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HEURISTIC EVALUATION:
INDIVIDUAL CASE STUDY REPORT

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01

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Introduction

There are a lot of online shopping sites in Malaysia and PGMALL is in the list of most visited online marketplace in Malaysia. PG Mall is online shopping platform in Malaysia. It provides wide range of products for buyers and a selling platform for the merchants. Me as a user experience researcher, online website must be always updated, and the usability problems must be fixed frequently. For me as a reviewer, an online shopping sites must bring a lot of ease to the buyers and sellers instead of bringing troubles for them. A clear and clean online shopping sites will merge customers' purchasing rate.

To do so, heuristics evaluation (HE) must be practice on the online shopping site so that the flexibility and efficiency in buying stocks will be soared. Heuristics evaluation is a usability inspection method that usually used in the user interface design testing purpose. In this reviewed platform, which is PGMALL, the heuristics evaluation will be performed by applying different methods. Some violations of part of the interfaces in PGMALL will be listed out based on the heuristic evaluations and the rating system. At the same time, if the severity of the violation is higher, the issue must be fixed earlier. This is to make sure that some possible issues will be fixed rapidly and the PGMALL site will be more user-friendly else the tasks could be carried out smoother. Next, recommend potential solution must be come out based on different target user to fix the issue. So, in this report, the problems will be analysed based on heuristics it has violated and the recommend potential solutions for each of the problems are clearly described.

In the development of solutions to fix the issue, the proposed solutions must be creative and well organised. A well understanding in all the design tools and skilful in using them are crucial in this part. As a junior member in the team, all the icons and interfaces of PGMALL must be analysed so that more problems could be found, and solutions can be thinking of. This is to show the ability of emphasize, observe, and analyse.

Method

Item 1

Based on my case study, there are three different types of heuristics methods I am going to use. The first method is Jakob Nielsen's heuristics, second is Shneiderman's Eight Golden Rules and the last method is Weinschenk and Barker classification.

There are 10 heuristics in Jakob Nielsen's heuristics and this method is the popular method among the heuristic evaluation methods. It is suitable to be used in every design step and encouraged to use it earlier. In my view, Nielsen's heuristics is extremely useful in discovering major of the problems and it should do earlier in the design stage. Nielsen's heuristics are broad rules of thumb. I use this in my case study is because there are 10 most general principles for the interaction design. These heuristics can be applied on a prototype, wireframe or a finished product for good usability. Since PGMALL is a platform of online shopping and many uncover major problems could be found using this method. The choices are made of user but not the website. So maybe some of the interfaces design will be changed to improve user experiences. I will use these as a "first stage", means I will use this method to test again all the interface in PGMALL first to check if there are major problems or not. Me as a good UX research, the method has to go through first to prevent all major problems.

From the name of second method which is Shneiderman's Eight Golden Rules. There are 8 golden rules in interface design. This rule is famous and even Microsoft, Apple and Google are applying Shneiderman's rules. There are some differences between this rule and Nielsen's heuristics. These rules are suitable in solid interaction design. The 8 golden rules are more detailed and specific. One of the rules focus on the bringing shortcut to users to bring more convenience. One of the rules is enable frequent users to use shortcuts. One example that always happen in our daily life is stuff of screenshot. For instance, some of the smartphones need only 3 fingertips to push upwards on the screen to take shortcut. One more example is there are a lot of hot keys when we are making screen recording such as F9 is to pause and F10 is to stop, even we can choose what buttons to be the hotkeys! Some issue may not discover using Nielsen's heuristics and maybe I will discover some problems based on Shneiderman's Eight Golden Rules. One of the rules is the informative feedback and I think it is useful in this case study because users always want appropriate feedback when there is interaction between users and PG Mall.

There are 20 heuristics in the Weinschenk and Barker classification and this classification has the greatest number of heuristics compared with the previous methods. This method is suitable to be used in the final stage of interface design. All the 20 rules in this heuristic are detailed and more problems will be found using this heuristics. This method is useful in cover all possible severity issue or we understand them as false positives problems. Some of the issues do exist and we can fix them using the Weinschenk and Barker classification. The special heuristics in this method is the aesthetic integrity. This is to evaluate if the interface is attractive or not. In other words, this method is more detailed if comparing with 2 methods above and it is suitable to be used in the final stage. This is to raise the quality of the interfaces.

By comparing Jakob Nielsen's heuristics, Shneiderman's Eight Golden Rules and the Weinschenk and Barker classification, 3 methods here are designed for the interaction design and taking care about the benefits of users. PG mall is a platform where the merchants and customers' interaction occur. So, it is good to take care about the benefits of users. How users feel when using the PG Mall. First method must be used in every step to prevent massive problems uncover. Then, we just move to the second method so that the convenience will be increased, and final step will apply the last method to raise the interfaces quality. Actually, there are many methods of heuristics evaluation. However, 3 evaluation methods are more than enough.

Item 2

I will create a combination of heuristics from the 2 examples that listed in Item 1 that is Jakob Nielsen's heuristics and Shneiderman's Eight Golden Rules. This is because I believe that more issues will be discovered using more heuristics evaluation method. According to a research article, five experts found out that 40% usability problems were identified using Touchscreen Mobile Devices heuristics (TMD), while only 26% usability issues were identified using Nielsen's heuristics (Mohd Kamal Othman, 2018). Based on this, I believe that more problems will be found if more than one heuristic evaluation is used. For Nielsen's heuristics, the usability heuristics that I choose are visibility of system status, match between system and real world, user control and freedom, consistency and standards, recognition rather than recall, aesthetic and minimalist design, help user recognize, diagnose and recover from error and the last one is help and documentation.

Visibility of system status

This is the first rule in the Nielsen's heuristics. It means the system must always inform the uses about what is going on through appropriate in a reasonable time (Harley, 2018). Visibility means transparency and users can know exactly what is happening now. When users know the status of the system, they will know what to change and have a better decision making. A good online system must able to present their current status and this is one of the communications between the online shopping system and users. An appropriate feedback is needed to reflect the status of a system so that users know whether the interaction is successful. An online shopping platform need this heuristic because user have to communicate with to buy things from it. It tells users is the item successfully keep, is the item successfully deleted, is the payment successfully.

Match between system and real world

Users will feel comfortable with what they familiar with. The design of icons must simple and match with the real life. For example, when there is a dustbin icon, user will know that that icon is to delete because in real life, dustbin is used to put all the rubbish. The heuristics is important because people build mental model of how a system works based on their past

experiences with real world objects. Users will easily learn an interface based on their existing knowledge (Kaley, 2018). One important thing is if the icons are simple designed or designer assume that their understanding of icons match with the users' understanding. There is a big issue here because designer is not user. Users will have a misunderstanding of it and leave the PGMALL. The icons designed must easy understand and match to the real world that users familiar with.

User control and freedom

User sometimes will make mistake and accidentally press something. The second situation is there is no choice for the users to choose. In this PGMALL, there are some private information needed such as address. Sometimes there is information that is needed to fill. However, user have to freedom choosing they have to fill in or not. Users must have the flexibility to do or undo something. It is user to control the system but not system to control users. More complex tasks must be implicitly performed, making the user believe they are working directly with the objects (María D. Lozano, 2013).

Consistency and standards

Since there are pages in PGMALL and various tasks can be done, the buttons must look the same across the site on any page. This is to minimize new concepts users how to learn to successfully use the interfaces. A button from aspects of function, colour, size and design must exactly same across the site of pages to prevent user getting misunderstand. Interfaces must be consistent so that users are not forced to learn new toolsets for each task. This is also helping to reduce the length of thinking process by eliminating confusing (Wong, 2020).

