Online Zakat Management System for UITM Jasin using Rule Based Technique

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ABSTRACT

ACIS as known as Academic Contemporary Islamic, is an institution which the students can apply zakat during their studies in UiTM Kampus Jasin, Melaka. However, during the process of applying the zakat, there are several problems that occur such as missing form, time consuming, lack of information dissemination and difficulties to filter student qualification with zakat requirement. The aim of this project is to develop a web-based system that can assist staff of ACIS in choosing the qualification students for zakat using rule based technique which can achieve all the objectives of this project. The methodology that had been used is rule based technique which is the data accepted is transformed into rules. The rules consist of IF-THEN statements which is to produce an accuracy filtering of students and assists staff to manage the students application effectively and efficiently. As for the result of this project, the system will display the selected students with their types of asnaf and students that are not selected is in waiting list based on the suggested percentages of criteria that showed the highest or lowest tendency of students to get the zakat. The project also has the reasoning why the particular students is selected and not selected by using explanation facilities provided in rule based architecture. Hence, the staff still can change the criteria based on changing in rules. In the future, it is recommended that the staff can view the record of students, staff management features, inference engine and real-time technology can be added for better enhancement of this system.

Keywords:
Zakat management system; rule based technique; student selection system.

1. Introduction

According to Raja *et al.*, [1], they stated that zakat is a mean of discharging social accountability and is obligatory to Muslims to provide a specific amount of their wealth to beneficiaries that meet certain conditions and requirements. ACIS is an Academic of Contemporary Islamic Studies which one of an academic institution provided at all Universiti Teknologi MARA (UiTM) that provided zakat to their students. One of the ACIS institution is at UiTM Kampus Jasin Melaka. The institution has its own vision and mission which is to be a centre of knowledge that students can referred to. There are domain staff that manage the ACIS in UiTM Jasin. They are consists of Pegawai Hal Ehwal Islam Kanan ACIS, Ustaz Nor Faisal bin Md Ariffin, Penolong Pegawai Hal Ehwal Islam, Ustaz Ahmad Zaki Fikri bin Nooh and Pembantu Hal Ehwal Islam, Ustaz Mohammad Helmi Supian. This project had being done by interviewing Ustaz Nor Faisal to get the raw data of the zakat information. This research is focusing on Bantuan Zakat dan Sedekah at UiTM Jasin. Bantuan Zakat in UiTM Kampus Jasin can be applied every semester which is two semesters a year. The staff will put the announcement at their notice

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board at Hal Ehwal Pelajar (HEP) to remind students to apply it. The staff still performing the manual method to process the form of zakat sent by students. The amount of zakat is collect from lecturers and staff salary that has being donated every month and be kept in ACIS to distribute to students that has the qualification to get it. Then, after collecting the zakat, the ACIS staff must have permission from executive management to sign the PEKELILING1 letter. For students, they have two options to get the form whether they download it through the UiTM portal or they can get the hardcopy form at the ACIS office. After they fill in the form, they will be given a duration to submit the form through the counter of ACIS until the due date. Then, the staff will gather the form at the corner of the room and they will do the selection phase by viewing the background of students and set the students to an interview later on. The result will be displayed at the ACIS noticeboard.

2. Literature Review

Technically, Mohamed [2] said that from distributing a prescribed amount to the poor and the indigent, people also can do a purification which means to purify ones possession of wealth. According to the basic principles of zakat, the zakat institution has to be established first within Muslim society in a well-organized way. There are many instituition that provide zakat to people who are in need. In Malaysia, like any other Muslim country, considers the zakat institutions as one of the important contributors to economic development and society in the country. Moreover, as stated by Abdul Manan et.al., [9], there are many institutions in Malaysia that provide zakat such as Lembaga Zakat Selangor (LZS), Majlis Agama Islam Melaka (MUIM) and others. This institution's helps to distribute the zakat given by zakat payers towards zakat recipients. Different regions have their different ways of distributing the zakat. There are criteria that provided to people who are qualified to accept the zakat. Zakat is consisting of two types which is zakat of wealth and zakat fitrah. 2.1. Rule Based Analysis Rule based is a conventional problem-solving computer programs make use of well-structured algorithms, data structures, and crisp reasoning strategies to find solutions. Based on Englemore and Feigenbaum, rule-based knowledge representation is one of the most widely used types. For the difficult problems with which expert systems are concerned, it may be more useful to employ heuristics strategies that often lead to the correct solution, but that also sometimes fail. Apart from that, Abraham stated that in the rule-based systems, the production of rules is getting from the knowledge. Based on system observe, a rule must describe the action that should be taken. Besides, the main characteristics of the empirical association is between premises and conclusions. Hence, these associations determine the impact of logical event chains that were used to represent the complex phenomena [7]. After considering the problem faced by Online Zakat Management at UiTM Kampus Jasin, the most suitable technique to apply to the system based on literature review is by applying the Rule- Based Techniques. Based on my reading of rule based architecture, four out of seven of research paper that agreed the uses of rule based in filtering process. This is because using the rule based will determine the problem and solution towards the system and it will go through phase by phase using if-then rules. Thus, the problem will be solved by the rules that will be generated. Hence, the methodology will be implemented in this project was The Waterfall Model which most suitable methodology for the development of the system.

3. Methodology

Rule based is a conventional problem-solving computer programs make use of well-structured algorithms, data structures, and crisp reasoning strategies to find solutions. There are three components of rule based system which is knowledge base, inference engine and user interface.

