

# SCHOOL OF COMPUTING, FACULTY OF ENGINEERING SESSION 2020/2021 SEMESTER 2

## SECV2113 HUMAN COMPUTER INTERACTION

## **ALTERNATIVE ASSESSMENT**

# HEURISTIC EVALUATION INDIVIDUAL CASE STUDY REPORT

**CASE STUDY: << E-Commerce >>** 

<< ebay (<a href="https://www.ebay.com">>> </a>

VS

<< Amazon (<a href="https://www.amazon.com">https://www.amazon.com">https://www.amazon.com</a>) >>

#### **PLATFORM**

<< Website >>

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#### Introduction

Heuristic Evaluation (HE) is a usability engineering method for finding the usability problems in a user interface design so that they can be attended to as part of an iterative design process. Heuristic evaluation involves having a small set of evaluators examine the interface and judge its compliance with recognized usability principles (Nielsen Norman Group, 1994). Thus, by using Heuristic Evaluation (HE), we can find the usability problems faced by the user by using recognized usability principles. With this, we can explain the problems of a certain interface design by facts and principles which the designers can further improve their designs. There are many related works related to heuristic evaluation. For example, to evaluate universal building design (Cigdem, 2009) and health information systems (Khajouei, 2018).

For my case study is about e-commerce which evaluating both big e-commerce company which are eBay and Amazon by using Nielsen's heuristics evaluation. E-commerce is a business model that lets firms and individuals buy and sell things over the internet (Investopedia, 2020). As pandemic of Covid-19 came across to whole world and E-commerce had become much more important than before as most of the people will rather shop online than shopping in a shopping centre or whole sales. In years to come, we will look back at 2020 as the moment that changed everything. Nowhere else has unprecedented and unforeseen growth occurred as in the digital and e-commerce sectors, which have boomed amid the COVID-19 crisis (United Nations Conference on Trade and Development, 2021). In the United States, retail and food services sales between February and April 2020 were down 7.7% compared to the same period in 2019. However, sales increased for grocery stores and non-store retailers (mostly e-commerce providers), 1 by 16% and 14.8% respectively (Organisation for Economic Co-operation and Development, 2020). The main difference between Amazon and eBay is eBay is an auction site and Amazon is a retail website, ebay mostly selling both new and used between third party sellers and buyers (Mitchell, 2019). Ebay is a global online auction and trading company launched by American entrepreneur Pierre Omidyar in 1995. eBay was one of the first companies to create and market an Internet Web site to match buyers and sellers of goods and services. Ebay is also one of the most notify e-commerce company globally. Amazon.com is a vast Internet-based enterprise that sells books, music, movies, housewares, electronics, toys, and many other goods, either directly or as the middleman between other retailers and Amazon.com's millions of customers. In 1994 Jeff Bezos, a former Wall Street hedge fund executive, incorporated Amazon.com, choosing the name primarily because it began with the first letter of the alphabet and because of its association with the vast South American river.

This case study report consist of introduction, method of case study, result of 20 violations from both e-commerce website so as the suggestion of improvement. Summary of the comparison result for both websites will be listed out and finally conclusion will be made.

#### Method

There are 10 usability of Heuristic Evaluation guideline by Jakob Nielsen (1994) which starting with visibility of system status, match between system and the real world, user control and freedom, consistency and standards, error prevention, recognition rather than recall, flexibility and efficiency of use, aesthetic and minimalist design, help users recognize, diagnose, and recover from errors and finally help and documentation. These 10 usability will be explain in the below.

#### 1. Visibility of system status

The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

#### 2. Match between system and the real world

The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

#### 3. User control and freedom

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

#### 4. Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

#### 5. Error prevention

Even better than good error messages is a careful design which prevents a problem from occurring in the first place.

#### 6. Recognition rather than recall

Make objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

#### 7. Flexibility and efficiency of use

Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

#### 8. Aesthetic and minimalist design

Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

#### 9. Help users recognize, diagnose, and recover from errors

Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

#### 10. Help and documentation

Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

#### Task 1:

After receiving the case study from the lecturer, firstly I understand the concept of the Nielsen Heuristic Evaluation which is the 10 usability of Heuristic Evaluation. These 10 usability is used to evaluate the user interface and the user experience to provide better experience to the users.

#### Task 2:

After understanding the 10 usability, I went to both eBay and Amazon websites to find out 10 violation which violated the Nielsen Heuristic Evaluation from both of these websites with the proof of an illustration which is a photo.

#### Task 3:

After list out all of the violations, I will give the severity rating for all 20 violations with elaboration of my findings. The severity rating include cosmetic issue, minor issue, major issue and catastrophic issue.

#### Task 4:

I will continue my case study by giving suggestions to one of the e-commerce website for improvement for each violation.

#### Task 5:

A summary of the comparison table result and analysis between these two websites will be made. Finally, a conclusion will be made which is about the lessons and experiences I received form this case study. Reflection about my opinion towards Nielsen Heuristic Evaluation will be made within the conclusion.

