

---

## Analysis of the Role of Quality on Job Satisfaction in Management with Sampling Techniques

I Bagus Hernu Murtiarso<sup>1</sup>, Yuliana Isma Graha<sup>2</sup>, Niko Alnabawi<sup>3</sup>

<sup>1-3</sup>STMIK Raharja, Jl. Jendral Sudirman No.40 Modernland, Cikokol, Tangerang

e-mail: [murtiarso@aptisi.or.id](mailto:murtiarso@aptisi.or.id), [iz@raharja.info](mailto:iz@raharja.info), [niko.alnabawi@raharja.info](mailto:niko.alnabawi@raharja.info)

### Abstract

*Basically in each management at the College has rules and procedures for writing a study, including in using the research population and sampling techniques to ensure its accuracy. In this study discusses the notion of population and the types of population in a study, sampling units and framework for sampling in Educational research, sample concepts along with the types of sampling, and complete reasons for using sampling and conducting census research. , various sampling methods that will be described as both probability sampling and non probability sampling, as well as explaining the reasons for determining the number of samples both theoretically and practically. So that with the existence of research on the population of research and sampling techniques with examples in the scope of management, it is expected that the samples used in this study actually represent the existing population so that the findings and conclusions obtained from the sampling are valid.*

**Keywords:** *Research Population, Sampling Technique, Probability and Non Probability.*

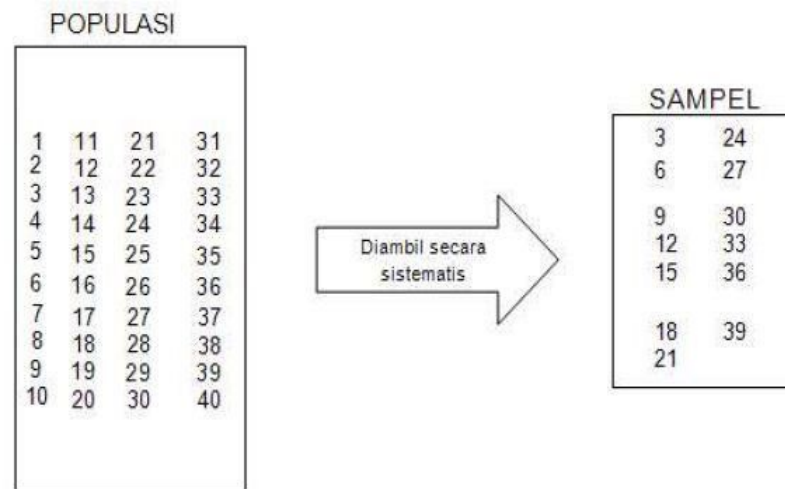
### 1. Introduction

Writing scientific papers in various sectors of Higher Education management has been highly developed, along with the development of information technology, the need to obtain information in the form of accurate data is certainly very needed. As explained in previous studies Sampling techniques are used in calculations on the management of prospective members of aptisi (Association of Indonesian Private Universities) [1]. According to Iswandari, E., (2018), In other words the population is a generalization region consisting of objects or subjects that have certain qualities and characteristics determined by researchers to be studied and conclusions drawn. With the example of a management case study if a top executive of a bank wants to know the marketing strategies carried out by all banks in Jakarta, then all banks in Jakarta are populations [2].

According to Setyowati, N., (2018), the sample framework can be a list of population numbers, number of buildings, number of members of each management and perhaps a map whose units are clearly illustrated. A good sample framework must meet the following requirements 1. It must include all sample elements (not one element is left behind). 2. No sample elements are counted twice. 3. Must be up to date. 4. The boundaries must be clear, for example regional boundaries and management in Higher Education (who is part of the Higher Education). 5. Must be traceable in the field [3].

Sampling is a process of selecting a number of elements from the population so that management in Higher Education provides a provision in research by studying samples to have accurate and real results, an understanding of the characteristics of the sample subject, making it possible to generalize the characteristics of population elements. The sampling technique is a sampling technique [4]. Sampling must meet representative requirements, meaning that the sample taken truly represents the existing population (representative) so that the data and information submitted is valid and accurate in order to be accountable to the management [5].

