

# IMPLEMENTATION OF E-LEARNING SYSTEM READINESS: INDONESIA CONTEXT

Aurino Djamaris<sup>1</sup>, Adi Budi Priyanto<sup>2</sup>, Ferry Jie<sup>3</sup>

<sup>1</sup>Department of Management, Bakrie University, Jakarta, Indonesia

<sup>2</sup>Department of Industrial Engineering, Bakrie University, Jakarta, Indonesia

<sup>3</sup>School of Business IT & Logistics, RMIT University, Melbourne, Australia

([aurino.djamaris@bakrie.ac.id](mailto:aurino.djamaris@bakrie.ac.id), [adi.budipriyanto@bakrie.ac.id](mailto:adi.budipriyanto@bakrie.ac.id), [ferry.jie@rmit.edu.au](mailto:ferry.jie@rmit.edu.au))

**Abstract -** This study was conducted to measure the readiness of PT Pertamina in implementing e-learning, where the study refers to the theories and methods of measurement have been developed by Aydin & Tasci. The results showed that PT Pertamina as a whole is ready for e-learning, but still need some improvement especially in the field of human resources. In addition, this study confirms that personal characteristics of respondents (gender, age and educational level) did not differentiate their overall perceptions of readiness of PT Pertamina in implementing e-learning.

**Keywords** - e-learning readiness, technology, innovation, human resource, self-development

## I. INTRODUCTION

E-learning is a teaching and learning activities that use computer networks and internet media, so that teaching materials can be conveyed to learners through electronic media [9,11]. Implementation of e-learning is expected to provide benefits by save the cost of education, save time and flexibility in the teaching-learning process, to reach a wider geographic area, train more independent learners in gaining knowledge and a positive influence on the development of human resource skills [36]. The provision of technological infrastructure and human resource training did not guarantee the success of an e-learning [28].

Corporate culture and leadership factors have influenced on the success of e-learning. Therefore, it is necessary to do preliminary research on the readiness of the company towards implementation of e-learning. By knowing the pre-conditions data, companies can find out which areas are still weak and require some improvement, and maintain areas that are already considered to be ready to support the implementation of e-learning. Managers are careful in the process of adopting e-learning for their organizations [1], [3], [8]. They point out that adapting e-learning without careful planning most likely ends with cost overruns, unappealing training products, and failure. They also state that like any other major innovation, e-learning strategies require considerable up-front analysis, development time, money, technological infrastructure and leadership support to be successful. Thus, managers should assess their companies' readiness for e-learning before adopting this innovation.

Measuring the readiness method of the company towards implementation of e-learning has been developed [2], where the study was to measure the four main variables, namely the factors of technology, innovation, human resources, and commitment to self-development of the company itself. In that method, Although Aydin & Tasci develop a measurement instrument according to the characteristics of corporate, they explained that Turkey is a developing country, so that companies from other developing countries can use these instruments easily to determine the readiness of the company towards implementation of e-learning.

To answer the challenge as world class companies, Human Resources Directorate of PT Pertamina (LTD.) with its road map, which have a strong corporate culture performance, world class leader and equal technical capability with the International Oil Company [24].

This study aims to collect information on stakeholders' perceptions of the manager level and above positions in his company's readiness towards the implementation of e-learning, to assess the readiness of companies in the implementation of e-learning system (e-learning readiness). The research was conducted referring to the theories that will be described in theoretical basis, and using data analysis methods have been developed by Aydin & Tasci [2].

## II. METHODOLOGY

This study is a descriptive study aims to describe the nature something that is taking place and examine the causes of a particular symptom [33].

Primary data collected through questionnaires to be filled by the respondent in order to be able to expose information about the real conditions, the environment and conditions of the past according to the views of respondents. Data collection procedures through the dissemination of questionnaires to the respondents are as follows:

- distribute the questionnaire to the respondents;
- explain the procedures for filling the questionnaire;
- respondents filled out questionnaires that have been described previously;
- questionnaires completed by respondents was collected and then processed in accordance to the research purpose.

