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**ONTOLOGY MODEL FOR ZAKAT HADITH KNOWLEDGE
BASED ON CAUSAL RELATIONSHIP, SEMANTIC
RELATEDNESS AND SUGGESTION EXTRACTION**



**DOCTOR OF PHILOSOPHY
UNIVERSITI UTARA MALAYSIA
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Awang Had Salleh
Graduate School
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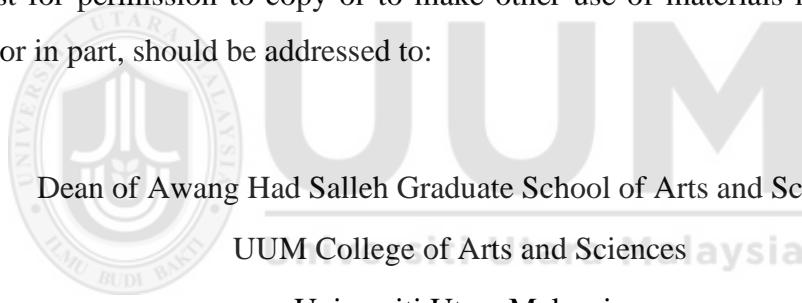
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Abstrak

Hadis adalah sumber kedua terpenting yang digunakan oleh seluruh umat Islam. Namun, kekaburuan semantik dalam hadis menimbulkan isu-isu seperti salah tafsiran, salah faham dan salah nilai kandungan hadis. Bagaimana untuk menangani kekaburuan semantik akan ditumpukan di dalam penyelidikan ini (RQ). Data hadis Zakat perlu dinyatakan secara semantik dengan mengubah semantik tahap permukaan kepada deria makna perkataan yang lebih mendalam. Ini boleh dicapai menggunakan model ontologi yang meliputi tiga aspek utama (Pengekstrakan hubungan semantik, perwakilan hubungan sebab dan akibat, dan pengekstrakan saranan). Kajian ini bertujuan untuk menyelesaikan kekaburuan semantik dalam hadis, khususnya dalam topik Zakat dengan mencadangkan pendekatan semantik untuk menyelesaikan kekaburuan semantik, mewakili hubungan sebab dan akibat dalam model ontologi Zakat, mencadangkan kaedah untuk mengekstrak polariti saranan dalam hadis dan membina model ontologi untuk topik Zakat. Pemilihan topik Zakat adalah berdasarkan dapatan soal selidik yang mendapati responden masih kurang pengetahuan dan pemahaman mengenai proses Zakat. Empat jenis kitab hadith (Sahih Bukhari, Sahih Muslim, Sunan Abu Dawud dan Sunan Ibn Majah) yang meliputi 334 perkataan konsep dan 247 hadis telah dianalisis. Pemodelan ontologi Zakat merangkumi tiga fasa iaitu Kajian awal, pemilihan sumber dan pengumpulan data, Pra-pemprosesan dan analisis data dan Pembangunan dan penilaian model ontologi. Pakar domain di dalam bahasa, hadis Zakat, dan ontologi telah menilai ontologi Zakat dan mengenal pasti bahawa 85% konsep Zakat ditakrifkan dengan betul. Skala Kebolehgunaan Ontologi digunakan untuk menilai model ontologi akhir. Seorang pakar dalam bidang pembangunan ontologi menilai ontologi yang dibangunkan di dalam Protégé OWL, manakala 80 responden menilai konsep ontologi yang dibangunkan dalam sistem PHP. Penilaian menunjukkan ontologi Zakat ini telah menyelesaikan masalah kekaburuan dan pemahaman proses Zakat terhadap hadis Zakat. Model ontologi Zakat ini juga membolehkan pengamal-pengamal dalam pemprosesan bahasa asli (NLP), hadis, dan ontologi mengekstrak hadis Zakat berdasarkan perwakilan model formal yang boleh diguna semula, serta hubungan sebab dan akibat dan polariti saranan di dalam hadis Zakat.

Kata kunci: Model ontologi, Perkaitan semantik, Kekaburuan semantik, Hubungan sebab dan akibat, dan Pengekstrakan saranan.

