



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING
Faculty of Engineering

SESSION 2021/2022 SEMESTER 1

SECV2113
HUMAN-COMPUTER INTERACTION

ALTERNATIVE ASSESSMENT

HEURISTIC EVALUATION REPORT

CASE STUDY

<https://www.utm.my/healthcentre/>

vs

<https://pusatkesihatan.uitm.edu.my/index.php>

NAME

Megat Irfan Zackry Bin Ismail

MATRIC NO

A20EC0205

EMAIL

megatirfanzackry@graduate.utm.my

LECTURER'S NAME

Prof. Madiya Ts. Dr. Masitah Binti Ghazali

SECTION

03

Introduction

Heuristic evaluation is a usability engineering method for identifying and addressing usability issues in a user interface design as part of an iterative design process. By assigning the correct heuristic, it can provide designers with quick insight and assist designers in recommending the most effective correction procedures. The purpose of this activity is to evaluate two similar websites under Heuristic guidelines since website designs is very much exposed to lots of Heuristic violations.

Both websites involved in this activity have a similar theme, which is official medical centre website for university. The first website is represented by Universiti Teknologi Malaysia (UTM) while the other holds the name of Universiti Teknologi Mara (UiTM). The aim of both websites is to provide medical support in terms of information such as working hours, contact information, and health-related guidelines.

Similar study was conducted in the year 2021 during a pandemic. The study aims were to find out how usable was the state public health websites for communicating during the pandemic in United State which is a similar with the websites I used in this study. Overall, results from the usability evaluation indicate that the health website were flooded with information and had the potential to reduce the quality of user experience when surfing through the sites.

Another different study was conducted but this time is not to evaluate usability, but to compare the efficiencies and effectiveness between user testing and heuristic evaluation. Usually, user testing was performed by doing scenario-based tasks while heuristic on the other hand was conducted more freely by exploring the design and elements. Both technique is good in finding problems in design, but by the end, the result shows that both analysis addressed different usability problem. Which is why they should rather be completing and not competing with each other.

From the research and planning that I have made, the result of this study will brings out usability problems that each websites have, comparisons between the two, and possible suggestion that can improve their websites.

Method

Heuristic Evaluation

Visibility of system status

The design should keep users updated about the current status of the system through providing appropriate feedback within the appropriate amount of time. Providing users with the current status can help users to decide on what is the next action that can be done in order to accomplish their goals. The design should not keep users in the dark.

Match between system and the real world

The design should be able to speak and interact with users using their familiar language. Users should always be able to understand meaning without having to look it up in a dictionary. The design should maximize the implementation of real-world objects and activities to appear natural and logical to be used by users. This can be done by resembling the experiences that users already had. The design, word, and concepts should be easily understandable by majorities of user.

User control and freedom

The design should be able to reverse user's action. Users tend to make mistakes, want to go back a step, and cancel their actions. Because of that, the design should have easily discoverable emergency exit to leave any unwanted state. The design should let users to be able to quickly undo their mistakes.

Consistency and standards

The design should maintain consistent and standards. Maintaining consistency can be achieved by using the same pattern across the system. By maintaining standards, users can know what to expect and avoid confusion. The design should look the similar within similar system.

Error prevention

The design should prevent users from making any errors at all. This can be done by eliminating conditions that are more likely to cause error, choose good defaults option, offer suggestion, and provide users with confirmation button before continuing with an action. The design should be able to avoid any errors from even happening.

Recognition rather than recall

The design should only need users to recognize rather than recall. Recognition design only needs users to identify correct information contradict to recall design which needs users to provide information by retrieving it from memories. The design should not make users memorize information from one interface to another.

Flexibility and efficiency of use

The design should accommodate both novice and expert users. New users need guidance while the experienced often want to complete task faster by skipping steps. The

design should provide easily followed step-by-step guidelines while providing shortcuts for frequent actions. The design should allow users to complete tasks in multiple ways.

Aesthetic and minimalist design

The design should only keep important information available for the user. The design should only provide relevant information and avoid unnecessary elements that can distract users from their goal. The design should not be flooded with information.

Help users recognize, diagnose, and recover from errors

The design should provide easily understandable error messages to help users recognize errors. These error messages should be able to explain to users upon what went wrong in languages that they can understand to diagnose the problems. The design should suggest users with solutions and ways to recover from errors.

Help and documentation

The design should provide users with help that is easily accessible. The design should provide help and documentation such as instructions, questions, and answers which should be easy to search for and find. The design should be prepared to provide users with any help efficiently and organized.

Nielsen's Severity Rating proposed from 0 up to 4 rating scale to rate the severity of usability problems. The description for each rating is shown as below.

0: Not a usability problem

1: Cosmetic problem only and does not need to be fixed unless there is an extra time

2: Minor usability problem and fixing it should be given low priority

3: Major usability problem, important to fix and should be given high priority

4: Usability catastrophe and need to be fixed before the product can be released

To conduct the Heuristic Evaluation, I need to surf through interfaces and interact with each element to get experience all the functions and overall flow of the website. Once I have gone through both websites mentioned before, I can proceed to evaluate both in order to find any Heuristic violations. Then, each violation is listed along with screenshots to illustrate the violations for both websites. Lastly, I rated each violation listed by following the Nielsen's Severity Rating as a guideline.

In order to evaluate both websites correctly, I need to understand the purpose of both websites and users' goals. Understanding those can replicate experiences that users are going through as an evaluator by performing suitable tasks for each website. Since both websites have similar purpose, goals, and tasks, the selected suitable tasks are listed as below.

- Look into schedules for operational hours
- Find contact details from someone in charged
- Submitting form to submit questions and suggestions

Result

UTM website

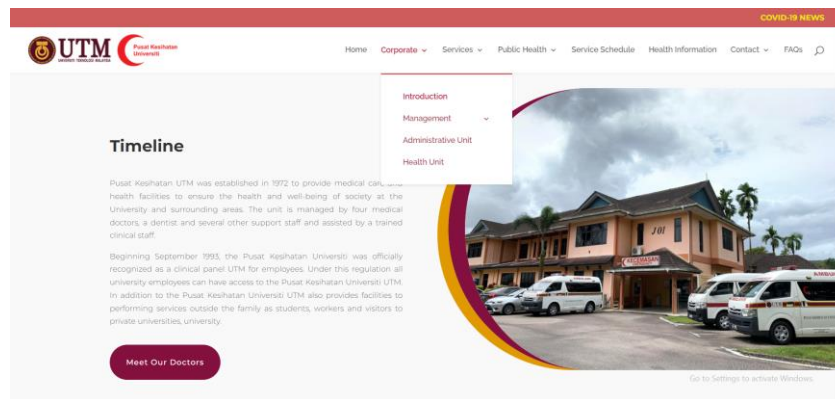


Figure 1

1. Violation: Visibility of system status

Severity rating: 1

Figure 1 shows the introduction page from one of the three pages located under corporate drop box. Other than the changed colour of the drop box, this page does not have any indicator showing at what page are the user currently at.

This violation is considered as a cosmetic problem because users can still know at what page they are by clicking the highlighted corporate drop box to find bolded-text inside introduction button as shown in Figure 1.



