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PREDICTION OF LECTURER NEEDS THROUGH *STUDY PROGRAM WORKLOADS ANALYSIS* REVIEW ON X UNIVERSITY

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Abstract

The objective of this research is to determine the right number of lectures needed by the faculties of University X. The research is descriptive—analytical study. Data was collected using secondary data and observation. Beside that, the data was also collected through informants, namely vice deans of the Faculty of Law, Business and Management, Social studies, and Vice Rector for General and Financial affairs. The shortage of lecturers will cause the ineffectiveness in the learning process, besides If the number of lecturers is bigger than the workload, it will create the disguise of unemployment. It is necessary for the University to have lectrurers whose workload comply with regulation. This research analysis between minimum credit point (compulsory) with the lecturer needed. Result suggested: several study programs should recruit more lecturers; b.
Keywords: *analysis, lecturer, workload*

INTRODUCTION

The phenomenon of disruption that is currently hitting Indonesia directly influences every aspect of people's lives, including education. X University is required to adapt and maintain a balance of resources where robotics and artificial intelligence technology is sweeping the world. This tertiary institution must transform innovatively so that it can carry out the vision and mission that has been set. One of the missions of University X is to produce graduates who are ready to enter the university of life, with soft and hard competencies with the characteristics of defending the country.

Currently, there are two phenomenal tendencies. First, changes in information technology which are marked by the emergence of new inventions are replaced by more sophisticated inventions in a short time. Prior to the Covid-19 pandemic, many lecturers avoided technology to teach, because they were used to teach face-to-face. Some parties consider that face-to-face learning is better than distance learning. There are community groups that look down on the Open University (UT) which carries out teaching and learning processes remotely. Phrases that sound derogatory, for example "universitas cold" to describe UT as a university that is less prestigious than a university with a magnificent and spacious campus with a large number of students.

However, environmental changes caused by the emergence of the Covid-19 virus forced teachers to become more familiar with the term e-learning. Applications such as zoom, G-meet, quiziss and hangout have become very popular among educators. Technological changes in the learning process require a number of competent lecturers and for courses taught online to be carried out effectively, the number of lecturers must be adjusted to the demands of semester credit units (SKS).

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Second,the increasing demands of a more varied society towards the teaching and learning process. Graduates needed by the world of work are creative graduates who do not become robots but have technical, field and social competence. In learning in tertiary institutions there are still tertiary institutions that are oriented so that their graduates have a high grade point average and ignore the noble value of education. This tendency encourages students to do everything in their power, including using technology by copying and pasting to answer questions that are tested online. Because of this, university readiness is needed to provide qualified and expert lecturers.

From observations so far, it is known that many lecturers teach courses of more than 12 credits with several courses. There are educators teaching 20 to 25 credits. This causes lecturers to have relatively limited time to do teaching tasks properly, for example making questions. Good exam questions require students to think at a higher level (high order thinking) in answering questions. However, teaching staff prefer more teaching hours in the hope that more honorarium will be received. According to Pak H (former Deputy Dean 3 of Faculty F) "many lecturers get KJM up to 25 to 30 million rupiah per semester," he said. A lecturer at Faculty B expressed his disappointment because he did not get enough teaching schedules. "I only get 5 credits, the most is my KJM, but if you are close to officials the SKS is big, I feel lazy to become a lecturer." Said a lecturer who has taught for more than 25 years. Currently X University has 7 faculties with 28 study programs. The number of lecturers currently available is 427 people.

Because lecturers are competing to get more credits in the hope of getting extra teaching money (KJM), as a result the learning and exam questions that are made are of low quality, not forcing students to use reason and creativity. Students easily get answers from the internet. Besides that, the busyness of teaching research assignments and community service became hampered. The task of writing books, obtaining patern rights, having Scopus indexed journals and others, became neglected.

Conversely, if the number of supporting lecturers is more than required, the quality of UTS or UAS questions is also not necessarily optimal. In reality, having more supporting lecturers than needed will encourage teachers to avoid this troublesome task by leaving the questions to colleagues in their teaching team, who also don't want to be bothered with making questions. At the same time, lecturers will feel reluctant to come to campus if not to teach, because teaching hours are shared with other teachers. It is not surprising that some lecturers are rarely seen on campus even though they have the status of Civil Servants, because teaching assignments only require 3 credits. If only 6 credits are enough to do one day a week, the rest of the time is wasted (idle time). above phenomenon,

As a result of an imbalance between the number of lecturers and the load of 12 credits, the expected feedback to determine student mastery of the material cannot be realized. Lecturers avoid the expression of students "as killer lecturers" and are considered "bad lecturers". Because of this, the lecturers choose a sense of security by teaching sober and giving high marks because of the length of the answers, not the depth of the students in the material.

