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**THE RELATIONSHIP BETWEEN SAFETY MANAGEMENT PRACTICE
AND RADIATION SAFETY AWARENESS AMONG EMPLOYEES IN
UUM UNIVERSITY HEALTH CENTRE**



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**A Research Paper submitted to the School of Business Management,
Universiti Utara Malaysia, in partial fulfillment of the requirement for the
Master of Science (Management)**

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ABSTRACT

Safety awareness programs have been conducted comprehensively and actively in order to inspire employees' engagement and commitment towards safety issues even though from time to time it has been reported that the number of incidents and accidents at the manufacturing firms is keep-on increasing. Furthermore in terms of radiation safety awareness, failure to reduce occupational exposure due to inadequate of knowledge, attitude and action towards ionizing radiation may result in cumulative radiation damage not only in Radiology Professionals but also the other citizens as well. The study was conducted in order to determine the relationship between safety management practice and radiation safety awareness in UUM University Health Centre. In addition, the study was done quantitatively by distributing questionnaires to all employees of University Health Centre. The data from 57 respondents were collected and then analyzed by using SPSS Version 24.0. The findings showed that safety management practice has strong correlation with radiation safety awareness. All these results and findings would provide fruitful guidance for scholars and practitioners in identifying "rooms for improvement" especially in radiation safety awareness campaign.

Key words: safety management practice, radiation safety awareness. X-ray, ionizing radiation and employees.

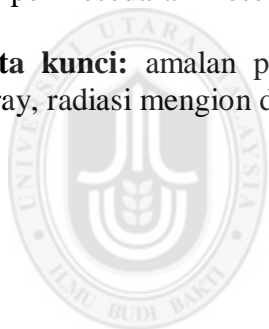


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ABSTRAK

Program kesedaran keselamatan sentiasa dijalankan secara komprehensif dan aktif bagi menggalakkan penyertaan dan komitmen pekerja terhadap isu-isu keselamatan walaupun kejadian insiden dan kemalangan yang dilaporkan dalam sektor perkilangan adalah meningkat dari masa ke semasa. Selanjutnya dalam konteks kesedaran keselamatan radiasi, kegagalan mengurangkan dos sinaran pekerjaan akibat kurangnya pengetahuan, sikap dan amalan akan mengakibatkan kemusnahan radiasi secara kumulatif bukan sahaja kepada Pekerja Sinaran tetapi juga orang awam yang lain. Kajian ini dibuat bagi mengkaji hubungan di antara amalan pengurusan keselamatan dan kesedaran keselamatan radiasi di Pusat Kesihatan Universiti UUM. Kajian telah dijalankan secara kuantitatif dengan mengedarkan borang kaji selidik kepada semua kakitangan Pusat Kesihatan Universiti UUM. Data daripada 57 responden dikumpul dan dianalisa menggunakan SPSS Versi 24.0. Hasil analisa menunjukkan amalan pengurusan keselamatan mempunyai hubungan yang kuat dengan kesedaran keselamatan radiasi. Semua keputusan dan dapatan akan dapat membekalkan panduan yang berguna untuk pengkaji dan pengamal keselamatan dan kesihatan pekerjaan di dalam mengenalpasti ruang-ruang untuk penambahbaikan terutamanya di dalam kempen kesedaran keselamatan radiasi.

Kata kunci: amalan pengurusan keselamatan, kesedaran keselamatan radiasi, X-ray, radiasi mengion dan pekerja.



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LIST OF ABBREVIATIONS

AELA	Atomic Energy Licensing Act
AELB	Atomic Energy Licensing Board
ALARA	As Low As Reasonably Achievable
BBS	Behavior Based Safety
CME	Continuous Medical Education
CT	Computed Radiography
DNA	Deoxyribonucleic Acid
DOSH	Department of Occupational Safety and Health
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiological Protection
MDUUM	<i>Medical Diagnostic</i> Universiti Utara Malaysia
MOH	Ministry of Health
MPD	Maximum Permissible Dose
NDT	Non-Destructive Testing
OSH	Occupational Safety and Health
OSHA	Occupational Safety and Health Act
<i>PKUUM</i>	Pusat Kesihatan Universiti, Universiti Utara Malaysia
PPE	Personnel Protective Equipment
UUM	Universiti Utara Malaysia
QAP	Quality Assurance Program
RP	Radiographers' Compliance
RPC	Radiation Protection Culture
RPO	Radiation Protection Officer
SBU	Strategic Business Unit
SMS	Short Message Service
SOP	Standard Operating Procedure
SPSS	Statistical Package for Social Science