Figure 2

2. Violation: Consistency and standards

Severity rating: 3

Figure 2 shows a drop box design for contact which can also act as a button that would bring users to contact page. The design for every other drop box is to drop a list of buttons while the drop box itself neither act as a button nor take users into any other page as shown in Figure 1 before.

This violation is considered as a major usability problem because users can easily miss the contact page since every other drop box does not behave that way. Furthermore, the page did not have any other way to be located even though it contains many important elements including a form to submit questions and suggestions.

Treatment

We provide medical care for patient at treatment bay for any case requiring close observation and stabilization. Treatments available are oral medication, intravenous drip, injection and cold compress.
 Patient will be attended by our dedicated medical officer for optimum care. Our committed paramedics will also assist in close monitoring and help carry out plans of treatment.



Figure 3

3. Violation: Match between system and the real world

Severity rating: 1

Figure 3 shows the website listing intravenous drip as one of the treatment available. Intravenous drip is a medical term which is widely known as “IV fluid drip”. Even though in medical field the term is used correctly, certain users may not understand the term and have to find out the meaning.

This violation is considered as a cosmetic problem because this is a medical website and users that wanted to look into that kinds of information are most likely to have medical background or people who already taken that kind of treatment and be able to understand the term.

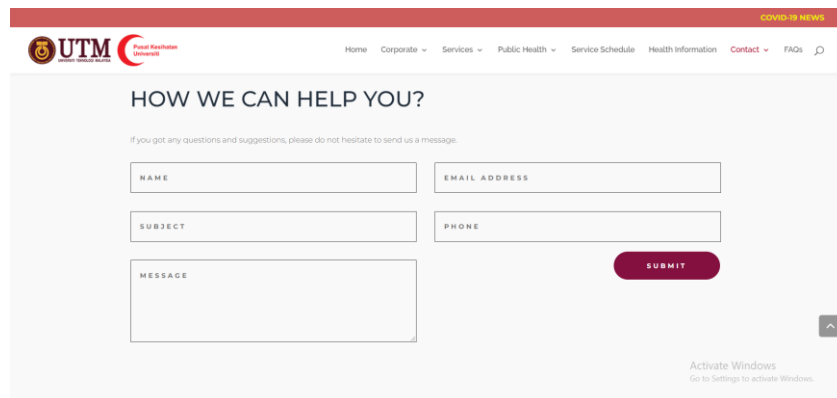


Figure 4

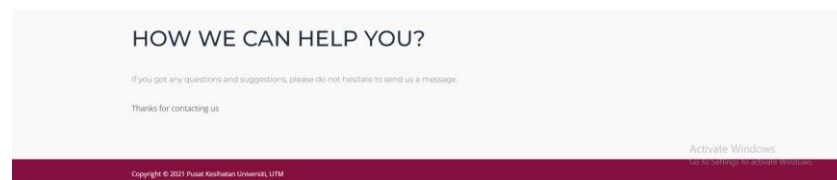


Figure 5

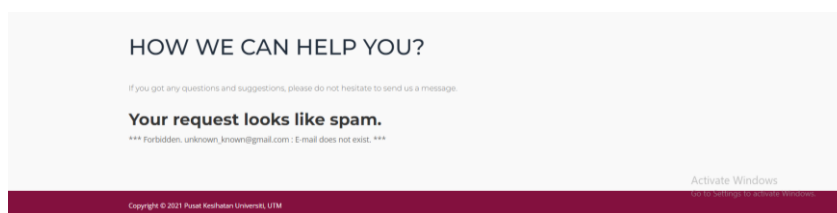


Figure 6

4. Violation: User control and freedom

Severity rating: 2

Figure 4 shows a form to submit questions and suggestion to the website. After the form have been filled and submitted, the website immediately removes the form without letting users to neither cancel the submitted form nor submit another form as shown in Figure 5.

This violation is considered as a minor usability problem because there is nothing users can do except refreshing the page itself only to submit another form. The website does not provide any way to cancel the submitted form.

5. Violation: Help users recognize, diagnose, and recover from errors

Severity rating: 2

Contradict to Figure 4 and Figure 5 explained before, Figure 6 shows the submitted form detected as a spam when a non-existing email was provided. Even though the error message is clear, the design failed to suggest users with solutions and ways to recover from errors.

This violation is considered as a minor usability problem because users would have recognized, understand, and know that submitting another form would be the logical solution to recover from this error. Although due to previous violation, users would have no idea that the page needs to be refreshed in order to submit another form. That is why it is important for the page to suggest users with solutions.

6. Violation: Visibility of system status

Severity rating: 1

In addition to Figure 6 explained before, the error message failed to provide the status of the form either it has been submitted or not. Users will wonder whether their questions and suggestions were sent or not. Providing the system status of the form will help users to decide their next steps and actions.

This violation is considered as a cosmetic problem assuming the user does not mind submitting two similar forms. In that case, the users will have to just submit another form with the correct information.

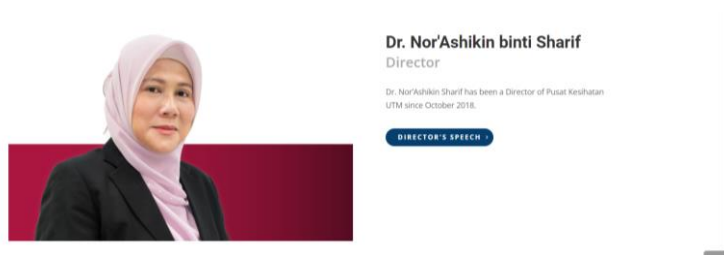


Figure 7

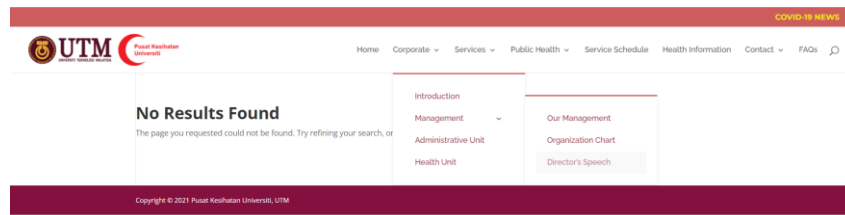


Figure 8

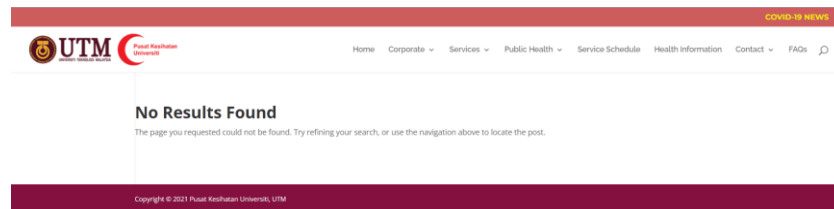


Figure 9

7. Violation: Error prevention

Severity rating: 2

Figure 7 shows a button for the director's speech which will only bring users back to the same page. Assuming the director's speech supposed to be in another page, the page seems to be missing when being accessed through drop box menu as shown in Figure 8. The design should remove buttons that are directing towards a missing page.

This violation is considered as a minor usability problem because the button shown in Figure 7 have been designed to redirect users back to the same page as an alternative.