The first section of questionnaire is statement form with response alternatives in order to know the characteristics of respondents. The second section

presents an alternative form of assessment in the form of five-point Likert scale [4].

The first part consists of four items aimed at collecting data statement respondent demographic characteristics (gender, age, educational level, and position in the company). The second part includes 30 items that collect data on respondents' perceptions of company readiness toward e-learning.

However, the meaning of each statement in the Indonesian language remains leads to the original statement which was developed [2].

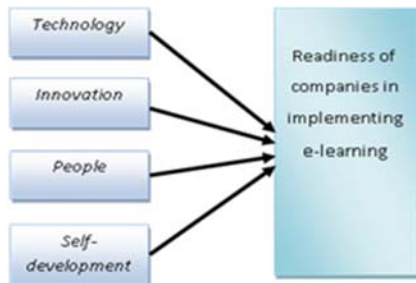


Figure 1. Research Framework

The data required in this study are grouped into 4 variables, according to e-learning readiness components. The details of the operationalization of variables, can be seen in **Table I**.

TABLE I  
THE OPERATIONALIZATION OF VARIABLES

| Variables        | Dimensions | Constructs   |
|------------------|------------|--|
| Technology       | Resources  | Access to computers and the Internet   |
|                  | Skills     | The ability to use computers and the Internet  |
|                  | Attitude   | Positive attitude towards use of technology  |
| Innovation       | Resources  | Obstacles  |
|                  | Skills     | The ability to adopt technology  |
|                  | Attitude   | Openness to innovation   |
| People           | Resources  | <ul style="list-style-type: none"> <li>• Education of employees</li> <li>• Specialist departments experienced human resources</li> <li>• Resources are superior</li> <li>• Vendors and external parties</li> </ul> |
|                  | Skills     | Ability to learn through / with technology   |
|                  | Resources  | budget   |
| Self-Development | Skills     | The ability of time management   |
|                  | Attitude   | Belief in self-development   |

An average value above 3.40 as the required level of readiness company of e-learning [2], because the scale

includes four five-point intervals and 5 categories, and the ratio of 4 intervals / 5 categories was 0.8 (see in Figure 2). Assessment model the one used in this study was to measure whether companies are ready to e-learning in an adequate manner in accordance with the perceptions of managers and office holders level higher in the company [2].

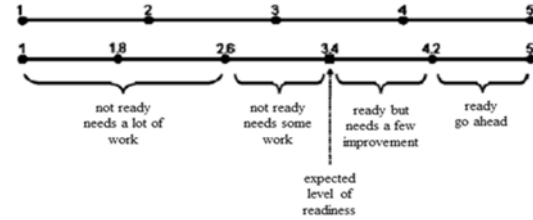


Figure 2. E-learning Readiness Assessment Model [2]

In order to determine whether the demographic characteristics of the respondent/manager (gender, age, and education level) distinguished their perceptions about the readiness of e-learning company, Analysis of Variance (ANOVA) was used. This study used measurements of Two Ways ANOVA (SPSS 17.0), to determine the relationship between one dependent metric variables against more than one categorical independent variables i.e. Levine's Test of Homogeneity of variance [4].

### III. RESULTS

#### A. Data Analysis

Cronbach Alpha reliability analysis produced 0.93 and shows that all factors reliable unless the factors of innovation ( $\alpha_i = 0.83$ ;  $\alpha_p = 0.61$ ;  $\alpha_s = 0.89 > \alpha_c = 0.6$ ,  $\alpha_t = 0.56 < \alpha_c = 0.6$ ). Similarly, the validity of instruments to test whether questionnaire measure what the study proposed to, resulting in the overall significance of the correlation value of each item questionnaire exceeds the specified requirements ( $> 0.05$ ).

