Career Model In Information And Communication Technology Informatics Based On Expert Systems

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Abstract— Expert Systems were built in building an application program in helping Informatics students in determining their work and future careers that were suitable for Informatics to fit their expertise by leading to Information and Communication Technologies (ICT). Where in determining the field of work and future career, it was seen from his expertise at the time of lecture, especially in mastering the material in each course arranged in the form of Semester Learning Plans in each course which was cared for by a Lecturer who was an expert in their field. With the Semester Learning Plan, students must complete their learning and have a graduated standard that is determined or agreed upon such as values 80-100, where the value will affect the cumulative achievement index. After the rules were established, a rule was established to determine the rules in determining the database of expert systems by using the forward chaining method so that it could be executed with a program in this case Desktop-based Visual Basic (VB).

Keywords --- Expert System, Forward Chaining, Career Informatics and ICT.

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1 INTRODUCTION

Higher education in Indonesia also consists of various kinds of disciplines taught, one of which is in the field of computer science. This field also consists of various kinds of elective study programs such as Informatics Engineering, informatics systems, and so forth. The difference in this study program will determine the course and graduate competencies that will be produced later. Like the Informatics Engineering Study Program, the subjects that must be taken will also be different from the courses in the Information Systems Study Program, which all existing courses will be mutually sustainable during the study period.[1][2]
The continuity of the existing courses is done so that the abilities and knowledge of students remain on the corps and are completed in accordance with their majors. Just as in the informatics engineering study program, when the second programming language course where the prerequisites must be completed the first programming language course, then with the precondition the students must be clever in determining what department is suitable for their particular field of expertise in informatics engineering whether they are majors in the field of Networking, Photoshop Designer, programming, WEB Designer, network administrator, and Informatics Engineering education personnel.[3][4]
So all of that needs the right selection to support so that the students really are experts in their field, if students are experts in their fields then it will definitely support their performance and career in the future, because today people need people who are reliable and experts in their fields.[5]
Therefore, so that students can compete in the Industrial Revolution 4.0, they must choose a department that is suitable for themselves and their personalities. However, the types of work that are very diverse in vocational education, especially in the informatics industry such as programmers, network administrators, system analysts, and other types of work, make students tend to have difficulties in determining which profession they want to pursue. This has an impact on student lecture flow while undergoing college studies. Expert systems are systems that try to adopt human knowledge to computers; in order to solve problems as can be done by experts. In this case, the expert system is used to help students, to get an overview of which profession is suitable for students, which of course refers to the informatics engineering curriculum.[6][7]
Basically the idea of making an expert system is to adopt the results of thinking and knowledge from humans into a computing device, namely a computer, to produce a solution to a problem that arises. The essence of an expert system is the generate process that is carried out when using it [8][9]. The role of choosing a method used in expert systems is important, the use of appropriate methods determines the accuracy and accuracy of the solutions offered to users as users.[10][11][12][13][14]

2. METHODOLOGY

Based on the background and formulation of the problem in this study, the type of research conducted is Research and Development or R & D. According to Sukmadinata (2005: 164), "Research and Development (Research and Development) is a process or steps to develop a n[2]ew product or perfect existing products that can be justified". While according to Sugiono (2010: 407) the development method is "The research method used to produce certain products and test the effectiveness of these products". Research and development methods are also defined as research that intentionally, systematically aims to find, formulate, improve, develop, produce, test the effectiveness of products, models, methods or strategies or ways, services, certain procedures that are more superior, new, effective, efficient, productive, and meaningful (Putra, 2012: 67).

This career profile procedure in the field of ICT based expert systems uses a 4-D development model (four-D Model). According to Thiagarajan (1974) suggests that, the steps of development research are abbreviated with 4D, which is an extension of Define, Design, Development, and Dissemination, which is shown in the picture.

The reason for researchers chose this 4D model is based on several studies of the theory of development procedures that are referred to, there are advantages and compatibility of the 4D model used in this study because it is systematic, so the steps are easy to follow.

3. RESULT AND DISCUSSION

Rule 1:
IF MK 1 AND MK 2 AND MK 13 AND MK 15 AND MK 17 THEN EM, SM-D, SM-M, MM, STAF.

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CAREER FOR INFORMATICS:
EXECUTIVE MANAGEMENT (EM)
CDO- Chief Digital Officer
SENIOR MANAGEMENT – DIRECTORS (SM-D)
Director Business Applications, Director IT Deployment, Director Systems And Programming, Director Technical Services.
SENIOR MANAGEMENT – MANAGER (SM-M)
Manager Application Development, Manager Application Technology, Manager Business Development, Manager Cloud Applications, Manager Competitive Intelligence, Manager Controller.
MIDDLE MANAGEMENT (MM)
Project Manager Applications, Project Manager - Implementation Deployment.
STAF
Cloud Computing Architect, Competitive Intelligent Analyst, E-Commerce Specialist, Enterprise Resource Planning (ERP) Security Administrator, Help Desk Analyst, Help Desk Technician, Object Programmer, Object Programmer Senior, Programmer or Analyst, Programmer Assistant, Programmer, Programmer Senior, Software Engineer, Software Quality Control Tester, System Programmer, System Programmer Senior.

The development of an expert system based ICT career profile model was developed using the 4D model through the Define, Design, Develop, and Disseminate stages. The development of this model has been developed validly, practically, and effectively so that it has clear comprehensive steps to produce a measurable expert system-based career profile model in the ICT field. Broadly speaking, the career profile model developed develops 3 stages including; (1) Expert system input, (2) Expert system Role processing, and (3) Output. So that it can be seen from the define, design, develop process, directly proportional to the results of the disseminate process obtained.

Expert system applications are developed and designed based on the needs of educators and students taking into account the interactivity that occurs in the career profile process, especially in the ICT field in informatics engineering study programs. So that the expert system developed was considered valid by experts, assessed practice by the user and proved effective and this can be seen from the level of satisfaction of the use of expert systems by the users.

This process and output stages are the result of the two previous processes of expert input, expert system role process. At this stage the results of the process of identifying student learning outcomes, GPA, KKM with career field specifications set by the KKNI so that the output form of the expert system application is in the form of decision support sheets and attachments to work fields that are in accordance with KKNI standards so that users can determine the attitude towards the chosen career level. The following is the output display of expert system-based ICT career models profile.

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