E-tracer study implementation of Indonesia Computer University alumni

Herman S. Soegoto* • Rahma Wahdiniwaty • Lia Warlina • Andri Heryandi

Universitas Komputer Indonesia (UNIKOM) Bandung, Jalan Dipati Ukur 102-116 Bandung, Indonesia.

E-mail: herman@unikom.ac.id. Tel: 08122097401.

Abstract. Indonesia Computer University applied for tracer study in 2016 for 2014 graduates by an online survey. Short messages system, email blast and social media are used to communicate with the alumni. Graduates received the password and username to enter the website of search tracker. Questions for this research were adopted from Indonesia Higher Education Directorate (Dikti) questioner. The questioner was modified to implement UNIKOM main subjects which are computer application (software), hardware and entrepreneurship. The website for this research is http://survey.alumni.unikom.ac.id/, and the alumni could participate by accessing this website. There is a special website for the administrator to manage studies, http://survey.alumni.unikom.ac.id/ administrator/index.php. This research focuses on the respond percentage and alumni characteristics (transition period, job nowadays, vertical and horizontal relevance, competence). The result shows that the respond percentage in 2016 research for 2014 graduates is 28%. The median period of transition is four months, and 34% of alumni were employed before graduation. Approximately 83% graduates claimed that their course has close relations with the level of their jobs recently. While 62% said that their education is equal to their occupation. The competence gap between the university contribution and alumni which is zero was found in research skills. These show that UNIKOM has achieved its graduates aim in research skills competence.

Keywords: Level of responses, transition period, jobs nowadays, relevance, competence gap.

INTRODUCTION

Alumni tracking (tracer study) became the necessity for the university at developing their institution. Tracer study is tracking the alumni tracks which is done between 1 and 3 years after they graduate and intend to know about (a) Education outcome in the shape of transition from education environment to jobs environment (including the range of time to wait for the occupation and the process to search for the first job), last occupation situation, and the competence application in work; (b) Education output as an individual judgement towards controlling and gaining competence; (c) Education process in the form of evaluation of the learning process and the university contributions for the competence acquisition; (d)

Education input as a further excavation towards socio-biographical information. If it is done for more than 3 years after graduation from the university, tracer study has several weaknesses such as (a) biased information that cause or could burden the subject or research respondent; (b) the information that have been obtained become less relevant especially if the information is related to the learning evaluation, gaining competence and transition in the first work situation (Kementerian Pendidikan dan Kebudayaan, 2012).

The university as a higher level of education has a duty to produce graduates according to their subject competence and have strong competitiveness in order for

these graduates to get absorbed by the employment world. Learning method and curriculum must subsequently adjust to the era of development and the need for occupation. That information can be obtained from the alumni by tracking their whereabouts, condition and other information that could be provided by the alumni.

Since November 2014, Indonesia Computer University have formed Career Centre that is under the Asset Directorate, governance and Career Centre (ATCC). One of the job and function of the Career Centre in doing the logging and tracer study is to know about the absorption, process and alumni position in the employment world through alumni database that is produced by Indonesia Computer University (UNIKOM). The research of tracer study in UNIKOM is conducted in 2016. Hence, the survey would track 2014 graduates. Since UNIKOM graduates are spread in every province in Indonesia, technology information is needed to make the tracking more accessible by using online electronics.

Identification and formulation of the problem

Higher institution task is to produce graduates who have the competence and the ability to compete. Alumni tracking is used to find out: the transition period before graduates get a job, alumni occupation, job alignment with alumni background, the employer opinion on alumni competence, and alumni perception towards obligatory subject in Indonesia Computer University.

Based on these terms the formulation of the problem in this research are:

1. What is the characteristic of Indonesia Computer University 2014 graduates for the transition times aspect, occupation aspects, alignment aspect and competence aspect.
2. What are the graduate's perception towards the obligatory subject at Indonesia Computer University
3. What is the user perception towards Indonesia Computer University alumni
4. How are the response rate and data identification

Research objective

Objectives from the research with the title of the implementation of alumni tracking (tracer study) for 2014 graduates at Computer Indonesia University are to:

1. Identify the response rate and obstacles
2. Identify the characteristics of Indonesia Computer University 2014 graduates for the transition times aspect, occupation aspects, alignment aspect and competence aspect.
3. Identify the perception of graduates towards the obligatory at Computer Indonesia University.

