Impact of Mobile Commerce on Mobile User Environment

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Abstract

Everyone is using mobile phones for their activities in life, which includes mobile facilities, the Internet, calculators, etc. I compared mobile phones and commerce applications with other phones to see which phones are best for mobile commerce. This paper investigates apps used in m-commerce and OS-wise app selection. I used observation techniques and questionnaires. The result of my research showed that the iPhone has many m-commercial applications, which is equivalent to 40%. That is, the economic situation of the iPhone will be on the rise in the coming years because it is also one of the most widely chosen devices. The study indicates that mobile commerce will develop significantly over time.

Keyword: Component, formatting, style, styling, insert

I Introduction

M-commerce is a type of e-commerce in which users can access online shopping platforms without using a desktop computer. M-commerce includes purchasing apps, mobile banking, virtual marketplaces such as the Amazon mobile app, and digital wallets such as Apple Pay, Android Pay, or Samsung Pay. Over time, wireless content delivery has become faster, more secure, and more scalable. M-commerce accounted for 34.5 percent of all e-commerce sales in 2017. Mordor Intelligence predicted Indian in August 2021 that the e-commerce market in Oman would be worth $2.19 billion in 2020. It will increase by 20 percent annually to reach $652 billion in 2026 [3]. As a result, global corporate digital transformation has been inconsistent. Following the global pandemic of COVID-19, there has been an increase in online shopping. As customers around the world faced lockdown, many businesses launched online outlets to ensure business continuity. As the number of mobile commerce users increases, the market becomes less crowded. As a result, the incidence and spread of COVID-19 disease will be significantly reduced [7]. It also enables the workforce to easily trade via the Internet without spending a long time abroad and waiting for customers. So, with the rise of online shopping, the security and privacy of the mobile application industry have become critical concerns. Customers are increasingly concerned about the

privacy and security of their financial communications. So we will discuss the impact of mobile commerce on the phone and the most important mobile commerce applications for each type of phone.

A. Problem statement

Everyone is using mobile for their activities in the life which contains mobile facilities, Internet, calculator, etc. Some people use mobile for m-commerce for purchase and sales. Learn about the applications we use in mobile commerce to help us facilitate the online purchase process. Compare mobile phones and commerce applications with other phones to see which phones are best for mobile commerce. Later, the ability to choose the best option to use in mobile commerce. Understand the financial value of commerce—mobile devices. The more you know about the pros and cons of mobile commerce, the more knowledge you have about it, which makes it easier for you to do business.

II Hypothesis and Assumptions

Customer satisfaction is one of the foundations of marketing science. Most studies have focused on the relationship between customer satisfaction and service quality. A study focused on the quality of electronic services and customer satisfaction [17].

1. **Website design:** It is one of the important factors in determining customer confidence, and website design is one of the most important factors affecting online shopping. If the website is designed in a distinctive way, it will attract many customers because most customers are very impressed with the external appearance.

2. **Security:** Security and privacy are the most important points that the customer focuses on in terms of shopping. And it affects those who are not purchasing due to the lack of security and information protection.

3. **Quality:** Of course, the main factor in knowing quality is the opinion of other customers and their experience, whether it is good or bad.

4. **Communication with the client:** Providing assistance to the client in the event of any problem or change. Also, responding to the client in an appropriate manner will positively affect the application.

B. Significant of study:

- Facilitate the process of customers choosing phones that provide mobile commerce applications.
- Generate new ideas for mobile commerce.
- Find out what applications customers prefer for mobile commerce.
- The most used phones with applications used for mobile commerce.

C. Research Questions:

- Which is easier, mobile commerce over the phone or going to the market?
- Which OS wise app is best for m-commerce?
- How many mobile users know the concept of M-Commerce?
- What are M-Commerce apps supporting in android mobile and iPhone?
- What is the use of M-Commerce?

D. Objective :

- Identify apps using in m-commerce
- OS wise app selection
- M-commerce user can select their option
- Cost estimation of m-commerce
- Easy to deal business

E. Scope, delimitation and limitation of the problem:

The study covers all things related to mobile commerce in terms of appearance, quality, safety, and

others. Also in terms of Android and iPhone applications, as well as applications that cannot be used on most phones. The research instruments are mobiles and the apps of m-commerce.