Recognition rather than recall

In PGMALL, users have to key in what they want to search in the searching bar. So, it is better to have a list of options for them when they enter some keywords. This is to reduce the application of user memory by making the actions visible. User no need to recall back the long and complicated word. They just have to key in a keyword and many related results will visible to them and users just have to pick one from the list of options. With the list of options displayed

based on a keyword that users enter, users can retrieve information from memory. So, users just have to recognize a piece of information as being familiar, rather than retrieval of related details from memory. (Budiu, 2014)

Aesthetic and minimalist design

A page should not contain irrelevant and unnecessary information or icon that does not support user tasks. (Moran, 2015). Make sure that there is no rarely used buttons to keep the page clean and clear. Extra unit of information or too many icons will compete with main goal of the page and users will confuse. I have to make sure that everything here is needed and with the absence of useless clutter. Users will feel comfortable when looking at a clean page.

Help user recognize, diagnose, and recover from errors

There are many targeted users in PGMALL and some of them maybe have a poor knowledge of words or users just make mistakes when typing. Users usually will just key in the word which is in their mind and maybe it is incorrect. The system has to detect the word and provide word with correct under the search bar so that users will realise where is wrong and pick a correct one. This is to protect users against making errors so that the result found will be more accurate and relevant to what they want. If a user makes mistake while doing tasks, an error message should be displayed with proper steps to correct user and user can learn from mistakes. (Kohei Arai, 2018)

Help and documentation

A searching for help should be enable so that the user can directly get their answer as soon as possible. The documentation must also be provided so that any such information should be easy to search. User should be find the things they are curious using search or by browsing to the topic. (Arel, 2012)

Usability heuristics that I choose from Shneiderman's Eight Golden Rules is **informative feedback.** When users point on one of the icons, some comment has to be appeared so that users will clearly know what the icons represent. Second situation is when users points on some words, the words will change colour and the mouse's arrow changes into a hand means that it is clickable. For every users' action, there should be appropriate, human-readable feedback within a reasonable time. (Wong, 2020)

Item 3

Rating system that I will use alongside the heuristics is severity ratings. Severity system is used to allocate most resources to fix most serious problems and can provide a rough estimate of need for additional usability efforts. (Nielsen, 1994) There are 4 levels in this rating system from low to high such as cosmetic issue, minor issue, major issue and catastrophic issue. The severity of all the issue could be estimated using this rating system. The severity is a combination of three reasons. The first one frequency of the problems occurred, the impact of problem on users and the persistence of problems. When the frequency of the occurrence of the problem greater, the severity will be higher. When we talk about cosmetic issue, means it is only a small problem and it should be fixed when time permits. The problem is categorized as minor issue when it disturbs users' ability to navigate and should be fixed when possible. The problem is a major issue if it confuses users and should be fix immediately. The problem is a catastrophic issue if it stops users from completing a task and this problem is an urgent and should be fixed rapidly.

I will use number to rate the severity of usability problem which 0 represent no usability problem at all, 1 represent cosmetic issue, 2 represent minor issue, 3 represent major issue and 4 represent catastrophe issue.

The purpose of severity ratings is to provide a tool to assist UX researcher in identifying the how serious of a problem and when to fix it. It also provides a rough estimate of the need for extra usability efforts (Nielsen, 1994). I use this is because this rating system can be used to estimate and fix many of the serious problems and the level of seriousness is known. So that UX research will know how to deal with the problems in a reasonable amount of time.

Item 4

PG MALL is a Malaysia online shopping platform for merchants to sell things online and for the customers to buys things online. PG MALL offers a wide range of products such as fashion accessories, food, machines, books, sports, cloths and more. There are always discounts or rewards for the customers while buying online. Customers can just enter what they want in the search bar and they have freedom to filter the price range of the things them want. All of the details are stated clearly below each product and the reviews of stock are stated too. They can even chat with seller if they wanted to know more. Furthermore, there is a cart prepared for each customer to store their stocks before paying. They can even delete them if they don't want to buy at the end without feeling embarrassed. This brings a lot of convenience because customers can shop first and pay their items at the end of the online shopping. This is almost same as offline shopping.

Persona: Belle – Undergraduate Student

This is Belle. She is 21 years old student living in Kedah. She is a computer science student studying in University Sains Malaysia. She is a shopping lover and she prefers to make some price comparison before paying. She always online shopping on different platforms but she has not tried PG MALL. She wants to give it a try. She feels like all the platform is almost the same and she is excited to have one more online shopping platform to shop. Belle's motivation is to get many rewards from online shopping platform and buy the items at a low price. She likes to add stocks to the cart first and then read the details of the stock. After she

reach the process of paying, she will keep thinking and thinking before she pays. This is because she is always comparing the prices before buying. Belle's daily activities are wake up to go lecturer hall or completing an assignment. She orders her 3 meals online and enjoys them with her roommate in a room. She thinks that the online buying method is cheaper.

It's Sunday morning and today is the begin of a new semester. Belle remembers that after a week is her mother's birthday. Belle decides to buy her mother a present such as Roborock sweeping robot. She also wants to buy herself something too. She prefers to make decision about what to buy while shopping. At the age of 21, she is still a university student and does not have enough money to go to a branded shop to buy a sweeping robot for her mother. At the same time, her friend recommends PG MALL to her.

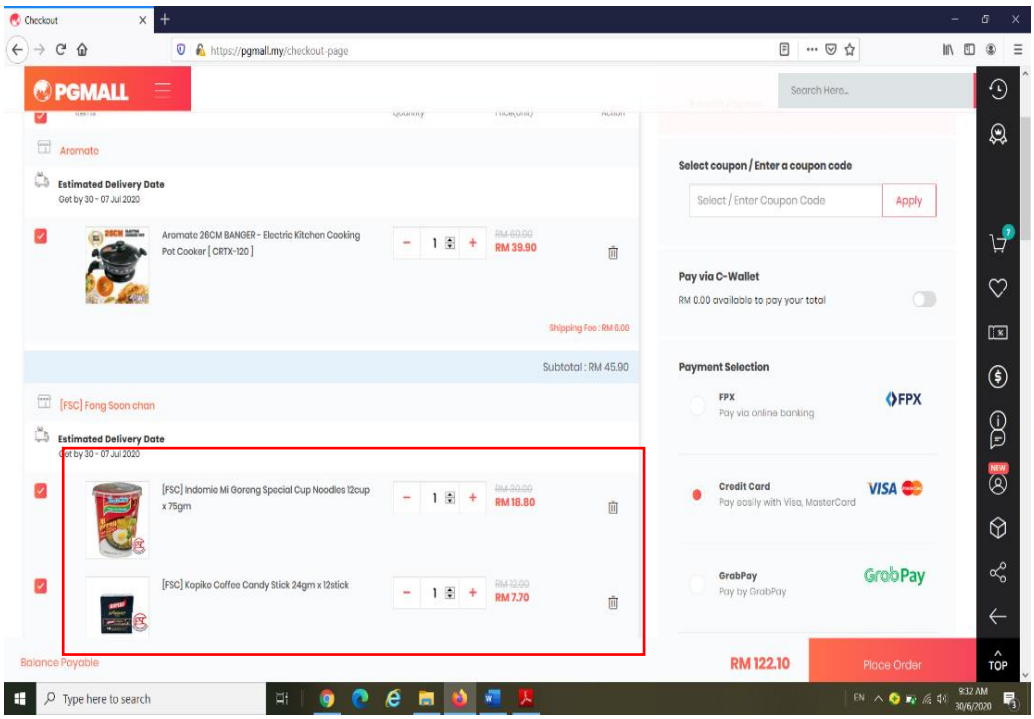
Belle feels like online buying the robot is cheaper, so she decides to register and login. After login, she **searches for the items**. However, she already forgot the brand of the sweeping robot and she just simply write a word that sounds similar to the robot brand else she makes some spelling mistake while entering. She enters "robotrot sweepin eobot" and the result found is different from her expectations else there is no list of options when searching. So, she has to return to Google and search again the complete name for the sweeping machine.