Abstract

Hadith is the second most important source used by all Muslims. However, semantic ambiguity in the hadith raises issues such as misinterpretation, misunderstanding, and misjudgement of the hadith's content. How to tackle the semantic ambiguity will be focused on this research (RQ). The Zakat hadith data should be expressed semantically by changing the surface-level semantics to a deeper sense of the intended meaning. This can be achieved using an ontology model covering three main aspects (i.e., semantic relationship extraction, causal relationship representation, and suggestion extraction). This study aims to resolve the semantic ambiguity in hadith, particularly in the Zakat topic by proposing a semantic approach to resolve semantic ambiguity, representing causal relationships in the Zakat ontology model, proposing methods to extract suggestion polarity in hadith, and building the ontology model for Zakat topic. The selection of the Zakat topic is based on the survey findings that respondents still lack knowledge and understanding of the Zakat process. Four hadith book types (i.e., Sahih Bukhari, Sahih Muslim, Sunan Abu Dawud, and Sunan Ibn Majah) that was covering 334 concept words and 247 hadiths were analysed. The Zakat ontology modelling cover three phases which are Preliminary study, source selection and data collection, data pre-processing and analysis, and development and evaluation of ontology models. Domain experts in language, Zakat hadith, and ontology have evaluated the Zakat ontology and identified that 85% of Zakat concept was defined correctly. The Ontology Usability Scale was used to evaluate the final ontology model. An expert in ontology development evaluated the ontology that was developed in Protégé OWL, while 80 respondents evaluated the ontology concepts developed in PHP systems. The evaluation results show that the Zakat ontology has resolved the issue of ambiguity and misunderstanding of the Zakat process in the Zakat hadith. The Zakat ontology model also allows practitioners in Natural language processing (NLP), hadith, and ontology to extract Zakat hadith based on the representation of a reusable formal model, as well as causal relationships and the suggestion polarity of the Zakat hadith.

Keywords: Ontology model, Semantic relatedness, Semantic ambiguity, Causal relationship, and Suggestion extraction.

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CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter outlines the research area, background and rationale for the present study.

This study is motivated by the current issue of ambiguity in text. There are various types of ambiguity that occurred in text which consists of syntactic ambiguity, semantic ambiguity, and pragmatic ambiguity. The main focus of the study is on semantic ambiguity focuses on Zakat hadith data. The following section discusses on related topics which are related to the issues above.

The division of the first chapter is as follows. Section 1.1 briefs on the overview which discuss in depth into the research background in section 1.2. This is followed by section 1.3 which is problem statement, section 1.4 highlights the research questions, section 1.5 covers research objectives, section 1.6 states the research scope, section 1.7 explains on research significance and expected contribution and lastly section 1.8 with the thesis organization.

1.2 Research background

In Hadith data, there are various types of ambiguity existed such as syntactic ambiguity, semantic ambiguity and pragmatic ambiguity (Abdelkader et al., 2019; Rahawan, 2019). Briefly, ambiguity resulted in misinterpretations, misunderstanding

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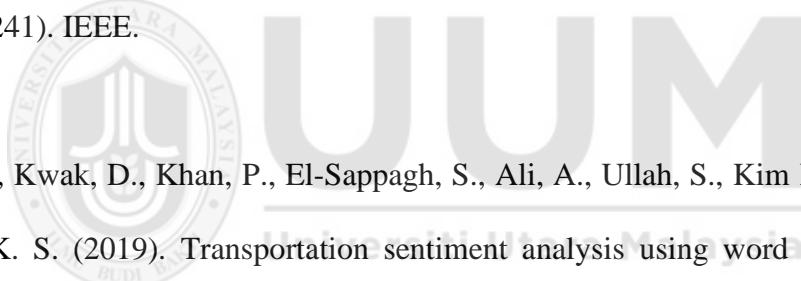
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APPENDIX A