4. Identify user's perception towards Indonesia Computer University alumni.

LITERATURE REVIEW

Tracer studies, is considered an appropriate means of evaluating the results of the education and training provided at a given institution (AAU, 2002 in Emmanuel *et al.*, 2017).

Chaudhary and Shankar (2016) stated that tracer studies can be used as a tool to address the issues of relevance of curriculum, quality and support services in terms of training to enhance the competencies and employability of the graduates in the job market both nationally and internationally.

Tracer study results is a powerful tool which documented the employment characteristics, transition to employment and the level of satisfaction of the PNU graduates of 2009-2011 in terms of the level of satisfaction of the University services, learning environment and facilities (Gines, 2014). Furthermore, Millington (2001) states that tracer study provides quantitative structural data on employment and career, the character of work and related competencies, and information on the professional orientation, and experiences of their graduates. Tracer studies on graduates can appropriately provide valuable information for evaluating the results of the education and training of a specific institution of higher education (Aquino *et al.*, 2015). If universities are to improve their teaching and training of graduates the precedence should be to learn and garner improvements from graduates' nuanced experiences (Badiru and Wahome, 2016).
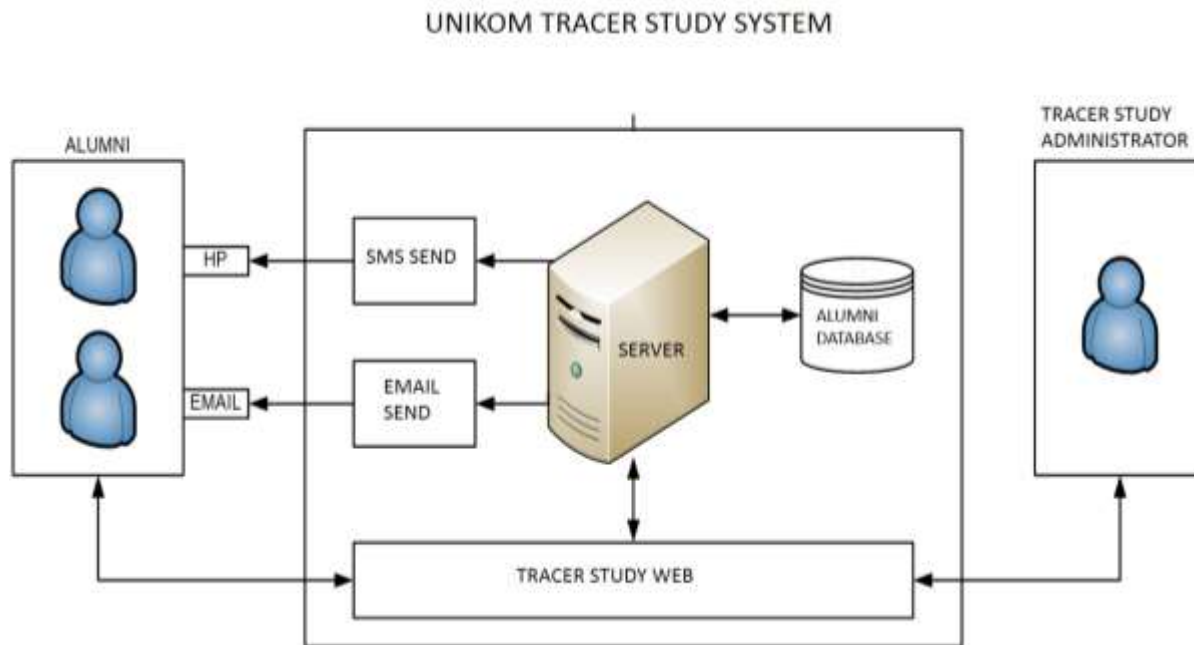
The information system is defined as a group of organisation procedures that when conducted would give information for the decision making to control the organisation. Basically, an information system is a system that is created by human which consist of components in the organisation in order to achieve the aim of providing information. Therefore, data file storage is added to the information system model. Information system receives additional data and instructions, process the data based on the instruction, and publish the result (Kristanto, 2003 in Evi *et al.*, 2017).

In a general sense, the term information system (IS) refers to a *system* of people, *data* records and activities that process the data and *information* in an organization, and it includes the organization's manual and automated processes (Paul, 2010).