III Related Work / Literature Review

Table 1 shows the summary of five papers for m-commerce. In this paper (Ruikar, 2019) Mobile Commerce provides tremendous benefits and facilities to businesses, customers, and the government.

M-commerce makes it simple to conduct global trade. According to various sources, e-commerce is transforming into m-commerce, which has created a smart way of trading and commerce for today's modern businesses. In this paper (Kaur, 2019), summarizes the concept of mobile commerce, its benefits and drawbacks, and methods for incorporating mobile commerce into our daily lives. Mobile commerce has had a significant impact on today's modern way of life. Consumers are shifting to M-commerce in order to achieve better and faster market transactions. In addition, an overview of innovative approaches in m-commerce was presented. (Eizan Azira Bt Mat Sharif, 2017), ten working adults were interviewed, and they were chosen at random. The factors and impacts of m-commerce usage among working adults were identified using expectancy of performance, expectation of effort, social influence, facilitating conditions, hedonic motivation, price value, and habit. The informants were asked to fill out a research consent form prior to the interview. (Litchfield, 2018), this paper presents contributions to the field of mobile commerce over the Internet. Specifically, procurement barriers in mobile commerce are divided into two categories: external and internal barriers. This type of section has not been studied before. Because this paper has been studied for exploratory purposes, its information has implications for its validity and reliability, which causes a decrease

in generality and redundancy levels. Also, it may be There is an effect of language barriers on the results. (Jayanthi, 2020), in this paper, the number of smart phone users is expected to reach 859 million in 2022 after it was about 468 million in 2017. Due to the increase in the use of the Internet via mobile phone, it has led to the increasing prevalence of online experience merchants in the cities. Indians can access the shopping sites easily by increasing the ownership of the smart phones.

IV Research Methodology:

Research Data Collection:

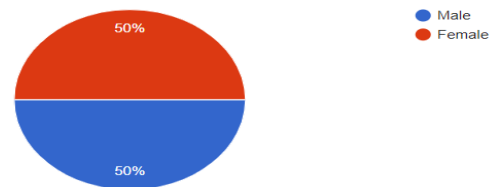**M-Commerce awareness from the user**

Figure 1: Samples collected from mobile users

I have prepared questionnaire based on my research hypothesis, samples were collected from my college students and my family as shown in the figure 1. There are 36 persons answered, from36, 18 students are boys and 18 students are girls
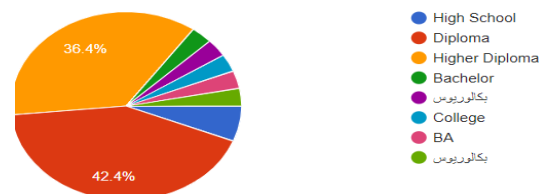
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Figure2: The educational level for user of m-commerce

As shown in figure 2 there are 33 students answered , from33, 36.4% of user are in higher diploma ,42.4% of user are in diploma , 6.1% are in high school and 15% are in Bachelor.
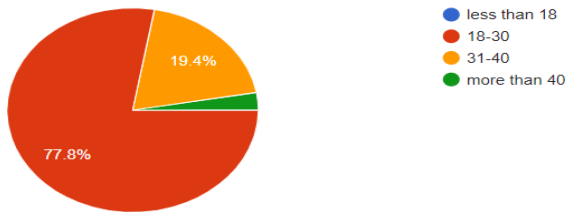

Figure 3:The age for user of m-commerce

Figure 3 shows that 77.8% of users are from 18 to 30 years old, 19.4% are from 31 to 40 years old, and only 2.8 % are more than 40 years old
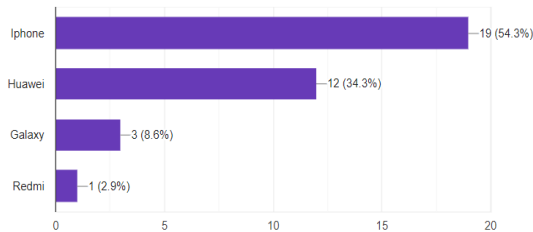