SAMPLE HADITH DATA

Zakat Type	Hadith No.	Hadith
Sea Product	1498	<p>And Ibn Abbas said, "Ambergris (a special kind of perfume), is not Rikaz, but a thing which is thrown out by the sea." And Al-Hasan said, "Khumus (i.e. one-fifth) is imposed on Ambergris and pearls." The Prophet fixed Khumus on Rikaz but not on the things taken out of the water. 1498. Narrated Abu Hurairah : The Prophet said, "A man from Bani Israel asked someone from Bani Israel to give him a loan of one thousand Dinar, and the latter gave it to him. The debtor went on a voyage but (when the time for the payment of the debt became due) he did not find a boat, so he took a piece of wood and bored it and put 1000 Dinar in it and threw it into the sea. The creditor went out and took the piece of wood to his family to be used as fire-wood." (See Hadith No. 2291 , Vol. 3)</p> <p>And the Prophet mentioned the narration (and said), "When he sawed the wood, he found his money."</p>
	1499	<p>And Malik and Ibn Idris said, "Rikaz is the buried treasures in the Pre-Islamic Period and Khumus is compulsory on it whether the treasure is small or large, but the mines are not considered as Rikaz." No doubt, the Prophet had said, "There is no Zakat on minerals. And Khumus is compulsory on Rikaz." Umar bin Abdul Aziz took five portions out of every two-hundred from minerals. And Al-Hasan said, "Khumus is compulsory on Rikaz found in the land owned by non-Muslims, but if found in the Muslim territory there is only Zakat on it. If one finds a Luqata (fallen property) in the territory of the enemy, he must announce it publicly. And if it belongs to the enemy, then Khumus is compulsory on it. Some people considered minerals as Rikaz similar to the buried treasures of pre-Islamic period.</p> <p>1499. Narrated Abu Hurairah : Allah Messenger said, "There is no compensation for one killed or wounded by an animal or by falling in a well, or because of working in mines; but Khumus is compulsory on Rikaz (i.e. buried treasure or wealth). [(Khumas) i.e. 1/5th of Rikaz wealth is to be paid to the Muslim treasury]</p>

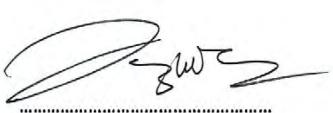
APPENDIX B

DOMAIN EXPERT PROFILE FORM

EXPERT BIODATA FORM			
NAME	AZLIDA BINTI AHMAD		
GENDER	<input type="checkbox"/> Male	<input checked="" type="checkbox"/> Female	
DATE OF BIRTH	20 /09 /1966		
ORGANIZATION	POLITEKNIK TUANKU SYED SIRAJUDDIN, PERLIS		
POSITION	LECTURER		
OFFICE ADDRESS	JAB · PENGAJIAN AM POLYTECHNIC TUANKU SYED SIRAJUDDIN .		
BACKGROUND	<input checked="" type="checkbox"/> English Language	<input type="checkbox"/> Zakat / Hadith	<input type="checkbox"/> Information Technology / Ontology
QUALIFICATION	① B.A (HONS) MODERN ENGLISH LG EDUC. ② MA in Education		
YEAR(S) EXPERIENCE IN RELATED FIELD	25 years		

I hereby declare that the above information is true and correct to the best of my knowledge and belief.

Signature:


 AZLIDA AHMAD
 Penyayarah
 Jab. Pengajian Am
 Politeknik Tuanku Syed Sirajuddin
 Arau, Perlis.
 Name: AZLIDA AHMAD

Date: 3/01/2020

APPENDIX C

SAMPLE OF OFFER LETTER

 **PUSAT PENGAJIAN PENGKOMPUTERAN
SCHOOL OF COMPUTING**
Universiti Utara Malaysia
06010 UUM SINTOK
KEDAH DARUL AMAN
MALAYSIA


Tel: 604-928 5056/5058/5060
Faks (Fax): 604-928 5067
Laman Web (Web): www.soc.uum.edu.my

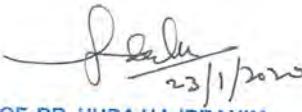
No. Rujukan: UUM/CAS/SOC/P-48
Tarikh: 22 Januari 2020

Azlida Binti Ahmad
Jabatan Pengajian Am
Politeknik Tuanku Syed Sirajuddin
02600, Pauh Putra, Arau, Perlis

Melalui:

Prof. Dr. Huda Ibrahim
Pusat Pengajian Pengkomputeran
Kolej Sastera dan Sains
Universiti Utara Malaysia
06010, Sintok, Kedah Darul Aman

Dr./Tuan/Puan


PROF. DR. HUDA HJ. IBRAHIM
Dekan
Pusat Pengajian Pengkomputeran
UUM College of Arts and Sciences
Universiti Utara Malaysia

PELANTIKAN SEBAGAI PENILAI PAKAR BIDANG 'GRAPHICAL KNOWLEDGE REPRESENTATION MODEL USING SEMANTIC ANALYSIS, CAUSAL RELATIONSHIP AND SUGGESTION EXTRACTION'

Dengan hormatnya saya merujuk kepada perkara di atas.