## Result

The table include heuristic violation with illustration and severity rating. The severity rating I'm using for this heuristic evaluation is by severity level. The severity level include mild, medium, major and critical. The purpose of the severity rating is to rate which of the heuristic evaluation need to be fix first. The severity level is described below:

Mild	Cosmetic Issue – affects the appearance and			
	should be fixed only if time permits.			
Medium	Minor Issue - hinders the user's ability to			
	navigate and should be fixed when possible.			
Major	Major issue – frustrates or confuses users and			
	requires repair as soon as possible.			
Critical	Catastrophic issue – prohibits users from			
	performing their given task and requires an			
	immediate modification.			

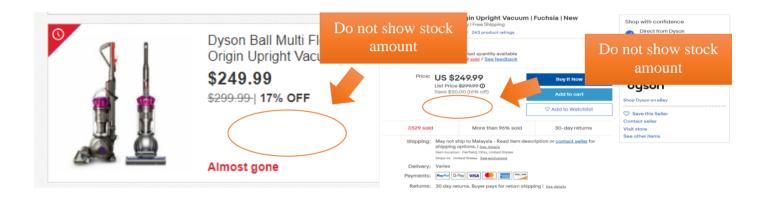
### **Ebay**

**1. Heuristic Violation** – Visibility of the system status

Severity rating - Medium

**Problem** – Do not show how many stock left for every product.

**Explanation** – From the screenshot below, we know that the stock is "almost gone" and "limited quantity available" which do not provide any information about how many stock left which will confuse the consumer and might change consumer's behaviour of buying this product. The system should keep inform users about the latest quantity selling.

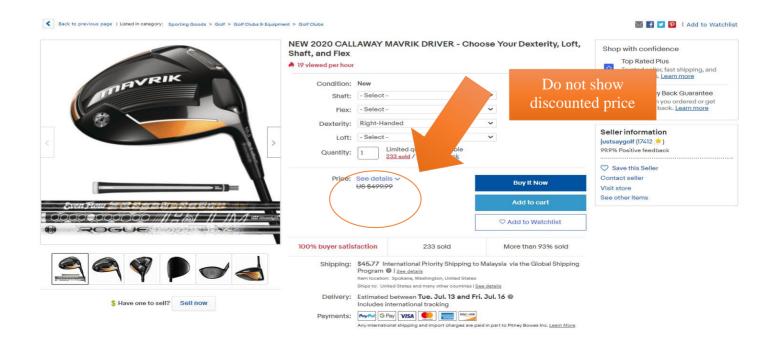


2. Heuristic violation - Visibility of the system status

Severity rating – Major

**Problem -** The product only show the old price which do not include the discounted price.

**Explanation** - The screenshot below only shows the old price of the product while the discount price do not being uploaded which will confuse the buyer decision to buy it.

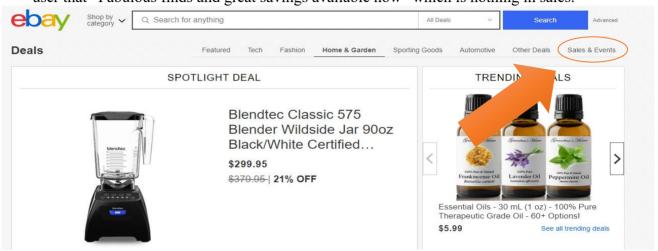


#### 3. Heuristic violation - Match between system and the real world

**Severity rating** – Major

**Problem -** Inside the "Sales & Events" page, there is no sales and event held by ebay but the page do not inform the users that there is no sales and events.

**Explanation -** When a user click into "Sales and Events", it shows nothing for any info for any sales and event. Instead of telling no sales and events, ebay system just inform the user that "Fabulous finds and great savings available now" which is nothing in sales.



eBay > Sales & Events

#### Sales & Events

Fabulous finds and great savings available now.

No sales and events found on this page

Looking for the hottest bargains on eBay? You've found the place! All year long, we offer a variety of sales and events to give you easy access to the best deals. See them all right here.

Seasonal sales are an excellent way to get quick, easy access to everything you need at a great price. Clothing, sports equipment, and more are just a click or two away.

Update your wardrobe with the latest style through our Fashion Events. Don't forget to grab some footwear while you're at it. Need a swimsuit for summer? We got it. Need a jacket for a ski trip in winter? You can find it here. Want some boots for a hike? Don't miss out on our deals. Personalize your outfit with the right jewelry and accessories as well.

Showcase your home by shopping our Home & Garden Events. Everything from small home appliances to backyard essentials will keep your house the envy of the neighborhood.

Get the latest sports gear when you browse our Sporting Goods Events. Don't let the next season start without stocking up on all the necessary equipment. We offer all the gear you need at some of the best prices.

Our Electronic Events give you access to fantastic bargains on the devices everyone's talking about. Smartphones, laptops, tablets, music equipment, TVs, cameras, and drones are just a few items on the list.