8. Violation: Help users recognize, diagnose, and recover from errors

Severity rating: 1

In addition to Figure 8, Figure 9 shows the full error message for any missing page. Even though the design succeeded to suggest users with solutions and ways to recover from errors, the solutions and ways provided are not effective since the missing pages are still cannot be found by neither searching nor using the navigation.

This violation is considered as a cosmetic problem because users were provided with easily understandable error messages to help them recognize, diagnose, and recover from the error.



Figure 10

9. Violation: Recognition rather than recall
Severity rating: 1

Figure 10 shows three buttons which do not have any animations for users to recognize them as buttons. Users may think those buttons just as poster and logos.

This violation is considered as a cosmetic problem because users may still be able to recognize them as buttons by the changes of the mouse's icons indicating that it can be clicked on.

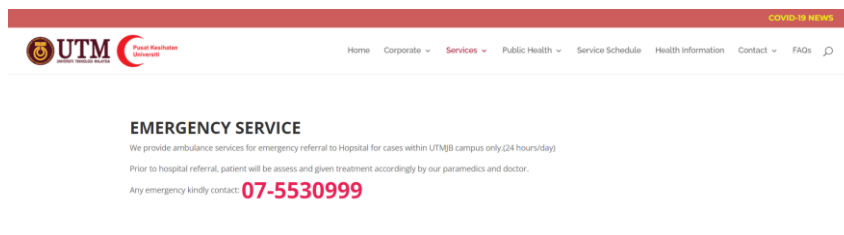


Figure 11

10. Violation: Flexibility and efficiency of use
Severity rating: 3

Figure 11 shows the emergency service page with a highlighted emergency contact number in different colour and size. The design missed the chance to provide hyperlink to immediately contacted the number for any emergency service.

This violation is considered as a major usability problem because in case of emergency especially when in need of medical service, users really need to be able to perform task in a very short period. The website failed to provide shortcuts to users who really needs it.

	Position	Gred	Office No.	Email
Dr. Nor'Ashikin bt Sharif	Director	UG54	37220	drshikin@utm.my
Dr. Norannizza bt Muzlan	Dental Officer	UG52	37651	norannizza@utm.my
Dr. Nurhazwani bte Zakaria	Dental Officer	UG48	37230	nurhazwani@utm.my
Dr. Mohd Zaki bin Yunus	Medical Officer	UD48	37217	mzaki@utm.my
Dr. Mohamad Syarani bin Najmudin	Medical Officer	UD48	37219	m_syarani@utm.my
Dr. Mohd Firdaus Akmal bin Azman	Medical Officer	UD47	37224	mohdfirdausakmal@utm.my
Dr. Dina Farizah binti Saiboldin	Medical Officer	UD43	37432	dinafarizah@utm.my
Dr. Nor Atikah binti Abdul Razak	Medical Officer	UD43	37215	noratikah@utm.my
Dr. Noor Hafzah Zaharah bt Mohd Nur	Medical Officer	UD41	37218	nh.zaharah@utm.my
Dr. Tan Bi Chuan	Medical Officer	UD41	37218	richuan.tan@utm.my
Muhammed Nabil bin Mahamed	Assistant	N41A	38012	mabilin@utm.my

Figure 12

11. Violation: Aesthetic and minimalist design

Severity rating: 1

Figure 12 shows a list of contact information of staff with details of their positions, greds, office numbers, and email addresses. Greds and office numbers can both be categorized as unnecessary information since only a minority of users will want that irrelevant information.

This violation is considered as a cosmetic problem because the page was not flooded by this extra information. Assuming those details were provided for a reason, the list was nicely organized.

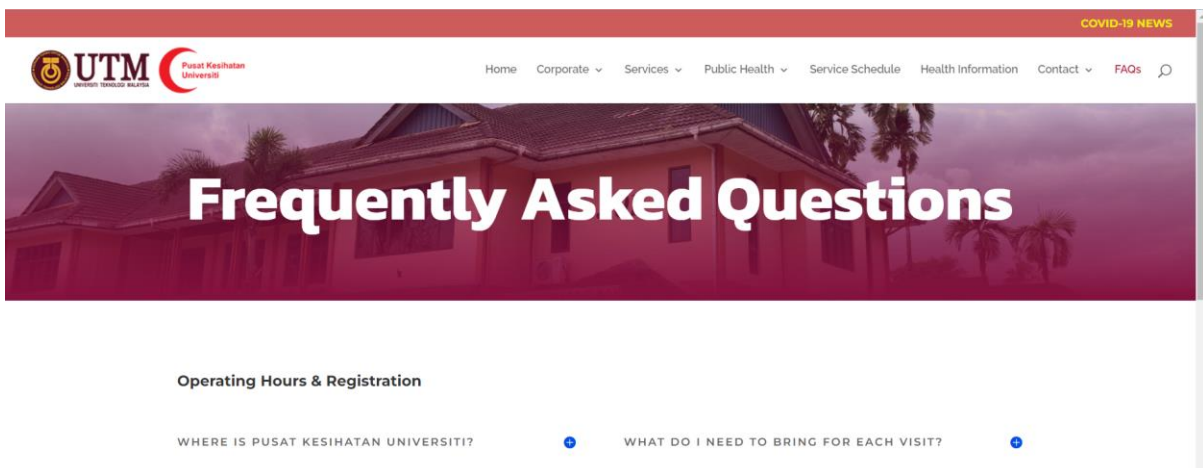


Figure 13

12. Violation: Help and documentation

Severity rating: 1

Figure 13 shows frequently asked questions page that provides answers for certain questions. The website should not only provide the frequently asked questions, but all the questions ever asked including its answers for each one of them.

This violation is considered as a cosmetic problem because the page did provide a proper documentation for two sets of questions and answers.

UTM website

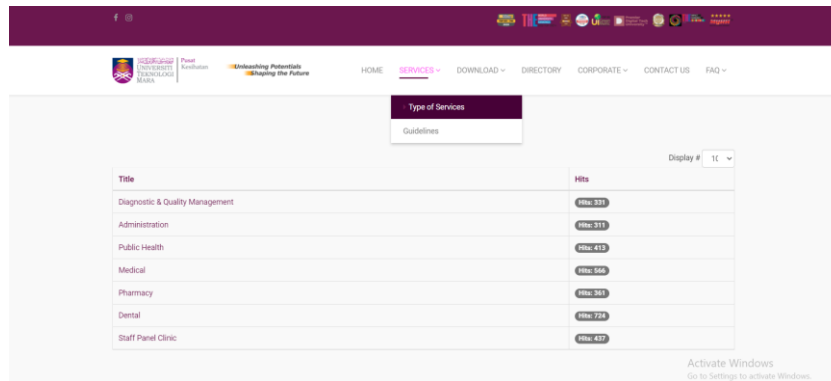


Figure 14

1. Violation: Visibility of system status
Severity rating: 1

Figure 14 shows the types of services page from one of the two pages under services drop box. Other than the changed colour of the drop box, this page does not have any indicator showing at what page are the user currently at.

This violation is considered as a cosmetic problem because users can still know at what page they are by clicking the highlighted services drop box to find colour-filled type of services button as shown in Figure 14.

2. Violation: Aesthetic and minimalist design
Severity rating: 1

In continuance of Figure 14, the hits column can be considered unnecessary information since only a minority of users will want that irrelevant information.

This violation is considered as a cosmetic problem because the page was not flooded by this extra information. Assuming those details were provided for a reason, the list was nicely organized.