---



**Figure 1. Example of a systematic sampling technique**

According to Isanawikrama, I., (2018), There are two basic methods of sampling, namely by example case studies on management 1. probability sampling, 2. non-probability sampling. The probability sampling is an objective procedure which in this case the probability of selection is known in advance for each unit or element of the population. with examples of population populations part of Higher Education management [6]. In this case each element of the population has the same opportunity or probability to be chosen as a sample. Withdrawal of probability samples based on random or random selection methods to produce accurate results [7]. On the other hand, non-probability sampling is a subjective procedure in which the sample framework is not available. Each population element does not have the same opportunity or probability to be selected as a sample. In this case the sample is chosen based on personal considerations so as to facilitate management in making a decision [8].

From the explanation above, the author intends to provide an understanding of research management, so that it can be used as a consideration in management decision-making. So that every research conducted produces a valid data using sampling techniques so that it can produce quality management. With this the author takes the research title "**Analysis of the Role of Quality on Job Satisfaction in Management by Using Sampling Techniques**".

## 2. Research Method

In carrying out the design and development of a system there are several very important things that must be considered, including the existence of research methods to solve various formulations of problems that exist in management Higher Education in this research stage[9].

In this study using several research methods including observation techniques, and literature reviews. In the observation technique has been carried out directly by monitoring the books and guidance grants to a management at the University.

### A. Literature Review

According to Rahardja, U. (2009), Literature Review is written material both in the form of books and sources from previous research, discussing the subject matter of journals or scientific works with topics to be carried out research that are relevant to the topic of previous research or existing ones. Because in previous studies there have been many scientific studies conducting research on credit memo features to minimize deposits and uncollectible accounts [10].

1. The research was conducted by Darmayanti, W., Deviyanti, D. R., and Kesuma, A. I., (2018), entitled "The Influence of the Role of Internal Audit on the Application of Good Government to the Government of Samarinda City". This study reviews a system which aims to determine the influence of the role of Internal Audit on the implementation of management in Samarinda City. The method used in this study is a quantitative method. The sample in this study is management of 7 SKPD in Samarinda City and each SKPD is represented by Internal Auditor, Head of Section or Sub Division of Management or Secretary, Staff of Financial or Accounting Records, and Staff of Las SKPD holders as respondents. The sampling technique used is purposive sampling and Data collection techniques were obtained through questionnaires or questionnaires and analysis techniques using Partial Least Squares (PLS) with the help of smartPLS software. The results of this study prove that Internal Audit with indicators sorted from the greatest influence, namely Internal Audit Report, Competence, Internal Audit Program, Implementation of Internal Audit, Independence, has a positive influence on the realization of Good Government in Samarinda City Government [11].
2. Research conducted by Handayani, I., Dewanto I. J., and Andriani, D., (2018), with the title "Utilization of RinfoForm as a Media for Lecturer Performance Data Collection". This study reviews a utilization of Rinfo Form on the collection of lecturers' performance data on management in Higher Education and in accordance with the needs to be displayed. With the conclusion, this system can provide good service in conducting data collection on lecturers' research performance and lecturer service performance so as to facilitate management in making a decision. The next goal is to be able to provide problem solving and data in real time, besides that it gets its own advantages. And finally, it can deliver updated information in improving quality and quantity effectively [12].
3. Research conducted by Tiara, K., Kusumah, H., and Putri, D. M., (2017), entitled "Application of Asset Management with Mapyourtag at Higher Education". This study reviews a system with barcodes where the asset management process that exists at Raharja College runs effectively without having to print the checklist form and the data is automatically updated in a database system so that management decisions on managed assets can have effective functions that is by using the MapYourTag application. Where in the previous system asset management applied was still manual or very conventional, namely by writing reports manually, then inputting the report into a data processing application. The results of this study are in the form of an asset management application system by scanning barcodes that have been created for each asset that is connected directly to the database that has a dashboard that shows the statistics of control treatment on each asset, so that supervision becomes more effective, optimal and easier in making asset management reports. And with the existence of this system, it is expected that asset management implemented at Raharja College can improve sustainable development in the asset life cycle [13].
4. The research was conducted by Rahardja, U., Aini, Q., and Khoirunisa, A., (2017), with the title "Implementation of Business Intelligence Using Highchart in Yii Framework-Based Attendance Assessment System". This study reviews a PenA system (Attendance Assessment). With the implementation of business intelligence using highchart in the Yii Framework based attendance assessment system, 3 (three) conclusions can be taken as follows: 1. The PenA (Attendance Assessment) system is considered to facilitate supervisors in inputting attendance into tables that are in the system so as to facilitate management in making decisions, data from the attendance table can be directly drawn into the highchart so that it is more efficient. 2. The PenA (Attendance Assessment) system is designed using a Website based on Yii Framework, with Xampp as a web server, PHP is used as a scripting language and MySQL as a Database Management System (DBMS). 3. The use of highchart in presenting data makes the supervisor easier to do the absenteeism of the number of data in the table to be structured and has a form that is easier to understand for the user as well as of

course can provide time efficiency in processing the data to be presented in the form Pie Chart [14].