2. Sukacita dimaklumkan bahawa Dr/Tuan/Puan telah dilantik menjadi panel penilai pakar bidang bagi menilai kandungan dapatan Hadith bagi kajian bertajuk 'Graphical Knowledge Representation Model Using Semantic Analysis, Causal Relationship and Suggestion Extraction'. Dapatan kajian yang Dr/Tuan/Puan akan nilai adalah hasil daripada analisa menggunakan Term Frequency – Inverse Document Frequency dan Naïve Bayes yang dibangunkan oleh pelajar PhD saya, Ruziana Binti Mohamad Rasli (94645).

3. Penilaian bagi model ini diadakan melalui 10 sampel Hadith yang dibahagikan kepada Hadis Sahih Bukhari (5 sampel) dan Hadis Sahih Muslim (5 sampel). Segala maklumat yang dikumpulkan adalah bagi tujuan akademik sahaja.

Perhatian dan kerjasama yang diberikan dalam perkara ini adalah dihargai.

**"KEDAH MAKMUR – HARAPAN BERSAMA MAKMURKAN KEDAH"
"ILMU BUDI BAKTI"**

Saya yang menjalankan amanah,


PROF. MADYA DR. SITI SAKIRA BINTI KAMARUDDIN
Penyelia

Universiti Pengurusan Terkemuka
The Eminent Management University



APPENDIX D

SAMPLE OF EVALUATION FORM (ONTOLOGY USABILITY SCALE)

Zakat on Zakatul-Fitr

Hadith Sahih Bukhari - 1503 ×

Narrated Ibn 'Umar : Allah's Messenger made it the payment of one Sa' of dates or one Sa' of barley as Zakat-ul-Fitr on every Muslim slave or free, male or female, young or old; and he ordered that it be paid before the people went out to offer 'Eid. (One Sa' = 3 kilograms approx.)

Hadith Sahih Muslim - 2287 ×

It was narrated from Abu Sa'eed Al-Khudri that when Mu'awiyah made half a Sa' of wheat equivalent to a Sa' of dates, Abu Sa'eed rejected that and said: 'I will not pay it except in the form I used to pay it at the time of the Messenger of Allah: A Sa' of dates, or a Sa' of raisins, or a Sa' of barley, or a Sa' of cottage cheese.'

Payment (1)

Zakatul-Fitr (1)

Every Muslim (1)

3 kgs (1)

Sa' (1)

Dates (1)

Raisins (1)

Barley (1)

Cottage Cheese (1)

Ontology Usability Scale

No.	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1	The purpose of this ontology is clear.					
2	I need more examples than provided in the documentation to make sure how to use the ontology.					✓
3	I found the concepts and relations in this ontology properly described in natural language.					✓
4	There is inconsistency between the formal specification of concepts and relations in this ontology and their descriptions in natural language.					✓
5	I would imagine that most domain experts would understand this ontology very quickly.					✓
6	I think that I would need the support of a person experienced with this ontology to be able to use it.					✓
7	I am confident I understand the conceptualization of the ontology.					✓
8	The attributes in this ontology fail to describe the concepts properly.		✓			
9	I think the relations in this ontology relate appropriate concepts.					✓
10	I think the class hierarchy of this ontology needs better organization.					✓

Respondent Profile

Employment Status:	<input checked="" type="checkbox"/> Employed _____ <input type="checkbox"/> Unemployed	Level of Education:	<input type="checkbox"/> Diploma <input type="checkbox"/> Bachelor Degree <input type="checkbox"/> Master <input checked="" type="checkbox"/> Doctor of Philosophy <input type="checkbox"/> Others: _____
Age:	<input type="checkbox"/> 18 – 24 years old <input type="checkbox"/> 25 – 34 years old <input checked="" type="checkbox"/> 35 – 44 years old <input type="checkbox"/> 45 – 54 years old <input type="checkbox"/> 55 – 64 years old	Background of study:	<input type="checkbox"/> Accounting <input type="checkbox"/> Business <input checked="" type="checkbox"/> Information Technology <input type="checkbox"/> Engineering <input type="checkbox"/> Religion Study <input type="checkbox"/> Others: _____

DR. ERNI MARLINA SAARI
Senior Lecturer

Department of Creative Multimedia
Faculty of Art, Computing and Creative Industry
Universiti Pendidikan Sultan Idris