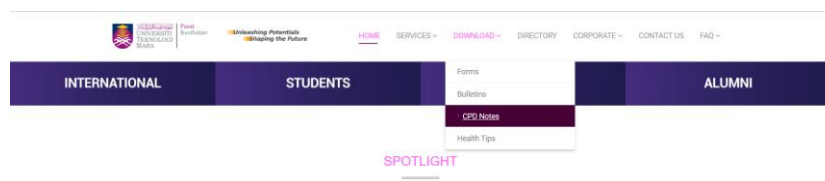


Figure 15

3. Violation: Match between system and the real world
Severity rating: 1

Figure 15 shows the website listing CPD notes as one of the four buttons located under download drop box. CPD is an acronym which stands for Continuing Professional Development. Even though in professional field the acronym is used correctly, certain users may not understand the acronym and have to find out the meaning.

This violation is considered as a cosmetic problem because this is an official medical website for providing all sorts of information and users that wanted to look into that kinds of information should be able to understand them.

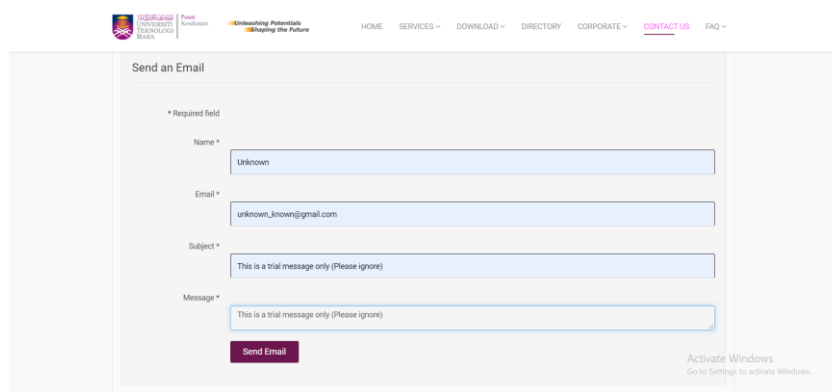
The image shows a web browser window displaying a 'Send an Email' form. The form is titled 'Send an Email' and has a header with the university's logo and navigation links. The form fields are: Name (filled with 'Unknown'), Email (filled with 'unknown_known@gmail.com'), Subject (filled with 'This is a trial message only (Please ignore)'), and Message (filled with 'This is a trial message only (Please ignore)'). A 'Send Email' button is located at the bottom of the form. The website's header includes the text 'UNIVERSITI KUALA LUMPUR' and 'Unleashing Potential, Shaping the Future'. The navigation menu includes 'HOME', 'SERVICES', 'DOWNLOAD', 'DIRECTORY', 'CORPORATE', 'CONTACT US', and 'FAQ'. The footer of the form area says 'Activate Windows Go to Settings to activate Windows.'

Figure 16

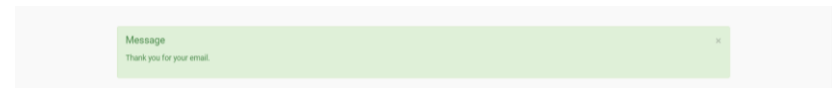


Figure 17

4. Violation: Error prevention

Severity rating: 2

Figure 16 shows a form to submit questions and suggestion to the website filled with fake details. After the form have been filled and submitted, the website provides users with system message showing that the form has been submitted as shown in Figure 17 even though the email addresses does not exist. The design should have a detection function to detect spams and non-existing email addresses.

This violation is considered as a minor usability problem because even though it was design to not let users to submit unfilled form or incorrectly filled form which is a good error prevention. But, not only did the design does not detect spams and non-existing email addresses, it also did not have any confirmation buttons before submitting the form.

5. Violation: User control and freedom

Severity rating: 1

In addition to previous violation, after the form have been filled and submitted, the website also did not provide any way for users to cancel the submitted form if there were any wrong information.

This violation is considered as a cosmetic problem assuming the user does not mind submitting two similar forms. In that case, the users will have to just submit another form with the correct information.

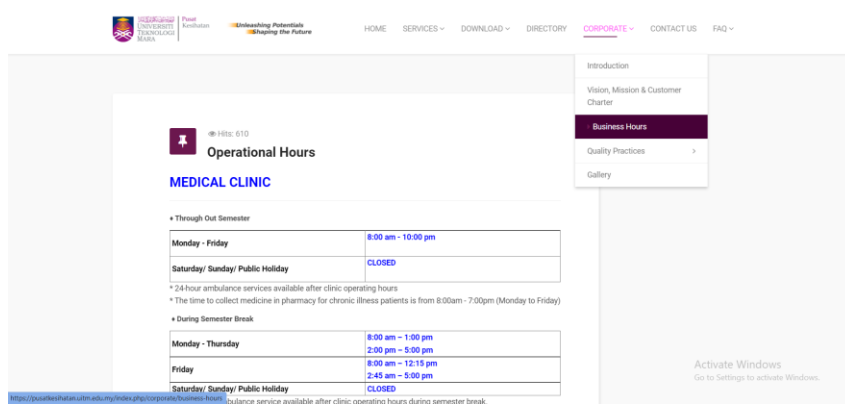


Figure 18

6. Violation: Consistency and standards
Severity rating: 1

Figure 18 shows business hours page that used operational hours as its title. The title of the page is not the same at different places even when it should be.

This violation is considered as a cosmetic problem since both of its name means the same thing and can be understood by users easily.

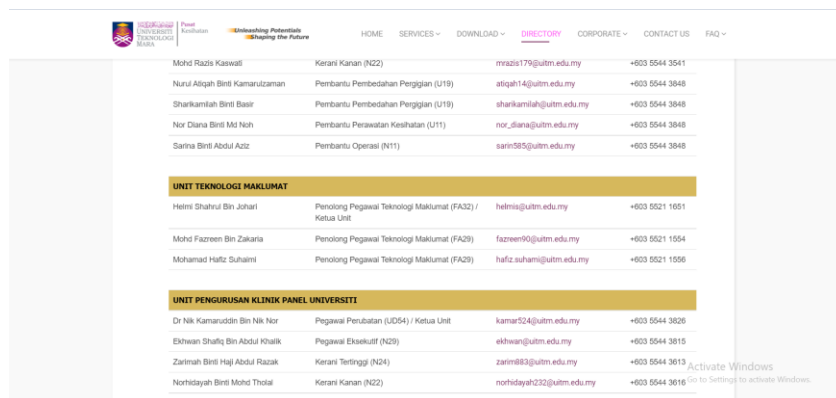


Figure 19

7. Violation: Flexibility and efficiency of use
Severity rating: 1

Figure 19 shows directory page which include a list of detail information of all staffs such as their names, their positions, email addresses, and telephone numbers. Even though the list is very long as shown by the scroll bar in Figure 19, the design did not provide a shortcut back to the top.

This violation is considered as a cosmetic problem because users can easily scroll to the bottom and find previous and next post shortcuts to easily navigate through the websites.

