

# Global Trend-Based Analysis Through Management Information Systems for Lecturers of School of Postgraduates Indonesia University of Education

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**Abstract**—Industry 4.0 has become a current trend of automation and digitalization of industries. The impacts and importance of Industry 4.0 are reflected in all aspects of lives, especially in the world of education. This era got rid of manually operated systems into an automated system in a well-designed rule application. With regard to this issue, in the management of educators, lecturers of postgraduates are necessary to compromise with the following guidance outlined (1) to eliminate problems; (2) effective and efficient; (3) increase productivity; (4) provide service excellence; (5) quality assurance; and (6) education marketing. The term Management Information Systems model (MIS) based on the current Industrial Revolution was developed for management in (1) academic counselors; (2) lecturers; (3) thesis supervisor and dissertation; (4) thesis examiners and dissertations, thus professionalism in its management could be managed, maintained and developed as optimal as possible. The present study is a kind of research and development (R & D) using mixed methods with 34 respondents from master's (S2) degree and 20 Doctoral (S3) degree. The results showed that the management of postgraduate educators was conducted manually, hence there was a lack of even distribution of academic advisers, lecturers, thesis advisers and dissertations and examiners of theses and dissertations, and therefore, the empowerment of quality resources turned into less optimal.

**Keywords**—*automation system; management; lecturers; Management Information Systems (MIS)*

## I. INTRODUCTION

Globalization under Industry 4.0 has gone beyond just the worldwide interconnectedness, including in Indonesia, there are several challenges in the industrial era 4.0 identified as follows; 1) improvement of information technology security; 2) increased reliability and stability of production machines; 3) improvement of skills; 4) the reluctance of stakeholders to change; and 5) loss of many jobs due to automation (Sung, 2017, in Yahya, 2018). In contrary, another challenge faced by the graduates of Indonesia University of Education (hereinafter called UPI) is the absence of a management information system model related to lecturer services starting from (1) academic counselors; (2) lecturers; (3) thesis supervisor and dissertation; (4) thesis examiners and dissertations, and in

turns, they are not evenly distributed in each study program both master's degree and doctoral.

Academic counselor is a member of a college faculty who helps and advises students solely on academic matters and informed career decisions [1-3]. In other words, appointed lecturers with duties on guiding a group of students who aim to assist with educational problems during the learning process thus students enable to complete their studies as quickly and efficiently as possible according to the conditions and potential of each. At the School of Postgraduates UPI, the role of an academic counselor or supervisor will be concurrent with a thesis and dissertation guide, thereby the academic supervisor is one of the important factors in completing education effectively and efficiently and has high quality.

Intended subjects are lecturers at the university who are in charge and responsible for designing, compiling, implementing, monitoring and evaluating the learning process with a particular focus of study, in this point, students are demanded to notably understand the scope of the course. Thus the transformation of knowledge carried out by lecturers is a series of implementation of management functions, in other words lecturers are organizing education in classroom [4-11].

Thesis and dissertation advisors are members of a university faculty whose role is to guide graduate students who are candidates for a master's degree and doctorate, helping them select coursework, as well as shaping, refining and directing the students' choice of sub-discipline in which they will be examined or on which they will write a dissertation. And therefore, it can be illustrated that thesis and dissertation supervisors generally denote academic experts who are hired to assist students carry out their final research management [12-18].

Thesis and dissertation examiners are selected educators in postgraduates study programs who are hired to conduct evaluations [19-23] to measure the level of mastery and accountability of the candidates of master's degree and doctorates concerning their final assignments, thesis and dissertation research. The assessment component includes aspects: the structure of writing, the depth and breadth of literature review, research methods, theoretical implications, advantage, originality, use of standard language, and the

accuracy of the written procedures, as well as giving input to improve the prior thesis and dissertation. It can be conveyed that the examiners for thesis test and dissertation build the quality of master and doctoral candidates [17, 24–27].

To investigate the matter, the four formulated factors are highly important in improving the quality of graduates, management is no longer conventional yet it must be comprehensive and competitive considering the resources are professional staffs. Not surprisingly, by adhering to the loyalty of resources depends on satisfying management of its institution, it generally denotes that the higher the quality of institutional services to professional staff, the higher their loyalty to the institution.

## II. METHODOLOGY

The current project is a kind of research and development using mixed methods, qualitative and quantitative, as applied research prioritizes changes for what works better, rather than why. The quantitative approach is carried out to figure out the extent of satisfaction of postgraduate educators on management (1) academic counselors; (2) lecturers; (3) thesis supervisor and dissertation; (4) thesis examiners and dissertations at School of Postgraduates UPI. In other words, the qualitative approach is carried out to explore policy implementation (1) academic supervisors; (2) lecturers; (3) thesis supervisor and dissertation; (4) examiners of theses and dissertations in each master's degree and doctoral study program in forms of documents and interviews.