APPENDIX E

SAMPLE OF RESULT FOR SEMANTIC RELATEDNESS EXTRACTION, CAUSAL RELATIONSHIP IDENTIFICATION AND SUGGESTION EXTRACTION

Ontology Content Evaluation										
<p>Purpose : To evaluate the content generated from the proposed techniques using Term Frequency - Inverse Document Frequency (TF-IDF) and Naive Bayes in order to analyse semantic and suggestions extraction. In this questionnaire, reviewer are needed to do two tasks which is:</p> <p>A) Semantic Analysis - The reviewer needs to refer to the Hadiths below and compare whether the concept words in the questionnaire is relevant with the Hadiths. If the concept word(s) is correct, then reviewer can tick on the correct section, if the concept words is incorrect, then reviewer need to tick on incorrect section and lastly if the concept word(s) is partially incorrect, reviewer can fill in additional concept words that can be suggested to be added in the model.</p> <p>B) Suggestion Extraction - The reviewer needs to evaluate on the meaning of Hadiths based on its meaning. In this study, there are three types of polarity which is positive suggestion, negative suggestion and information. Positive suggestion means the Hadiths provides positive suggestion to user to do or acts on something while negative suggestion means the one who read the Hadiths does not need to do or acts on something. The third polarity is information which means the Hadiths provides only information to the user without any positive or negative polarity. Based on the suggestion result, reviewer can evaluate the Hadiths suggestion polarity whether is it correct or incorrect. If the meaning is incorrect, then reviewer can fill in suggested meaning of the Hadiths.</p>										
Topic: Gold										
Hadith No.	Hadith	(A) Concept Word Evaluation (Semantic Analysis)					(B) Suggestion Mining Evaluation(Suggestion Extraction)			
		Concept Words	Correct	Partially Correct	Incorrect	Suggested Concept Words	Suggestion Result	Correct	Incorrect	Suggested Meaning Suggestion / Information
1404	<p>Narrated Khalid bin Aslam; We went out with 'Abdullah bin Umar r.a and a bedouin said (to 'Abdullah)' "Tell me about Allah's Saying: "And those who hoard up gold and silver (Al-Kanz - money, gold, silver etc., the Zakat of which has not been paid) and spend it not in the Way of Allah (V.9:34)." Ibn 'Umar said, "Whoever hoarded them and did not pay the Zakat thereof, then woe to him. But these holy Verses</p>	Property	✓				Information	✓		

	were revealed before the Verses of Zakat. So when the Verses of Zakat were revealed Allah made Zakat a purifier of the property."									
1405	Narrated Abu Sa'id r.a: Allah's Messenger said, "No Zakat is due on property mounting to less than five Uqiya (of silver), and no Zakat is due on less than five camels, and there is no Zakat on less than five Wasq" (A Wasq equals 60 Sa) & (1 Sa = 3kgms approx.).	Property, Uqiya	✓				Information	✓		
1406	Narrated Zaid bin Wahab: "I passed by a place called Ar-Rabadha and by chance I met Abu Dhar r.a and asked him, "What has brought you to this place?" He said. "I was in Sham and differed with Mu'awiya on the meaning of (the following Verses of the Qur'an): 'And those who hoard up gold and silver (Al-Kanz - money, the Zakat of which is not paid) and spend it not in the Way of Allah.' (V .9 :34). Mu'awiya said, "This Verse is revealed regarding the people of the Scriptures." I said, "It was revealed regarding us and also the people of the Scriptures." So we had a quarrel and Mu'awiya sent a complaint against me to 'Uthman r.a 'Uthman wrote to me to come to Al-Madinah, and I came to Al-Madinah. Many people came to me as if they had not seen me before. So, I told this to 'Uthman who said to me, "You may depart and live nearby if you wish ". That was the reason for my being here for even if an Ethiopian had been	The way of Allah, People of scriptures and Al-Madinah	✓				Information	✓		