5. Research conducted by Handayani, I., Mutmainah, S., and Rosmawati, O., (2017), entitled "Application of Rinfo Form as a Data Collection Media for iLearning Lecturers' Performance Results." This study reviews an Rinfo Form system which maximizes the filling of online questionnaires, after the admin gets complete data from the RPU, the admin immediately inputs the data in the online questionnaire form and with the use of the Emailer form on Rinfo This form can facilitate the admin and user and management in making a decision because with the use of an automatic Form Emailer admin and students will get an email notification about who has filled out the online questionnaire form. In addition, Rinfo Form has also been linked to spreadsheets if spreadsheets are related to forms and automatic responses will be sent to spreadsheets. If not, the user can see the response summary, the page then the page can be accessed from the response menu [15].

Based on the 5 (five) literature reviews on the research method, it was explained that there was an important role in conducting research using population and sampling techniques to obtain valid information and data. nowadays there is still a great need for learning and understanding of population calculations and sampling techniques so that research is more directed. So researchers conducted research and development of a population calculation using sampling techniques with case studies relevant to management where there was no topic in previous studies.

### 3. Results and Analysis

Probability sampling is a sampling technique that provides equal opportunities for each element or member of the population to be selected as a sample. There are several methods of probability sampling, including 1. simple random sampling method, 2. stratified random sampling method, 3. cluster sampling method, 4. systematic sampling method (systematic sampling), 5. proportionate stratified random, and 6. disproportionate stratified random.

#### 1. Simple Random Sampling

According to Mania, H., and Recht, B., (2018), Among the best and most representative sampling techniques are random sampling techniques. The goodness of the technique is not only the underlying theory but also empirical evidence produced. In this technique each individual has the same opportunity or opportunity to be the subject of research [16].

With a case study example that will be applied to management at the University in conducting a study, a sampling technique is needed in order to obtain valid data. After all the paper in the box has been shaken properly, 35 samples are selected, the withdrawal procedure is 35 times. Another way can be done by using a random number table as shown in Table 9-1. For example we want to draw a sample consisting of 10 retail stores from a population of 60 retail stores. In this case, the retail stores are numbered 01 to 60, or 00 to 59. We begin to choose randomly with each 2 digit number in Table 7.1, say the first 2 digits in line 16 of the table, which falls in the number 51 by using a table of random numbers [17].

If we read the 2 digit numbers down by column, our simple random sample consists of retail shops numbered 51, 07, 03, 41, 15, 10, 57, 55, 01 and 42. In the computer era at present, sampling can be done with the help of a computer. For example, in a telephone survey, telephone numbers can be chosen randomly, through a computer.

**Table 1. Random Number Tables with Simple Random Sampling Techniques**

40743	39671	07812	42293	41539	40498	95829	11436	40890	16406
90833	23016	3R342	03628	21313	46364	11934	82901	46587	41614
10743	34555	49339	36401	90000	77565	95132	95536	81876	59673
88103	46176	35968	10648	22427	22321	77904	76877	51824	55779