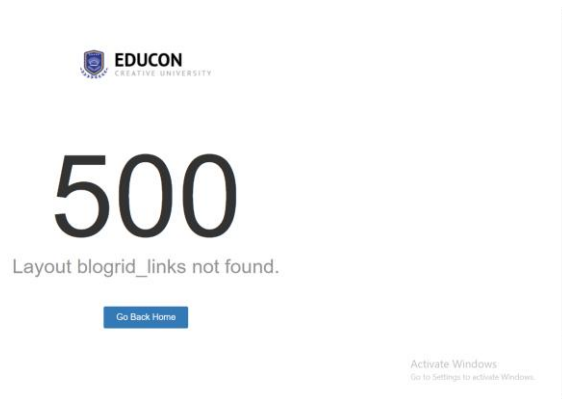


Figure 20

8. Violation: Help users recognize, diagnose, and recover from errors
Severity rating: 2

Figure 20 shows the full error message for any missing page. The design not only does not speak in users' language, it also did not suggest users with any solution or ways to recover from this error except for going back to home.

This violation is considered as a minor usability problem because even though the design provides a button to go back home, the error message provided are very hard to understand and did not help users to recognize, diagnose, or recover from the error.

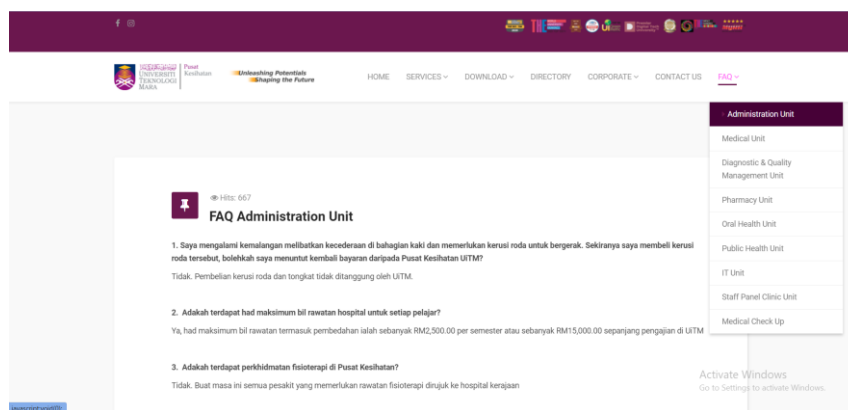


Figure 21

9. Violations: Help and documentation
Severity rating: 1

Figure 21 shows sets of frequently asked question categorized by different units. Since the website provide too many sets of questions and answers, the design should implement a search function for this section to increase the efficiencies of searching for the right question and answer.

This violation is considered as a cosmetic problem because the page did provide a proper documentation by helping users to find the right questions and answers easily.

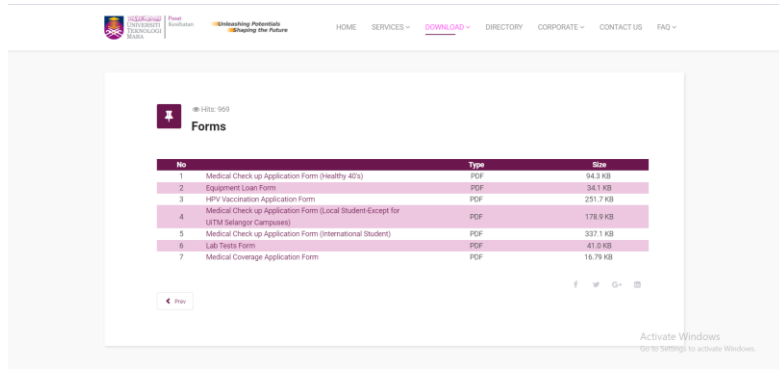


Figure 22

10. Violation: Aesthetic and minimalist design
Severity rating: 1

Figure 22 shows list of forms that can be downloaded. The type and size column can be considered unnecessary information since only a minority of users will want that irrelevant information.

This violation is considered as a cosmetic problem because the page was not flooded by this extra information. Assuming those details were provided for a reason, the list was nicely organized.

Discussion

Recommendations for UTM website

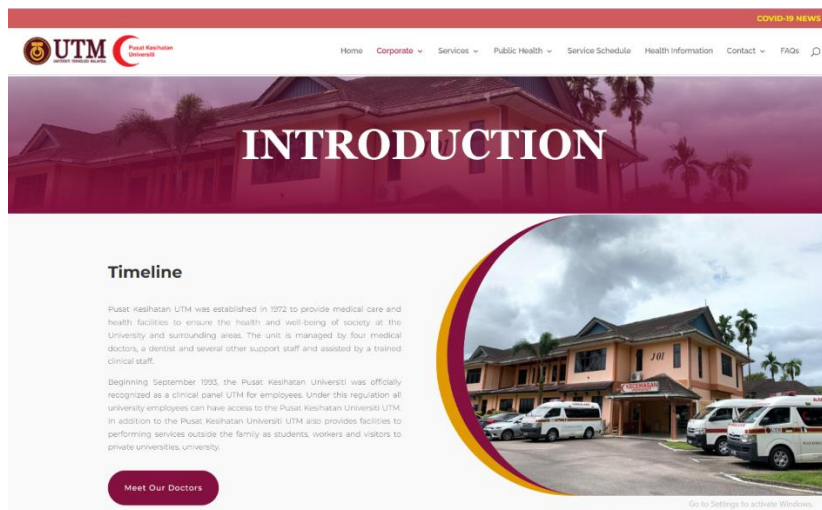


Figure 23

1. I recommend using the same header used for other page to show users the name of the page as shown in Figure 23. Furthermore, using the same header can avoid inconsistency of the design.

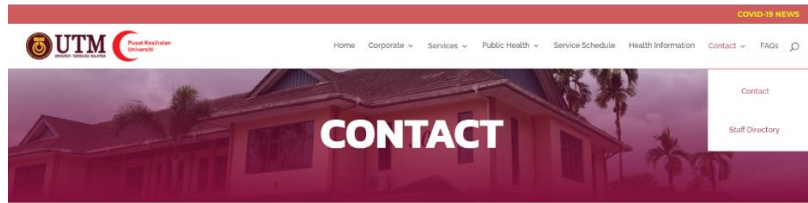


Figure 24

2. I recommend adding another contact button under contact drop box to access the contact page to avoid further inconsistency in the design as shown in Figure 24.

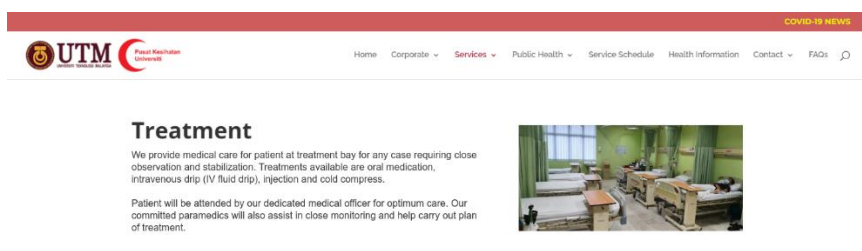


Figure 25

3. I recommend including the term “IV fluid drip” to avoid confusion from users in addition to the original as shown in figure 25.