Results showed the average value of the variable of human resources (people) is the only one that is smaller than the value required for enterprise readiness of e-learning ( $M_p = 3.21 < M_{elr} = 3.41$ ). This shows that companies are not ready to e-learning that needs to make improvements and development relating to human resource variables. The extent to which companies need to improve and develop the human resources they have, are described in more detail in the following explanation.

TABLE 2  
SEX, AGE AND EDUCATION LEVEL OF RESPONDENTS

| Sex    | Age (years) | Education | Nos. |
|--------|-------------|-----------|------|
| Male   | ≤ 30        | Undergrad | 4    |
|        |             | Graduate  | 9    |
|        | 31-40       | Undergrad | 12   |
|        |             | Graduate  | 6    |
|        | 41-50       | Undergrad | 7    |
|        |             | Graduate  | 3    |
|        | ≥ 51        | Undergrad | 3    |
|        |             | Graduate  | 3    |
| Total  |             |           | 44   |
| Female | ≤ 30        | Undergrad | 3    |
|        |             | Graduate  | 4    |
|        | 31-40       | Undergrad | 4    |
|        |             | Graduate  | 4    |
|        | 41-50       | Undergrad | 1    |
|        |             | Graduate  | 2    |
|        | ≥ 51        | Undergrad | 4    |
|        |             | Graduate  | 4    |

The Human Resource department can manage and evaluate the training, career development and help employees, showed under the value of readiness company of e-learning (MQ17 = 3.00 <Melr = 3.41). Similarly, lack of potential employees to be e-learning champion, the statement number 18 obtained an average value below the value required (MQ18 = 3.02 <Melr = 3.41). Statement number 16 is associated with education level corporate employees, resulted value of 2.94, which indicates that the company has the highest level of formal education the majority of employees undergraduate (S1).

TABLE 3  
THE AVERAGE VALUE OF RESEARCH FACTORS

| Variables        | N         | M           | SD         |
|------------------|-----------|-------------|------------|
| Technology       | 62        | 3.79        | .84        |
| Innovation       | 62        | 3.86        | .45        |
| People           | 62        | 3.21        | .73        |
| Self-Development | 62        | 3.96        | .42        |
| <b>Overall</b>   | <b>62</b> | <b>3.74</b> | <b>.52</b> |

The results for statement number 19 and 20 above the value required for enterprise readiness of e-learning (MQ19 = 3.47; MQ20 = 3.48 > Melr = 3.41), indicating that the employee was familiar to the tools and have experience in using electronics as a learning tool and supporting activities of their daily work. While statement number 21 scored higher than the required level of readiness company of e-learning, as well as get the highest score on this variable (MQ25 = 4.26 > Melr = 3.41), which indicates that respondents are aware of the availability of external resources (vendors and e-learning experts) who can assist companies in implementing e-learning.

The company also requires to make improvement related to technological factors. The results showed, the average value of this variable is higher than the value required, however, the average value of this variable is the second lowest value between the average values of other factors. The results showed that all statements on this factor score higher than that required for readiness of e-learning company. Statement number 3 (MQ3 = 3.24 <Melr = 3.41) associated with the availability and ease of Internet access and / or Intranet outside the workplace (see Table 5).

TABLE 4  
PEOPLE VARIABLE STATISTICAL RESULTS

| People  | Mean | SD  | Description Company's Readiness |
|---|------|-----|---------------------------------|
| Average education level   | 2.94 | .21 | Not ready. Needs some work      |
| The HRD or function that can manage and evaluate training, and assist employee career development | 3.00 | .18 | Not ready. Needs some work      |
| An e-learning champion, who will be able to assist other  | 3.02 | .12 | Not ready. Needs some work      |

|   |      |     |                                   |
|---|------|-----|-----------------------------------|
| employees in e-learning   |      |     |                                   |
| The majority of your employees are experienced in technology-based training   | 3.47 | .50 | Ready but needs a few improvement |
| HR department staff are experienced in technology-based training              | 3.48 | .53 | Ready but needs a few improvement |
| Existence of vendors or external e-learning specialist sufficiently available | 4.26 | .47 | Ready. Go ahead                   |

