

rules are simply defined by a combination of graphical shapes and pieces of text [19].

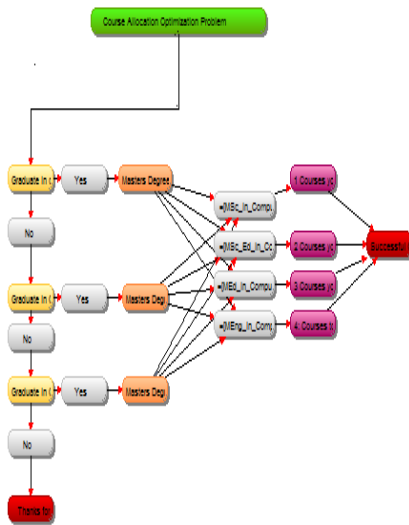


Fig. 1: Visirule Expert System Model to allocate courses to various lecturers

5. Discussion

The findings account that problem of assigning courses to lecturers could be solve using artificial intelligent rule-based models far better than the using of manual/conventional approaches. As it was illustrated in the table 4, it could be deduced that the use of solvers such as Microsoft Excel Solver, Lingo Solver, and TORA Solver performed so greatly compared to manual allocation of courses in terms of number of iterations to generate the final result, the time taken to complete the execution of the result and the skills required to implement those solvers. Though, manual iteration might be lower compared to some of the solvers but using manual assignment of allocating courses may prone to series of errors and at the same time takes a lot of time to complete the allocation. The HODs and whoever in charge of course allocation of courses may need to have fundamental basic knowledge of computing as a prerequisite to the use of the aforementioned solvers. At the same time, Visirule expert system complemented the use of three solvers by helping the HODs to conveniently allocate courses to the lecturers using decision procedures already embedded into the software. As shown in the fig.1, the

green box is the starting point, yellow boxes is a single question box that asks a teacher/lecturer area he/she did his/her first degree. In this, if the answer is no, it will proceed to ask another question and if the answer is yes it will move further to ask question relating to the second degree of such lecturer. The white boxes are to display the yes or no answers and link to other boxes. Orange boxes are multiple question option boxes while the purple boxes show the list of courses assigned to a lecturer after matching lecturers' qualifications, area of specialization and experience together and finally allocate all the courses to the lecturer. Expert systems/ knowledge based systems, a sub-branch of artificial intelligence, are consultative programs, which although limited in flexibility, have achieved levels of performance as comparable to that of human experts [19]. The use of visirule does not require one to write series of codes, it is by just picking the boxes and implement the processes [22]. It will generate codes which can be exported to different programming languages as well as html language

6. Conclusion

This study established the use of different solvers to ease the problems that HODs of any department might be facing in relation to allocating courses to most qualified and competent hands (lecturers/Teachers). Previous studies have used different mathematical manual approaches but proved very slow, error prone and time consuming in all ways. In the same vein, a novel approach of using expert system also applied in this study which has made this study a unique type compared to previous approaches. In this, no code is required in the use of visirule software to achieve a successful course allocation assignment problem.

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