Save on all the equipment and supplies you need for a job well done by shopping our Business & Industrial Events. You'll find everything from commercial-grade equipment to healthcare devices to hardware, all at affordable prices.

Use our Collectibles Events to find the latest item to add to your collections. Whether you're after rare antiques or supplies for starting up a new hobby, eBay sellers have just what you need.

#### 4. Heuristic violation - User control and freedom

Severity rating - Medium

**Problem -** User can't edit or undo the search experience which had sent to ebay.

**Explanation** - As users had typed and reviewed the search experience to ebay, they can't undo or redo the rating and the message that had sent mistaken to ebay although the message is not complete.

#### Tell us about your Search experience

Send

Please rate your search experience *					<b>XDav</b>		
Very Poor		Average		Very Good			
1	2	3	4	5	Thank you for helping to improve eBay.		
					manik yee ter neiping te improve ebay.		
Tell us how can we im	prove your search e	experience			While we are not able to respond directly to your comments, we will carefully review them to improve your experien with eBay!		
Very good and satisfying	g.l				If you need help, contact Customer Service.		
					Copyright © 1995-2021 eBay Inc. All Rights Reserved. Accessibility, User Agreement, Privacy, Cookles,  Do not sell my personal information and AdChoice (i)  Norto		
25 / 500					powered by digital		
*Required				No uno	lo or redo		

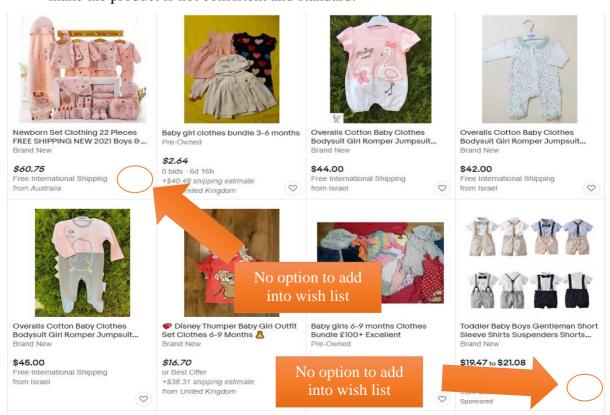
5. Heuristic violation - Consistency and standard

Severity rating - Mild

**Problem -** Not every product can be added to wish list.

**Explanation -** As before user want to buy something, usually user will tend to add the product to wish list. Got a small amount of product cannot be added to wish list which make the product is not consistent and standard.

option found

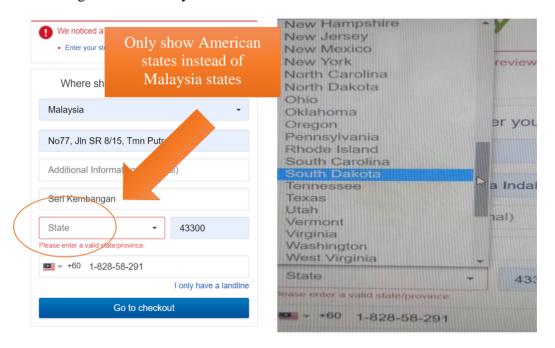


#### **6.** Heuristic violation - Error prevention

**Severity rating** – Critical

**Problem -** Do not show the states of user's country for address input.

**Explanation** – As I'm a user from Malaysia, I can't choose my country states which just showing the states in the United States of America. As why the severity rating is critical because it will definitely stop the buyer from Malaysia from buying its product which will cause a great loss to ebay.

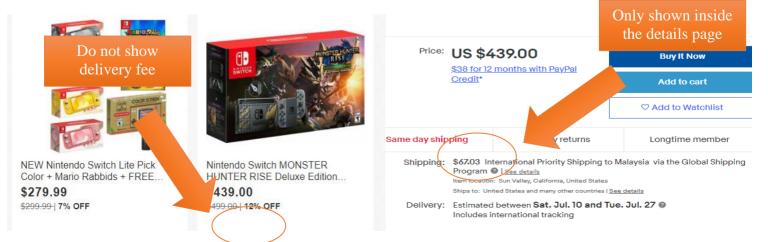


#### 7. **Heuristic violation** - Recognition rather than recall

**Severity rating** – Medium

**Problem** – User need to remember all delivery fee for specific product.

**Explanation** – The users should not have to remember information from one part of the dialogue to another. As all of the product have different delivery fee, thus it is necessary to put the delivery fee outside the main page of product and not only in the detail page of the product. As an example, the screenshot on the left do not show the delivery fee and only show it inside the screenshot on the right which is detail page.