RESEARCH METHOD

Design

Design to conducted tracer study at UNIKOM for 2014 graduates is by online system. 2014 graduates are given

Figure 1. Tracer study system at UNIKOM.

information to fill the tracer study questioner. The information will be sent by email, short message via cell phone, and social media. The diagrammatic tracer study system flows at UNIKOM is presented in Figure 1.

Stages of the tracer study research are as follows:

1. Questioner making: Questioner that is used in tracer study is referred to Indonesia Higher Education Ministry (Kemenristekdikti)) standard with an additional question from UNIKOM. Every questioner must be checked first before it is ready to be published and distributed to the alumni.

2. Uploading questioner: After the questioner have been checked and direct revision is done to the website of tracer study in http://www.survey.alumni.unikom.ac.id

3. Username and password distribution to login: Username and password distribution to the alumni is done by message broadcast and email. Moreover, the information of tracer study events is also informed by social media (Facebook, Twitter, Instagram) that are available in Indonesia Computer University.

4. Monitoring the questioner filling: Questioner filling will continue to be monitored until the number of the questioner has been answered by the alumni. During the answering process for the questioner by the alumni, UNIKOM website always reminds the alumni to fill the questioner. Furthermore, each of the alumni mailing lists is linked with UNIKOM tracer study website and also takes advantage of social media (such as Facebook and Twitter). The remainder of the alumni who has not answered the questioner and the one's who has been answering it but incomplete will be done by 27 September 2016.

5. Gift/ door prize: To attract UNIKOM alumni and since there is aid from Directorate General Belmawa Kemristekdikti, on August 2016, there would be a prize announcement for the alumni who fill the tracer study questioner in the form of cell phone and printer. These prizes would be drawn at the end of the questioner answering period.

Population and data resources

Graduates population on alumni tracking in 2014 from 7 faculties (Engineering and Computer Science, Economy, Law, Social and Political Sciences, Design, Literature, Post Graduates) reached 2008 people. Table 1 shows the total population that will be asked to fill tracer study questioner.

Collecting data

Tracer study that was conducted in 2016 for 2014 graduates is held online. Therefore, collecting the answers data is also done by downloading the data that have been answered by the alumni.

Data procedure analysis

Data that have been collected would be analysed based on the needs. Data analyses conducted in the research are:

1. Analysing the alumni characteristics in university level

Table 1. 2014 Graduates population in Indonesia Computer University based on the faculty in number of people and percentage.

No	Faculty	2014 total graduates	
		Number	%
1.	Engineering and Computer Sciences	1099	55
2.	Economy	370	18
3.	Law	11	1
4.	Social and Political Sciences	201	10
5.	Design	202	10
6.	Literature	32	2
7.	Post Graduate	97	5
Total		2012	

Source: Directorate of ICT MM UNIKOM (2016).

Table 2. Indonesia Computer University 2014 alumni characteristics based on transition period.

No	Transition period	Result
	Total of graduates who searched for job	Percentage
1.	1. Before Graduation	34
	2. After Graduation	66
	Times that is needed to obtain a job	Month
2.	1. Before Graduation	2
	2. After Graduation	4

Source: Data evaluation (2016).

2. Analysing alumni's perception towards the obligatory subject at the university level.
3. Analysing the user perception by assessing the alumni ability and personality through the alumni director.
4. Analysing response rate from the graduates who fill the data questioner.

RESULTS

Alumni characteristics

Alumni characteristics based on the transition aspect, occupation aspect, alignment aspect and competence aspect are shown in Tables 2 to 5.

The transition period from UNIKOM alumni is relatively quite low due to the average of waiting period before obtaining a job in four months. Moreover, there is also an approximately high percentage (34%) of alumni who already had a job before their graduation.

On the aspect of works, the majority of 2014 alumni were employed in private firms with Rp. 4,000,000 (four million rupiah) as their median income. This number is quite good since it is relatively higher than the minimum wage of DKI Jakarta Province in 2016 which is Rp. 3,100,000 (three million one hundred thousand rupiah). (Pemerintah Provinsi DKI, 2015).

On the horizontal alignment aspect, the alumni are mostly employed based on the education degree. 83% of alumni claim that there is a close relationship between their occupation and their education degree. Additionally, on the vertical aspect, the majority of alumni mention that their education degree is at the same level with their occupation. 62% of alumni said that their education degree is the same with their occupation level.