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

Occupational safety, health and welfare are the essential subjects about people at work in the organization. According to Shariff (2005), some of the purposes of occupational safety and health are to ensure the health of the employees to be fit physically, mentally as well as socially and safe against any risk, work hazard or illness. In Malaysia, work place accident is one of the factors which contributes to mortality rate and the number of those who are suffering of work related hazards such as cancer, chemical burns, loss of limbs and bodily handicapped is increasing annually. In addition, accidents in workplace which happen for number of reasons may produce the outcomes of minor injuries, damages to properties or even in certain cases may end up with major injuries or deaths (Zakaria, Mansor, & Abdullah, 2012).

According to Occupational Accidents Statistics by Sectors until October 2016 which includes manufacturing, mining and quarrying, construction, agriculture, forestry, logging and fishing, utility, transport, storage and communication, wholesale and retail trade, hotel and restaurant, financial, insurance, real estate and business services, public services and statutory bodies, the manufacturing sector has the highest number of death which is 39. In terms of Non-Permanent Disability, manufacturing sector is still leading the figures which is 1751. In addition, for Permanent Disability, the value is 61 which have been contributed by manufacturing sector also (DOSH, 2016).

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SURVEY QUESTIONNAIRE, ENGLISH AND MALAY LANGUAGE VERSION



COLLEGE OF BUSINESS UNIVERSITI UTARA MALAYSIA

Dear Sir/Madam,

I am Ruzaidi bin Ramli, a Master of Science (Management) student from Universiti Utara Malaysia (Matric No.: 818217), currently conducting research entitled **“The Relationship between Safety Management Practice and Radiation Safety Awareness Among Employees in UUM University Health Centre”** under the supervision of Associate Professor Dr. Fadzli Shah bin Abd. Aziz and Mr. Fadzil bin Mohd Husin. In endeavoring to conduct this research data will be collected from UUM University Health Centre’s employees.

Fortunately you have been nominated to take part in this research and may I ask that you kindly complete the questionnaire enclosed. I assure you that it would not take longer than 30 minutes as your cooperation will contribute to improving the standard of safety in UUM University Health Centre.

All data provided will be treated as confidential and will only be used for this academic research.

Thank you for your cooperation.

Yours sincerely,

Ruzaidi bin Ramli
College of Business
Universiti Utara Malaysia
06010 UUM Sintok
Kedah
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QUESTIONNAIRE / KAJI SELIDIK

THE RELATIONSHIP BETWEEN SAFETY MANAGEMENT PRACTICE AND RADIATION SAFETY AWARENESS AMONG EMPLOYEES IN UUM UNIVERSITY HEALTH CENTRE

HUBUNGAN ANTARA AMALAN PENGURUSAN KESELAMATAN DAN KESEDARAN TERHADAP KESELAMATAN RADIASI DI KALANGAN STAF PUSAT KESIHATAN UNIVERSITI UUM

PART A: DEMOGRAPHY OF RESPONDENT / DEMOGRAFI RESPONDEN

Please tick (✓) the appropriate answer. / Mohon tandakan (✓) pada jawapan yang sesuai.

1. What is your classification of occupation? *Apakah kategori pekerjaan anda?*
 Management and Professional / *Pengurusan dan Profesional*
 Support / *Pelaksana*
2. Which age do you belong? / *Yang manakah kategori umur anda?*
 20 – 30
 31 – 40
 41 – 50
 51 – 60
3. Sex / *Jantina:*
 Male / *Laki-laki*
 Female / *Perempuan*
4. Level of education / *Tahap pendidikan:*
 Secondary School / *Sekolah Menengah*
 Professional Certificate / *Sijil Profesional*
 Diploma / *Diploma*
 First Degree / *Ijazah Pertama*
 Master Degree / *Ijazah Sarjana*
5. Years of service in UUM University Health Centre / *Jumlah tahun perkhidmatan di Pusat Kesihatan Universiti UUM:*
 1 – 5 years / *1-5 tahun*
 6 – 10 years / *6-10 tahun*
 11 – 15 years / *11-15 tahun*
 16 – 20 years / *16-20 tahun*
 More than 21 years / *Lebih daripada 21 tahun*

PART B: SAFETY MANAGEMENT PRACTICE / AMALAN PENGURUSAN KESELAMATAN

Instruction / Arahan:

Mark (√) in the related spaces. / Tandakan (√) pada ruang berkaitan.