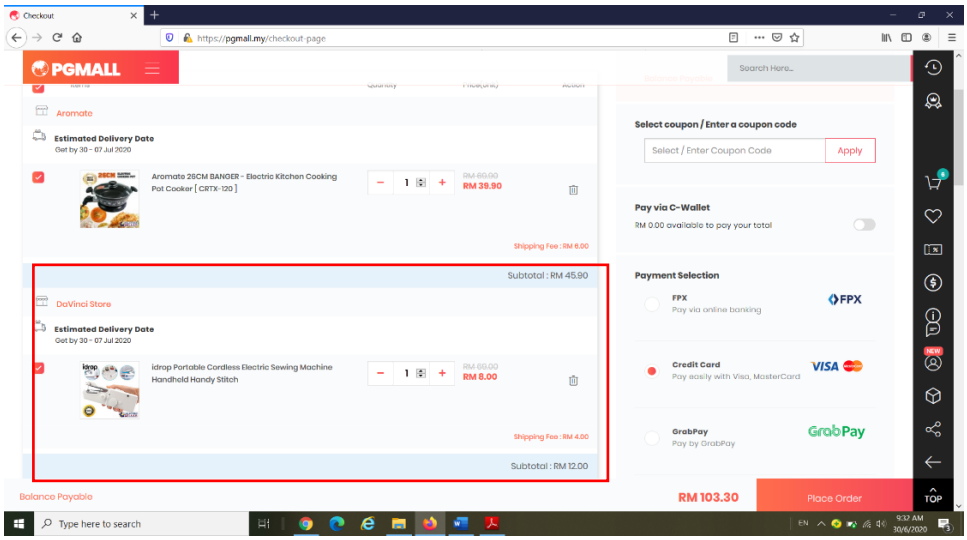
After searching, she managed to get an accurate result. There are 4 icons at the upper right of the column. She is curious about this and move the arrow of mouse on top of that 4 icons, but she gets no information. She wants to **ask a question** regarding this. She decides to click on help icon on the main page, but she cannot find it. Luckily, there is an information icon. She wants to enter a question about what 4 icons represent but there is no such question asking section.

However, after reading the details of the stock, she chooses to **add the items into cart**. She continues searching for her own things and add them into shopping cart too. Before paying, she wants to know more about the sweeping robot. So, she presses icon of the chat and start chatting with the seller. However, she found that status of seller is online, but she is not sure her messages are seen are not. So, she has no choice to wait until the reply of seller.

Results

Item 6, Item 7 and Item 8

Heuristics it has violated	Problem
Visibility of system status	1. There is no delete dialogue when delete items from cart **Severity #2: minor issue** When the item is deleted, there is no delete dialogue pop put to notify that the item is successfully deleted or not. When there are too many items in the cart, I will confuse because when I deleted the items, there is no notifications or something else are not given within a reasonable time, the item queue after it will immediately move upwards. Sometimes, I will curious am I deleted the item or not because I have added similar items to the cart. This situation happens and I have to go back to the page to order again. 

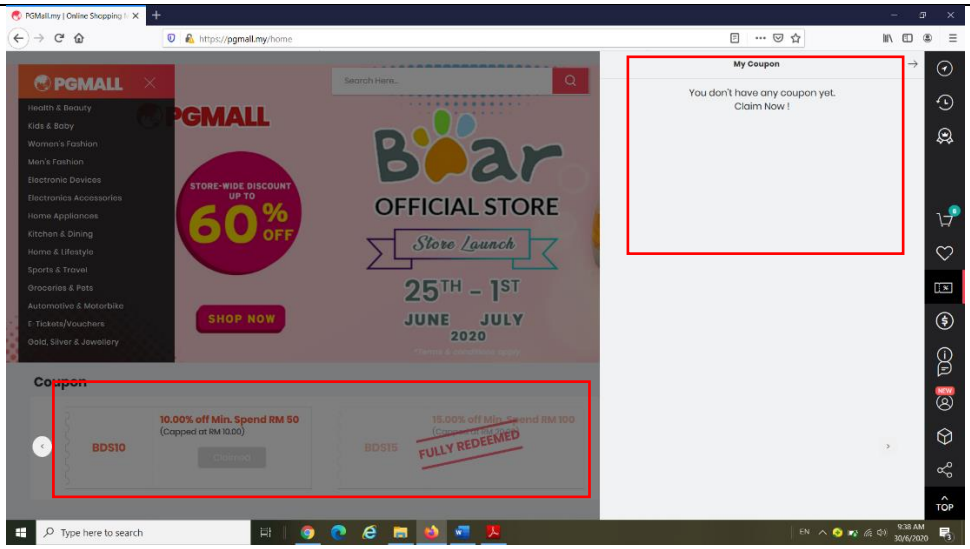


When I delete the Maggi at the upper part, there is no delete dialogue to inform me that Maggi is successfully deleted. After I press the delete icon, the arrangement of items in cart is rearranged. I get confused about what had happen and I am curious about am I really deleted the Maggi?

2. User confuses where the claimed vouchers kept

   Severity #3: Major issue

   When I get the claimed voucher at the front page. There is no appropriate feedback shows where the claimed vouchers saved. It is not neither in the voucher section nor in the enter code section when purchasing. This will make users confuse that whether the voucher is claimed or not. I do not know what is going on after I claimed the vouchers. The system status is not clear.

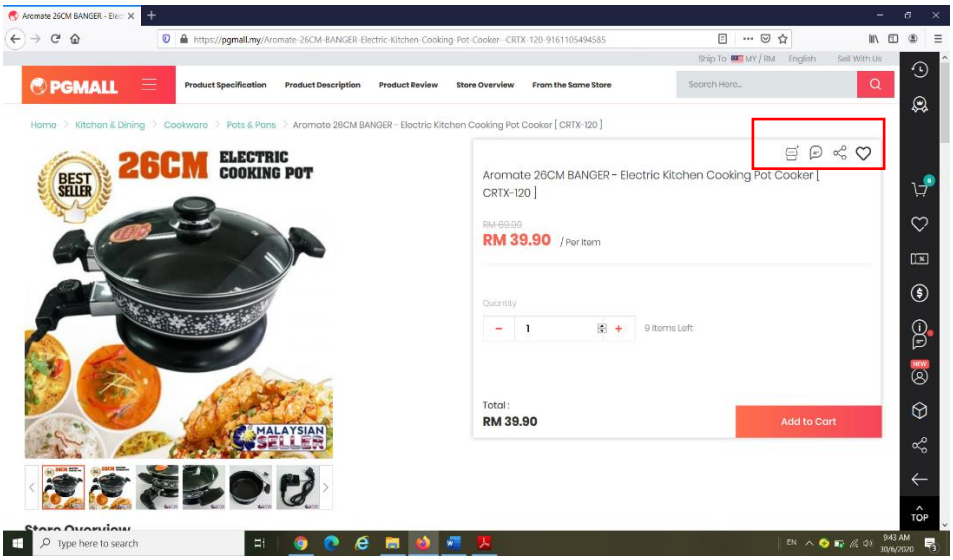


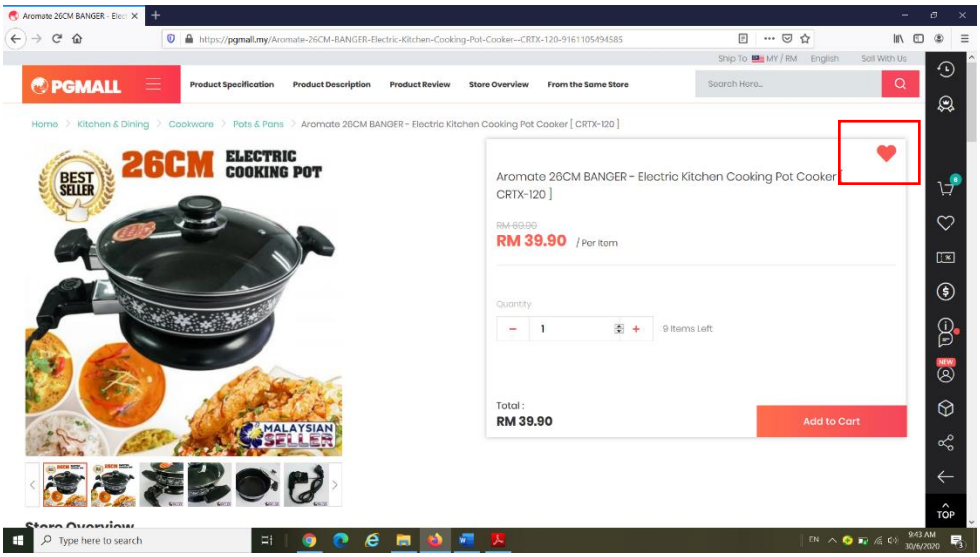
When I save the claimed coupon and decided to look at the voucher section. There is no claimed coupon saved.