	nominated as my ruler, I would have obeyed him.									
1407	Narrated Al-Ahnaf bin Qais: While I was sitting with some people from Quraish, a man with very rough hair, clothes, and appearance came and stood in front of us, greeted us and said, "Inform those who hoard wealth, that a stone will be heated in the Hell-fire and will he put on the nipples of their breasts till it comes out from the bones of their shoulders, and then put on the bones of their shoulders till it comes through the nipples of their breasts, the stone will be moving and hitting". After saying that, that person retreated and sat by the side of the pillar, I follow him and sat beside him, and I did not know who he was, I said to him, "I think the people disliked what you had said." He said, "These people do not understand anything."	People from Quraish and The people			✓	Property & Wealth	Information		✓	Warning
1447	Narrated Abu Sa'id Al-Khudri : Allah's Messenger said, "There is no Zakat on less than five camels, and also there is no Zakat on less than five Awaq (of silver). (5 Awaq = 22 Fransa Riyals of Yemen or 200 Dirhams i.e., approx. 640 Grams.) And there is no Zakat on less than five Awsuq. (A special measure of food-grains, and one Wasq equals 60 Sa'.) [For gold, 20 Mithqal, i.e., approx. 94 grams, i.e., equal to 12 Guinea English. No Zakat for less than 12 Guinea (English) of gold or for silver less than 22 Fransa Riyals of Yemen,	Fransa Riyal of Yemen, Dirhams, and Special measure of food grains			✓	Calculation of Zakat	Information	✓		

	i.e., 200 Dirhams, i.e., approx. 640 grams of silver. (This is called Nisab)].								
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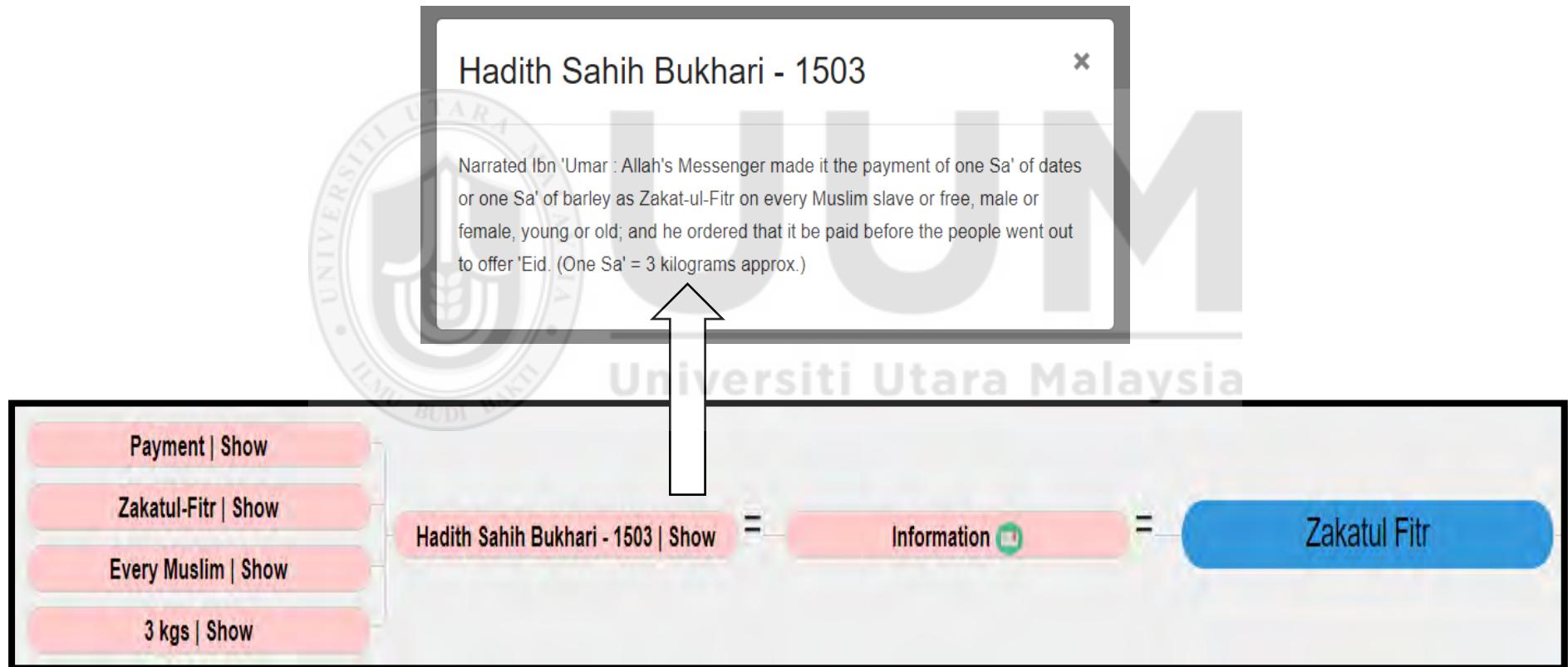
Topic: Zakatul Fitri

