Implementation of Agile Education for Study Program Operational Plan Development

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Abstract. The rapid development of science and technology at this time has also spurred progress in various fields of life, including education, especially in providing good and quality services. Universities compete with each other to be the best in providing services. The applied informatics management undergraduate study program is one of the study programs that is being intensively cultivated in various fields, especially human resources, facilities and infrastructure, to be improved and become an accredited study program A. Association of Higher Education Informatics and Computers in Indonesia explained that there are seven informatics management study programs in Indonesia, none of which has been accredited with an A grade. Currently, the accreditation status of research study programs is good. Therefore, this study program prepares an operational plan which is the result of the elaboration of the strategic plan of the vocational program to support or strengthen the internal and external conditions of the informatics management program, so that this program can improve accreditation. The development method chosen is a quantitative methodology based on the philosophy of positivism to study a particular population and sample. This method is beneficial in analyzing data in several components of the operational plan, including Human Resources, Facilities, and Infrastructure and Research. This research also applies the agile education method, making operational plans more flexible and sustainable in setting targets. With these two methods, the baseline value parameter is generated as a determinant of the following target depending on the conditions of the study program.

Keywords: Operational Plan. Agile education · Quantitative · Accreditation · Services

1 Introduction

In the middle of 2021, the applied bachelor program in the management of informatics was born after the upgrading of the associate management informatics program, which at that time was still located at the engineering faculty and has now become part of the vocational program at the State University of Surabaya (Unesa). The vision of the

applied bachelor of informatics management is "To become an institution/institution in the field of software engineering technology that is superior, competitive, and has a good environmental culture at the national level." targeting graduates who are competitive at the national level. This relatively young study program tries to improve its quality to achieve its vision and mission by compiling an operational plan for the study program based on an analysis of both internal and external problem conditions using quantitative methods that will analyze each component data, which is Quantitative approaches focus on objective measurement and statistical, mathematical, or numerical analysis of data acquired through polls, questionnaires, and surveys, as well as modifying pre-existing statistical data using computational techniques [1].

Nine components will be used as standards in making operational plans and analyzed based on a quantitative approach, including Vision, Mission, Goals and Targets, Governance and Cooperation, Students, Human Resources, Finance, Facilities and Infrastructure, Education, Research, Service to Society, Outcomes and Outcomes of teaching, research and service. Some of these components result from the elaboration of the strategic plan of the faculty or vocational program that oversees the applied undergraduate program in informatics management. There are nine components in the faculty's strategic plan, which are almost the same as the components in the operational plan but are more general because they are parameters for some of the study programs being supervised. This research applies not only a quantitative approach but also the agile education method, which can provide flexibility because this method is sustainable. It is also following this operational plan development research because it is a derivative or the result of elaborating the faculty's strategic plan.

The rest of the paper is organized as follows: Sect. 2 introduces the operational and strategic plan's background. Section 3 presents the quantitative approach and agile education. Section 4 describes our results and evaluation. Finally, Sect. 5 presents the conclusion and future work of this research.

2   Background

There are two backgrounds that are related to each other for this research, the first one is an operational plan and the second one is a strategic plan.

2.1   Operational Plan

The operational plan is the formulation of plans and targets for achievement within a certain period, which can be quantitative and qualitative for the operation of each performance indicator both within one year to five years [2] in this case, based on the targets set in the faculty strategic plan, every university must have criteria or components for preparing operational plans in the manufacture or development, as well as the informatics management study program which has nine components resulting from the elaboration of the strategic plan which has been explained in the introduction section.

2.2 Strategic Plan

The relationship between the strategic and operational plans is an integral part of the development of educational institutions. Strategic planning is an activity describing new programs, which can be in the form of strategic plans, strategic goals, initiatives, and targets. [3] the development of the operational plan of the informatics management study program is a description of the strategic plan of the vocational program, which also has nine components similar to the components in the operational plan but more generally.

3 Methods

In this research, two approaches are used, namely quantitative approaches and agile education, in this section we will discuss these two approaches and compare them with other methods that have been used by other studies.

3.1 Quantitative Methods

The researcher uses a quantitative approach because of the study program's operational plan related to data, questionnaires and surveys. The choice of this method as a substitute for the qualitative method is expected that the data presented and analyzed are not too abstract and can be accounted for.

In the strategic plan and operating plan research in Islamic education institutions [4], researchers also apply quantitative methods because they are related to student data, the number of infrastructure facilities and the number of research in the academic field, but do not apply agile education so that the targets set will not be flexible to follow developments institution.

In operations, management research methodologies using quantitative modeling [5], explain that this research distinguishes between empirical research and axiomatic research and further between descriptive and normative research. Presents guidelines for conducting quantitative model-based research in operations management. In building the argument, it builds on lessons learned from operations research and operations management research from the last decade and on research from a number of other selected academic disciplines [6, 7]. Concluded that the quantitative model-based empirical research methodology offers great opportunities for operations management researchers to advance the theory further. However, it is still the same as previous research that has not implemented agile education to increase flexibility in determining the amount of the annual target.

3.2 Agile Education

The application of agile education, apart from being a differentiator from other research because this approach is under this research, is related to an approach that prioritizes agility if there is a change and is more flexible and sustainable because agile learning is built on taking small, frequent steps, reviewing what was learned, and acting after each iteration of a design [8]. It seems that the research on the development of this operational plan will continue with the strategic plan and be ready to follow changes if the parameter provisions change in content [9, 10].

