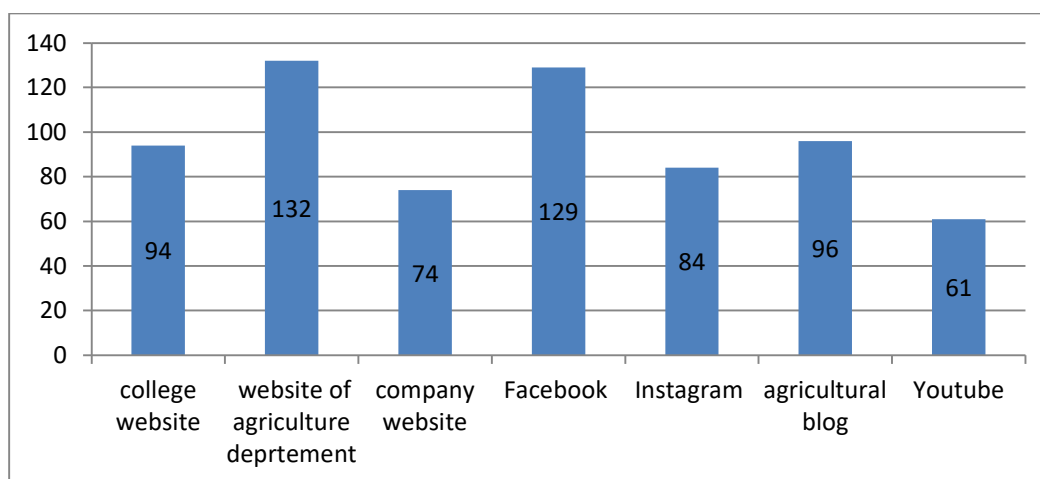


Figure 1. The distribution of learning sources on the internet that respondents are interested in

Viewed from the learning discipline level, extension workers were classified as having a good learning discipline (an average score of 3.29), indicated by the extension workers' activity in consistently studying the learning materials to the end (39.84% of the respondents). Based on the interview results, the reason why extension workers always complete the materials they read or watch was so that the information they received would be complete and clear. Extension workers believe that they are highly responsible for the learning process and the accuracy of the information they study to disseminate to others. Even though they rarely sign up to the learning source address, the extension workers often set aside a routine time to search for new knowledge on the internet. Pamungkas (2016) stated that one of the most important learning discipline points is the coordination between learners and between the learners and the learning source. In this case, coordination is done by the extension workers who learn through the internet by creating a self-managed learning routine, driven by their high level of need for new information.

Concerning the critical thinking level, the strongest aspect possessed by the extension workers was their fairly strong curiosity of novel technology that could support the improvement of their knowledge (49.22% of the respondents said this). Extension workers often felt curious about novel things that are better than their predecessors, and want to improve their current information with something better. This critical attitude was also demonstrated by 41.80% of the respondents who often compared information they received from various sources so they would receive high-quality information. The learners' critical thinking ability according

to Prajoko (2015) is influenced by the learners' interest in the material they are studying. In this case, besides being interested in the materials they studied via the internet, extension workers must also guarantee that the materials they are studying are highly accurate to be conveyed to other parties.

The extension workers' self-confidence level was classified as good even though the average score was the lowest at 2.83. The self-confidence level was indicated by 47.27% of the respondents who often felt excited to learn new things from the internet and 38.67% said they often felt capable of overcoming the difficulties in learning through the internet. However, more than 40% of the respondents still felt unsure of conveying the learning material they had studied to other people. According to the extension workers interviewed, they needed to reconsider many times before disseminating the information they had received. One of the ways they reconsidered was by discussing the material they had received in an extension worker forum routinely held places such as at the agency headquarters in Cianjur District or the Agricultural Extension Center (Balai Penyuluhan Pertanian) in Bogor District. Self-confidence according to Lauster (Sungadi, 2017) is related to an individual's hesitance. The best ways to overcome the extension workers' hesitance in sharing their knowledge is by equipping the extension workers with various character education programs and conducting training programs about the most recent knowledge. These must be held by the related agencies periodically.

In general, the results of the study showed that the extension workers had a good learning independence level in their learning process through e-learning. This indicated that the extension workers had a fairly keen awareness and interest in utilizing e-learning as one of the learning channels to support their daily jobs. The extension workers of today should be sensitive to and completely open to the internet media as a learning source. A great amount of information they need is easily accessible on the internet, not only innovations in the form of tangible objects but also concepts that support their work. However, what is the most important is that the extension workers must be wise in utilizing these learning sources by accessing credible learning sources are released by institutions that guarantee the accuracy of their content or news.

The Correlation between the Extension Workers' Individual Characteristics and Learning Independence Level

The individual characteristics studied in this study included age, education level, and the learning need level. Meanwhile, the learning independence level was described using 5 components, namely the initiative level, creativity level, discipline level, critical thinking level, and self-confidence level. This part answers the study's hypothesis: "There is a significant correlation between the extension workers' individual characteristics and their learning independence level in e-learning". The results of the analysis using the rank Spearman correlation test of the correlation between the two variables are presented in Table 3.