Hadith No.	Hadith	Concept Word Evaluation					Suggestion Mining Evaluation		
		Concept Words	Correct	Partially Correct	Incorrect	Suggested Concept Words	Suggestion Result	Correct	Incorrect
1503	Narrated Ibn 'Umar : Allah's Messenger made it the payment of one Sa' of dates or one Sa' of barley as Zakatul-Fitr on every Muslim slave or free, male or female, young or old; and he ordered that it be paid before the people went out to offer 'Eid. (One Sa' = 3 kilograms approx.)	Zakatul-Fitr, Every Muslim, 3 kgs		✓		Amount of zakat + Time of zakat	Information	✓	
1504	Narrated Ibn 'Umar : Allah's Messenger made it obligatory on all the slave or free Muslims, male or female, to pay one Sa' of dates or barley as Zakat-ul-Fitr.	Obligatory		✓		Gbt Zakat obligation	Information	✓	
1506	Narrated Abu Sa'id Al-Khudri : We used to give one Sa' of meal, or one Sa' of barley or one Sa' of dates, or one Sa' of Iqt (dried yoghurt or cottage cheese), or one Sa' of raisins (dried grapes) (per head) as Zakat-ul-Fitr.	Meal, Iqt, Cottage Cheese, Dried Grapes		✓		Zakat obligation	Information	✓	
1507	Narrated 'Abdullah bin 'Umar : The Prophet ordered (Muslims) to give one Sa' of dates or one Sa' of barley as Zakat-ul-Fitr. The people regarded two Mudd of wheat as equal to that.	Muslims, Mudd of wheat		✓		Zakat obligation	Information	✓	
1508	Narrated Abu Sa'id Al-Khudri : In the lifetime of the Prophet we used to give one Sa' of meal or one Sa' of dates, or one Sa' of barley, or one Sa' of raisins (dried grapes) (per head) as Sadaqat-ul-Fitr. And when Mu'awiya became the caliph and the wheat was (available in abundance) he said, "I think (observe) that one Mudd (of wheat) equals two Mudd (of any of the above-mentioned things).	Meal, Raisins, Dried Grapes, Mudd of Wheat		✓		Zakat obligation and calculation	Information	✓	


 AZLIDA AMALIAH
 Penyayarah
 Jab. Pengajian Am
 Politeknik Tuanku Syed Sirajuddin
 Arau, Perlis.

APPENDIX F

SAMPLE OF ONTOLOGY BASED-MODEL ON ZAKAT HADITH



APPENDIX F

ACHIEVEMENT AND AWARDS

 <p>JABATAN PENGAJIAN POLITEKNIK KEMENTERIAN PENDIDIKAN MALAYSIA Galeria PJH, Aras 5, Jalan P4W Persiaran Perdana, Presint 4 62100 PUTRAJAYA MALAYSIA</p>	<p>POLITEKNIK MALAYSIA</p> <p>Tel : 03-8891 9000 Faks : 03-8891 9316 Laman Web : http://politeknik.gov.my Facebook : politeknik.edu</p>
<p>58/07</p> <p>Ruj. Kami : KPT.JPP.PPPP. 700-1 JLD 5(138) Tarikh : 2 Julai 2014</p>	
<p><i>Seperti di senarai edaran</i></p> <p>Melalui dan salinan :</p> <p>Pengarah Politeknik</p> <p>YBrs./Dato'/Datin/Tuan/Puan,</p> <p><i>UPI</i></p> <p><i>Tuan Haji Nizar</i></p> <p>RECEIVED 07 JUL 2014 Unit Pengabdian Politeknik Tuan Haji Syed Sirajuddin</p>	
<p>KEPUTUSAN PERMOHONAN SKIM GERAN PENYELIDIKAN FUNDAMENTAL (FRGS) FASA 1/2014 : JABATAN PENGAJIAN POLITEKNIK</p>	
<p>Dengan hormatnya saya merujuk perkara di atas.</p>	
<p>2. Sukacita dimaklumkan bahawa Kementerian Pendidikan Malaysia telah bersetuju untuk meluluskan peruntukan Skim Geran Penyelidikan Fundamental (FRGS) Fasa 1/2014 sebanyak 7 projek kepada Jabatan Pengajian Politeknik. Pusat Penyelidikan dan Inovasi Politeknik (PPIP) ingin mengucapkan tahniah kepada semua penerima peruntukan Skim Geran Penyelidikan Fundamental (FRGS) Fasa 1/2014 seperti di Lampiran 1</p>	
<p>3. Untuk makluman YBrs./Dato'/Datin/Tuan/Puan, subwaran peruntukan kewangan penyelidikan akan disusuli kemudian. Kelulusan peruntukan dan projek penyelidikan seperti yang dinyatakan adalah tertakluk kepada beberapa syarat seperti berikut :-</p>	
<p>I. projek penyelidikan yang diluluskan dan menerima peruntukan di bawah FRGS Fasa 1/2014 tidak dibenarkan menerima sebarang peruntukan daripada Kementerian/ agensi lain bagi projek penyelidikan yang sama;</p>	