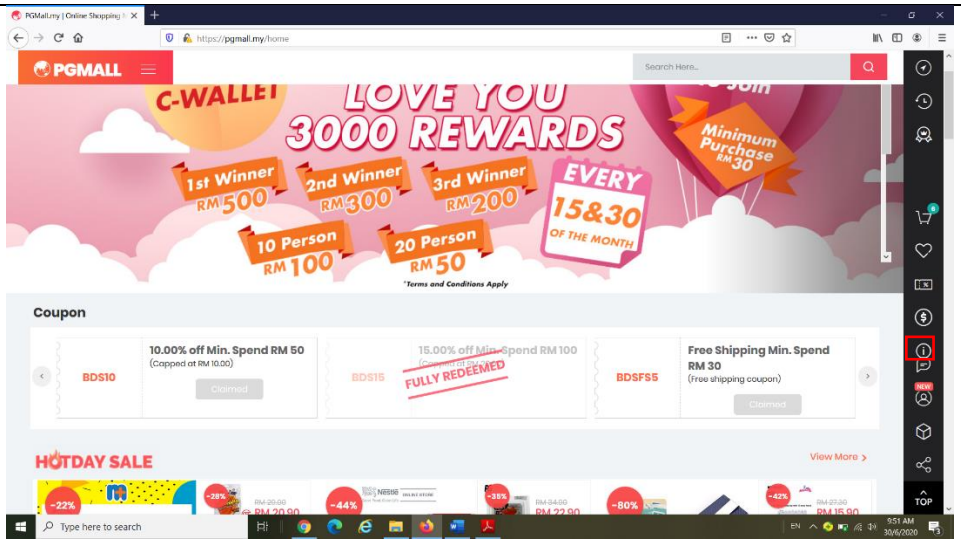
3. Users confuse about where the “loved” item saved.

When I click the love icon which is located at the upper right. There is not appropriate feedback to notify where does the item saved when I click the love icon. I do not know where it saved. Or it is not saved. I am confused about the “love” status.

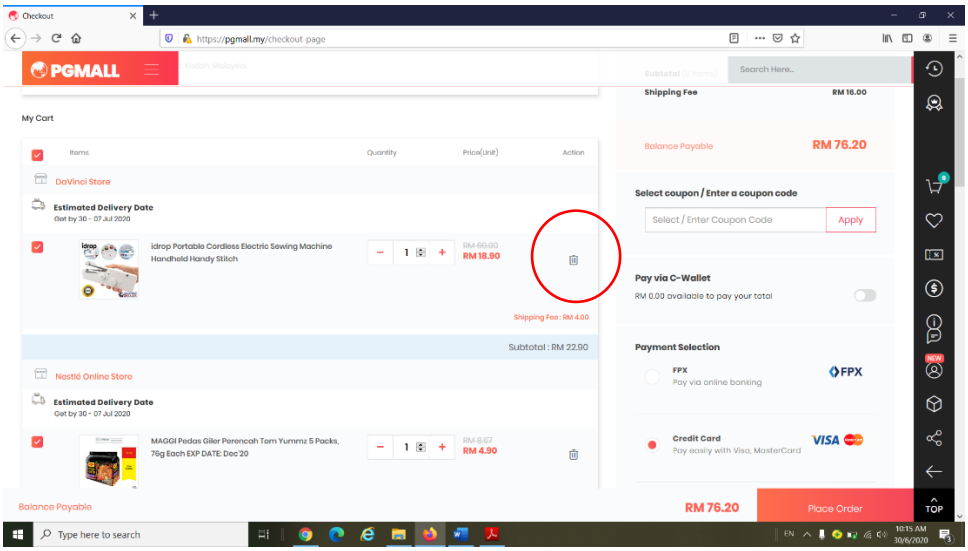
Severity #3: Major issue



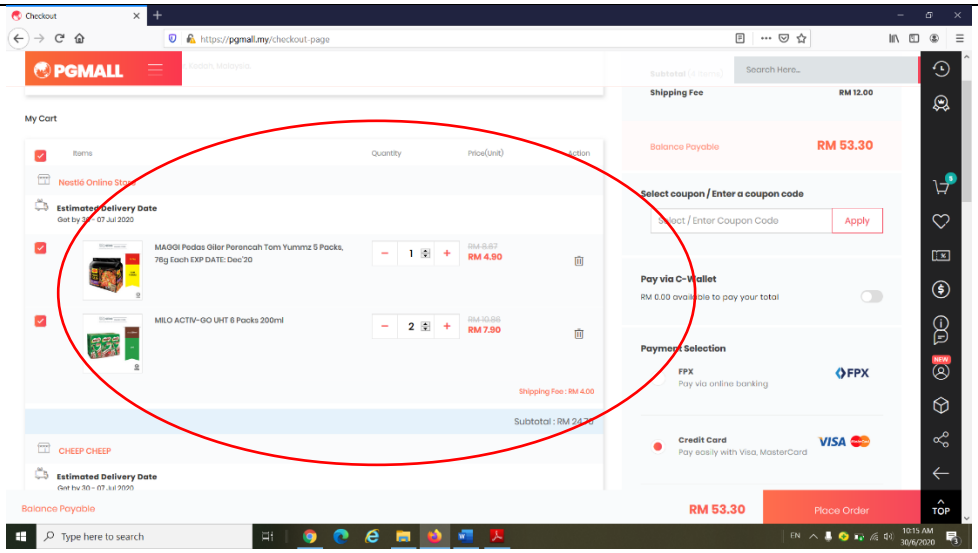
	This is the pictures that I haven't click the love icon.  This is the picture that I already "loved" the item. There is also no message appear to show where does it saved and weird thing is after I "loved", the other three icons around the love icon disappear.
Match between system and real world	4. There is information icon (! Icon) instead of help icon (? icon) when users need help In real world, a question mark means that there is something that people are not understand or they want to ask something that they are curious or confused. However, I am curious at some question and there is no help icon for me to search. Luckily, I found an information icon (! Icon) but I cannot type my question there. Besides, I cannot find any materials object that reflect the question mark, so I didn't get any help since the object in the interface don't align to my version of reality. **Severity #2: Minor issue**

<table>
<tr>
<td></td>
<td>


There is ! icon represent the information. However, I assume ? icon to represent asking a question.</td>
</tr>
<tr>
<td>User control and freedom</td>
<td>5. There no undo button when user accidentally delete ordered item
Severity #3: major issue
When I add item to order and press “check out” to view the cart. I accidentally press the dustbin icon and delete the item I added. I want to undo but there is no undo and redo buttons. The only choice that this system has is to delete the item in cart and this cannot be undone or redone. So, I have to go back and search again the history and add the item to the cart.