Legend / Legenda:

Judgement	Rating
Strongly Disagree / <i>Sangat Tidak Bersetuju</i>	1
Disagree / <i>Tidak Bersetuju</i>	2
Partially Agree / <i>Bersetuju Sebahagian</i>	3
Agree / <i>Bersetuju</i>	4
Strongly Agree / <i>Sangat Bersetuju</i>	5

1) Management Commitment / Komitmen Pihak Pengurusan

No.	Statement	1	2	3	4	5
1.	Safety is given the high priority by the management. <i>Keselamatan dalam pekerjaan diberi keutamaan tinggi oleh pihak pengurusan.</i>					
2.	Safety rules and procedures are strictly followed by the management. <i>Peraturan dan prosedur keselamatan dalam pekerjaan dilaksanakan sepenuhnya oleh pihak pengurusan.</i>					
3.	Corrective action is always taken when the management is told about unsafe practices. <i>Langkah penambahbaikan selalunya dilaksanakan oleh pihak pengurusan apabila dimaklumkan mengenai amalan-amalan pekerjaan yang tidak selamat.</i>					

*4.	<p>In my workplace, Supervisors / Heads of Units do not show interest in the safety of workers.</p> <p><i>Di tempat kerja saya, Penyelia-penyelia / Ketua-ketua Unit tidak menunjukkan minat terhadap keselamatan para pekerja.</i></p>					
5.	<p>The management considers safety to be equally important as services.</p> <p><i>Pihak pengurusan menganggap keselamatan dalam pekerjaan adalah sama pentingnya dengan perkhidmatan.</i></p>					
*6.	<p>Members of the management do not attend Occupational Safety and Health Meetings.</p> <p><i>Ahli-ahli daripada kalangan pihak pengurusan tidak menghadiri Mesyuarat Keselamatan dan Kesihatan Pekerja.</i></p>					
*7.	<p>I feel that the management is willing to compromise on safety for improving the services.</p> <p><i>Saya merasakan bahawa pihak pengurusan sanggup berkompromi dalam aspek keselamatan pekerjaan demi meningkatkan perkhidmatan.</i></p>					
8.	<p>When near-miss accidents are reported, my management acts quickly to solve the problems.</p> <p><i>Bilamana kemalangan yang hampir berlaku dilaporkan, pihak pengurusan akan bertindak segera untuk menyelesaikan masalah tersebut.</i></p>					
9.	<p>My department provides sufficient Personal Protective Equipment (PPE) for the workers.</p> <p><i>Jabatan saya menyediakan Alat Pelindung Peribadi (PPE) yang mencukupi untuk para pekerja.</i></p>					

2) **Safety Training / Latihan Keselamatan**

No.	Statement	1	2	3	4	5
1.	<p>My department gives comprehensive training to the employees on workplace safety and health issues.</p> <p><i>Jabatan saya menyediakan latihan yang menyeluruh kepada pekerja mengenai isu-isu keselamatan dan kesihatan pekerjaan.</i></p>					
2.	<p>Newly recruits are trained adequately to learn safety rules and procedures.</p> <p><i>Pekerja-pekerja baru telah dilatih secukupnya dalam mempelajari peraturan dan prosedur keselamatan dalam pekerjaan.</i></p>					
3.	<p>Safety issues are given high priority in training programmes.</p> <p><i>Isu-isu keselamatan dalam pekerjaan diberi keutamaan dalam program-program latihan.</i></p>					
*4.	<p>I am not adequately trained to respond to emergency situations in my workplace.</p> <p><i>Saya tidak dilatih secukupnya untuk bertindak balas terhadap situasi kecemasan di tempat kerja saya.</i></p>					
5.	<p>The management encourages the employees to attend Occupational Safety and Health training programmes.</p> <p><i>Pihak pengurusan menggalakkan para pekerja untuk mengikuti program-program latihan Keselamatan dan Kesihatan Pekerjaan.</i></p>					
6.	<p>Safety training given to me is adequate to enable to assess hazards in the workplace.</p> <p><i>Latihan keselamatan pekerjaan yang diberikan kepada saya adalah mencukupi untuk saya menilai bahaya-bahaya di tempat kerja.</i></p>					