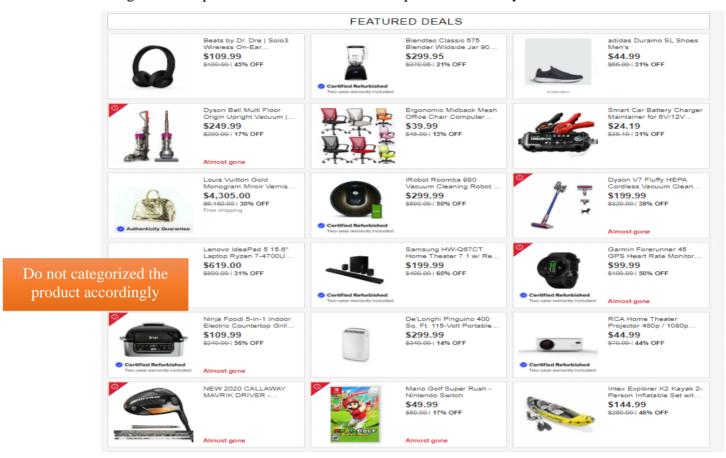


#### **8.** Heuristic violation - Flexibility and efficiency of use

Severity rating – Medium

**Problem** – There are many products that have special featured deals but it is not categorized which much will delay the user's time to find certain featured deals product.

**Explanation** – The screenshot below shows many kind of product that have special deals but the products include headphone, blender, shoes, bags, chairs... ebay should categorized the product which will much more provide flexibility to the users.

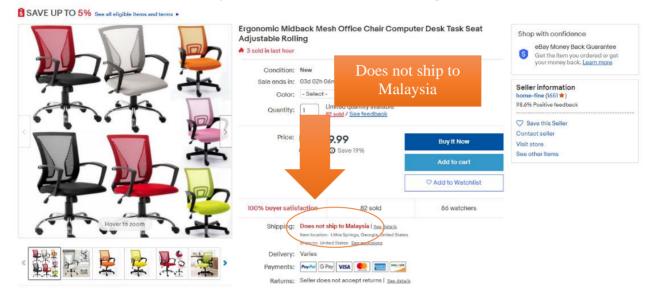


#### **9.** Heuristic violation - Aesthetic and minimalist design

Severity rating - Major

**Problem** – Product out of delivery range but users still manage to see the product.

**Explanation** – As I'm a user from Malaysia, I still manage to see the product that can't be deliver to Malaysia which actually irrelevant to me. Ebay should provide a list of product which can deliver to Malaysia which exclude the irrelevant product.

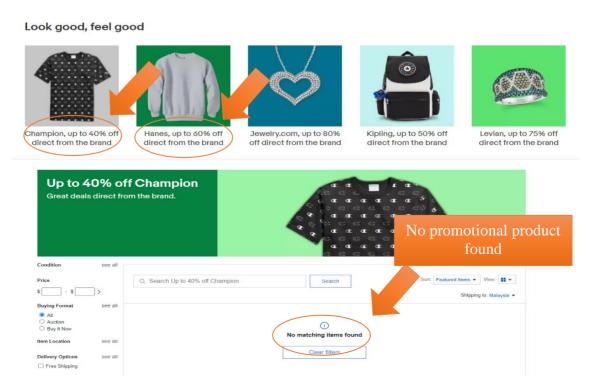


#### 10. Heuristic violation - Aesthetic and minimalist design

**Severity rating** – Medium

**Problem** – Discount brand do not have discount product.

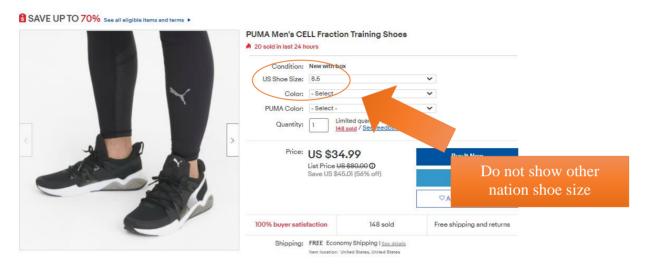
**Explanation** – There are a few brands which shows discount up to 40% and even 60% for their product but sadly there is no any product that had discount. There is no filter applied. Ebay should cancel any discount brand which don't have discount product.



# 11. Heuristic violation - Help users recognize, diagnose, and recover from errorsSeverity rating – Medium

**Problem** – Only shows US shoes size which do not include EU and UK shoe size.

**Explanation** – As not every users know their shoes size and only know certain nation shoes size such UK shoe size. Ebay should provide an information about UK and EU shoe size to recover user's error.



#### 12. Heuristic violation - Help and documentation

Severity rating – Major

**Problem** – There is no cutting info for almost all of the shirt selling in ebay.

**Explanation** – The screenshot below only shows the size of the shirt which do not include the cutting of the shirts. Cutting is an important documentation for every shirt selling in ebay as not all of the country have same size of cutting since ebay is an international platform.