The formulated steps are as follows, firstly: Potential Analysis and Problems in the services of School of Postgraduates UPI (SPs UPI) related to lecturers (1) Academic counselors; (2) lecturers; (3) thesis supervisor and dissertation; (4) thesis examiners and dissertations. Secondly: Data Collection and Needs Analysis related to the making of lecturers of SPs UPI management information system models in terms of (1) academic supervisors; (2) lecturers; (3) thesis supervisor and dissertation; (4) thesis examiners and dissertations. Thirdly: Initial product development is a rough draft of the SPs UPI management information system model. Fourthly: Draft or initial product that has been described above is carried out by Focus Group Discussion (FGD) with experts staples to request responses and assistance in accordance with their expertise (desk try out or desk evaluation), and fifthly: Product Revision and Final product testing, to examine whether a product of research management is feasible and has excellence at the practice level. The product is assumed to be perfect.

## III. RESULTS AND DISCUSSION

Based on results obtained in this line of research, it could be illustrated as figure 1.

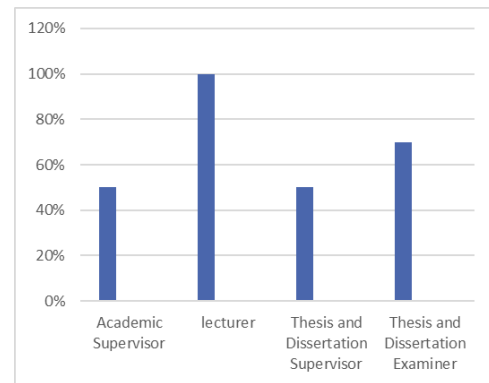


Fig. 1. Research result.

From such observations, as the figure 1 shows, there has been a rapid rise on the level of equity of academic supervisors as the number of students and the number of lecturers given the assignment as academic supervisors is only 50%. This draws to a close that not all lecturers receive assignments as academic advisers, where almost all study programs occur in several lecturers while other lecturers are not given role as academic advisers. This shows that the head of study program as a decision maker has essentially made a step to waste the professional resources possessed by the university. The impact is a great loss for the development of the quality of the university due to the use of optimally professional resources.

In this regard, the level of distribution of the distribution of courses reaches 100% in the sense that each study program has utilized all professional resources owned by the university. The decision to use all resources for each study program is a good step so as to avoid wasting the professional resource assets owned by the university.

As well, the distribution of thesis and dissertation supervisors is very low at only 50%, it indicates that the head of study program makes inconsistent decision towards the thesis supervisor and dissertation and only relies on a few lecturers, hence certain professional resources are not used, this delivers an assumption that all graduate lecturers are staff professionals who have conditions according to the provisions of university policies.

Similarly, in the thesis and dissertation examiners, the level of equity is only 70%, in the sense that not all lecturers as professional resources possessed by each study program are used to become examiners, even in many testing study programs piled up on some professional lecturers / resources. Even though the decision of the head of study program has encouraged the waste of professional resources owned by the university as a result of not being used optimally for professional resource use.

The solution proposed is 4 activities above, namely (1) academic supervisor; (2) lecturers; (3) thesis supervisor and dissertation; and (4) thesis testers and dissertations are carried out in an automated manner. The assumptions referred to are that all postgraduate lecturers are professional resources as university assets, thus to avoid unused optimally which will result in huge waste and losses for the university due to wasted professional resources, and therefore, a system capable of

accommodating various operating conditions based on source expertise to achieve the system task is created.

It is needless to mention that if study program A has 20 professional resources, then if there are 50 students who have registered for the new school year then marks should be distributed equally to all lecturers. The step shows optimal utilization of professional resources. Nonetheless, for lecturers, thesis supervisors and dissertation counselors are immediately divided equally for all the prevailing resources of the study program. The above step is one form of utilizing appropriate professional resources.

#### IV. CONCLUSION

Based on results obtained in this line of research, the management of postgraduate lecturers at the Indonesia University of Education still remains terrible, because almost every study program wastes university assets by giving assignments that accumulate to several people and do not use all the prevailing resources. As already figured out in the findings above, the cited matters are thus essentially important to conduct immediate follow up with an automated management model of postgraduate's lecturers by dividing the equal volume of work among all professional resources on each study program within university. The automation system is built to avoid the accumulation of workloads and the waste of professional resources as a management information system (smart system) that will assist the decision making of the head of study program as a strategic way to avoid wasting professional resources.

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