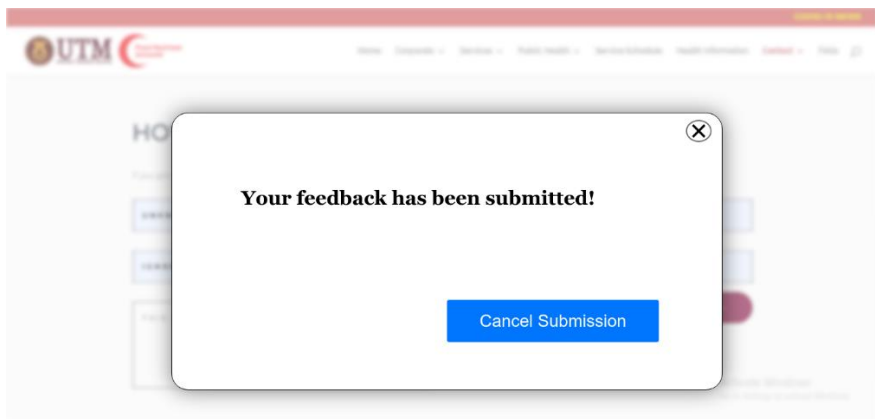


Figure 26

4. I recommend a pop-up notification to let the users know that the feedback have been submitted as shown in Figure 26. This can help users confirmed regarding the status of the submission. Not only that, I also recommend including a cancel button for users to cancel the submission if necessary. The purpose of the pop-up notification design is to let users to have one last chance to cancel the submission before it will be sent via email. Once the email have been sent, users will no longer be able to cancel.

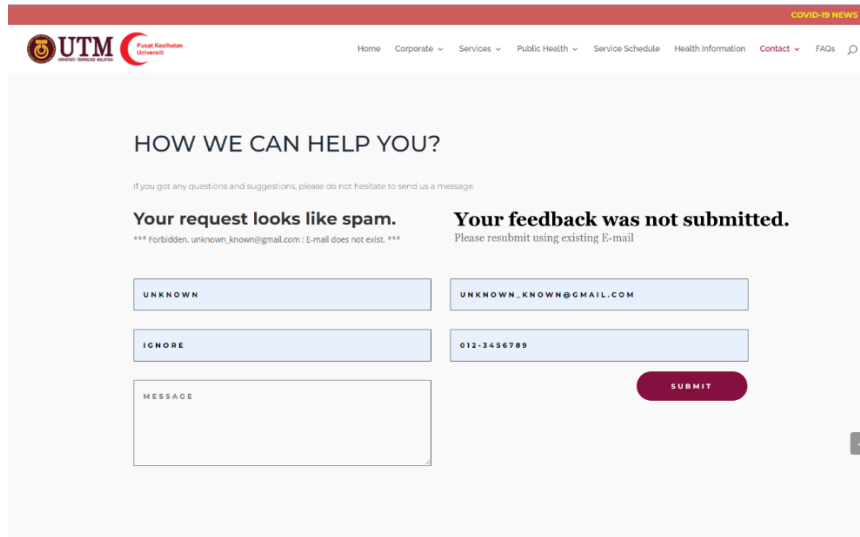


Figure 27

5. I recommend adding clear suggestion on ways for users to recover from the error as shown in Figure 27.
6. I recommend letting users know if the form was either submitted or not as shown in Figure 27. This way, users can easily decide on their next steps and actions.

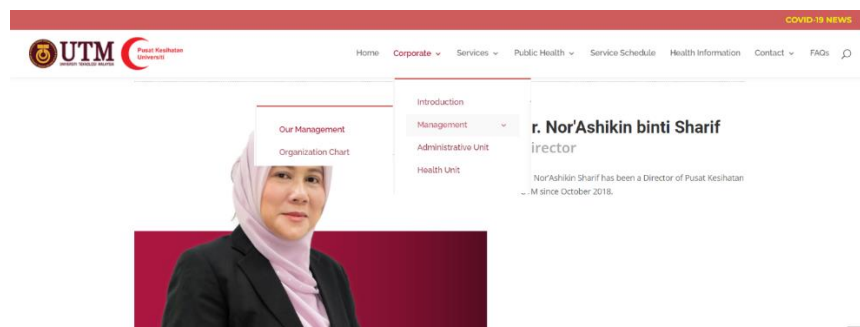


Figure 28

7. Since the page is not available, I recommend removing both buttons from the page and from the navigation menu as well as shown in Figure 28. This will avoid unnecessary errors from the design.

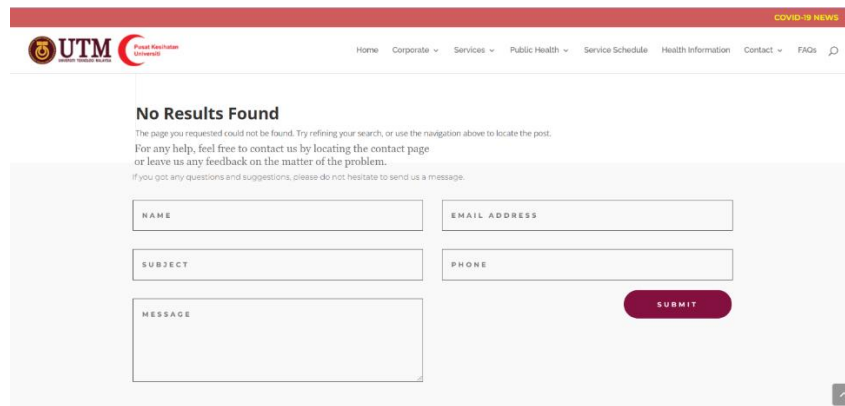


Figure 29

8. If any page were to go missing, I recommend adding another solutions that may be much more helpful for users such as leaving feedback upon any errors as shown in Figure 29.



Figure 30



Figure 31

9. I recommend implementing animation design to help users to recognize those as a button, not as a posters or logos. Figure 30 and Figure 31 shows what will happen when users hover their mouse towards any of the buttons.

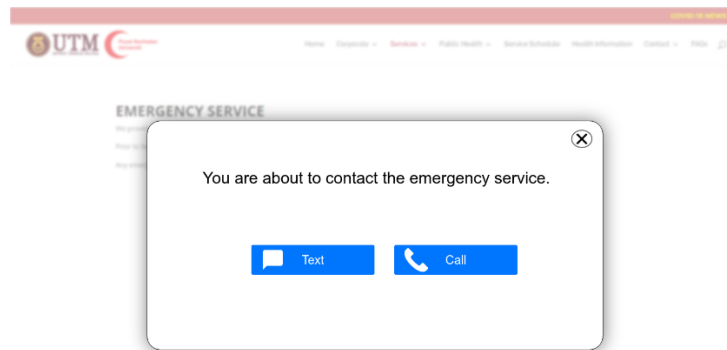


Figure 32

10. I recommend providing shortcuts for users who wants to contact the emergency service by clicking the contact number as shown in Figure 11 previously. I also recommend implementing a pop-up notification to confirm the users to avoid the numbers being contacted by accident as shown in Figure 32.

The image shows a website header with the UTM logo and navigation links. Below the header, there is a table listing staff members. The table has three columns: Name, Position, and Email.