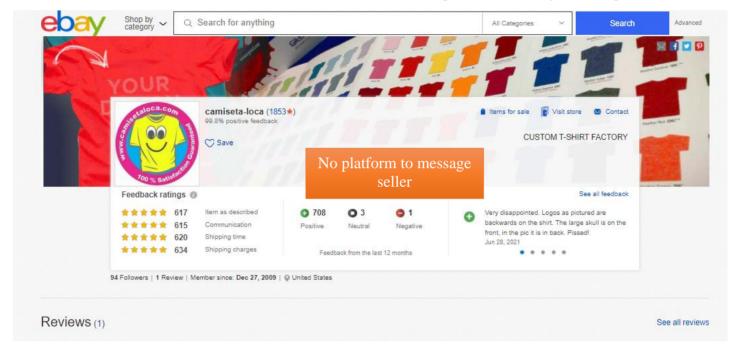


### 13. Heuristic violation - Help and documentation

Severity rating – Major

**Problem** – There is no platform to send the sellers message in ebay.

**Explanation** – As asking for more information is a frequent incidents to happen when buying products, thus, ebay should setup a platform to chat with the seller to gain more information or else the user will felt insecure for the products that they had bought.



#### Amazon

1. Heuristic violation - Visibility of system status

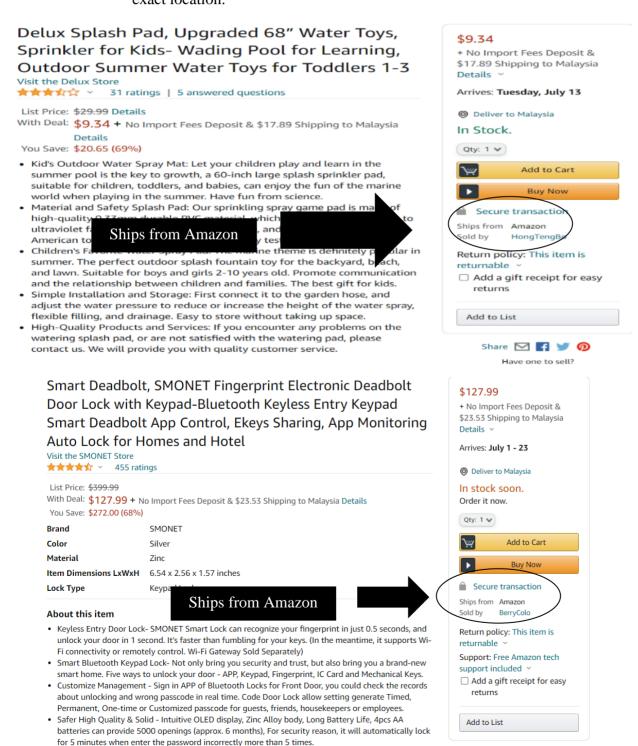
Severity rating - Medium

**Problem** – Do not inform users the exact location of the product shipped or produced.

**Explanation** – As some of the country is infamous for their production line, thus it is very important to inform the users the product is shipped or produced from. For example, all of the products in Amazon only mention the product is shipped from Amazon without the exact location.

Share 🗹 🧗 💆 🔞

Have one to sell?



Customer Service Warranty - 1-year warranty and free life-time technical support. Any question such

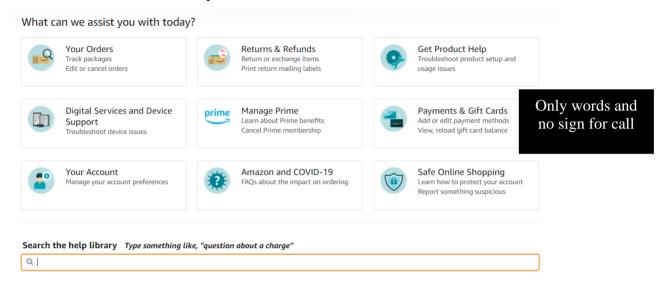
as installation or App problems(or for more gateway information) please feel free to contact us.

#### 2. Heuristic violation - Match between system and the real world

Severity rating - Major

**Problem** – There is no platform for the user to contact the customer service agent.

**Explanation** – As some users may be an illiterate (buta huruf) users who do not know how to write and read, this kind of users surely need a live call to the customer service but inside the customer service only have tons of word.

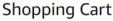


#### 3. **Heuristic violation** - User control and freedom

Severity rating – Medium

**Problem** – User can't undo or redo for deleted products from the cart.

**Explanation** – If a user accidentally deleted a product inside the cart, there is no undo button which the user only can search back the deleted product to add in the cart again.





## Your Amazon Cart is empty.

Your Shopping Cart lives to serve. Give it purpose — fill it with groceries, clothing, household supplies, electronics, and more. Continue shopping on the Amazon.com homepage, learn about today's deals, or visit your Wish List.

#### **4. Heuristic violation** – Consistency and standards

Severity rating - Major

**Problem** – Certain product only do not show the price as others product.

**Explanation** – From the screenshot below, we can see that the first product in the screenshot do not have any price tag and only a few products show available stock while others product do not show left over stock.