Therefore it is important to have a balanced number of lecturers with workload. Apart from providing more time for lecturers to carry out learning evaluations and providing feedback to students, lecturers can carry out the tri dharma tasks optimally.

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Against these two tendencies, it is important for University X to have a number of lecturers in accordance with the demands of the course workload spread across study programs from seven faculties so that the teaching and learning process will be effective in realizing visionary and competitive outputs.

(Helianty, 2014) conducted research on the workload of educational staff at the Bandung National Engineering Institute, although there is no job description for each position of educational staff. conducting research using the full time equivalent method on the workload of the Secretary of the Study Program found that the workload of the study program secretary was overloaded.using the Nasa-Task Load Index method to analyze mental workload. Whereas,conducted research on Pattimura University students using the recommended weight limit approach. The calculation of workload analysis based on the job description is carried out by(Fetriana, 2017)(Simanjuntak, 2010)(Soleman, 2011)(Archi, 2012)

This study calculates the needs of lecturers at University X based on the workload of each study program. According tocalculating the number of lecturers based on the workload of the department is more precise than using the method of the number of students in the department. Barizi continued. The workload of a department is determined by the number and type of programs held and the size of the activities in the program, for example the number of students cared for. Thus planning for the need for lecturers will be based on the programs that are being and will be held by the department in the coming years as well as the projected number of students for each of these programs. Research calculates the workload of lecturers according to government decisions, 12 credits. This research will help or encourage lecturers to carry out research assignments, community service, write books, articles and others.(Bariz, 2010)

LITERATURE REVIEW

X University currently has 7 faculties. The Faculty of Economics and Business has five credits undergraduate and two vocational study programs. Faculty of Medicine opens three study programs, Faculty of Engineering with four study programs, Faculty of Political Science develops three study programs, furthermore, three study programs are also owned by the Faculty of Computer Science, Faculty of Law opens one bachelor study program and one master study program, Faculty of Health Sciences has four undergraduate study programs and two vocational study programs. So that from the seven faculties there are 28 undergraduate study programs and four vocational study programs. For more details described in the table below.

Table 1 Distribution of the Number of Lecturers at UPN Veterans Jakarta

No	Majors courses	Number of Lecturers
1	faculty of Social Science and Political Science	69
	Political Science Study Program	12
	International Relations Study Program	19
	Communication Science Study Program	38
2	Faculty of Economics and Business	92
	Accounting Study Program	31
	Management Study Program	30

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	Master of Management Study Program	5
	Development Economics Study Program	7
	Sharia Economic Study Program	8
	D3 Banking Program	6
	D3 Accounting Program	5
3	Faculty of Computer Science	38
	Informatics Study Program	13
	Information Systems Study Program	14
	D3 Informatics Systems Study Program	11
4	Faculty of Law	43
	S1 Study Program	
	Masters Study Program	
5	Medical School	83
	Medical Undergraduate Study Program	70
	Medical Professional Program	6
	Pharmacy Professional Program	7
6	Faculty of Engineering	43
	Mechanical Engineering S1 Program	11
	Industrial Engineering S1 Program	16
	Marine Engineering S1 Program	9
	Electrical Engineering S1 Program	7
7	Faculty of Health Sciences	76
	D3 Nursing	7
	D3 Physiotherapy	9
	S1 Nursing	14
	S1 Public Health	23
	Bachelor of Nutrition	17
	Nurse Profession	6
Total Lecturers		444

Source: Processed data (2020)

From the table above it can be seen that there are differences in the number of lecturers ateach study program or between faculties. The highest number of lecturers is owned by the Faculty of Economics and Business while the lowest is the Faculty of Computer Science. Theoretically, this table shows that study programs that have a greater workload will have a large number of lecturers and vice versa