On the competence aspect, the gap is made between the competences that are given by UNIKOM and the alumni. The result of the gap calculation shows there is one competency that is zero. This means that the value of competence contribution from UNIKOM and the alumni competence is the same. The competence is research skills. The calculation has shown that UNIKOM has met the alumni expectation in research skills.

Alumni perception towards obligatory subject in Indonesia Computer University

On the tracer study for 2014 graduates, there is a question about the alumni perception for the benefit and role of the obligatory subject. Indonesia Computer University has three obligatory subjects such as Computer Application (Software), Hardware, and Entrepreneurship. Tables 6 to 8 show the alumni

Table 3. Indonesia Computer University 2014 alumni characteristic based on occupation.

No	Alumni occupation recently	Result
	Alumni who works	Percentage
1.	1. Has a job (not part time job)	84
	2. Did not has occupation	16
	Alumni situation whose did not have a job	Percentage
	1. The alumni are studying or continue to post graduate	21
	2. The alumni get married	8
2.	3. The alumni manage their family or kids	8
	4. The alumni is searching for a job	48
	5. Others	34
	Alumni who is searching for a job	Percentage
3.	1. The alumni would obtain a job in the last four weeks	5
	2. The alumni did not obtain a job in the four weeks	45
	Alumni who have been worked on the category of	Percentage
	1. Government Institutions (including BUMN)	17
	2. Non-profit organisation/non-governmental organisation	1
4.	3. Private firms	67
	4. Own company	15
	5. Others	10
5.	Alumni income per month	Rupiah
	Median	4.000.000

Source: Data evaluation (2016).

Table 4. Indonesia Computer University 2014 alumni characteristic based on horizontal and vertical alignment.

No	Alignment	Result
	Relationship between the majors and the alumni occupation	Percentage
	1. Not close at all	9
	2. Not slightly close	8
1.	3. Quite close	29
	4. Close	19
	5. Really close	35
	1. Vertical alignment (the alignment between the education degree and the level of occupation)	Percentage
	2. The education degree is slightly higher than the occupation level	23
2.	3. The education degree is the same with the occupation level	62
	4. The alumni education degree is one level lower than the occupation level	11
	5. Education degree is not required for the alumni occupation	3
	The alumni reason whose work did not have connection with their education degree	
	The reason that mostly choose (first reason)	The question is irrelevant; the occupation nowadays is according to the alumni degree
3.	The second mostly choose reason (second reason)	In this occupation the alumni have better career prospect
	The reason that mostly choose (third reason)	The alumni have not employ in the suitable job

Source: Data Evaluation (2016).

Table 5. Indonesia Computer University 2014 alumni characteristic based on competence.

No	Competence	Mastered by the alumni	UNIKOM contribution	GAP
	Alumni competence (score 1-5)	Average score	Average score	
1	Knowledge within the area or discipline in your studies	2.43	2.40	-0.03
2	Knowledge outside the area or discipline in your studies	2.61	2.66	0.05
3	Common knowledge	2.43	2.62	0.19
4	Internet skills	1.97	2.20	0.23
5	Computer skills	2.07	2.09	0.02
6	Critical thinking	2.21	2.43	0.22
7	Research skills	2.48	2.48	0.00
8	Study skills	2.22	2.38	0.16
9	Communication skills	2.27	2.38	0.11
10	Work under pressure	2.22	2.41	0.19
11	Time management	2.26	2.39	0.13
12	Work independently	2.03	2.36	0.33
13	Work in group/ work together with other people	2.03	2.27	0.24
14	The ability to solve problems	2.19	2.33	0.14
15	Negotiation	2.43	2.70	0.26
16	Analysis skills	2.24	2.30	0.06
17	Tolerance	2.11	2.42	0.30
18	Adaptation skills	2.06	2.36	0.30
19	Loyalty	2.08	2.40	0.31
20	Work with people from different culture or background	2.02	2.31	0.28
21	Leadership	2.30	2.46	0.15
22	Responsibility	1.99	2.23	0.24
23	Initiative	2.13	2.36	0.24
24	Project/programme management	2.43	2.46	0.03
25	Skills to present the idea/product/report	2.39	2.38	-0.01
26	Skills to write memo report and document	2.26	2.29	0.02
27	The ability to study lifelong	2.08	2.33	0.25
28	English language	2.69	2.74	0.05
29	Integrity	2.18	2.39	0.21

Source: Data Evaluation (2016).