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Figure 4: Type of phone that m-commerce users use

Figure 4 shows that 54.3% of users use iPhone, 34.3% use Huawei,8.6% use Galaxy, and only 2.9% use Redmi.
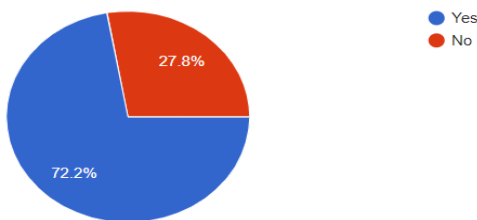

Figure 5: Sample of purchasing a product online

As shown in figure 5, there are 72.2% of users purchased a product online and only 27.8% don't purchase the product online.
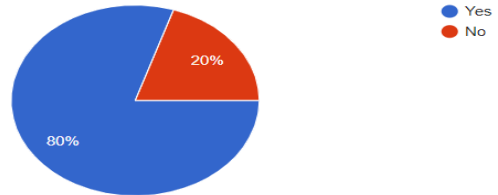

Figure 6: purchase through social networks

As shown in figure 6, 80% of user made purchase through social networks and 20% they don't made purchase through social networks.
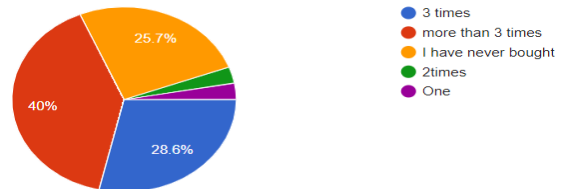

Figure 7: online purchases within 12 months

Figure 7 show that 40% of people answered that they have made a purchase online more than three times. 28.6% of them have made online purchases three times. 25.7% of the people did not make any purchases. Some of the people answered that they only bought twice, and others bought once online, and the percentage of both of them was about 5.8%.
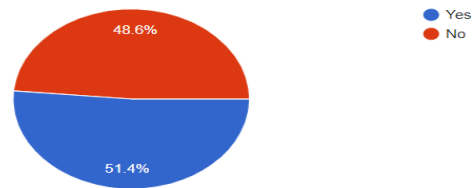

Figure 8: scams while using m-commerce over the phone

Figure 8 show the sample scams while using mobile commerce over the phone. 51.4% of the respondents answered that they encountered a scam while making an online purchase. And 48.6% of the people indicated that they did not encounter any fraud while making online purchases.
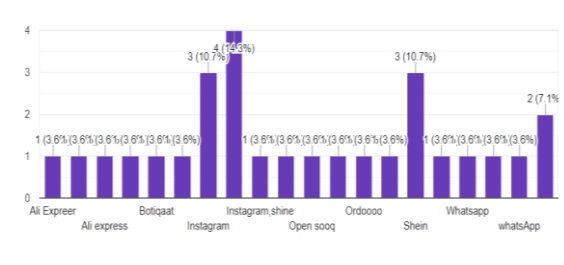
Figure 9: most frequently used m-commerce applications

Figure 9 show responses of 25, 20% of users prefer the Ali Express application to buy online. Another 20% also prefer the Shein application. Open sooq users amounted to about 16%. As for the Boutiqaat application, users answered about 4%, while some of the users preferred social media to buy online, such as Instagram, which accounted for 32% of respondents, and WhatsApp, which answered about 8% of users.
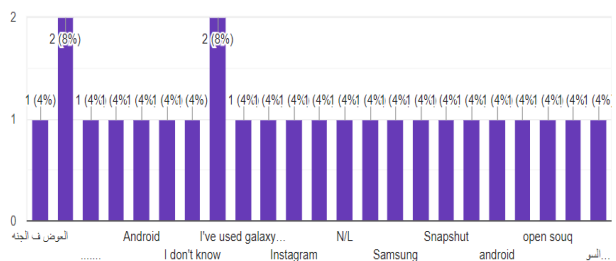