53975	43761	61725	49408	42200	98000	91259	42759	10504	14307
31230	41200	43973	62146	70245	39856	24029	38382	09225	49848
29249	48104	47431	26302	71090	63391	91312	25044	99955	66663
56588	28502	31317	37819	93119	50860	51639	55193	95115	06864
35438	73223	44149	70587	40561	10406	53423	82627	45000	42584
19793	30194	42198	59868	92882	74022	37797	93500	41877	17477
16965	67701	21341	67891	16751	49371	47998	91437	70400	93943
722111	11366	71611	47954	59660	26741	74733	00810	01142	52801
15890	96036	21583	04417	17438	76876	51807	27263	84521	55808
19983	27843	69758	61186	38368	39769	31722	68252	09347	04839
81126	95633	42617	16726	14259	08045	01691	16800	30293	23518
51823	40600	41306	23247	33716	53619	11016	51730	22239	08272
07454	92103	41564	21146	28807	01764	13854	73228	49968	94216
03375	95032	65271	71876	25947	84015	67464	28424	07995	48746
91374	36275	90717	56396	24855	99138	12491	52901	73174	48511
41086	67186	22605	15775	73647	34586	35994	44814	29835	64245
60431	24886	80034	96476	82831	20048	30157	73453	26122	09458
15899	81159	28224	17790	46251	30142	57206	30095	52935	47568
10052	05764	51779	47543	26866	02152	04707	54037	49744	59947
95657	52708	94879	12367	22228	06005	86391	78208	72906	31788
57337	24309	03169	95668	29124	14437	04837	91244	82967	67869
64988	98506	70398	68695	95970	76676	49086	09069	70654	39241
07387	98150	49313	08281	32958	15356	73356	71642	16187	92525
55762	30446	42835	27282	13450	01402	82937	48344	74237	85740
67720	48010	98907	44585	16464	28870	23885	18085	00278	93300
86903	62206	09160	81182	99671	17224	74272	31011	79866	45546

## 2. Quota Sampling

According to Ochoa, C., and Porcar, J. M., (2018), quota sampling techniques are basically the same as judgment sampling, which is by considering the criteria that will be used as sample members with case studies of management members in a company. For example, we want to draw a sample of 1,000 people from the city of Bandung. If it is known that the population distribution is geographic, the same sample percentage can be drawn [18].

**Table 2. Population Tables of Bandung City with Quota Sampling Techniques**

Wilayah Kota	Persentase Penduduk	Penyebaran Ukuran Sampel
Bandung Timur	10	100
Bandung Utara	20	200
Bandung Kota	10	100
Bandung Barat	20	200
Bandung Selatan	40	400
	100	1000

### 3. Determining Sample Size Using Percentages

Now let us take two cases. First, we assume that we believe 90 percent of the population uses radial tires. This means that the result is (90%) times (100% - 90%) = 900. Now let us assume that we believe there is greater variation in the population, for example only 70% have radial tires. This translates into 70% times 30% or (100% - 70%) = 2100. Note that 2100 is greater than 900. Since the value is a numerator in the equation (formula), the end result is a larger sample for percentage 70 % compared to 90%. Next we suppose that the percentage variation in the population is greater, say 50% times 50% = 2500. Next we determine the level of accuracy we want. In this case, use the following formula with Formula 1 [19].

$$N = \frac{z^2(pq)}{e^2}$$

Where;

N = Sample size (Sample size)

z = Standard error is associated with selected Level of confidence

p = estimated Variability in the Population

q = (100-p)

e = Acceptable Error.

A level of confidence of 99 percent, for example, allows the researcher to believe 99 percent that the actual percentage of the population is in a series of percent around the percentage specified in the sample estimate. Keep in mind that the z (z value) value for confidence level 99 percent is 2.58 while the z value for level of confidence is 95 percent 1.96. Now let us calculate the size of the sample using formula 1. First we assume that the level of variability in the population is 50%, so the proportions are as follows: p = 50% and q = 50% [20].

The desired level of accuracy (e) is 10 percent with 95 percent level of confidence. The calculation results of the sample size are

$$n = \frac{1.96 (50 \times 50)}{10^2} = \frac{3.84 (2500)}{100} = \frac{9600}{100} = 96$$

Then if we increase it to 3 percent then the result is

$$n = \frac{1.96 (50 \times 50)}{3^2} = \frac{9600}{9} = 1067$$

Next we change the confidence level from 95% to 99%, the results are:

$$n = \frac{2.58 (50 \times 50)}{3^2} = \frac{6.66(2500)}{9} = \frac{16.650}{9} = 1850$$

### 4. Determining Samples Using Average Values (Mean)

Now, this study discusses how to determine sample size using the mean value, the formula used is as follows. Where to use Formula 2

$$n = \frac{s^2 z^2}{e^2}$$

Where

n = sample size (sample size)

z = Level of confidence (level of confidence)

s = Variability indicated by an estimate of standard deviation (Variability indicated by an estimated standard deviation)

e = The level of precision or the level of error that is allowed in the estimation of the sample of the population.