#### **5. Heuristic violation** – Consistency and standards

**Severity rating** – Critical

**Problem** – Product discount in product page is different with detail page.

**Explanation** – The product discount in the screenshot below is different which will cause a big confusing matters to the users. The screenshot on the left side is 37% while the screenshot on the right side is 22%.

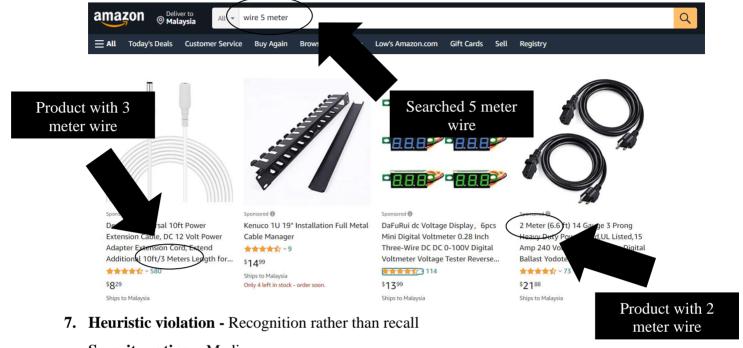


#### **6.** Heuristic violation - Error prevention

Severity rating - Major

**Problem** – Searched product is not compatible with the product that user searched.

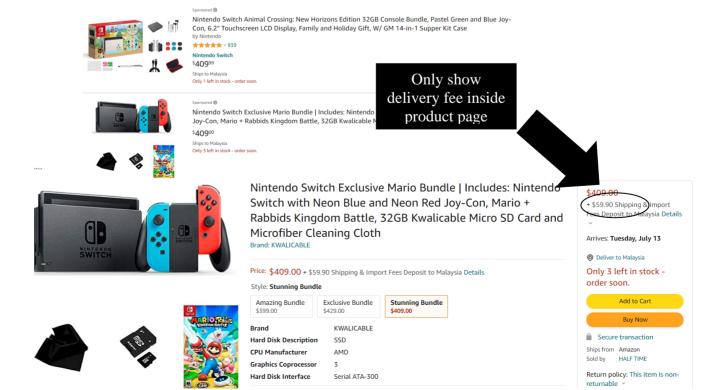
**Explanation** – I had searched 5 meter wire but instead of giving me 5 meter wire, Amazon system also give me 3 meter and 2 meter wire as option which will confuse me as the user.



**Severity rating** – Medium

**Problem** – Same product with different delivery fee.

**Explanation** – As a user, we need to always compare and recall the delivery fee for the same product. Thus, Amazon system should implement their delivery fee not just detail page but also products page for user to recognise the delivery price. The first screenshot is product page while the second screenshot is details page.



#### **8.** Heuristic violation - Flexibility and efficiency of use

Severity rating - Medium

**Problem** – The price of the product and the delivery fee should be added together.

**Explanation** – As a user, we often sum up all the product price and delivery fee only we decide which product is cheaper. Thus, Amazon system should add up both product price and delivery fee together for user's flexibility and efficiency of use. The screenshot below shows that the shipping and import fees deposit is a lot more expensive than the product.



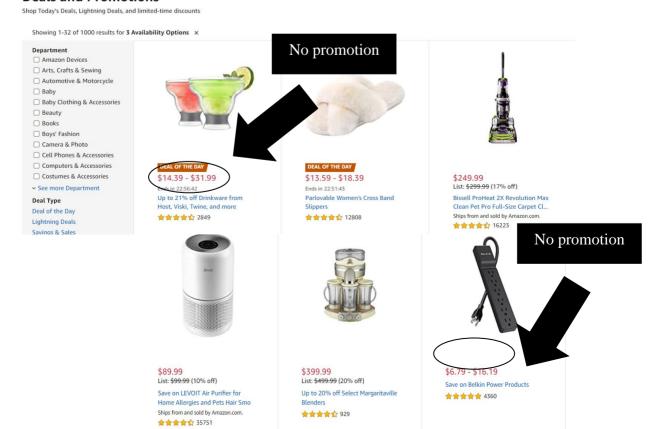
#### 9. Heuristic violation - Aesthetic and minimalist design

**Severity rating** – Major

**Problem** – Non-promotional product is inside the promotional web page.

**Explanation** – As users will always search for promotional product inside the promotion page. There should be no non-promotional products inside as Amazon should minimalize the space for promotional products.

#### **Deals and Promotions**

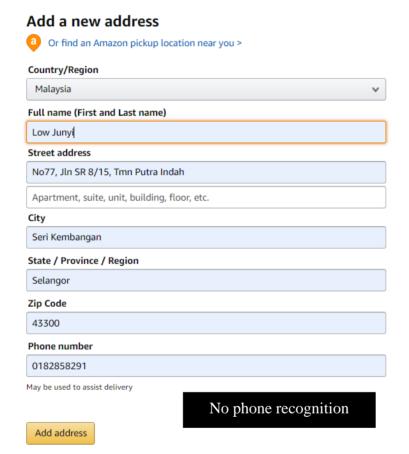


10. Heuristic violation - Help users recognize, diagnose, and recover from errorsSeverity rating – Medium

**Problem** – Do not have phone recognition process.

**Explanation** – As user might enter the wrong the phone number, thus, Amazon.com should send a verification code before the user successfully change their mobile number. The screenshot below is the proof where there is no phone recognition in Amazon.com.