In everyday life, economists, engineers, the Chief of Police, the Commander of the Armed Forces, and even a clothing shop owner do good calculations to determine the characteristics and number of human resources that must be owned as important factors in achieving the goals to be achieved. However, in practice, these stakeholders often find it difficult to obtain accurate workload information. According toworkload means a number of activities that require mental processes or abilities that must be completed within a certain period of time, both physically and psychologically.(Gawron, 2019)(Dhani, 2010)

Thus a heavy workload will affect the minds of workers and if not managed properly will affect low performance and productivity. Not only will productivity and performance be impacted, but also morale and staff will be negatively affected leading to an increase

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in absenteeism and employee turnover. Research conducted byworkload that is too heavy affects audit quality and decreases satisfaction. It even influences the occurrence of family conflict (.(Perselin, 2019)(Illies, 2007)

The outbreak of the Covid-19 pandemic has affected the workload of employees, the workload of employees who are working from home is less than when working from the office. Physical work imbalance researched bywho found a 40% difference in the ratio of physically unbalanced workload which causes groups with low physical workloads to impact work schedules and income.(Matsumoto, 2020)

Agree with Mashumoto's opinion, in a book published by the US Army Research Institute for the Behavioral and Social Science,said that a high workload can lead to low effectiveness, therefore workload must be taken into account through a planned process system.(Johnson, 1991)

Workload is closely related to working hours. A high workload, if carried out by a relatively unbalanced number of employees, will require longer working hours. Conversely, if the work volume is low, if it is done by more employees, the working hours will be short, and the rest of the employees will be unemployed.said that the occurrence of disguised unemployment in government or private offices is associated with less than normal work volume and income that is not in accordance with the necessities of life. Too little volume of workload also causes boredom at work. More than that, work that is not evenly distributed in one organization creates jealousy among employees.(Harfina, 2009)(Irawati, 2020)(Khasifah, 2015)

Information regarding the workload of each position is useful for organizations to determine human resource needs which become the basis for policy makers to recruit and select or even carry out employee separation. Employees will work effectively if the recruitment and selection are done correctly. To carry out recruitment properly, it is necessary to compare data on the number of existing employees with the volume of work, so that the organization can carry out human resource planning properly. Human resource planning (human resource planning) describes the condition of the organization's HR in the future based on the current condition of HR. So it can be said that workload analysis functions to provide data on the number and qualifications of human resources needed according to the workload of each position in the organization.

METHODS

The method used in this research is descriptive. This research will use the FTE (full time equivalent) unit with reference to the Decree of the Chancellor of the University X Number 76 of 2019 concerning monitoring and evaluating the performance of university lecturers requiring lecturers to continue to carry out 12 credits in one semester. This amount consists of education, research, community service and support which is equivalent to one FTE or full teaching time equivalent (EWMP). For more details, it is presented in table 2 below.

Table 2 Distribution of Main Tasks According to Academic Position

No	Task Tree	Expert Assistant	Lector	Head Lecturer	Professor
1	Education	55 % x12 = 6.6 credits	45%x12 = 5.4 credits	40 %x12=4.8 credits	35%x12=4.2 credits

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2	Study	25%x12=3.0 credits	35%x12=4.2 credits	40%x12=4.8 credits	45%x12=5.4 credits
3	Abdimas	10%x12=1.2 credits	10%x12=1.2 credits	10%x12=1.2 credits	10%x12=1.2 credits
4	Support	10%x12=1.2 credits	10%x12=1.2 credits	10%x12=1.2 credits	10%x12=1.2 credits
	Amount	12.0 credits	12.0 credits	12.0 credits	12.0 credits

Source: Decree of the Chancellor of UPNV X (2019)

The workload of 1 credit is considered equivalent to the workload of teaching one subject weighing 1 credit for one semester to one class of undergraduate program students of 40 people. It should be noted that the teaching load of 1 credit is equivalent to 3 hours of work per week for one semester, while the 3 hours per week consist of 1 hour of lecture preparation, 1 hour of face-to-face meetings, and 1 hour of evaluation. For more details, it is presented in table 3 below.