For example, a researcher wants a level of confidence of 95 percent or 1.96 and it is thought that from previous studies, the standard deviation is 100. The desired level of precision is 10, the results are as follows

$$n = \frac{100^2 \times 1.96^2}{10^2} = \frac{10.000 \times 3.84}{100} = \frac{38.400}{100} = 384$$

**5. Determining Sample Size from Small Populations**

In determining the sample size for small populations, we must use "Finite Multiplier" which is an adjustment factor, more or less the same as the root of the proportion of the population not included in the sample. For example, the population is 1000 companies and we decide to take a sample of 400. This will result in a "Finite Multiplier" of 0.77 or a root of 0.6 (1000 - 400/1000). In this case we only need a sample of 308 or 0.77 x 400 companies [21].

The formula for calculating sample size with "Finite Multiplier" is as follows using with Formula 2

Sample size = Sample size formula or number of samples multiplied by

$$\sqrt{\frac{N-n}{N-1}}$$

The following is an example using a population of 1000 companies. We are not so sure about the level of population variability, so we use the following proportions

$$n = \frac{z^2(pq)}{e^2} = \frac{1.96^2(50 \times 50)}{5^2} = 384$$

$$n = 384 \times \sqrt{\frac{N-4}{N-1}} = 384 \times \sqrt{\frac{1000-384}{1000-1}} = 384 \times \sqrt{\frac{616}{999-1}} = 303.$$

By using "Finite Multiplier", the sample needed can be reduced from 384 to 303 so that it can be more efficient [22].

**4. Conclusion**

Population is a generalization area consisting of objects or subjects that have certain qualities and characteristics determined by researchers to be studied and conclusions drawn. There are 2 (two) basic methods of sampling: (1) probability sampling, (2) non-probability sampling. There are several methods of probability sampling (1) simple random sampling method, (2) stratified random sampling method, (3) group sampling method (cluster sampling), (4) withdrawal method systematic sample (systematic sampling), (4) proportionate stratified random, and (5) disproportionate stratified random.

The withdrawal of non-probability samples is a subjective sampling procedure, in this case the probability of selecting population elements cannot be determined. There are several nonprobability sampling methods, namely systematic sampling, area sampling, convenience sampling, judgmental sampling, quota sampling, and snowball sampling. The sample size is determined by several factors such as the level of population variability, the desired level of accuracy / precision and the level of confidence used. Another consideration in determining sample size is adjusting to the statistical tool that will be used.

**References**

[1] Rahardja, U., Lutfiani, N., & Alpansuri, M. S. (2018). Pemanfaatan Google Formulir Sebagai Sistem Pendaftaran Anggota Pada Website Aptisi. or. id. SISFOTENIKA, 8(2), 128-139.