Figure 10: m- commerce apps preferred by users

The figure shows some of the users' answers, but they were not as clear as I wanted, but there are some answers that I benefited from. One of the users says in their answer about the best mobile commerce app, "I have used the Galaxy Watch in the past and it is one of the best smartwatches out there." Although it works with Tizen OS, there are a lot of great apps that have greatly enhanced its functionality. However, I always felt that Wear OS would easily beat Tizen OS both in terms of the quality and quantity of apps and in terms of system improvements. I tested some Wear OS apps

on the Tic watch E and here are my picks for the best Wear OS apps for Android Wear OS.
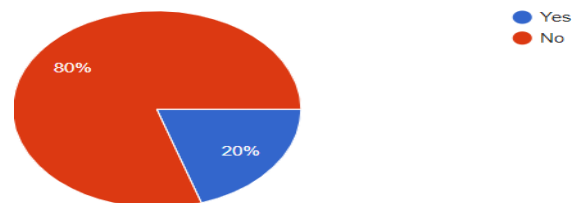

Figure 11: using mobile commerce for business

The figure 11 shows that 20% of users use mobile commerce for business; 80% of them do not use mobile commerce for business.

V Sample Techniques

Cost estimation of m-commerce

The cost of mobile commerce depends on a number of factors. The indispensable and advanced features must first be divided. The application must be created using the latest technologies. The cost of developing mobile applications varies from one phone to another. Here I will explain the cost of developing mobile commerce applications for Android phones and iPhones [4].

Here in table 2 will explain the cost of developing mobile commerce applications for Android. The application must work on the Android system, which leads to an increase in the number of working hours and takes more time. The quality team also works to ensure that the application works well. Here is the table showing the cost of developing an application for a device [2].

Table 2: cost of developing native android

	Native Android development
Basic version	$20 000
Medium complexity	$40 000
Complex version	$70 000+

This table 3 also shows the cost of developing applications for the iPhone. Most iPhone applications do not work on other phones, but the iPhone takes fewer resources. Updates are implemented on the device when the application is maintained. Android depends on the phone manufacturer for updates. Here is the table showing the cost of the iPhone application [2].

Table 3 : cost of developing native iOS

	Native iOS development
Basic version	$25 000
Medium complexity	$40 000
Complex version	$80 000+

Creating a local application or a hybrid application leads to an increase in the cost. Compared to the hybrid applications, the original applications are expensive because of their speed [2].

Framework:

Figure 12:Sample collection for M-Commerce

Cost for Mobile Commerce: Navigating the Internet has been gradual for years. In 2017, the number of e-commerce sales was about $1.36 and gradually increased, buNo index entries found**.**t in 2020 it returned to the same previous amount. Then e-commerce sales increased in 2021 to $3.56 [18].
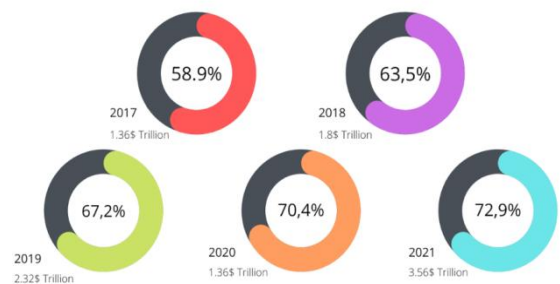

Figure 13: Total ecommerce spend

As figure 1.2 it show total ecommerce of mobile from 2017 to 2021 . The illustration indicates that the percentage of the cost of mobile commerce in 2017 is about 58.9%, which is approximately $1.36 trillion. and gradually increased by 4% in the other years. But in 2020, the percentage increased by only about 3%, with a decrease in the amount from 2019, which was about 2.32 trillion dollars, to 1.36 trillion dollars. In 2021, the percentage increased to 2.5 percent, bringing the total to approximately $3.56 trillion [18].
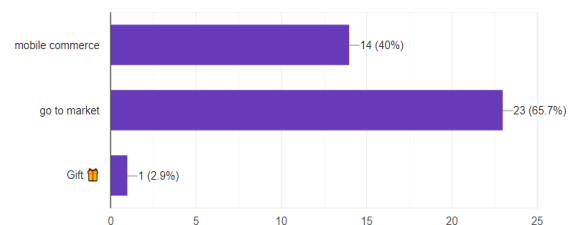
M-commerce user:

Figure 14 : Buying via mobile commerce or going to the market

As a result of my survey, 65.7% of people prefer to go to the market to buy their needs. 40% of people prefer to buy through mobile commerce over the phone. Only 2.9% prefer to receive things as a gift.