TABLE 5  
TECHNOLOGY VARIABLE STATISTICAL RESULTS

| No | Technology   | Means | SD  | Description Company's Readiness   |
|----|--|-------|-----|-----------------------------------|
| 1  | Employees have access to a computer that can be used individually in the office  | 4.03  | .25 | Ready but needs a few improvement |
| 2  | Employees have access to an internet that can be used individually in the office   | 4.02  | .33 | Ready but needs a few improvement |
| 3  | Employees can access the Internet and / or Intranet outside the office   | 3.24  | .43 | Not ready. Needs some work        |
| 4  | employees have basic skills using a computer   | 3.97  | .17 | Ready but needs a few improvement |
| 5  | Employees have the basic skills of using the Internet (such as using e-mail, chat, surf, etc.)   | 3.44  | .50 | Ready but needs a few improvement |
| 6  | Employees can read and learn, or follow the instructions on the computer screen to complete the task   | 3.79  | .41 | Ready but needs a few improvement |
| 7  | the majority of employees voluntarily willing to use technology (computers) in supporting the implementation of daily tasks                                  | 3.69  | .49 | Ready but needs a few improvement |
| 8  | The majority of employees can receive technological innovations in implementing the daily tasks (e.g. using digital documents rather than hard copy)         | 3.69  | .53 | Ready but needs a few improvement |
| 9  | The majority of middle and upper level managers of company to think positive about the intervention of technology in carrying out daily tasks                | 4.02  | .33 | Ready but needs a few improvement |
| 10 | changes in policy regarding the use of technology needed to support an activity, has been well received by the majority of middle-level managers and higher. | 4.03  | .31 | Ready but needs a few improvement |
| 11 | The company is easy to invest into the development of technological mastery  | 3.84  | .45 | Ready but needs a few improvement |

TABLE 6  
INNOVATION VARIABLE STATISTICAL RESULTS

| No | Innovation   | Means | SD  | Description Company's Readiness   |
|----|--|-------|-----|-----------------------------------|
| 12 | The majority of employees can receive easily (minimal retention) changes / innovations that have occurred. | 3.56  | .56 | Ready but needs a few improvement |

|    |   |      |     |  |
|----|---|------|-----|--|
| 13 | Any changes that occur in the company can be easily accepted by the majority of middle and upper level managers                                     | 3.94 | .47 | <i>Ready but needs a few improvement</i> |
| 14 | The company's HR function can adapt to the changes that have occurred in your company with easily   | 3.48 | .53 | <i>Ready but needs a few improvement</i> |
| 15 | There are no issues in your company's internal and external (e.g. political, legal, etc.) which may be a barriers to the adoption of an innovation, | 4.47 | .56 | <i>Ready. Go ahead</i>                   |

The innovation factor, where research on this variable to explore information about the company's experience in adopting an innovation in the past, so it can estimate the action on the adoption of new innovations in the future. The average value of this variable is higher than the required (MQ12 = 3.56; MQ13 = 3.94; MQ14 = 3.48; MQ15 = 4.47> Melr = 3.41) (see Table 6) . These results indicated that there are no difficulties if the company make a change in the future and adopt a new innovation (one of them adopt e-learning).