I accidentally press the delete when I check out my cart.</td>
</tr>
</table>

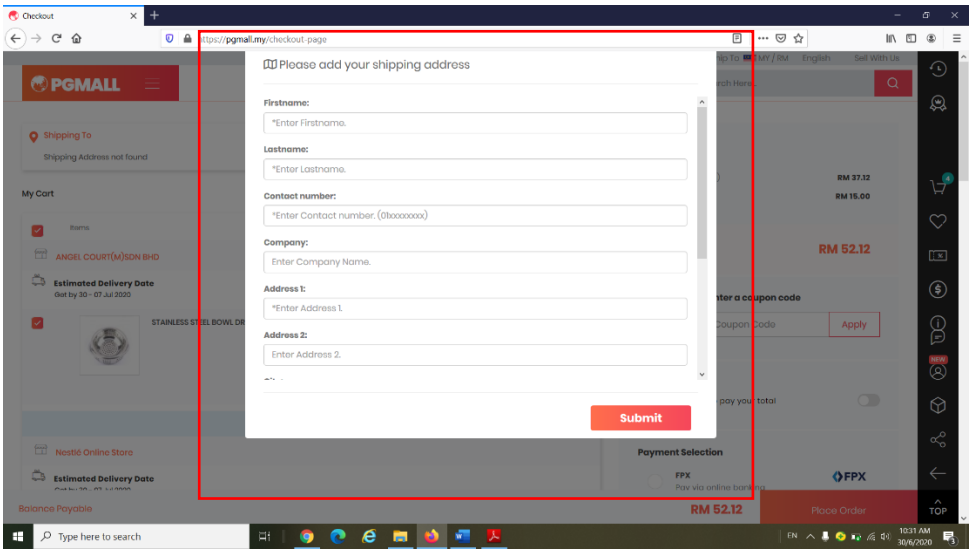


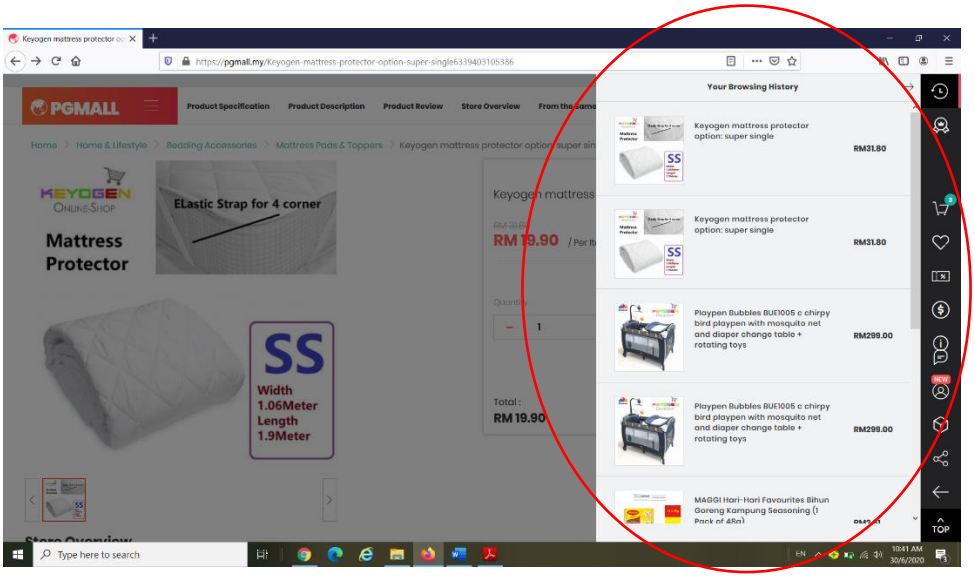
After I accidentally delete one of the items from cart, I want to undo but there is no such feature here.

6. There is no cancel button in the filling shopping address page

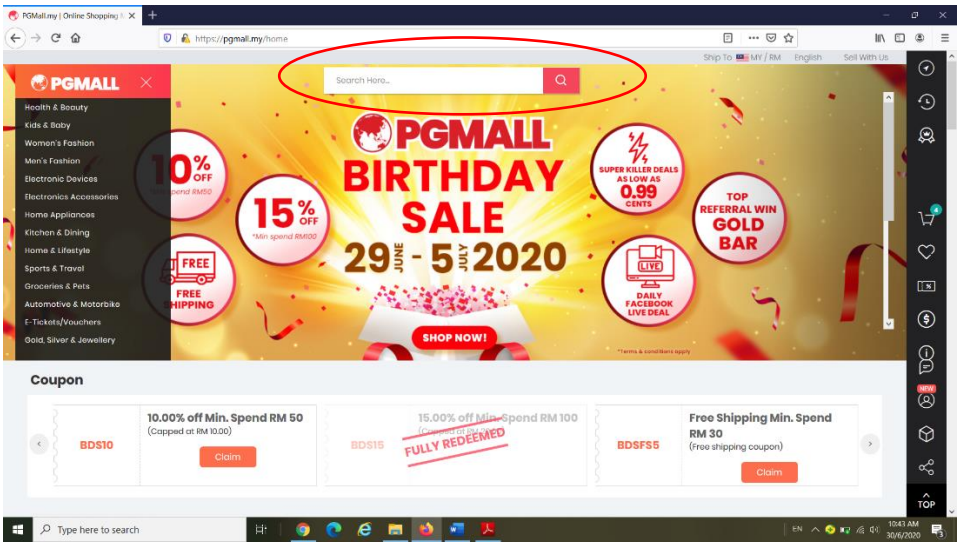
   Severity #2: Minor issue

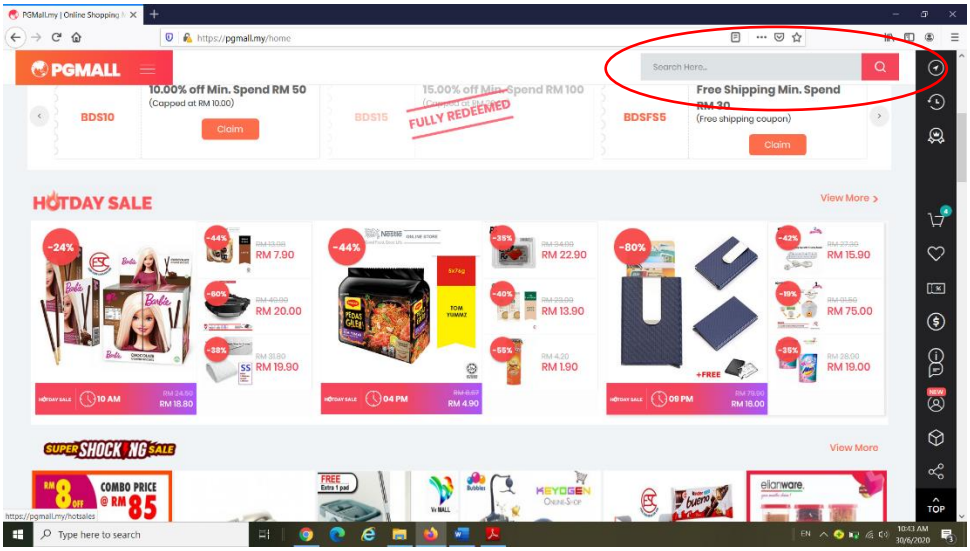
   When I first time adding item to cart, and I have fill in the shipping address. However, I found that there is no cancel button but only the submit and the cross button is not existing too. Since this is only an earlier stage and I don't want to fill in yet. However, I have no choice and I am compulsory to fill in the shipping address at this early stage so that I can check out my cart.