M-Commerce Business:

E-commerce activity varies depending on certain factors. An e-commerce business depends on sales and the volume of merchandise. Amazon was once a bookstore, but it evolved into a market selling household goods, fashion, and food, and it is the largest store business-to-business and customer-to-customer online, with a business of about 37 billion dollars [5]. If you want to start your own business, branding is important to attract customers. To attract customers to your business, your product must have an emotional brand story, the message must align with your company's identity, and focus on solving the problems that customers have [1].

Apps using in m-commerce:

Banking: Developed by ICIC Bank Users can complete all online banking transactions using their mobile phones. It is also possible to transfer money, request to stop networks, pay bills, etc. from ICIC bank accounts. It is easy to access this application as it is useful and allows the user to use it for their online banking needs [13].

Mobile Marketing: If you want to send messages to help attract customers, this application is the best choice. You can also send messages for new services or products. Because people have smartphones, it is easy to reach potential customers and bring them to your business [13].

Mobile Ticket: Airlines, cinemas, concerts, and other organizations use mobile ticket kiosks and also provide tickets via mobile phone. You can show your electronic ticket anywhere you want to exchange the ticket [13].

Reservation: Such as reserving parking lots, reserving restaurants, hotel rooms, and others. Now it's easy to book wherever the customer wants to go. So it will be easy for the client and the company to reduce the amount of work and effort for booking [13].

Entertainment: The mobile phone can be used for all kinds of entertainment, such as applications that display programs and movies, such as YouTube and others. This type of application is one of the best uses for e-commerce in terms of using it for something other than communication [13].

Healthcare: It is possible to access health records and pay bills, as well as access to medical records of patients through a mobile phone. A physician can send a health prescription, report, or clinical decision by phone. This helps care professionals and other physicians provide patients with the best overall experience [13].

Office Communication: Enhance communication within the offices in which he works with a team. For such things as insurance, real estate agents, etc., it is often necessary to re-contact the office. E-commerce allows professionals to track inventory and ensure that the sellers are in this field. That is, they get approval without spending a long time waiting [13].

VI Result and Analysis

There are many e-commerce apps for both the iPhone and Android, and if you want to mention them, it will not end, so I will talk in general about the e-commerce apps for each phone. Clarifying research examples of the applications that customers prefer to go to when making a purchase. The questionnaire that I put showed that most customers prefer the Shein application, then Instagram, then Ali Express, and finally OpenSooq.

Table 4 : Compare the ecommerce app for iPhone, android for business

App/ Brand	Android	iPhone
WhatTheFont.		✓
Source Viewer		✓
TypePad	✓	✓
Google Analytics	✓	
WordPress	✓	✓
PPC Editor	✓	✓
Cellica Database		✓
SEO Search Ranking.	✓	✓
TweetDeck	✓	✓
Search Engine Marketing (SEM) Calculator		✓
WordPress	✓	
Ego		✓

The table 4 shows the commercial applications that can be used in electronic commerce [21]. Here, it shows the commercial applications of companies, and the number of applications on the iPhone is more than the application on iPhone.