TABLE 7  
SELF-DEVELOPMENT VARIABLE STATISTICS

| No | Self-Development   | Means | SD  | Description Company's Readiness          |
|----|--|-------|-----|--|
| 22 | Employees can voluntarily join in a training   | 3.42  | .49 | <i>Ready but needs a few improvement</i> |
| 23 | Employees may take some time (15, 30 or 60 minutes) to do the development themselves (e.g. do their own e-learning)                        | 3.37  | .52 | <i>Not ready. Needs some work</i>        |
| 24 | The majority of middle and upper level managers believe that employee self-development can strengthen the company's position in the market | 4.03  | .25 | <i>Ready but needs a few improvement</i> |
| 25 | There is the possibility of making / proposed budget to the company to implement e-learning  | 3.77  | .52 | <i>Ready but needs a few improvement</i> |
| 26 | Implementation of e-learning have been discussed to be able to support companies and employees, so that the budget needs to be planned     | 3.76  | .50 | <i>Ready but needs a few improvement</i> |
| 27 | E-learning will be suitable to be implemented in the company   | 4.26  | .51 | <i>Ready. Go ahead</i>                   |
| 28 | The majority of employees of the company's HR function believe that training can strengthen the company's position in the market           | 4.00  | .25 | <i>Ready but needs a few improvement</i> |
| 29 | The company is ready to implement e-learning   | 4.42  | .50 | <i>Ready. Go ahead</i>                   |
| 30 | Employees are ready to implement e-learning  | 4.42  | .50 | <i>Ready. Go ahead</i>                   |

The statement number 23 of self-development factor got value below required (MQ23 = 3.37 < Melr = 3.41). This statement relates to an employee-owned free time, as well as the capabilities of employees in managing free time so they can be used to involve themselves into training(see Table 7). This statement is closely related to the statement number 22, where the statement number 22 is intended to dig up information about an employee's participation into the training voluntarily. The results showed, the average value on the statement of the number 22 for MQ22 = 3.42, one point above the required value of readiness towards e-learning company.

The average value of respondents' perceptions of the dimensions of the resources, skills, and attitudes. Statistics in this table shows that the company was ready to e-learning in terms of resources they possess because the average value of these factors exceeds the required level of readiness company of e-learning (Mr = 3.56> Melr = 3.41) but remained require improvement and development (see Table 8).

Relationship Between Demographic Characteristics of Top Managers And Perception towards readiness company of e-learning using the Levene test showed that there is no real difference on the demographics of respondents to respondents' perceptions. It can be seen that the results of research in which the calculated F values for 1860 are not statistically significant (p = 0.0064).

TABLE 8  
AVERAGE PERCEPTIONS TOWARD DIMENSION

| Dimension | Means | SD  |
|-----------|-------|-----|
| Resources | 3.56  | .73 |
| Skills    | 3.57  | .22 |
| Attitudes | 3.96  | .33 |

#### IV. DISCUSSION

Related to the issue of human resources in order to implement e-learning in accordance with the findings of this study, the phenomenon suggests that there is a lack of enthusiasm of the workers in the company's activities, such as socialization programs, inauguration ceremony events, and some number of important meetings. Even there were lack of interest to the workshop for the transformation on the years 2006 - 2008 [20]. To achieve firm objectives, it is impossible without the awareness and involvement of all workers. The low attendance rate of workers in corporate events, directly or indirectly indicate the low level of concern to the company's activities. Moreover, since February 2010, the Directorate of Human Resources still struggling to speed up routine processes such as coaching, mutation, and the determination of the duty of a worker in a new place, improve reward and Consequences that should be more objective and fair, and supports the spirit of PT Pertamina into a world class company [21]. At the very least, the Directorate of Human Resources must remodel many things as soon as possible,

due to the conditions of competition in the oil and gas business at the national, regional, and global. The current human resources function is in the stage of transformation and development, so all programs relating to human resource functions (coaching, training, workshops, etc.) has not been aware by respondents [21].

The study also showed that companies have lack of potential employees of e-learning champion. These results are similar to [23] that human capital of Pertamina firm is being trained to be independent, meaning attached to mental improvement in each individual company employees so that every individual is able to become champion. The results of assessment and implementation of Knowledge Management concluded that the Leadership/ Champions get the value "very favorable", this indicates that the support and commitment of management is no doubt, but support is apparently not based on an understanding of the intricacies of KM. Where this does not only apply to senior management, but also on all workers of Pertamina [23]. Therefore, based on these statement, indicated that the situation in the company is currently being 'encouraged' nursery/improving ability of their human resources, so the future can be born champion human beings, one of which is e-learning champion.