Table 6. Computer Indonesia University 2014 Alumni Perception towards Software as an Obligatory Subject.

Benefits and roles of software computer application (Software) as an obligatory subject						
	None (%)	Small (%)	Quite big (%)	Big (%)	Huge (%)	Total (%)
Benefit in aspect						
Helpful in the lecture activities	1	5	25	38	26	90
Helpful for internship	2	7	24	32	26	83
Helpful for finishing final assignment and thesis	1	7	19	32	35	86
Role in aspect						
Starting a job	0	11	21	28	36	85
Obtain a satisfying job/meet their expectation	2	15	21	26	34	81
Meet the competence requirement for work	0	13	17	28	38	83
Increasing entrepreneurship skills	0	9	28	26	34	87
Self-development	0	9	21	28	40	89
Future careers	0	11	21	28	36	85

Source: Data Evaluation (2016).

Table 7. Indonesia Computer University 2014 alumni perception towards Hardware as an obligatory subject.

Benefits and roles of hardware as an obligatory subject						
	None (%)	Small (%)	Quite big (%)	Big (%)	Huge (%)	Total (%)
Benefits in aspect						
Helpful in the lecture activities	3	15	30	30	19	79
Helpful for internship	7	19	26	24	16	67
Helpful for finishing final assignment and thesis	9	21	28	20	14	61
Roles in aspect						
Starting a job	4	13	40	17	23	81
Obtain a satisfying job/meet their expectation	6	19	30	19	23	72
Meet the competence requirement for work	4	19	36	15	23	74
Increasing entrepreneurship skills	4	17	30	26	21	77
Self-development	2	11	30	23	32	85
Future careers	2	19	30	23	19	72

Source: Data Evaluation (2016).

Table 8. Indonesia Computer University 2014 alumni perception towards entrepreneurship as an obligatory subject.

Benefit of entrepreneurship as an obligatory subject						
	None (%)	Small (%)	Quite big (%)	Big (%)	Huge (%)	Total (%)
Benefits in aspect						
Helpful in the lecture activities	4	15	27	29	21	51
Helpful for internship	8	21	26	22	15	37
Helpful for finishing final assignment and thesis	8	24	24	21	15	36
Role of entrepreneurship obligatory subject						
In building a business	Total (%)					
1. Contribute	85					
2. Did not contribute	15					

Source: Data Evaluation (2016)

perception towards the benefit and role of obligatory subjects in the learning process, searching for a job while working.

The alumni perception towards Computer Application (Software) as an obligatory subject is that it is the most beneficial subject of the lecture. The alumni perception towards Hardware as an obligatory subject is that it is the most helpful for self-development. The alumni perception towards Entrepreneurship as an obligatory subject is it is likely to contribute to creating their own business.

User perception towards 2014 graduates

At Indonesia Computer University Tracer Study in 2016 for 2014 graduates, research for user perception towards the graduate's ability was conducted. The evaluation was done by the graduate's department head that as shown in Table 9.

User perception is an important aspect of assessing the graduate's quality from the user's side. This information is salient for the evaluation of learning process to improve the graduate's competence. The information that is contained in 2016 tracer study for 2014 graduates is the director analysis of the graduate's ability. The graduate's ability aspects with a good achievement based on the graduate's department head opinion are:

i. Integrity
ii. Skills based on knowledge
iii. Information technology utilization
iv. Communication
v. Team work
vi. Flexibility of insight in knowledge
vii. Self-development
viii. Leadership

Whereas, the aspect that quite low are:

i. Foreign languages besides the English language

Table 9. Department head perception towards the graduate's ability.

No	Evaluation of the graduate's ability and personality	Very good (%)	Good (%)	Indifferent (%)	Bad (%)	Very bad (%)	Total (%)
1	Integrity (etiquette and morals)	69	25	6	0	0	94
2	Skills based on knowledge (professionalism)	50	38	13	0	0	88
3	English language	6	63	25	6	0	69
4	Information technology utilisation	56	38	6	0	0	94
5	Communication	44	50	6	0	0	94
6	Team work	44	44	13	0	0	88
7	Self-development	50	44	6	0	0	94
8	Flexibility of insight in knowledge	38	50	13	0	0	88
9	Leadership	38	56	6	0	0	94
10	Foreign language besides English language	6	25	44	25	0	31

Source: Data Evaluation (2016).