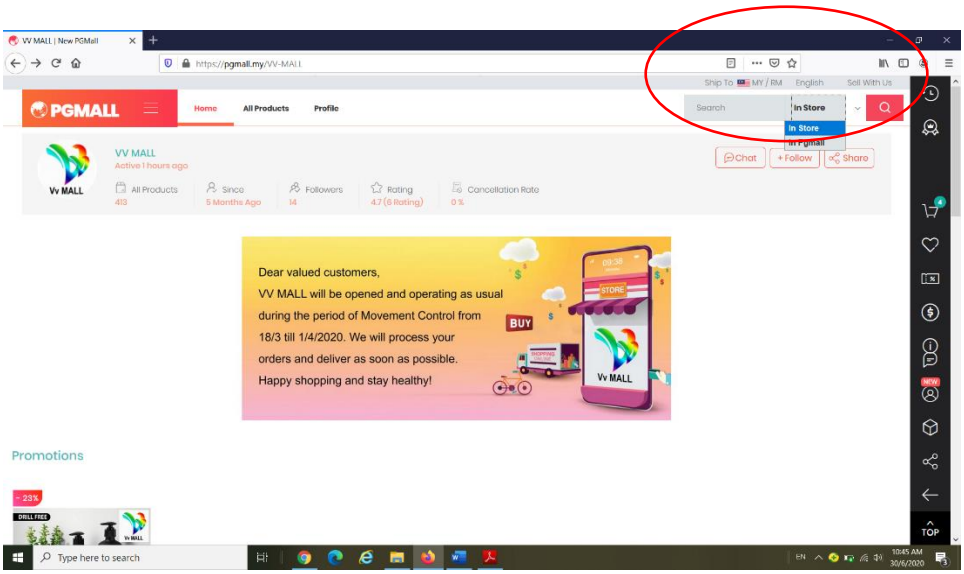


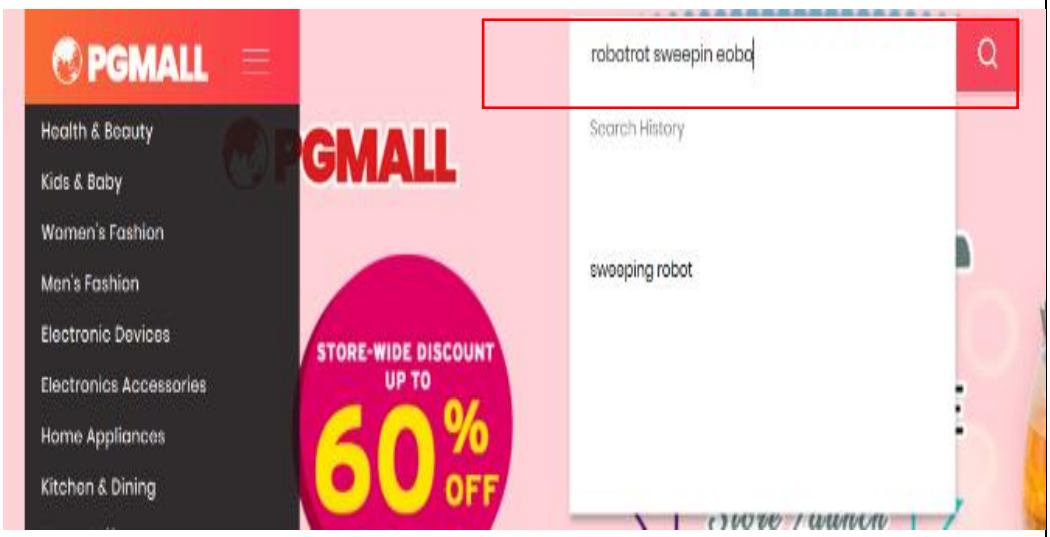
	There is only one clickable submit button there. 7. There is no delete button to delete browsing history **Severity #2: Minor issue** After completing 3 tasks and I decided to delete the browsing history. There is nothing for me to press, means I have no choice and all the search history cannot be deleted. I have no freedom to navigate and perform action.  The search history cannot be edited. That means the search history will be kept and cannot be deleted.
Consistency and standards	8. Search bar are different at some page **Severity#1: cosmetic issue** There are 3 different type of searching bars. The first type is located at the upper part when I am not scrolling down. The other type is searching bar when scrolling down. The third type is searching bar with options and the magnifier icon is located behind the options. Consistency is not the key here and the search bars are not looking the same across the site on

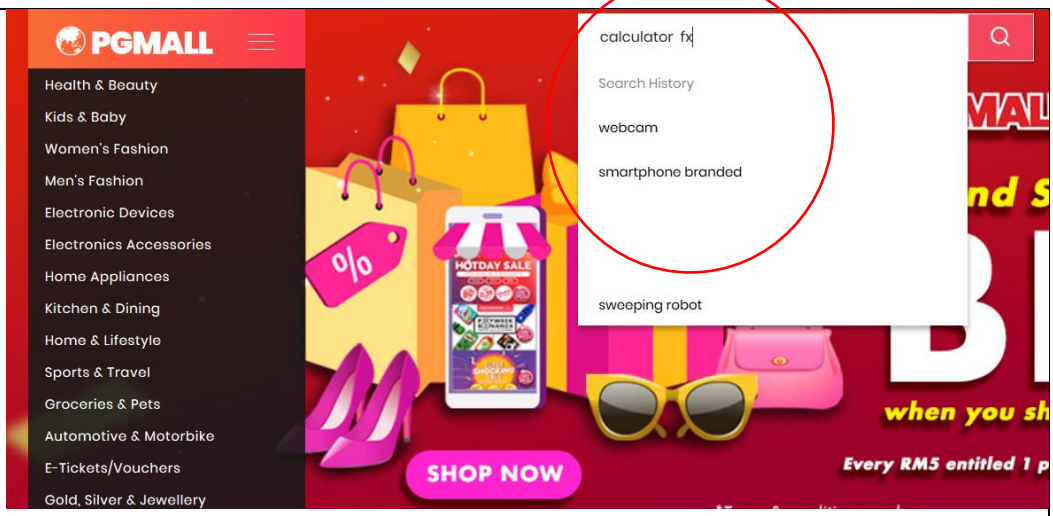
some page. I wonder whether different arrangements of icons mean the same thing.







	There are 3 different type of search bars and search bar in the last pictures has a big difference with the two pictures above,
Helps user recognize, diagnose and recover from error	9. No reminder and correction when there are typo **Severity#2: Minor issue** When I am searching for "Roborock sweeping robot" and I found that the result found is not accurate since the words I key in is wrong and there is no reminder. I have to google search back and find out the correct words and key in the correct word.  There is no reminder and correction when typo. Users will not know what they key in is correct or wrong.
Recognition rather than recall	10. No list of options when searching **Severity#2: Minor issue** When I already forgot the product name but there is no option for me to choose when I am searching. What I have to do is google search again or try to think back what the full name of the product is. The system is failed to minimize users' memory by making objects and options visible.