Name	Position	Email
Dr. NorAshikin bt sharif	Director	drshikin@utm.my
Dr. Noranizza bt Mazlan	Dental Officer	noranizza@utm.my
Dr. Nurhafzawani bte Zakaria	Dental Officer	nurhafzawani@utm.my
Dr. Mohd Zaki bin Yunus	Medical Officer	mzak@utm.my
Dr. Mohamad Sjarani bin Najmudin	Medical Officer	m_sjarani@utm.my
Dr. Mohd Firdaus Akmal bin Azman	Medical Officer	mohdfirdausakmal@utm.my
Dr. Dina Faridah binti Sallehin	Medical Officer	dinafaridah@utm.my
Dr. Nor Atikah binti Abdul Razak	Medical Officer	noratikah@utm.my
Dr. Noor Hafifah Zaharah bt.	Medical Officer	nh.zaharah@utm.my

Figure 33

11. I recommend removing unnecessary information such as greds and office numbers detail from the page completely. The page is now a lot cleaner without them as shown in Figure 33.

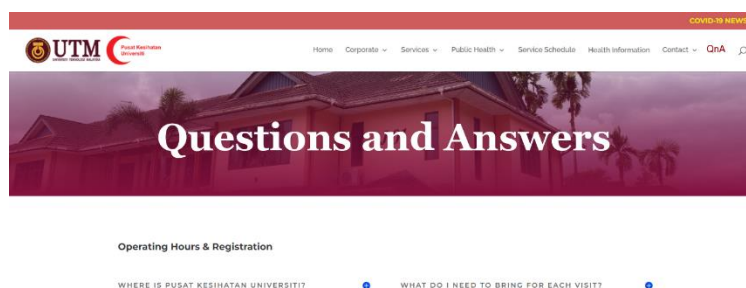


Figure 34

12. I recommend changing the page from frequently asked questions page to questions and answers page as shown in Figure 34. The title of the page were just showing that the page now is going to include every questions and answers for a better documentation.

Recommendations for UiTM website

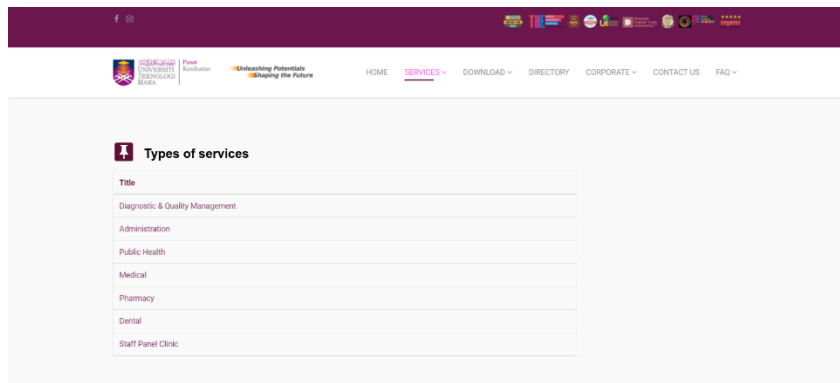


Figure 35

1. I recommend using the same title design used for other page to show users the title of the page as shown in Figure 35. Furthermore, using the same design can also avoid inconsistency of the design.
2. I also recommend removing hits column from the table as shown in Figure 35 since only a minority of users will want that irrelevant information and can be considered as unnecessary information.



Figure 36

3. I recommend spelling out the Continuing Professional Development instead of using its acronym as shown in Figure 36.

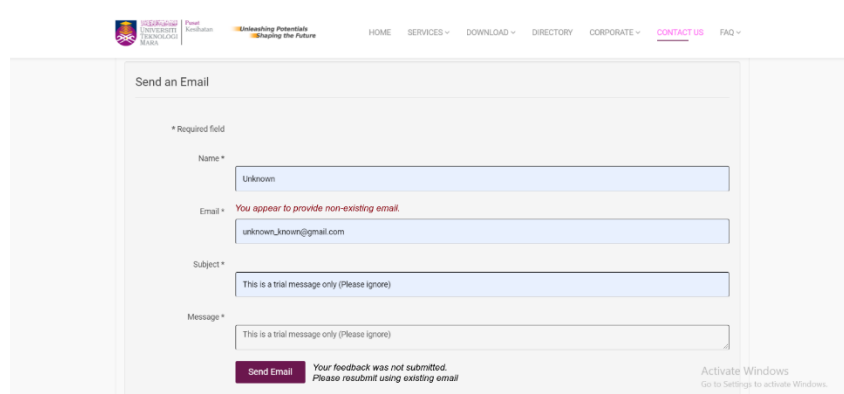


Figure 37

4. I recommend a detection function that can detect all kinds of error before submitting the form. Figure 37 illustrate what will happen when the form was filled with a non-existing email address based on my recommendation.

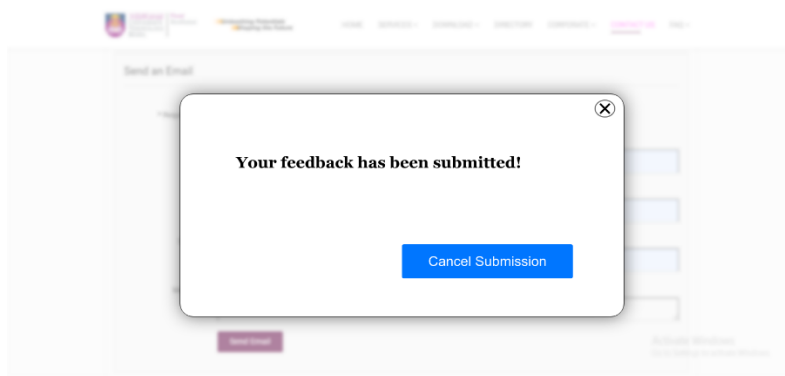


Figure 38

- I recommend a pop-up notification to let the users know that the feedback have been submitted as shown in Figure 38. This can help users confirmed regarding the status of the submission. Not only that, I also recommend including a cancel button for users to cancel the submission if necessary. The purpose of the pop-up notification design is to let users to have one last chance to cancel the submission before it will be sent via email. Once the email has been sent, users will no longer be able to cancel.

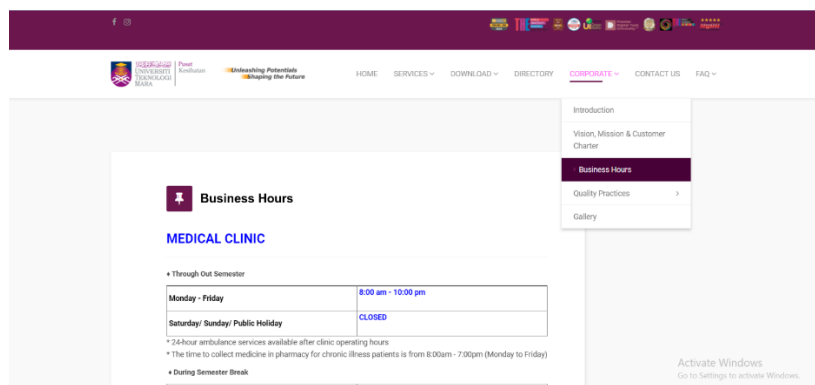


Figure 39

- I recommend changing one of the names to be the same as the other to avoid confusion and inconsistency. Figure 39 illustrate how the same name can be implemented.