Table 10. Response rate and completion rate in tracer study for 2014 graduates.

Component	Notation	Total	Unit
Total population target	a	2012	Persons
Total population that did not contact	b	0	Person
Subject target	c = a-b	2012	Persons
Total respondent	d	563	Persons
Gross response rate	e = (d/a)*100	28	Percentage
Net response rate	f = (d/c)*100	28	Percentage
Total respondent who answer it completely	g	394	Persons
Completion rate (subject who answer questioner from total respondent (d)	(g/d)*100	70	Percentage

Source: Data Analysis (2016)

ii. English language skills

Response rate

On tracer study research for Computer Indonesia University 2014 graduates, the response rate is approximately 28%, and the completion rate reaches 70%. The complete result of calculation and data are shown in Table 10.

UNIKOM tracer study response rate 2016 for 2014 graduates is apparently 28%. For the survey with the online method which was categorised as good, the total of response rate is 30%. As a result, since the response rate did not reach 30%, the response rate could not be categorised as good.

Several anticipations have been done to make the response rate good or above 30% for UNIKOM tracer study by:

i. Giving present as a stimulant for alumni to fill the questioner. Presents are in the form of a cell phone with functional specification and a printer.
ii. The questioner is made shorter by following the

national standard from Kemenristekdikti.
iii. Tracer study notification is available on the main page of https://cdc.unikom.ac.id/ and other UNIKOM's sites.
iv. Tracer study is notified to all social media frequently, and the information about the present for the one who answers the questioner completely.
v. Sending a message or email reminder to the alumni who have not filled the questioner.

The low percentage of response rate is caused by the possibility that not all alumni understand the advantage of answering the questioner for graduates. Moreover, the time to fill the questioner is quite short since it less than six months.

CONCLUSION AND SUGGESTION

Response rate in 2016 tracer study for 2014 graduates has not accomplished good category since it did not reach 30%. However, various attempts have been made to acquire a satisfying response rate. 2014 graduates' characteristics information from different aspects such as transition period, occupation, alignment and competence

are precious information for UNIKOM in order to improve the learning process for gaining better abilities to compete in works.

REFERENCES

Aquino AB, Punongbayan EJ, Macalaguim LP, Bauyon SM, Rodrigues RA, Quizon GR (2015). "Teacher Education Graduate Tracer Study from 2010 to 2014 in One State University in Batangas, Philippines", Asia Pac. J. Multidiscip. Res. 3(5): 45-50.

Badiru EO, Wahome M (2016). "Conducting Graduate Tracer Studies for Quality Assurance in East African Universities: A Focus on Graduate Students Voices on Quality Culture", J. Educ. Pract. 7(6):174-181.

Chaudhary N, Shankar G (2016). "A Tracer Study of Ignou Graduates". Int. J. Curr. Adv. Res. 5(4):791-798.

Emmanuel KO, Gyekye AB, Novisikwadso G, Quarshie V (2017). "Bachelor of Commerce Programme and employability of University of Venda graduates**,** South Africa", J. Econ. Behav. Stud. 6(4):291-30.

Evi F, Muh U, Ummul H (2017). "Sistem Informasi *Tracer Study* Berbasis *Website* Dengan Sms *Gateway* Pada Fakultas Ilmu Komputer Dan Teknologi Informasi Universitas Mulawarman". Prosiding Seminar Ilmu Komputer dan Teknologi Informasi, 2(1):136-141.

Gines AC (2014). "Tracer Study of PNU Graduates". Am. Int. J. Contemp. Res. 4(3):81-98.

Millington C (2001). "The use of tracer study for enhancing relevance and marketability in online and distance education". Retrieved July 30, 2013 from http://wikieducator.org/images/e/e1/PID_424 pdf.

Paul RJ (2010). "What an Information System Is, and Why Is It Important to Know This".J. Comput. Inform. Technol. 18(2):95-99.

Kementerian Pendidikan dan Kebudayaan (2012). "Buku Panduan Sistem Pusat Karir. Edisi II". Kementerian Pendidikan dan Kebudayaan, Jakarta, Indonesia.

Pemerintah Provinsi DKI (2015). Peraturan Gubernur Daerah Khusus Ibu Kota Jakarta No 2013 tahun 2015 tentang Upah Minimum Provinsi Tahun 2016, Jakarta, Indonesia.