These three components is an important part in the rule based expert system. During knowledge base, the input will be stored as facts. The rules consist of parentsalary, family member, student loan, student transport, student physical, student spending and student result. Thus, all the inputs will be matched with the rules stored in database. From the process, the inference engine which is a computer program that applies artificial intelligence try to obtain answers or responses to queries from a knowledge base that can be matched with database. If the result was matched, the explanation facility will produce the reasoning of the result chosen. Hence, the user interface acts as communicate medium between user and system. This is to make the interface is easy to understand and used by users. Figure 1 shows the sample of input of zakat that used rule based architecture.
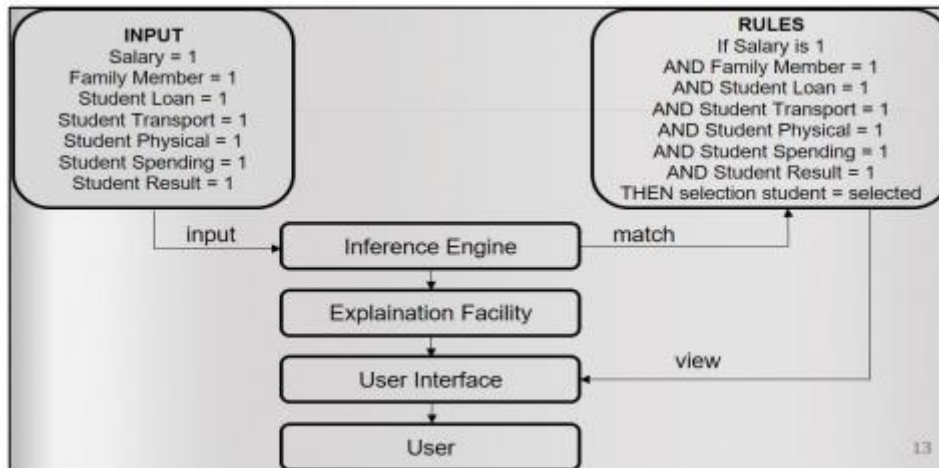

Fig. 1. Zakat Management using Rule Base Architecture

4. Findings and Analysis

(i)   Rates of inputs Table 1 shows the rate of each zakat criteria. There are seven criteria consists of salary, family members, students loan, students spending, student transportation, students examination result and the reason for students to apply zakat. Each of this criteria have each value for rating.

(ii)   Results

Based on the findings, there are two outcomes from the project that can be analyzed which is the pass students and students in waiting list. Those results are produced through the suggested percentage that will rated the qualification of students based on the rate input shown in table 1.

Table 1
Rates of Zakat Criteria

Zakat Criteria	Value for each Zakat Criteria
Salary (RM)	1) 800 - 1200 2) 1201 – 1500 3) 1501 - 2000 4) 2000 and above
Family members (excluded married siblings)	1) 1 - 3 2) 4 - 7 3) 8 - 11 4) 12 and above
Students Loan	1) PTPTN 2) JPA 3) Scholarship 4) Others
Students Spending	1) 100 - 150 2) 151 - 200 3) 201 - 300 4) 300 and above
Students Transportation	1) Car 2) Motorcycle 3) Bicycle 4) Does not have any
Student Examination Result	1) 1.50 – 2.50 2) 2.51 – 2.99 3) 3.00 – 3.50 4) 3.51 – 4.00
Why the students apply zakat?	1) As an additional money 2) Not really sure 3) Really needed the zakat to support life 4) All of the above

This rating will assist the staff in improving the workload, reduced a task that would take weeks to minutes and students will be easily informed what they are searching for. Throughout the system the staff managed to handle the form efficiently. Compared before the staff and students using the system, the staff are taking a few weeks in managing the form sent by students. This is because they do not have a platform to do the selection automatically since the staff do it manually. The system also can reduce time for students to applied the zakat because the students are able to know their status through the system without waiting the staff to print out the result at the noticeboard of UiTM Jasin.

Table 2
Results of System

	Inputs Entered	Rules (constraint) matched? (%)	Result
Student A	salary = 2 dependent = 2 stud Loan = 1 stud Transport = 1 stud Physical = 1 stud Spending = 1 stud Result = 1	Yes 65%	Pass to get the zakat
Student B	salary = 3 dependent = 1 stud Loan = 1 stud Transport = 2 stud Physical = 1 stud Spending = 1 stud Result = 1	No 45%	Waiting list

4. Conclusion

Zakat plays an important role in ensuring all the type of asnaf accept the right amount of zakat based on each criteria. In order to distribute the zakat properly, there are a certain part where the selection of criteria is needed to filter all the requirements. Basically, during the process of developing the project, many research and previous case study was conducted in order to implement the facts into the system. However, the project will assist the staff to select the students using the filtering process. This selection is usually the same as staff usually done but with computerized method and the project will ease their jobs in selecting students. Thus, using Rule Based technique can improve efficiency and effectiveness in management of zakat. For future enhancement, this research could be enhanced by adding inference engine and notification features. 6. Acknowledgements This project was supported by Universiti Teknologi Mara (UiTM) Kampus Jasin, Melaka. In preparation of my project, I had been guided by a respected person, who deserve my deepest gratitude. As the completion of this paper gave me much pleasure, I would like to show my gratitude to my supervisor for giving me a good guideline for completing this project throughout numerous consultations. I would also like to expand my gratitude to all those who have directly and indirectly guided me in finishing this project.

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