Table 3. Equivalence of Activities in the Education Sector

No	Tridharma Activities of PT	
1	Lectures at S0 and S1 levels for 1 hour face to face per week plus 1 hour of independent activity and 1 structured hour with the number of students:	
	a. 1 class consists of 1 to 40 students	1 credit
	b. 1 class consists of 41s/d80	1.5 credits
	c. 1 class consists of 81 to 120	2 credits
	*) lecture/tutorial activities are limited to a maximum of 12 credits	
2	Lectures at Masters level for 1 hour face to face per week plus 1 hour of independent activity and 1 structured hour with the number of students:	
	a. 1 class consists of 1 to 25 students	1 credit
	b. 1 class consists of 26s/d50 mhs	1.5 credits
	c. 1 class consists of 51 to 75 students	2 credits
3	Lecture or practicum assistant consisting of up to 25 students for 1 semester for 2 hours face to face per week	1 credit
4	Programmed work/practice guidance that is carried out at least:	
	a. 40 hours of work per semester consisting of:	
	1) 5 to 20 mhs	1 credit

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	2) 21 to 40 mhs	1.5 credits
	3) 41 to 60 mhs	2 credits
	b. More than 40 hours of work per semester consisting of:	
	1) 5 to 20 mhs	1.5 credits
	2) 21 to 40 mhs	2 credits
	3). 41 to 60 mhs	2.5 credits
	4). Subsequent increments are multiples of 40 hours equivalent to	0.5 credits

Source: Chancellor's Decree (2019)

Furthermore, the calculation of the amount of workload is carried out using the formula (Barizi, 2010):

SKS Weight x Number of Classes x SKS/class

The results obtained are equivalent to full time equivalent.

RESULTS AND DISCUSSION

The amount of lecturer workload required to organize an educational program is called 'program workload'. The workload of this program can be measured in credits using the calculation guidelines as shown in Table 2, then translated into FTE. The magnitude of the program workload stated in the FTE indicates the number of lecturers needed to implement the educational program, as long as each lecturer works full load (12 credits per semester) and his duties are only in the teaching field. In fact, the task of lecturers is not only in the field of teaching, but also in other fields.

The results of calculating the needs of lecturers at the Jakarta Veterans National Development University using workload analysis show the following data:

Table 4 Total Workload and Needs for the number of Lecturers per Study Program

No	Study program	Workload	Current number of lecturers	Crew results	gaps	Need	Information
	FACULTY OF BUSINESS ECONOMICS						
1	ODD Sharia Economics Undergraduate Program	193	8	13	5	5	
	EVEN Sharia Economics	**201.5**	**8**	**13,2**	**5**	**5**	

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	Undergraduate Program						
	ODD S1 Development Economics Program	250	7	16	9	9	
	EVEN Development Economics Undergraduate Program	**199.5**	**7**	**13,11**	**6**	**6**	
	Diploma 3 Accounting ODD	234	5	15	10	10	
	Diploma 3 Accounting EVEN	**165**	**5**	**11**	**6**	**6**	
	ODD S1 Accounting Program	1,306,5	31	85.25	54	**54**	
	EVEN Bachelor of Accounting Program	**1,325**	**31**	**86.41**	**55**	**55**	
	Diploma in Finance and Banking ODD	167	5	10.87	6	6	
	Diploma in Finance and Banking EVEN	**162.5**	**5**	**10.59**	**6**	**6**	
	ODD Management Undergraduate Program	**1,796**	**30**	**117,19**	**87**	**87**	
	EVEN Management S1 Program	**1981**	**30**	**129.3**	**99**	**99**	
	ODD Management Masters Program	**84**	**5**	**5,46**	**-**	**-**	
	EVEN Master of Management Program	**79.5**	**5**	**5,17**	**-**	**-**	
2	**FACULTY OF ENGINEERING**						

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	ODD Mechanical Engineering S1	331	11	22	11	11	
	S1 Mechanical Engineering EVEN	**294.5**	**11**	**20**	**9**	**9**	
	S1 ODD Industrial Engineering	238.5	16	16	-	-	
	S1 Industrial Engineering EVEN	**297**	**16**	**20**	**4**	**4**	
	S1 Odd Shipping Engineering	201	9	13	4	4	
	S1 Evening Marine Engineering	**157**	**9**	**11**	**2**	**2**	
	S1 Electrical Engineering ODD	36	7	3	4	4*	Excess
	S1 Electrical Engineering EVEN	**20**	**7**	**2**	**5**	**5***	**Excess**
3	**FACULTY OF SOCIAL SCIENCE AND POLITICAL SCIENCE**						
	ODD S1 Communication Studies	2,195	38	143,29	105	105	
	S1 Communication Studies EVEN	**2.177**	**38**	**142,2**	**104**	**104**	
	S1 ODD International Relations	840	19	56	37	37	
	S1 International Relations EVEN	**774**	**19**	**50**	**31**	**31**	
	ODD S1 Political Science	303	38	20	18	18*	Excess