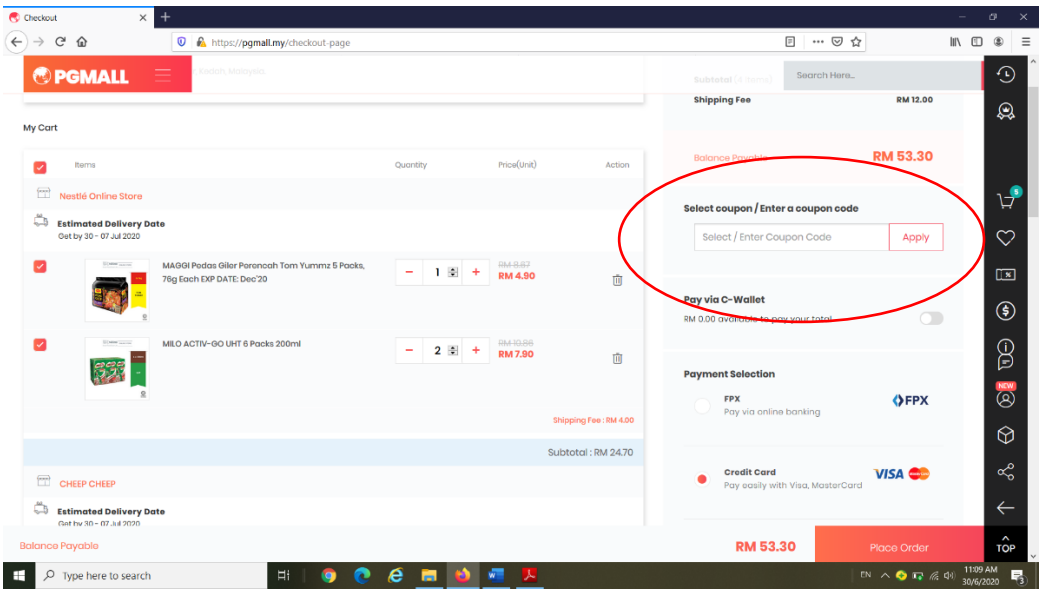


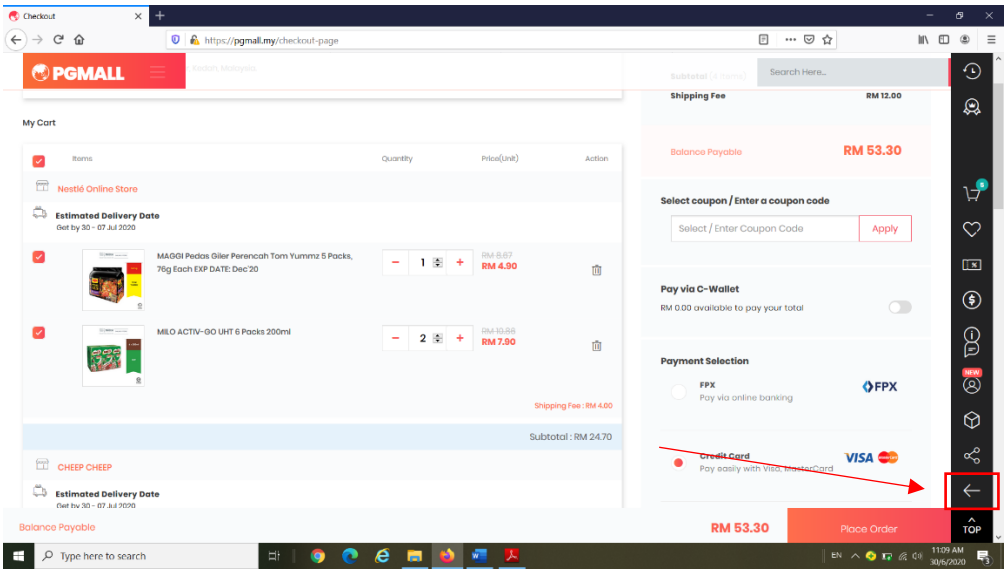
There is no list of options chosen when searching. It shows only the search history.

11. No list of options for the coupon although coupon is claimed

    Severity#3: major issue

    When I want to purchase the sweeping robot and I want to use the voucher that I have claimed. I found that there is no list of vouchers to be chosen although I already claimed all of them. This is a waste of my time and I have to refer back what is the code is and enter the code manually. There is no list of options that shows the list of vouchers when I reach the section to use voucher to get discounts.



	There is no list of options to be chose when I already claimed all the coupon.
Aesthetic and minimalist design	12. The back icon is not necessary **Severity#1: Cosmetic issue** When I click one the sweeping robot and want to know more its details, I enter a page that have all those details and the icons line aside at the right is same with the icons at the main page. However, I just realized there is a back icon at the bottom right when I already use the back icon at the upper part provided by the Mozilla Firefox. The back icon located at the bottom part is not necessary and it is a waste of space. I am not using it.  The back button here is not necessary. 13. There are too many icons at the main page **Severity#1: cosmetic issue** There are too many icons at the main page of PG Mall, and I was confused to get too many information at a same time. I cannot even find the login icon at the beginning. The main page is too complicate, and I cannot pay attention on the items that have the promotions. I have limited capacity of my brain and I cannot accept too many information in one time. If doing so, I will also forget all the things later. This is because the absorption ability of my brain to process the information is not that advanced.

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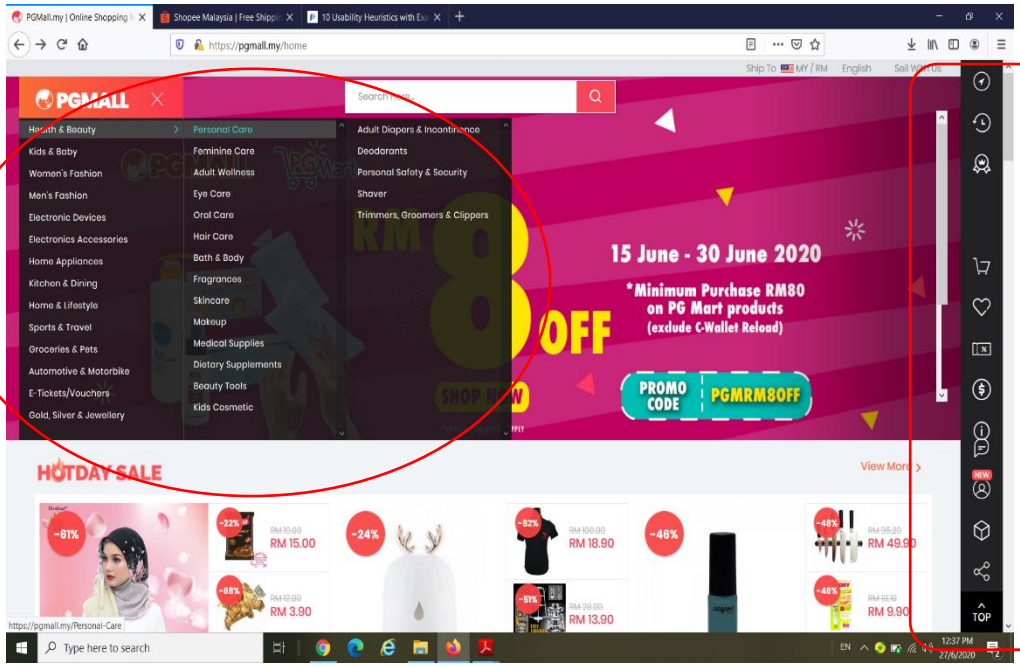
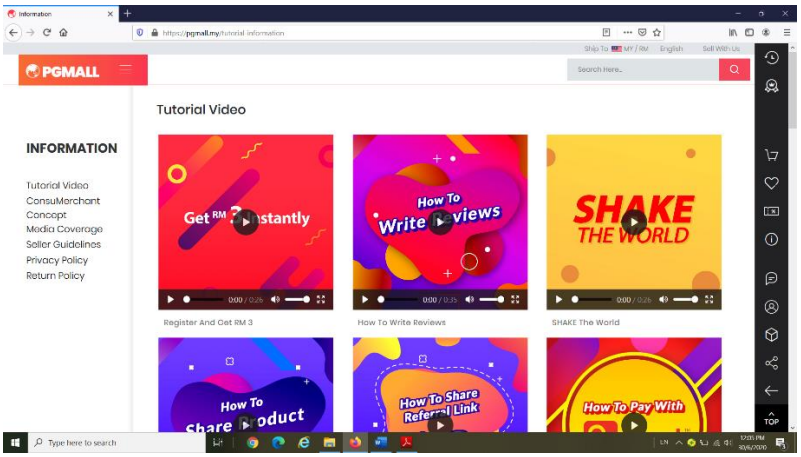


There is too many information at the main page and my brain capacity is not enough to accept all the information from the main page.
</td>
</tr>
<tr>
<td>Help and documentation</td>
<td>
14. User cannot enter what is the problem they are facing
Severity#2: Minor issue
There is good when there is tutorial video to watch and article to have a look when users have problem. However, I have to read all of the long article to solve my own problem and no one else to ask. This is such a waste of time. What if I read all the information and tutorial video but still fail to figure out the ways to solve?


</td>
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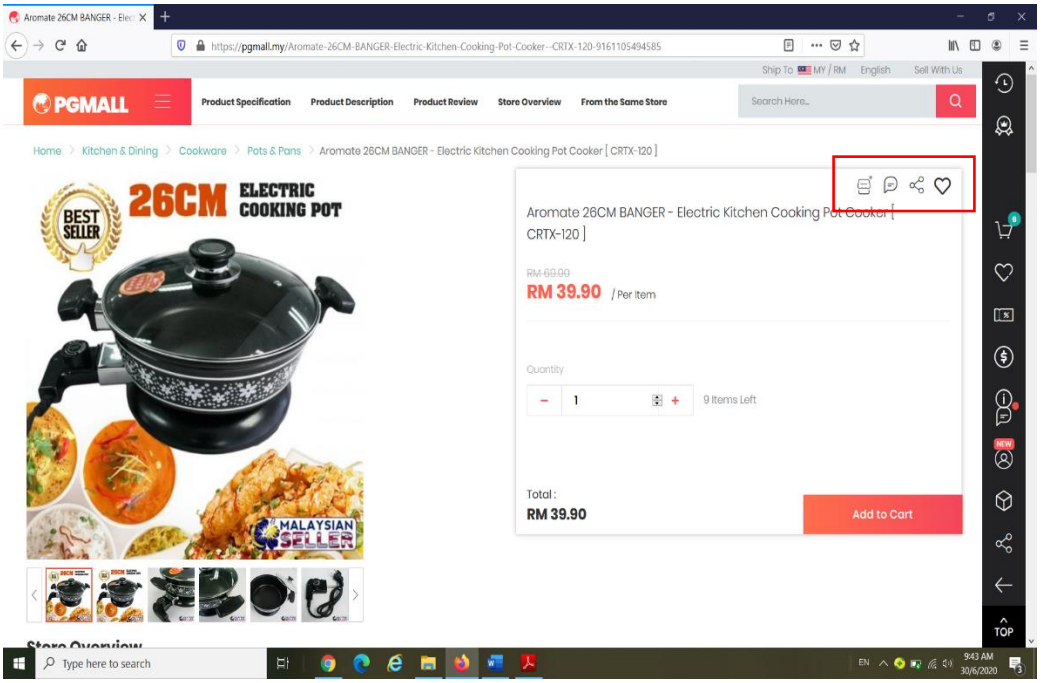
</table>