KEPUTUSAN PERMOHONAN FRGS 1/2014

No	Polytechnic	Reference Code	Title	Project Leader	Cluster	Sub Cluster	Approved Budget(RM)
1	Polytechnik Kota Kinabalu	FRGS/1/2014/TK01/3PP/03/1	Fundamental investigation on the repeated collapse resistance and dissipated energy properties of thin-walled hybrid hollow structures with various size and cross sectional shapes for automotive applications	Tengkuendri Ibin Parsha	Technology and Engineering	Mechanical & Manufacturing	71,000
2	Polytechnik Junku Syed Irajuddin	FRGS/1/2014/ICT02/3PP/03/1	COMPUTERIZED ZAKAT ONTOLOGY MODEL FOR QURANIC KNOWLEDGE CAUSAL RELATIONSHIP METHOD	Munirah Azrina Binti Jaafar	Information and Communication Technology	Soft Computing	64,000
3	Polytechnik Ungku Omar	FRGS/1/2014/TK07/3PP/03/1	PERODUA KESEDIAN PENGUNAAN BERANAK KENDERAAN TIDAK BERMOTOR (BERBASIKAL)	Muhammad Razuanan Bin Mat Yordi	Technology and Engineering	Infrastructure and Transportation	77,800
4	Polytechnik Sultan Haji Ahmad Shah	FRGS/1/2014/TK03/3PP/03/1	APPLYING GSA IN FOLI LEGGED ROBOT TRAJECTORY PLANNING	Hazruil Bin Che Shamsuddin	Technology and Engineering	Electrical and Electronic	65,500
5	Polytechnik Sultan Sallehuddin Abdul Aziz Shah	FRGS/1/2014/TK04/3PP/03/1	Stabilizer Rhodium nanoparticle in beta phase pulverized Titanium metal.	Maheran Sulaiman	Technology and Engineering	Material and Polymer	91,200
6	Polytechnik Sultan Haji Ahmad Shah	FRGS/1/2014/STWIND3/3PP/03/1	Phytochemical Profiles, Antioxidant Capacities and Antimicrobial Activity of 5 Selected Malaysian Plants and their Efficacy as Natural Preservatives in Food	Azizah Binti Mahmood	Natural Sciences and National Heritage	Agriculture	78,700
7	Polytechnik Sultan Haji Ahmad Shah	FRGS/1/2014/STWIND3/3PP/03/2	Relationship between Phytochemical contents and Antioxidant Capacities of 5 Selected Malaysian Uluans in Controlling Food Rancidity	Husna Hawa Binti Mohd Hassan	Natural Sciences and National Heritage	Agriculture	92,700
TOTAL							540,900

Certificate of Award

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FAUDZIAH BINTI AHMAD, SITI SAKJRA BINTI KAMARUDDIN,
NIME AZRINA BINTI JAAFAR, RUIZIANA BINTI MOHAMAD RASLI,
HAFIZAH BINTI ABDULLAH@ ALI, HAIZATUL AKYIA BINTI HAZALI

Silver Medal

COMPUTERIZED ZAKAT ONTOLOGY MODEL FOR QURANIC
KNOWLEDGE BY CAUSAL RELATIONSHIP METHOD

in **iCOMPETITI**

NATIONAL INNOVATION AND INVENTION COMPETITION THROUGH EXHIBITION 2017

held on 21, 22, & 23 March 2017

at Sultan Abdul Halim Mu'adzam Shah Polytechnic



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DATO' AMIR BIN MOHD NOOR
DIRECTOR GENERAL
DEPARTMENT OF COMMUNITY COLLEGE EDUCATION