- [2] Iswandari, E., Amboningtyas, D., & Yulianeu, Y. (2018). THE EFFECT OF PROFIT MANAGEMENT ON FINANCIAL PERFORMANCE OF MANUFACTURING COMPANY WITH GOOD COORPORATE GOVERNANCE AS A MODERATING VARIABLE LISTED IN INDONESIAN SECURITY EXCHANGE 2012-2016. *Journal of Management*, 4(4).
- [3] Setyowati, N. (2018). ANALISA PENGARUH KUALITAS PELAYANAN DAN KUALITAS PRODUK TERHADAP KEPUASAN KONSUMEN DAN DAMPAKNYA PADA LOYALITAS KONSUMEN APARTEMEN BELMONT RESIDENCE KEBON JERUK.
- [4] Rahardja, U., Harahap, E. P., & Dewi, S. R. (2019). The Strategy of Enhancing Article Citation and H-Index on SINTA to Improve Tertiary Reputation. *TELKOMNIKA (Telecommunication Computing Electronics and Control)*, 17(1).
- [5] Rahardja, U., Aini, Q., & Hardini, M. (2018). PENERAPAN SOFTWARE AKUNTANSI ONLINE SEBAGAI PENUNJANG PENCATATAN LAPORAN KEUANGAN. *SISFOTENIKA*, 8(2), 176-187.
- [6] Isanawikrama, I., Wibowo, F. A., Buana, Y., & Kurniawan, Y. J. (2018). ANALISIS PENGARUH TALENT MANAGEMENT TERHADAP ORGANIZATIONAL PERFORMANCE DAN DAMPAKNYA PADA EMPLOYEE RETENTION. *Jurnal Administrasi dan Kesekretarisan*, 3(1), 150-160.
- [7] Sunarya, A., Rafika, A. S., & Rahayu, S. (2017). Analyze and Record a series of Purchase Transactions on Companies using Online Accounting Software. *Aptisi Transactions of Management (ATM)*, 1(1), 42-47
- [8] Handayani, I., & Kusumah, H. (2018). Prototipe Deteksi Curah Hujan Dan Sistem Informasi Berbasis Pada ESP8266 Di BMKG Klimatologi Geofisika Klas I Tangerang. *Voice Of Informatics*, 7(2).
- [9] Aini, Q., Graha, Y. I., & Zuliana, S. R. (2017). Penerapan Absensi QRCode Mahasiswa Bimbingan Belajar pada Website berbasis Yii Framework. *Sisfotenika*, 7(2), 207-218.
- [10] Rahardja, U. (2009, May). Artificial informatics. In *Industrial Electronics and Applications, 2009. ICIEA 2009. 4th IEEE Conference on* (pp. 3064-3067). IEEE
- [11] Darmayanti, W., Deviyanti, D. R., & Kesuma, A. I. (2018). Pengaruh Peranan Audit Internal terhadap Penerapan Good Government pada Pemerintah Kota Samarinda. *Jurnal Ilmu Akuntansi Mulawarman (JIAM)*, 2(3).
- [12] Handayani, I., Dewanto, I. J., & Andriani, D. (2018). Pemanfaatan RinfoForm Sebagai Media Pengumpulan Data Kinerja Dosen. *Technomedia Journal*, 2(2), 14-28.
- [13] Tiara, K., Kusumah, H., & Putri, D. M. (2017). PENERAPAN MANAJEMEN ASET DENGAN MAPYOURTAG PADA PERGURUAN TINGGI. *CERITA Journal*, 3(1), 91-109.
- [14] Rahardja, U., Aini, Q., & Khoirunisa, A. (2017). Implementasi Business Intelligence Menggunakan Highchart pada Sistem Penilaian Absensi berbasis Yii Framework. *CSRID (Computer Science Research and Its Development Journal)*, 9(2), 115-124.
- [15] Handayani, I., Kom, S., Mutmainah, S., & Rosmawati, O. (2017). Penerapan Rinfo Form Sebagai Media Pengumpulan Data Hasil Kinerja Dosen iLearning. *Technomedia Journal*, 2(1), 49-68.
- [16] Mania, H., Guy, A., & Recht, B. (2018). Simple random search provides a competitive approach to reinforcement learning. *arXiv preprint arXiv:1803.07055*.
- [17] Manurung, E. B. P., Ariessanti, H. D., & Desrianti, D. I. (2017). Implementation of Recording System Regular Spending Cost Based Software Online Accounting For Record Expenditures on the Company. *Aptisi Transactions of Management (ATM)*, 1(2), 123-130.
- [18] Ochoa, C., & Porcar, J. M. (2018). Modeling the effect of quota sampling on online fieldwork efficiency: An analysis of the connection between uncertainty and sample usage. *International Journal of Market Research*, 1470785318779545.
- [19] Nurdin, N., Hamdhana, D., & Iqbal, M. (2018). APLIKASI QUICK COUNT PILKADA DENGAN MENGGUNAKAN METODE SAMPLE RANDOM SAMPLING BERBASIS ANDROID. *TECHSI-Jurnal Teknik Informatika*, 10(1), 141-156.
- [20] Alvey, B., Ho, D. K., & Zare, A. (2018, April). Sample spacing variations on the feature performance for subsurface object detection using handheld ground penetrating radar (Rising Researcher Presentation). In *Detection and Sensing of Mines, Explosive Objects,*



and Obscured Targets XXIII (Vol. 10628, p. 106280U). International Society for Optics and Photonics.

- [21] Leuw, T. R. M. (2018). Pengaruh Destination Attributes Terhadap Pembentukan Destination Image Bali Menurut Peserta Mice Domestik. *Jurnal Manajemen Perbankan Keuangan Nitro*, 1(01), 22.
- [22] Kok, M. G. M., De Ronde, M. W. J., Moerland, P. D., Ruijter, J. M., Creemers, E. E., & Pinto-Sietsma, S. J. (2018). Small sample sizes in high-throughput miRNA screens: a common pitfall for the identification of miRNA biomarkers. *Biomolecular detection and quantification*, 15, 1-5.
- [23] Rahardja, U., Aini, Q., Ariessanti, H. D., & Khoirunisa, A. (2018). Pengaruh Gamifikasi pada iDu (iLearning Education) dalam Meningkatkan Motivasi Belajar Mahasiswa. *Nusantara Journal of Computers and its Applications*, 3(2).