	I cannot enter a question that I want to ask. The search bar is only prepared to search the items but not the questions. The only thing that I have to do is only go through all the video tutorial but cannot ask a question.
Informative feedback	15. No information when point to some icon **Severity#4: Catastrophic issue** When I enter a new page to view the details of the sweeping robot, there is one icon I have never seen before. The icon is located at the left of the chat icon. I decided to point to it and hope to get some information. However, when I point to it, there is no information for me. So, I decided to give up finding the meaning of the icon and leave that page.  When point to the icons above, I cannot get any information. There is no feedback information when I point to it.

Discussion

Item 9

Problem	Recommended potential solution
1. there is no delete dialogue when delete items from cart	After users click the dustbin icon to delete the items that they saved to cart. A delete dialogue is pop up to remind the user that what particular item is deleted. This can be simply done by designing a clear and clear dialogue written "Your order item: Maggi with quantity (1) set is deleted." And followed by a big tick.
2. User confuses where the claimed vouchers kept	When the coupon is claimed, a feedback must send back to user. This can be done by using information pop out. For example, a rectangle will appear and display sentences like "Congratulation, you get a coupon! The coupon is stored in voucher section, have a look!". Designers should prepare a "ok" button at the bottom part of the rectangle. This will attract users' eyes and users will have a stronger memory with it. This rectangle will pop up once the users successfully claimed a coupon or get a reward by opening the reward box.
3. Users confuse about where the "loved" item saved.	When an item is "loved" by clicking the love. It is compulsory for the user to know what is going on. What will happened after they click the love icon. If a first-time user is using the system, he or she will sure get confused. To avoid this from happening, a pop-up notification is used to notify users about the love icon. For example, the message written in the notification box could be wrote like this. "Your item now is successfully saved in wishlist." However, user will feel annoyed when they are already used to it but there is still message like this pop up. So, This pop-up message will only functions until the third time of users login. At the fourth time login of users, there is no pop-up message to remind users where the "loved" items saved.

4. There is ! icon instead of ? icon when users need help	In the real world, users are familiar with question mark when they need help. So, the information icon (! Icon) is changed into help icon (? icon) so that it can match with the real world object when users need help.
5. There no undo button when user accidentally delete ordered item	Users will make careless mistakes and as a UX researcher I always have to consider this stuff. So, when a user accidentally clicks on the delete or press on it. The item will be directly deleted. However, there is also a message pop up at the bottom part written "Your item is deleted. UNDO". If users want to undo, they can just click the undo button. If they really want to delete, just ignore it and the message will disappear after 3 seconds.
6. There is no cancel button in the filling shopping address page	The filling address page can modify a bit by adding a cancel button beside the submit button and a cross button at the upper right. Users have freedom to choose not to fill in the shipping address at the early stage. Users can choose not to fill up the shipping address, but the address is set to be compulsory filled up at the payment section. Otherwise, they are failed to make an order successfully.
7. There is no delete button to delete browsing history	Users have their right to edit what they have searched for. The search items that they searched must designed to let users edit the browsing history. Users have the right to choose whether to keep the browsing history or delete them since the searching history is saved based on what users have searched. This is their right to edit. A cross button could be added on the upper right of each searched items. If users want to keep the browsing history, just ignore the cross button. Or users can click cross button to delete correspond items.

8. Search bar are different at some page	The search bars must look consistent across the site on all the pages. This is to minimize the number of new concepts that users have to learn to use the interfaces successfully. The search bar must have same colour and the magnifier icon is placed behind. The options to choose to search items in that shops or in PG MALL is put in front of the search bar but not in the middle of search bar and the magnifier icon.
9. No reminder when there is typo	When there is typo, the words which is wrongly spell is wave underlined with red colour. This is to remind user that they have type something wrong. However, users sometimes do not know how to spell the word out. To prevent this from happening, user just have to click on the word with wave underlined, a correct word will appear on top of the wrong word. User just have to click on the word so that the correct word will replace the typo. If users reject to do so, they can ignore the word with wave underlined.
10. No list of options when searching	A list of options is appeared when user key in a word. For example, if user key in “sweeping”, the list of options must appear and in the list of options must contained sweeping broom, sweeping robot, sweeping floor. The list of option is created based on what users key in. The lists of options will contain the related result with the word “sweeping”.
11. No list of options for the coupon although coupon is claimed	When the coupon is claimed, the coupon must save in a list of options. If there is column ask users to enter code to get discounts, users just have to click the column and they will see a list of options containing all the coupon saved. Then they just have to choose one from the lists and don’t have to remember the long code and type in themselves.

12. The back icon is not necessary	A clear and clean interface will make users feeling comfortable. There is back button in Google Chrome, Mozilla Firefox and more. So, the back button on some pages is not necessary and can be removed. An aesthetic and minimalist design should not contain button that is not necessary as it will disturb users' sight.
13. There are too many icons at the main page	"Me" icon could be created and some of the icons at the main page can be moved to "Me". The main page can left only help icon, share icon and information icon. And "Me" icon can created to contain the cart, wishlist, voucher and more. The login icon should move to the upper part beside the searching bar. This is to remind the user to login before adding cart and purchase.
14. User can't enter what is the problem they are facing	Sometimes users only have some problems to ask and have no time to go through all the tutorial videos. They just need a quick answer and somebody to ask. So, after the information icon is changed into help icon (? Icon). A column for users to ask question is set and the question will be replied as soon as possible.
15. No information when point to some icon	For every user action, system should show a meaningful and clear reaction. When user point to one of the four icons to know what they are representing, the four icons must quickly show some words to show what are they represented. The changes notifying users of their interactions. A system with feedback in every users' actions help user to achieve goals without frictions and goals can be achieve smoothly.

Conclusion

Item 10

An interface must be always updated and modified so that some uncover issue will be discovered. There are a lot of heuristics evaluation method that can be used to fix some issues in the interfaces. The most popular heuristics is Nielsen's heuristics, but I will use different heuristics method to evaluation the PG Mall because I believe that more issues can be discovered and successfully to fix by using more heuristics evaluation method. The 2 methods that I use in this case study is Nielsen's heuristics and Shneiderman's Eight Golden Rules.

When doing the evaluation, I have to do every possible task that can be done in PG Mall. This is to ensure that the PG Mall system has a high fidelity. The heuristics can help us to list out all the issues found and rate them using a rating system called severity rating. This rating system can assist us to know how serious the problem is and let us know whether is it okay to leave the problem within a long period of time. After the problems are listed out. I have to come out with proposed solution so that there is no occurrence of extra problem.

Heuristics evaluation is very important in identifying the usability problems and how they impact the overall experience. Furthermore, a rating system is needed to in the evaluation because the severity of the problems is known and we can fix it within a period of time. However, as a UX researchers, we must very careful in choosing appropriate heuristics. Otherwise, some of the usability problems may be overlooked. Using the heuristics evaluation will guide us to create a better user experiences for others. We can generate our own heuristics too if we are experienced enough.

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