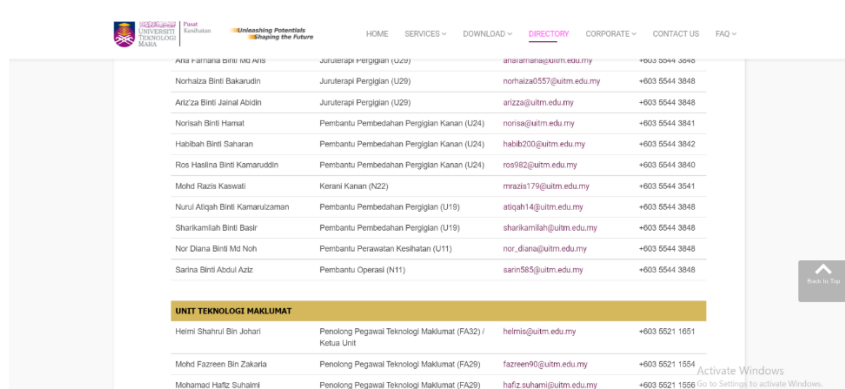


Figure 40

7. I recommend adding a shortcut button on the side of the page to let users to quickly return back at the top of the page without having to scroll back up as shown in Figure 40.

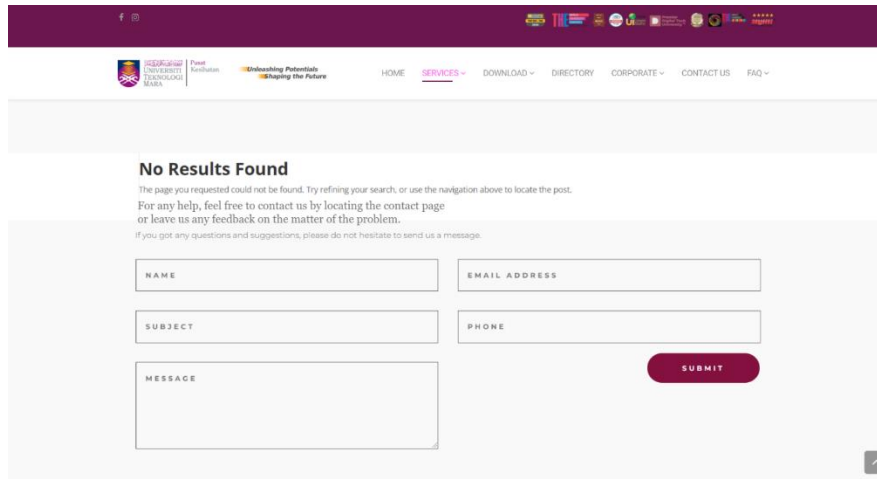


Figure 41

8. I recommend changing the whole design for missing pages error message and provide users with input regarding the error that happen and ways that can be done to recover from the error as shown in Figure 41.

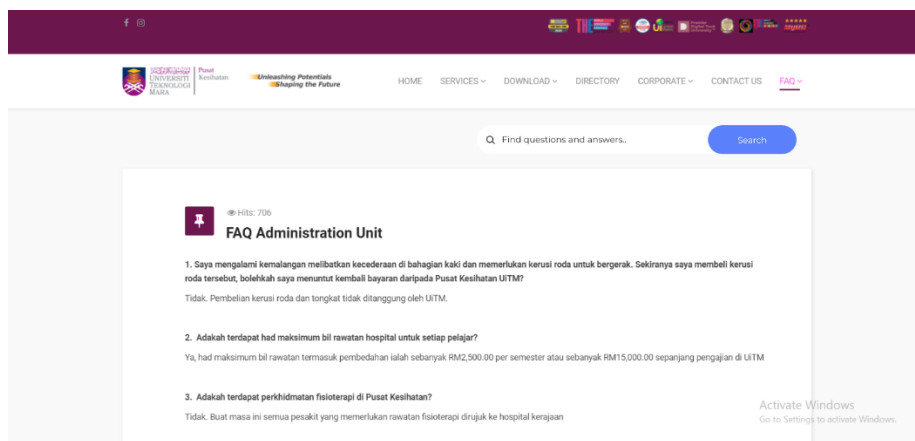


Figure 42

9. I recommend implementing a search function for this page as shown in Figure 42 to help users to find the right questions and answers easily.

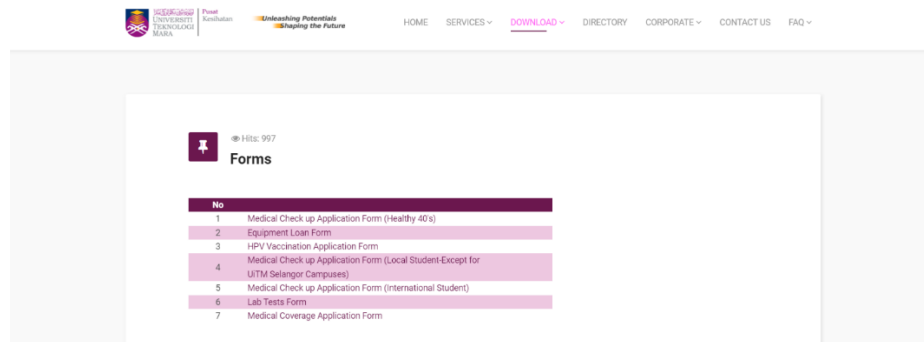


Figure 43

10. I recommend removing type and size column from the table as shown in Figure 35 since only a minority of users will want that irrelevant information and can be considered as unnecessary information.

Comparison table between the two websites

Usability Heuristic	UTM Health Centre	UiTM Health Centre
Visibility of system status	This website shows most of the system status by highlighting and colour changing title. Although there are a few pages that failed to show the system status to users	This website shows most of the system status by highlighting and colour changing title. Although there are a few pages that failed to show the system status to users
Match between system and the real world	Since this is a medical website and users that wanted to look into that kinds of information are most likely to have medical background or people who already taken that kind of treatment and be able to understand the design.	Since this is a medical website and users that wanted to look into that kinds of information are most likely to have medical background or people who already taken that kind of treatment and be able to understand the design.
User control and freedom	This website does not have many important decision making interaction or function. Hence, users are free to roam around the website	This website does not have many important decision making interaction or function. Hence, users are free to roam around the website
Consistency and standards	The consistency and standards are overall nicely followed	The consistency and standards are overall nicely followed
Error prevention	This website did not did its best in preventing error	This website did not did its best in preventing error
Recognition rather than recall	This website does not let users to use their memory	This website does not let users to use their memory

Flexibility and efficiency of use	There a lots of shortcuts available for experienced and very clear guide for beginner	There a lots of shortcuts available for experienced and very clear guide for beginner
Aesthetic and minimalist design	This website was aesthetihc and minimalistic	This website was flooded with information
Help users recognize, diagnose, and recover from errors	This website helps users recognize, diagnose, and recover from errors in easy and understandable word	This website helps users recognize, diagnose, and recover from errors in easy and understandable word
Help and documentation	This website have very few helps and documentation	This website have very few helps and documentation

Conclusion

The overall result of my findings from this study is that since both websites main purposes were to only display health information and services available, both websites appear to be unmaintained frequent enough since there are a lot of errors especially missing pages. Nevertheless, both websites have similar pros and shortcomings in terms of usability

From this study, I learnt to identify issues by going through every detail and interaction at both websites. I also gain the experience in evaluating websites based on Heuristic Evaluation as a guideline.

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