Table 1. Indicators and workplan

Indicator	Work Plan	Baseline (2020)	Target			
			2021	2022	2023	2024
The number of synergies and cooperation fields education with government, private local level	The study program establishes cooperation in the field of education with the government and private sector at the local level	0	4	4	5	6
The number of synergies and collaborations in the education sector with the government, and private sector at the national/domestic level	The study program establishes cooperation in the field of education with the government and private sector at the national/domestic level	15	16	17	18	19
The number of synergies and collaborations in the education sector with the government, and private sector at the international level	The study program establishes cooperation in the field of education with the government and private sector at the international level	0	0	1	1	1

4   Results and Evaluation

This section will discuss the results and evaluate the results obtained whether the data entry in each component is in accordance with the indicators, work programs, baselines and annual targets. Below, we show some tables that are closely related to the 2 approaches that we choose as the method of filling data in the components in the Tables 1, 2, 3 and 4.

Table 2. Student status program

Indicator	Work Plan	Baseline (2020)	Target			
			2021	2022	2023	2024
The ratio The ratio of the number of applicants and passed the selection	Increase the ratio of the number of registrants and pass selection	1:3	1:4	1:4	1:4	1:5
Percentage of foreign students	Study Program conducts student exchange foreign	0	0	0	1%	1%
GPA of graduates	AverageGPA of study program graduates	0	0	0	3.25	3.3
Tracer Study	Study Program Conducts tracer study	0	0	0	1	1

4.1 Study Program Collaboration Programs

This program is one of the programs stipulated in the operational plan of the study program as a material for consideration to increase cooperation between study programs and various parties at the local, national and international levels. With this data, it is hoped that the work program targets every year until 2024 can be realized.

Filling in the number of targets in each program results from a quantitative approach based on the results of synchronization between the hypothesis and the calculation of the chances of realizing the work program. We can note that in the third indicator of cooperation in the international field based on the 2020 baseline, that the program has not yet been realized, then in the following target per year, we can give one cooperation because according to the survey conducted, this is quite difficult to implement.

In contrast to the national level work program based on a survey in 2020, the informatics management study program has collaborated 15 times. Therefore, the target for the next year until 2024 is that each must be able to cooperate at least 15 times.

4.2 Student Status Program

This program contains several indicators and work programs, including those related to student registration data and passing the selection to enter the informatics management study program, international students, graduate gpa and tracer studies.

Table 3. Community status program

Indicator	Work Plan	Baseline (2020)	Target			
			2021	2022	2023	2024
Total community service with university funding sources	The study program conducts community service with university funding sources	6	6	7	7	7
Total community service with national/domestic funding sources	The Study Program carries out community service with national/domestic funding sources	0	0	1	1	1
Total community service with foreign funding sources	The Study Program carries out community service with foreign funding sources	0	0	1	1	1
Presentation of community service from lecturers involving students	Community service from lecturers involving students	4	4	5	6	7

In filling in the data in this program based on each indicator, it also applies things like in the previous table, where quantitative methods help determine the following year's target based on the survey results in 2020. We can observe that the tracer study indicator shows no graduate data in 2020 because the informatics management study program does not have graduates until 2022, with the condition of students with the highest semester being the sixth semester. So it can be predicted that in 2023 there will be the first graduates who will later become the first alumni so that it can be written or set targets for tracer studies in 2023 and 2024, totaling at least one.

4.3 Community Service Program

This program contains several indicators and work programs related to sources of financing for community service programs which are differentiated based on local/university, national and international levels, and community service data from lecturers involving students.

We can analyze that the determination of targets in this work program also uses a quantitative approach when viewed from the number of targets set not much different from the 2020 baseline. For example, in the first work program on community services with university funding sources, the survey results show that in 2020 there will be six

Table 4. Academic and non-academic achievement program

Indicator	Work Plan	Base line (2020)	Target			
			2021	2022	2023	2024
Total academic achievement of local level students	The study program involves students in competitions local-level academic	0	1	2	2	3
Total academic achievement of national-level students	The study program involves students in competitions in national- level academic	0	4	5	5	5
Total academic achievement of international students	The study program involves students in competitions international -level academic	0	0	1	1	2
Total non-academic achievement of local	The study program involves students in competitions	2	3	3	3	3

financings. So that the target for the next year will not be much different, it is determined that at least seven financings will be realized by 2024.

4.4 Academic and Non-academic Achievement Program

This program contains several indicators and work programs related to academic and non- academic achievement data from students at the local or university level, nationally and internationally. in the table below, we have determined the baseline value based on the survey according to the quantitative methodology. After determining the baseline, the next step is to set an annual target until 2024. The target size is determined by a survey using quantitative methods and agile education so that the target can change at any time according to the conditions of the study program. we can pay attention to one of the indicator programs. In the first indicator about student academic achievement in the local or university field that, according to the survey, there has been no achievement in 2020, then we set a target of at least one achievement in the following year and increase until 2024.

5   Conclusion

The conclusion that can be drawn is that the second approach follows the researchers' expectations. We can see in several tables in several study programs and in particular

numerical analysis, surveys and questionnaires from interested parties in this research, namely students, lecturers and staff. It can be concluded that this method is quite helpful in determining the closest target per year for four next year. It is hoped that there will be technology that can support agile education technology to make it easier to determine targets accurately.

Authors' Contributions.   This article is performed by five authors that have contributed as follows: Dermawan, Nudin, and Fahmi are responsible in curriculum development and data collection while Sidhimantra and Hakim are responsible in data processing and reporting.

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