Amazon.com should send a message to verify the phone number.



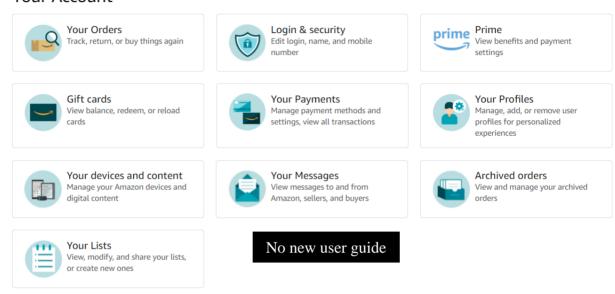
#### 11. Heuristic violation - Help and documentation

**Severity rating** – Medium

**Problem** – Do not have new user guide.

**Explanation** – As not all people is well practised with the system and tools inside the Amazon.com, thus Amazon.com should provide a new user guideline on the menu which will help the new users a lot.

#### Your Account



#### **Discussion**

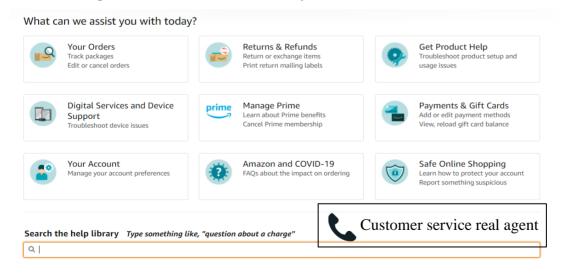
#### Suggestion for improvement for Amazon website

#### Problem 1 Improvement for visibility of system status



The figure above shows that there is an exact location ships from. Amazon.com should specify the exact location delivered by the seller. Or else the users will be worried with the product that they bought and loss confidence with the seller which will much affect seller's e-business.

#### Problem 2 Improvement for match between system and the real world



With the presence of phone call customer service real agent, the people who face trouble in reading can solve their problems via this phone call service.

## Problem 3 Improvement for user control and freedom

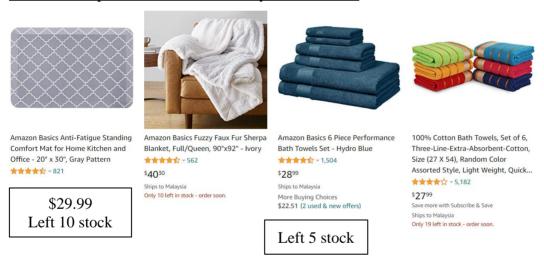
## **Shopping Cart**

Deselect all items



Amazon.com should implement confirmation button. With the presence of confirmation button, user can undo the deleted product. Thus, user don't have to waste more time spending to find the product again.

#### Problem 4 Improvement for consistency and standards



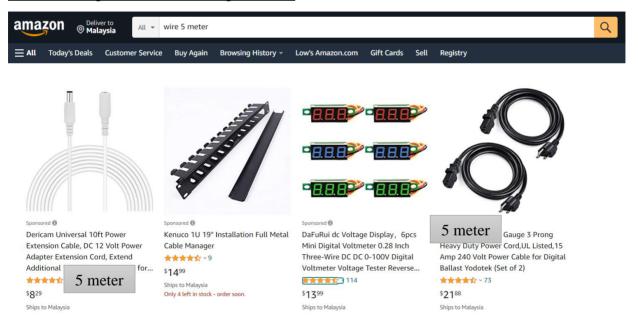
Amazon.com should update the latest price so as the stock for each product from time to time. With the newly implemented system, users will not confuse anymore about the price and the quantity of the stock anymore.

## Problem 5 Improvement for consistency and standards



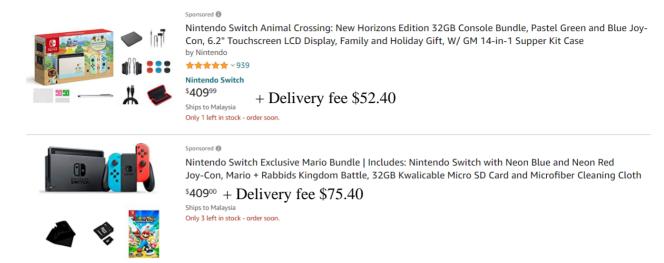
Amazon.com should standardise their products and maintain it well. Any changes of the price or discount will be update immediately without error. By standardise the discount percentage and the price of the product, the user will not confuse with the price of the product again.