Table 5: Compare the ecommerce app for iPhone, android

App/ Brand	Android	iPhone
SHOPPER APP	✓	✓
SHIPPER APP		✓
walmart	✓	✓
Krazy Coupon Lady	✓	

	Android	iPhone
Amazon	✓	✓
Starbucks	✓	✓
McDonald's	✓	✓
REI		✓
Groupon		✓
payPal		✓
AliExpress	✓	
Souq.com	✓	
productHunt	✓	✓

The table 5 below shows a comparison between commercial mobile applications for the iPhone and Android. The number of mobile commercial applications found on Android is less than the application on iPhone and there are a view hybrid application.
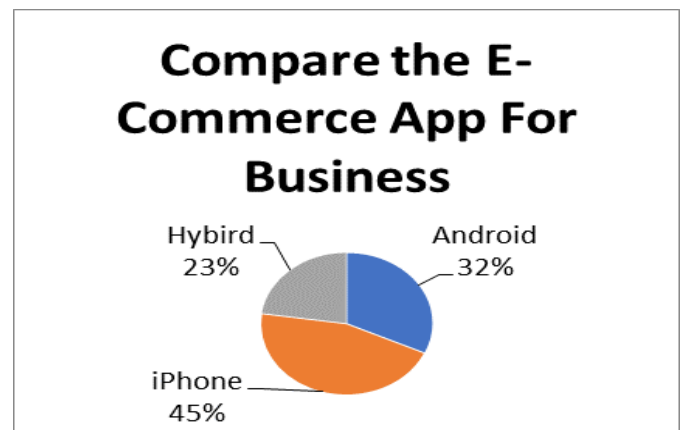

Figure 15 : Compare the ecommerce app for business

The figure 15 shows the commercial applications that can be used in electronic commerce. Here, it shows the commercial applications of companies, and the number of applications on the Android phone is about

32%. As for the iPhone, the percentage of its applications is about 45% and for hybrid is about 23%.
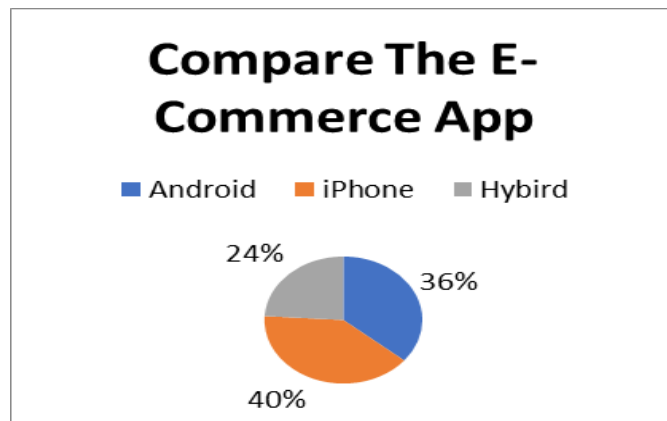

Figure 16: Compare the e-commerce app

The figure 16 above shows a comparison between commercial mobile applications for the iPhone and Android. The number of mobile commercial applications found on Android is about 36%. As for the iPhone, the number of its applications is about 36% and the hybrid is about 24%.

VII Findings

I noticed that there are many customers who face scams through mobile commerce, so one of the most important things that mobile commerce business owners should do is to provide strong protection and customer privacy. I concluded that the iPhone is more commonly used by customers, but the development of the iPhone application is more expensive than the Android. But if you want to create a hybrid application, it will cost you more.

VIII Recommendation

This study provides a wide range of potentially important beliefs about online shopping. Therefore, I hope that other factors of customer satisfaction will be included in future research. Factors include referrals from friends or family, etc. Finally, a research

questionnaire is conducted that contains questions that respondents can understand. Scams and problems faced by the customer and work on solving them are also included.

IX Conclusion

Mobile commerce is developing day by day and the number of its users is increasing, which motivates the owners of mobile commerce businesses to design a better application to attract customers and help them as well. Therefore, I focused my research on looking at mobile commerce applications and the most used applications on phones so that he can choose the application he wants easily and also know the important things in commercial applications and their benefits to make it easier for him to design his own application if he wants to do so in the future.

X Future work

I hope that my research will be useful for customers in terms of clarifying the best and most commonly used applications for each phone. Also, e-commerce business owners know the things that attract customers in commercial applications. I hope the owners of mobile commerce businesses consider the problems faced by customers and work to solve them.

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