The education level corporate employees get an average value of 2.94, where it indicates that the company has a formal education level of employees as a majority of the undergraduate level. If the quote on the theory expressed by Rogers (2003) in [2], in which individuals who have higher education levels would be faster to adopt innovations. This study shows that the company already has employees with higher education levels. However, it would be better if companies increase / intensify training to improve skills of employees so the company can compete with the tight market, and also have a better chance to achieve his goal.

Another area of improvement company that also requires is related to technological factors. Statement number 3 (MQ3 = 3.24 < Melr = 3.41) associated with the availability and ease of Internet access and / or Intranet outside the workplace. E-learning is a learning process is facilitated and supported through the utilization of information technology and internet [27], and e-learning is distance learning (distance learning) that utilizes computer technology, computer networks and the Internet [36]. Then from the above two terms can be concluded that it was important for employees to have access to computers and the Internet can be done easily anytime and anywhere to support the implementation of e-learning. The result on the statement of the number 3 indicates that employees have difficulty in accessing the Internet or intranet outside the office.

The majority of employees do not have the constraints in access to computers and the Internet internally. Pertamina has the functions of Corporate Shared Services (CSS) which is under the Directorate General. Currently Pertamina should build on the strength Information and Communication Technology world-class, to support the

vision of Pertamina into a world class national oil company [24]. ICT of Pertamina, which in this case is managed by CSS, is a shared services organization for the field of ICT in order to serve corporate and subsidiaries / affiliates. CSS of Pertamina has been awarded the ISO 20000:2005 certificate as the first international standard specifically aimed for Information Technology Service Management.

No major obstacles in adopting an innovation for technological intervention to support the daily work of employees. Handoko (2004) in [12] argued that the rapid technological changes led to increased demand for employees with better skills through education and training. So that from the research results can be seen that the employees of the company were no longer awkward to use technology. With so companies can quickly adopt a new innovation to be applied, in order to support the daily work of employees and enhance the employee's own capabilities. Every new innovation that was decided by management, informed through the media of Pertamina so that information can be distributed evenly to all employees. The management of Pertamina began a policy of Flexi Time Ltd. since February 1, 2011. Limited Flexi Time is a system designed to manage employee attendance system [23].

## V. CONCLUSION

This study shows that Pertamina is ready to apply e-learning, however, the company still need to make some improvements, especially in the field of human resources. The research showed that the overall average value of the studied factors, beyond the level required for the readiness of e-learning company ( $M_o = 3.74 > M_{elr} = 3.41$ ), but the results of research on the human factor shows that the value average of the human factor is smaller than the value required for the readiness of e-learning companies ( $M_p = 3.21 < M_{elr} = 3.41$ ). In addition, this study also concluded that the personal characteristics of respondents (gender, age, and education level) did not significantly differentiate their perceptions of readiness towards e-learning company.

Factors associated with self-development indicate that employees of the company are enthusiastic and would be voluntarily join the training (if it exists), though the employee has little time to spare, so they can follow the training while filling in spare time. The best preparation for successful implementation of e-learning is to increase the self-commitment. It means that the regulation in learning is the learners own responsibility, not because of coercion from the outside.

In general, the results showed that factors related to human resources should be taken seriously, where the company need employees who are more educated, a champion of e-learning (excellent resource), and of course the company is expected to have a human resources department with bigger role that employees can be more focused in terms of application of e-learning (in particular) so that employees (and companies) can achieve performance and achieve predetermined goals.