#### Problem 6 Improvement for error prevention



Amazon.com also need to be more attention with the length and the weight of the product. As user search for 5 meter length of a product, the system should only give the correct information requested by the user or else user might buy the wrong product.

#### Problem 7 Improvement for recognition rather than recall



Amazon should implement the delivery fee in product page. With this, user can easily recognise the price of the delivery fee which allow user to make the best decision. Or else the user need to click in the product details page only can see the delivery fee.

#### Problem 8 Improvement for flexibility and efficiency of use



Amazon.com should implement a total price of delivery and product inside which allow user to know the final sum of the product which included delivery fee. As some of the seller tend to increase the delivery fee and decrease the product price to attract more customer.

\$249.99
List: \$299.99 (17% off)
Bissell ProHeat 2X Revolution Max
Clean Pet Pro Full-Size Carpet Cl...
Ships from and sold by Amazon.com.

\$614.55 included delivery fee

## Problem 9 Improvement for aesthetic and minimalist design



Amazon.com should make sure all the product inside the "Deals and Promotions" have promotion. This is because if the promotion product mixed with non- promotional product, the whole "Deals and Promotions" will confuse the users which will give a negative mindset and impact to the users about the "Deals and Promotions".

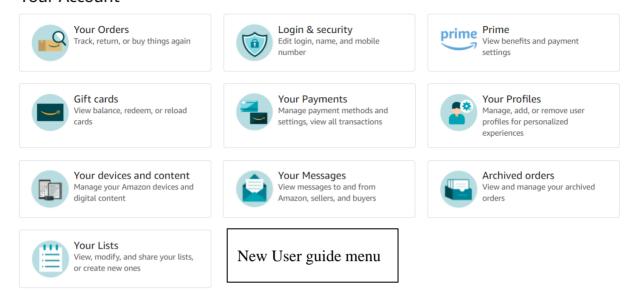
Problem 10 Improvement for help users recognize, diagnose, and recover from errors

Phone number						
0182858291	Phone number verified					
May be used to assist delivery						

Amazon.com should verify any of the user's phone number. This is because if the user had enter the wrong phone number, Amazon.com cannot contact the user immediately about their package condition which will cause a lot of unwanted trouble.

#### Problem 11 Improvement for help and documentation

#### Your Account



By implementing the new user guide menu, new user can avoid many of the unwanted trouble such as tracking the parcel so as the return and refund problems. This not only benefit to users but also Amazon.com customer service which produce win-win situation.

# **Comparison Table between ebay and Amazon**

## **Violation**

Usability Heuristics	ebay	Amazon
Visibility of system status	Do not show how many stock	Do not inform users the exact
	left for every product	location of the product
		shipped or produced
Match between system and	Inside the "Sales & Events"	There is no platform for the
the real world	page, there is no sales and	user to contact the customer
	event held by ebay but the	service agent
	page do not inform the users	
	that there is no sales and	
	events	
User control and freedom	User can't edit or undo the	User can't undo or redo for
	search experience which had	deleted products from the cart
	sent to ebay	
Consistency and standards	Not every product can be	Certain product only do not
	added to wish list	show the price as others
		product
Error prevention	Do not show the states of	Searched product is not
	user's country for address	compatible with the product
	input	that user searched
Recognition rather than recall	User need to remember all	Same product with different
	delivery fee for specific	delivery fee
	product	
Flexibility and efficiency of	There are many products that	The price of the product and
use	have special featured deals	the delivery fee should be
	but it is not categorized which	added together
	much will delay the user's	
	time to find certain featured	
	deals product	
Aesthetic and minimalist	Discount brand do not have	Non-promotional product is
design	discount product	inside the promotional web
		page

Help	users	recognize,	Only shows U	JS sh	oes	size	Do	not	have	phone
diagnos	e, and	recover from	which do not in	nclude	e EU	and	recog	nition p	process	
errors			UK shoe size							
Help an	d docur	nentation	There is no pla	atform	ı to	send	Do no	ot have	new user	guide
			the sellers mess	sage ir	n eba	ay				

#### Compliance

<b>Usability Heuristics</b>	ebay	Amazon			
Visibility of system status	Both ebay and Amazon have rating and user's review which allow				
	us to understand some of the users' experience.				
Flexibility and efficiency of	Almost all of the product is being categorized well such as				
use	electronic, clothes and jewellery.				
Recognition rather than recall	The home button for both ebay a	and Amazon is the same which is			
	their logo.				

#### **Conclusion**

After this individual case study, I found out that it is difficult to work alone but I still manage to overcome it although I don't have a team or mate. In this case study, I also learned 10 Usability Heuristic from Jakob Nielsen. He is a very great mentor for evaluating. I also know that how big and how huge is a company is, there is still flaw or incomplete system as we as a human and user are not a robot which perfect at everything. We need evaluation system to produce a better and more effective system. Heuristic evaluation is one of the successful example of an evaluation system. From the experience that I truly received from this case study is that all system will have a hole, only evaluation system can make the hole smaller.

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