3) Employees' Involvement / Penglibatan Para Pekerja

No.	Statement	1	2	3	4	5
1.	<p>The management always welcomes opinion from employees before making final decisions on safety related matters.</p> <p><i>Pihak pengurusan sentiasa mengalu-alukan pendapat dari pihak pekerja sebelum membuat keputusan muktamad berkenaan perkara-perkara yang berkaitan keselamatan pekerjaan.</i></p>					
2.	<p>My department has Safety and Health Committees consisting of representatives from management and employees.</p> <p><i>Jabatan saya mempunyai Jawatankuasa Keselamatan dan Kesihatan Pekerjaan yang terdiri daripada pihak pengurusan dan pekerja.</i></p>					
3.	<p>The management promotes employees involvement in safety related matters.</p> <p><i>Pihak pengurusan menggalakkan penglibatan pihak pekerja dalam perkara-perkara yang berkaitan keselamatan pekerjaan.</i></p>					
4.	<p>The management consults with employees regularly about workplace safety and health issues.</p> <p><i>Pihak pengurusan kerap berbincang dengan para pekerja mengenai isu-isu keselamatan dan kesihatan pekerjaan.</i></p>					
*5.	<p>Employees do not sincerely participate in identifying safety problems.</p> <p><i>Para pekerja adalah tidak sepenuh hati melibatkan diri dalam mengenalpasti masalah-masalah keselamatan pekerjaan.</i></p>					

4) Safety Communication and Feedback / Komunikasi Keselamatan dan Maklumbalas

No.	Statement	1	2	3	4	5
*1.	<p>My department does not have a hazard reporting system in which employees can communicate hazard information before hazard occurs.</p> <p><i>Jabatan saya tidak mempunyai sistem pelaporan di mana para pekerja dapat menyalurkan maklumat berkenaan sesuatu bahaya di tempat kerja sebelum ia berlaku.</i></p>					
2.	<p>The management operates an open door policy on safety and health issues.</p> <p><i>Pihak pengurusan mengamalkan polisi pintu terbuka berkenaan isu-isu keselamatan dan kesihatan pekerjaan.</i></p>					
3.	<p>There is sufficient opportunity to discuss and deal with safety and health issues in the meetings.</p> <p><i>Terdapat peluang yang secukupnya untuk berbincang dan menangani isu-isu keselamatan dan kesihatan pekerjaan di dalam mesyuarat.</i></p>					
*4.	<p>The targets and goals for safety performance in my organization are not clear to the employees.</p> <p><i>Sasaran dan matlamat prestasi keselamatan pekerjaan di dalam jabatan saya adalah tidak jelas kepada para pekerja.</i></p>					
5.	<p>There is an open communication about occupational safety and health issues in the workplace.</p> <p><i>Terdapat komunikasi secara terbuka berkenaan isu-isu keselamatan dan kesihatan pekerjaan di tempat kerja saya.</i></p>					