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	S1 Political Science EVEN	**332**	**38**	**22**	**16**	**16***	**Excess**
4	**FACULTY OF MEDICINE**						
	ODD S1 Pharmacy	78	7	5.07	2	2*	Excess
	S1 Pharmacy EVEN	**58**	**7**	**3.75**	**3**	**3***	**Excess**
	ODD S1 Medicine	2,595	70	169.53	100	100	
	S1 Medicine EVEN	**1958**	**70**	**122,23**	**52**	**52***	
5	**FACULTY OF LAW**						
	S1 ODD Law	2,846		185.7			
	S1 Law EVEN	**2,552**		**146.95**			
	Master of Odd Law	57.5	8	4	4	4*	Excess
	Semester 1	52		3,29			
	Semester III-Business Law	13		1			
	Semester III-Criminal Law	18		1			
	Semester III-Health Law	14		1			
	S2 Law EVEN	48	8	4	4	4*	Excess
	Semester II-Business Law	13		0.86			
	Semester II-Criminal Law	13		0.86			
	Semester II-Health Law	13		0.86			
	Semester IV	9		0.56			
6	**FACULTY OF HEALTH SCIENCES**						
	D3 ODD Physiotherapy	153	9	9.97	1	1*	Excess
	D3 Physiotherapy EVEN	150	9	9.65	1	1*	Excess

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	ODD D3 Nursing	74	7	4.89	2	2	
	D3 Nursing EVEN	54	7	3.51	3	3	
	S1 Nursing ODD	688.5	14	44,92	31	31	
	S1 Nursing EVEN	522.5	14	34.07	20	20	
	S1 Nutrition ODD	456	17	29,73	13	13	
	S1 Nutrition EVEN	396	17	25,83	13	13	
	ODD Bachelor of Public Health	580	23	37,83	15	15	
	S1 SKM EVEN	562	23	36,66	14	14	
7	**FACULTY OF COMPUTER SCIENCE**						
	D3 ODD Information System	240	11	15.65	5	5	
	D3 EVEN Information System	188	11	12.25	1	1	
	S1 ODD Information System	510	14	33,26	19	19	
	S1 EVEN Information System	489	14	31.89	18	18	
	S1 Informatics ODD	515.5	13	33,61	20	20	
	S1 Informatics EVEN	506.5	13	33.03	19	19	

Source: Processed data (2019)

According to Dr. Prasetyo Hadi, former Dean of the Faculty of Economics and Business who is now Deputy Chancellor for General Affairs and Finance "It is true that at FEB there is a shortage of lecturers, we will recruit many prospective doctoral or postgraduate lecturers who have graduated from foreign universities for all faculties, so that lectures are not uneven."

Analysis of workload data at the Faculty of Engineering with the smallest workload being in the Electrical Engineering Study Program each with 36 credits in odd semesters with a need for 2.33 or 3 lecturers. Currently there are 7 lecturers teaching in the Electrical Engineering Study Program, it seems that there are an excess of 4 people. In the even semester the workload is 20 fte with the number of lecturers needed 2 people.

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Currently the number of teachers in the even semester is 7 people, there is an excess of 5 lecturers.

The Faculty of Social and Political Sciences has 3 Study Programs namely International Relations, Political Science and Communication Science. From the data in the table above, the Political Science Study Program has the smallest amount of workload, 303 (20 lecturers) each for odd semesters. In carrying out daily tasks there are 38 permanent lecturers, meaning there are an excess of 18 people. Likewise in the even semester with a workload of 332 (22 lecturers). Same with the number of lecturers in the even semester of 38 people. From the results of the analysis of lecturer needs, it can be seen that there are an excess of 16 lecturers teaching in even semesters. When commenting on these findings, the Vice Dean for Academic Affairs of FISIP, Dr. Kusumajanti said "yes, that's true, but can you say we have 150 lecturers for Communications, but at the same time these lecturers are also lecturers in International Relations and Politics."