## REFERENCES

- [1] Anderson, T. (2002). Is e-learning right for your organization? *Learning Circuits: ASTD's Online Magazine All About E-Learning*, Retrieved May 20, 2011, from [http://www.astd.org/LC/2002/0102\\_anderson.htm](http://www.astd.org/LC/2002/0102_anderson.htm)
- [2] Aydin, C. H., & Tasci, D. 2005. Measuring Readiness for e-Learning: Reflections from an Emerging Country. *Educational Technology & Society*, 8 (4), 244-257.
- [3] Chapnick, S. (2000). Are you ready for e-learning? *Learning Circuits: ASTD's Online Magazine All About ELearning*, Retrieved May 21, 2011, from, [http://www.astd.org/LC/2000/1100\\_chapnick.htm](http://www.astd.org/LC/2000/1100_chapnick.htm)
- [4] Cooper, Donald R. 2006. Business research methods. 9th edition. New York: McGraw Hill.
- [5] Dewi, Shynta. 2011. Analisa Hasil Asesmen Implementasi KOMET. Media Pertamina: Jakarta.
- [6] Ellitan, Lena. 2002. Praktik-Praktik Pengelolaan Sumber Daya Manusia dan Keunggulan Kompetitif Berkelanjutan. *Jurnal Manajemen & Kewirausahaan* Vol. 4, No. 2, September 2002: 65 – 76.
- [7] Flipppo, Edwin. 1996. Manajemen Personalial Edisi 2. Jakarta: Erlangga.
- [8] Gold, A., Malhotra, A., & Segars, A. H. (2001) Knowledge management: An organizational capabilities perspective. *Journal of Management Information Systems*, 18 (1), 185-214.
- [9] Hartley, Darin E. 2001. Selling e-Learning: American Society for Training and Development. Virginia: ASTD.
- [10] Herdiman, Urip. 2011. Sosialisasi Limitd Flexi Time. Media Pertamina: Jakarta.
- [11] Koran, Jaya Kumar C. 2002. Aplikasi E-Learning Dalam Pengajaran Dan Pembelajaran Di Sekolah-Sekolah Malaysia [laporan penelitian]. Malaysia: Pasukan Projek Rintis Sekolah Bestari Bahagian Teknologi Pendidikan, Kementerian Pendidikan Malaysia.
- [12] Lemmergaard, Jeanette. 2008. From Administrative Expert To Strategic Partner. <http://www.emeraldinsight.com/journals.htm?articleid=1762071>. access date: 20 Mei 2011.
- [13] Manik, Tunggul K. Simon. 2008. Pengaruh Program Pelatihan Dan Pengembangan Karyawan Terhadap Kualitas Pelayanan Prima Kasus: Pada Pt. Bank Sumut [thesis]. Jakarta: Universitas Terbuka.
- [14] Maria S., Agustine Eva. 2007. Identifikasi Perilaku Dan Kesiapan Mahasiswa Yang Mendukung
- [15] Penerapan E-Learning. Seminar Nasional Aplikasi Teknologi Informasi 2007 (SNATI 2007), Yogyakarta, 16 Juni 2007.
- [16] Media Pertamina. 2006. INI BARU TEROBOSAN AWAL. Access from: [http://www.pertamina.com/index.php/detail/view/pertamina-news\\_/50/ini-baru-terobosan-awal](http://www.pertamina.com/index.php/detail/view/pertamina-news_/50/ini-baru-terobosan-awal).
- [17] Media Pertamina. 2006. Memperkaya Pengetahuan SDM melalui Aplikasi e-Learning. Access from: [http://www.pertamina.com/index.php/detail/view/pertamina-news\\_/50/transformasi-adalah-perubahan-menyeluruh](http://www.pertamina.com/index.php/detail/view/pertamina-news_/50/transformasi-adalah-perubahan-menyeluruh). Access date: 31 Mei 2011
- [18] Media Pertamina. 2006. Mencetak SDM Kelas Dunia. [http://www.pertamina.com/index.php/detail/view/berita-pertamina\\_/8192/mencetak-sdm-kelas-dunia](http://www.pertamina.com/index.php/detail/view/berita-pertamina_/8192/mencetak-sdm-kelas-dunia). Access date: 31 Mei 2011