Table 3. The results of the r-Spearman correlation test between the individual characteristics and learning independence level in e-learning

Characteristic	Initiative level	Creativity level	Discipline level	Critical thinking level	Self-confidence level	Learning independence level
Age	0.627*	0.581*	0.451	0.121	0.437	0.534*
Education level	0.738**	0.762**	0.500	0.238	0.612*	0.629*
Work experience level	0.105	0.119	0.043	0.047	0.023	0.062
Learning motivation level	0.821**	0.767**	0.475	0.637*	0.532	0.806**

Notes: *Significant correlation ($p < 0.05$)

**Very significant correlation ($p < 0.01$)

Table 3 showed that several individual characteristics correlated with the learning independence level: age with initiative level and learning creativity level; education level with initiative level, learning creativity level and self-confidence level; and the learning needs with initiative level and learning creativity level and critical thinking level.

The respondent's age had a significant correlation ($p < 0.05$) with initiative level and learning creativity level. This indicates that the older the age of the extension workers who participated, the more initiative and creativity they would have in independent learning. In general, the extension workers were within the adult category in the 33-44 year age range. This age is usually

considered to be fairly mature, people in this age group usually have clearly-defined goals in life. To achieve these goals, strong initiative and creativity are needed. It is also true in the pursuit of knowledge; the older a person is, the more actively the person will be in the effort to search for the knowledge desired. The older the independent learner is, the harder he/she will work to find an effective way of learning. This was supported by the opinion of Mallon (2012) and Cercone (2008) who stated that adult learners had more responsibility in the fulfillment of their needs, which in this case includes their need for expanding their horizons. This sense of responsibility is one of the characters found in independent learners. In addition, the study by Islam (2010) showed that the learning readiness score of adult participants was higher than those of a younger age. In general, in the present study, age had a significant correlation with the learning independence level. Therefore, the finding by Islam (2010) strengthened the finding of this study that the more mature a person is, the more independent he/she would be in learning.

The education level also had a correlation with the initiative level and learning creativity level and even had a very significant correlation ($p < 0.01$). Besides, the education level also had a significant correlation with the self-confidence level. More than 50% of the extension workers had an education of senior high school and or higher. In this era, the delivery of information technology-based learning materials is more advanced and the learners tend to be self-taught in terms of information technology than what they were taught at school. This situation encouraged the learning activities of extension workers when faced with searching for learning materials using the internet (e-learning). Therefore, a higher education level would indicate a higher initiative level and learning creativity in extension workers. About self-confidence, extension workers who had a high education level tended to understand and respond to materials more quickly, building their self-confidence in learning and using their abilities in applying the learning results. This finding was not completely in line with the findings in the study by Islam (2010). The results in Islam (2010) showed that the difference in the education level did not really affect the learning readiness. Nevertheless, in general, the education level characteristic in extension workers had a significant correlation with learning independence ($p < 0.05$) with a correlation coefficient of 0.629 (Table 3).

The third individual characteristic studied in the present study was the learning motivation level, which was interpreted as the extension workers' motive in searching for learning materials on the internet. Table 3 showed that there was a very significant correlation between ($p < 0.01$) the learning motivation level and the initiative and learning creativity level and had a significant correlation ($p < 0.05$) with the critical thinking level. This indicated that the stronger the extension workers' need for learning, the higher the initiative and learning creativity level they would have which leads to a higher critical thinking level.

Motivation is the most important element for an individual in achieving a goal. The study results demonstrated that the respondents' motive in their learning process through e-learning is to expand their horizons and build their capacity as extension workers. A person who is always striving to expand his/her horizons and wishes to improve his/her capacity tends to have a stronger sense of curiosity. If a person has a strong sense of curiosity, most probably he/she would have independence in pursuing his/her curiosity. In this situation, too, the respondents who have a strong need for learning most probably have a keen sense of curiosity which is a reflection of critical thinking which will then make him/her have more initiative and creativity in managing the learning activities. This was supported by the opinion of Mallon (2012) who stated that learners who have good learning independence would select materials they need, and would therefore have a strong learning motivation to achieve their intended learning goals.

From Table 3 presented above, it can be seen that in general, all the study results showed that the age, education level, and learning needs had a significant correlation with the learning independence level. Therefore, the study has proven that the study hypothesis which was "There is a significant correlation between the extension workers' individual characteristics with their learning independence level through e-learning" can be accepted.

IV. CONCLUSION

From the results of this study, it can be concluded that extension workers are generally adults with an average education level of senior high school or its equivalent to university, work experience as extension workers which are categorized as high, having worked for 11-15 years, and have a learning motivation that tends to be high. The independence characteristics possessed by the extension workers in general were: a learning initiative level, critical thinking level, and discipline level that were classified as good, and learning creativity level and self-confidence level that were classified as good but leaned towards the intermediate level. The individual characteristics that had a significant correlation with the independence level were age with initiative level and learning creativity level. Meanwhile, the education level had a very significant correlation with the initiative and learning creativity levels, and had a significant correlation with the self-confidence level. The learning motivation level had a very significant

correlation with the initiative and learning creativity levels, and had a significant correlation with the critical thinking level. Only the work experience level had no significant correlation with the learning independence level. In general, the individual characteristic had a positive correlation with the learning independence level. Based on these findings. It can be concluded that the older the age and the higher the education level and learning need level, the higher the extension workers' learning independence level would be.

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