Of the three study programs, the Communication Studies study program has the highest workload, namely 2,195 in the odd semester (143 lecturers) and 2,177 in the even semester with 142 lecturers. From the comparison between the results of the needs analysis, it can be seen that each has a shortage of 105 lecturers in the odd semester and 104 teachers in the even semester.

The Faculty of Medicine consists of the Pharmacy Study Program and the Bachelor of Medicine. From table 4, it is known that the Pharmacy Study Program in odd semesters has a workload of 78 fte with a required number of lecturers of 6 people. Because currently there are 7 people teaching in the Pharmacy Study Program, so there is one more teacher. In even semesters, the number of lecturers needed is 4 people, meaning there is an excess of 3 people (currently there are 7 people) with a total workload of 58 fte.

Data for the Bachelor of Medicine Study Program shows that the workload in odd semesters is 2,595 fte with the need for 170 lecturers, there is a shortage of 100 lecturers. Whereas in the even semester, there is a shortage of 52 lecturers (workload of 1,958 with the current number of lecturers of 70).

The Faculty of Law consists of 2 study programs, namely undergraduate and postgraduate programs. The law degree program in odd semesters has a workload of 2,846 with 186 lecturers needed. The teaching and learning process for the undergraduate law program in the even semester has 2,552 workloads with a total of 147 lecturers.

The Master of Law Study Program has a workload of 57.5 in odd semesters with 4 lecturers with special needs, while currently the number of lecturers teaching in the Masters program is 8 people, meaning there is an excess of 4 people than needed.

The workload data for D3 Physiotherapy are odd-even, respectively, 153 and 150 fte with the need for 10 lecturers for odd and even semesters. Currently there is a gap in the need for 1 lecturer because the D3 Physiotherapy already has 9 lecturers. In contrast to the D3 Physiotherapy, the D3 Health has a workload of 74 fte for odd semesters and 54 fte for even semesters, this amount of workload requires 5 and 4 people respectively, lecturers who teach in D3 Health currently number each odd and even 7 people. It still needs to be done with 2 people each in the odd semester and 4 people in the even semester.

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If you look at the needs of lecturers in the Undergraduate Program in Nursing, Nutrition and Public Health, the smallest workload is in the Nutrition study program, namely 456 (odd) and 45 lecturers are needed (an additional 31 lecturers). In the even semester, there is a workload of 396 (26 lecturers), requiring 9 more people from the current number of lecturers (17). The highest workload is in the Nursing study program, namely 688.5 (45 lecturers) and there is a gap of 34 people from what is currently available (14). In the even semester 522.5 (34.07 lecturers needed) this indicates a need for 20 lecturers from those currently available (14). According to the Vice Dean for General Affairs and Finance at FIKES, this shortage cannot be avoided because it is difficult to find prospective lecturers with doctoral degrees. "If there are many Masters graduates, but the Dean said we need a S3 to support accreditation." said Mr. Sugianto. That is one of the causes of the discrepancy between the number and workload of lecturers.

The Faculty of Computer Science consists of D3 Information Systems with a workload of 240 (16 lecturers) and 188 (12 lecturers) respectively. Because currently there are 11 lecturers available for odd and even semesters, so the gap in the need for lecturers is 5 (odd semester) and 1 person (even).

For S1 workload information 510 (33 lecturers required) and 489 (32 lecturers required) there is still a difference in lecturer needs, 19 (odd semesters) and 17 (even semesters) respectively. For the needs of lecturers in S1 Informatics, 21 lecturers are needed (odd) and 20 lecturers for even semesters.

CONCLUSION

In some Study Programs there is a shortage of lecturers, but in several study programs (Electrical Engineering study program, Political Science Study Program, Pharmacy, Law Masters program, and D3 Physioptherapy) there is an excess of teaching staff. The advantages and disadvantages of lecturers are caused by the workload in the study program which is greater or smaller than the number of lecturers currently available. In order to maintain the effectiveness of the teaching and learning process, higher education leaders can recruit new lecturers to be placed in study programs that lack permanent lecturers. UPN Veteran Jakarta with state status will have no problem getting students who are interested in studying. Regarding the excess of lecturers in several study programs, the leadership of UPN Veteran Jakarta can also make adjustments to the number of lecturers according to the results of the workload needs analysis that has been carried out. This research only looks at the workload analysis, in subsequent research other methods can be used to ensure the accuracy of the number of lecturers needed in a tertiary institution

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