5) Safety Rules and Procedures / Peraturan dan Prosedur Keselamatan

No.	Statement	1	2	3	4	5
1.	<p>The safety rules and procedures followed in my department are sufficient to prevent incidents from occurring.</p> <p><i>Peraturan dan prosedur keselamatan pekerjaan di dalam jabatan ini adalah mencukupi untuk mencegah kejadian tidak diingini daripada berlaku.</i></p>					
*2.	<p>The facilities which are provided by the Occupational Safety and Health Committee are not adequate to meet the needs of the organization.</p> <p><i>Kemudahan-kemudahan yang disediakan oleh Jawatankuasa Keselamatan dan Kesihatan Pekerjaan adalah tidak mencukupi untuk keperluan organisasi ini.</i></p>					
3.	<p>My Heads of Units and Top Management Officers always try to enforce safe working procedures.</p> <p><i>Ketua-ketua Unit dan Pegawai-pegawai Pengurusan Atasan sentiasa menguatkuasakan prosedur pekerjaan yang selamat.</i></p>					
4.	<p>Safety inspections are carried out regularly.</p> <p><i>Pemeriksaan keselamatan pekerjaan kerap dilaksanakan.</i></p>					
5.	<p>The safety procedures and practices in this organization are useful and effective.</p> <p><i>Prosedur dan amalan keselamatan pekerjaan dalam organisasi ini boleh digunapakai dan berkesan.</i></p>					

6) Safety Promotion Policies / Polisi Galakan Keselamatan

No.	Statement	1	2	3	4	5
1.	<p>In my department, safe conduct is considered as a positive factor for job promotion.</p> <p><i>Dalam jabatan saya, perlakuan selamat dalam pekerjaan dianggap faktor positif untuk kenaikan pangkat.</i></p>					
2.	<p>In my department, employees are rewarded for reporting safety hazards (thanked, cash or other rewards, recognition in newsletter, etc.).</p> <p><i>Dalam jabatan saya, para pekerja diberi ganjaran kerana melaporkan bahaya-bahaya keselamatan dalam pekerjaan (diberi penghargaan, wang tunai atau ganjaran-ganjaran lain, pengiktirafan dalam buletin jabatan dan sebagainya).</i></p>					
3.	<p>In my department, Occupational Safety and Health Week celebration and other safety promotional activities arranged by the management are very effective in creating safety awareness among workers.</p> <p><i>Sambutan Minggu Keselamatan dan Kesihatan Pekerjaan dan aktiviti-aktiviti promosi keselamatan pekerjaan yang lain yang diatitkan oleh pihak pengurusan adalah amat berkesan dalam mewujudkan kesedaran keselamatan dalam pekerjaan di kalangan pekerja.</i></p>					
4.	<p>There is an existence of very healthy competition among employees to find out and report unsafe conditions and acts.</p> <p><i>Terdapatnya persaingan yang sangat sihat di kalangan pekerja dalam mencari dan seterusnya melaporkan keadaan dan tindakan yang tidak selamat dalam pekerjaan.</i></p>					

*5.	<p>The Head of Unit becomes very unhappy and angry when employees find out and report unsafe conditions and acts in the unit.</p> <p><i>Ketua Unit berasa sangat tidak berpuas hati dan marah apabila para pekerja menemukan dan melaporkan keadaan serta tindakan yang tidak selamat di unit berkenaan.</i></p>					
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PART C: RADIATION SAFETY AWARENESS / KESEDARAN KESELAMATAN RADIASI

Knowledge, Attitude and Action / Pengetahuan, Sikap dan Tindakan

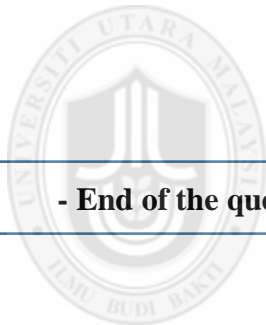
No.	Statement	1	2	3	4	5
1.	<p>The knowledge of ionizing radiation dose of common radiological investigation in medical practice is important.</p> <p><i>Pengetahuan mengenai dos radiasi mengion untuk pemeriksaan radiologi biasa di dalam bidang perubatan adalah penting.</i></p>					
*2.	<p>Lectures, workshops and clinical attachments would not help the most to raise the understanding of awareness on radiation safety.</p> <p><i>Syarahan, bengkel dan penempatan klinikal tidak membantu dalam meningkatkan kefahaman mengenai kesedaran keselamatan radiasi.</i></p>					
3.	<p>ALARA (As Low as Reasonably Achievable) principle is one of the practices in order to minimize radiation dose and at the same time optimizes the quality of X-ray image.</p> <p><i>Prinsip ALARA (As Low as Reasonably Achievable) adalah salah satu praktis dalam meminimakan dos radiasi dan pada masa yang sama mengoptimakan kualiti imej X-ray.</i></p>					