- [19] Media Pertamina. 2006. TRANSFORMASI ADALAH PERUBAHAN MENYELURUH. 25 September 2006: [http://www.pertamina.com/index.php/detail/view/pertamina-news\\_/50/transformasi-adalah-perubahan-menyeluruh](http://www.pertamina.com/index.php/detail/view/pertamina-news_/50/transformasi-adalah-perubahan-menyeluruh). Access date: 31 Mei 2011
- [20] Media Pertamina. 2009. Memperkaya Pengetahuan SDM melalui Aplikasi e-Learning. No. 49, Tahun XLV, 7 Desember 2009. <http://www.pertamina.com/download/mediapertamina/2009/mpno49071209.pdf>. Access date: 2 Juni 2011.
- [21] Media Pertamina. 2010. JBMP Angkatan II di RU IV Cilacap. No 47 TAHUN XLVI: 22 November 2011 <http://www.pertamina.com/download/mediapertamina/2010/mpno47221110.pdf>. Access date: 3 Juni 2011.
- [22] Media Pertamina. 2011. CSS Wujudkan Layanan ICT Berkelas Dunia. 25 Mei 2011: <http://www.pertamina.com/index.php/detail/view/news-update/8207/css-wujudkan-layanan-ict-berkelas-dunia>. Access date: 2 Juni 2011.
- [23] Media Pertamina. 2011. Mencetak SDM Kelas Dunia. NO. 06 TAHUN XLVII: 7 Februari 2011: <http://www.pertamina.com/download/mediapertamina/2011/mpno06070211.pdf>. Access date: 31 Mei 2011
- [24] Media Pertamina. 2011. Mencetak SDM Kelas Dunia. NO. 21 TAHUN XLVII: 23 Mei 2011: <http://www.pertamina.com/download/mediapertamina/2011/mpno21230511.pdf>. Access date: 31 Mei 2011
- [25] Novia, Trisa. 2011. Gambaran E-Readiness Pada Mahasiswa Fakultas Psikologi Universitas Sumatera Utara. [skripsi], Medan: Fakultas Psikologi, Universitas Sumatera Utara
- [26] Prayudi, Yudi. 2009. Kajian Awal: E-Learning Readiness Index (Elri) Sebagai Model Bagi Evaluasi E-Learning Pada Sebuah Institusi. Seminar Nasional Aplikasi Teknologi Informasi 2009 (SNATI 2009).
- [27] Priyanto. 2009. Model E-Learning Readiness Sebagai Strategi Pengembangan E-Learning. Diterima melalui email 3 Mei 2011.
- [28] Priyatno, Duwi. 2010. Paham Analisa Statistik Data dengan SPSS. Yogyakarta: Mediakom.
- [29] PT Pertamina (Ltd.) Corporate Website. Company Profile. [http://www.pertamina.com/index.php/detail/view/company\\_profile/460/profil-pertamina](http://www.pertamina.com/index.php/detail/view/company_profile/460/profil-pertamina). Akses terakhir: 31 Mei 2011
- [30] Rahmawati, Nova Tri (2011). Hubungan Antara Dukungan Keluarga Dengan Burnout Pada Karyawan PT.PLN (Ltd.) Apj Surakarta. Skripsi Thesis, Universitas Muhammadiyah Surakarta.
- [31] Ulrich, D. (1997), Human Resource Champions – The Next Agenda for Adding Value and Delivering Results, Harvard Business School Press, Boston, MA.
- [32] Ulrich, D. and Brockbank, W. (2005b), The HR Value Proposition. Harvard Business School Press, Boston, MA.
- [33] Umar, Husein. 1997. Riset Sumber Daya Manusia Dalam Organisasi. Jakarta: Gramedia Pustaka Utama.
- [34] Umar, Husein. 2003. Metode Riset Akuntansi Terapan. Jakarta: Ghalia Indonesia.
- [35] Veronica, Poppy. 2008. System E-Learning: Upaya Peningkatan Kompetensi Karyawan. Diakses dari 20 Mei 2011
- [36] Wahono, Romi Satria, 2003, Pengantar e-Learning dan Perkembangannya, diakses dari <http://www.bpplsp-jateng.com/elearning/download/1122167682romi-elearning2.pdf>, Access date: 31 Mei 2011.