4.	<p>The policies and procedures which are associated with radiation safety in my department are purely based on Atomic Energy Licensing Act 1984 (Act 304).</p> <p><i>Semua polisi dan prosedur berkaitan keselamatan radiasi di jabatan saya adalah berdasarkan kepada Akta Perlesenan Tenaga Atom 1984 (Akta 304).</i></p>					
5.	<p>Lead apron, lead gown, gonad shield, thyroid shield and lead glass goggles are some of the Personal Protective Equipment (PPE) which are being used in Diagnostic Imaging Unit / Department.</p> <p><i>Apron getah berplumbum, gaun getah berplumbum, perisai gonad, perisai tiroid dan goggle kaca berplumbum adalah sebahagian daripada Alat Pelindung Peribadi (PPE) yang digunakan di Unit / Jabatan Pengimejan Diagnostik.</i></p>					
*6.	<p>I believe that all the policies and procedures on radiation safety awareness in my department are not clear and difficult to understand.</p> <p><i>Saya percaya semua polisi dan prosedur kesedaran keselamatan radiasi di jabatan saya adalah tidak jelas dan sukar difahami.</i></p>					
7.	<p>I feel anxiety over risks of radiation exposure.</p> <p><i>Saya berasa bimbang mengenai risiko-risiko dedahan radiasi.</i></p>					
8.	<p>I know whom to contact if I have questions about radiation safety precautions which are needed for employees and patients.</p> <p><i>Saya tahu kepada siapa perlu berhubung jika saya mempunyai soalan-soalan mengenai langkah-langkah keselamatan radiasi yang perlu untuk pekerja dan juga pesakit.</i></p>					
9.	<p>I feel I can clearly explain the radiation safety precautions needed to the patients.</p> <p><i>Saya berasa saya boleh menerangkan secara jelas tentang langkah-langkah keselamatan radiasi kepada pesakit.</i></p>					

10.	<p>I feel safe when caring for patients needing radiation safety precautions.</p> <p><i>Saya berasa selamat semasa memberi perkhidmatan kepada pesakit yang memerlukan langkah-langkah keselamatan radiasi.</i></p>					
11.	<p>I feel confident about the steps which I need to take when caring for patient needing radiation safety precaution.</p> <p><i>Saya berasa yakin mengenai langkah-langkah yang perlu diambil semasa memberi perkhidmatan kepada pesakit yang memerlukan penjagaan keselamatan radiasi.</i></p>					
12.	<p>Radiological examinations should be justified by doctors is the practice for radiological examinations in patients with the possibility of being pregnant.</p> <p><i>Pemeriksaan radiologi yang melibatkan pesakit yang disyaki mengandung perlu dirujukkan terlebih dahulu kepada doktor untuk justifikasi.</i></p>					
*13.	<p>Any individual can enter the X-ray room freely.</p> <p><i>Sesiapa sahaja boleh masuk ke bilik X-ray sesuka hati.</i></p>					
14.	<p>Personal Protective Equipment (PPE) needs to be worn by related staff when performing X-ray examinations.</p> <p><i>Alat Pelindung Peribadi (PPE) perlu dipakai oleh kakitangan berkaitan semasa menjalankan pemeriksaan X-ray.</i></p>					
15.	<p>When performing the X-ray examinations, the related staff needs to increase the distance from the X-ray source.</p> <p><i>Semasa menjalankan pemeriksaan X-ray, kakitangan berkaitan perlu menjarakkan diri daripada sumber X-ray.</i></p>					
16.	<p>X-ray exposure time needs to be minimized in order to decrease radiation dose to patients and the staffs.</p> <p><i>Masa dedahan X-ray perlu diminimumkan bagi mengurangkan dos radiasi kepada pesakit dan kakitangan.</i></p>					

17.	<p>Radiation Protection Policies in my department are compliance with Atomic Energy Licensing Act 1984 (Act 304).</p> <p><i>Polisi Perlindungan Radiasi di jabatan saya adalah menepati keperluan Akta Perlesenan Tenaga Atom 1984 (Akta 304).</i></p>					
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UUM
Universiti Utara Malaysia

- End of the questionnaire. Thank you for your valuable time-