IMPACT OF MOBILE APPLICATIONS OVER E-COMMERCE

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Abstract: *The purpose of this paper is to examine the impact of mobile applications over e-commerce platforms as a stand-alone market place or additional channel to get in touch with potential customers and not only. This study advances research on adoption of mobile applications within the e-commerce platform and investigates the impact for the companies after initiating the process of implementation. The decisions for mobile application adoption in e-commerce are dependent on the knowledge of the owner /manager and the expertise of managing development and marketing teams. Main impact or benefits of adopting a mobile application within e-commerce are improved internal efficiency, increased information exchange, better user experience and a faster understanding of consumer feedback.*
Key words: *e-commerce, mobile application, online marketplaces, commercial website, search engine, impact, marketing tools, mobile distribution stores.*

JEL CLASSIFICATION: M15, M31, M37, L81, L96, L97

1. INTRODUCTION

In present accelerated lifestyle, the intense use of technologies and global organizations (healthcare, governmental etc.) encourage people to make purchases via different e-commerce platforms (https://blogs.worldbank.org, 2020). Customers require a convenient experience when buying products and services through e-commerce. Mostly all e-commerce systems develop their own platforms-based web and mobile technologies. The main reason is because consumers tend to use more internet traffic using a mobile device, rather than a Desktop/Laptop (Mobile Vs Desktop Internet Usage, 2021). Mobile applications (apps) offer customers convenient access to the products and services required by the clients (Pantano, E.; Servidio, R., 2012), but in the same time face limited and isolated functionality. Having the possibility to make different purchases via the mobile applications and allowing to pay for it (De Kerviler, G.; Demoulin, N.T.; Zidda, P., 2016; Martins, J.; Costa, C.; Oliveira, T.; Gonçalves, R.; Branco, F., 2021) permit people to use any e-commerce service faster and make the delivery better, allowing to know the exact address and better delivery terms (Visser, J.; Nemoto, T.; Browne, M., 2014). High-speed Internet access, the increased performance of smartphone devices, advances in personalized and interactive apps (e.g., geo-tracking (Tong, S.; Luo, X.; Xu, B., 2020)), and the fast rhythm of modern life (Kim, M.J.; Lee, C.K.; Kim, J.S.; Petrick, J.F., 2019) have created a fertile environment for the adoption of mobile applications. Indeed, the 2.7 billion smartphone users across the world spend 90% of the time they spend on their mobiles on apps (https://buildfire.com/app-statistics). The average smartphone owner uses 30 apps per month and nine apps per day. This development has changed individuals' lifestyles and turned occasional app use into a daily habit (Report: Smartphone Owners Are Using 9 Apps per Day, 2017). As with any innovation, mobile services present both opportunities and challenges to current business models. The development of mobile communication coupled with evolving mobile services have completely changed the business landscape and have transformed consumer behavior. It is important to understand the impact that these services have on users lives, business, and society.

2. CONCEPT

Mobile commerce, named also m-commerce in many sources (Kire Jakimoski, 2014), includes transactions expressed in money (value), direct or indirect, made through mobile communication technologies. Transactions can be made entirely from mobile equipment or can only be initiated or authorized with its help. In other words, mobile commerce defines the ability of the mobile consumer to obtain goods and services securely through wireless technology.

In a simple, general approach, mobile business (m-business) can be defined as an exchange of goods, services or information through mobile technologies (Kalakota, R., Robinson, M., 2001). The term refers to various value-added transactions and services, which can be done with the help of mobile devices (telephones, personal digital assistants, pagers, car on-board computers and any other portable devices capable of communicating wirelessly). More specifically, mobile business can be defined as a new form of using information and communication technologies to integrate value chains and business processes, a form that facilitates communication and coordination within the organization, as well as, overall, its management. The particular characteristics of mobile business are interactivity, almost permanent availability and personalization.

The main idea of implementing an e-commerce mobile application is to inherit the core services from the main platform and combine it with the mobile device capabilities. In the end this should represent a model or complex system where firms or individuals conduct business over the internet. This approach of using mobile device power can allow different kind of entrepreneurs to operate in different market places and promote their product value.

3. STATISTICS

In the past year we detect an increase usage of internet network usage from the mobile devices compared to the desktop/laptop. People tend to use more a mobile device to search for their needs rather than a standard PC. This trend we can observe in the following Figure 1.
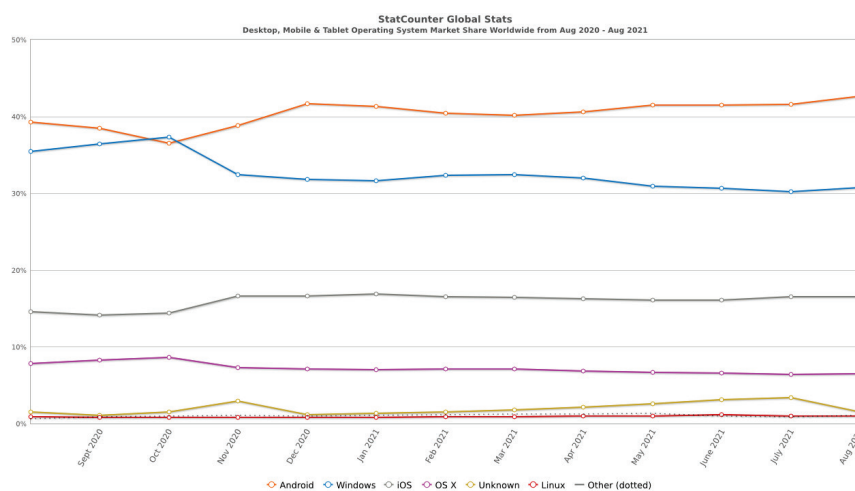

Figure 1. Desktop, Mobile & Tablet Operating System Market Share Worldwide
Source: https://gs.statcounter.com/

According to BuildFire post (https://buildfire.com/category/ecommerce), referring specifically to mobile e-commerce, it is mentioned that mobile applications forecast by the end of 2021 will hit the sales with over $221.2 billion. Basically, if we compare the mentioned sales value with the Statista Mobile App Revenues (Worldwide mobile app revenues in 2014 to 2023,

https://www.statista.com) that is also presented in Figure 2, we can observe that around 32% of total sales were done within different mobile e-commerce market places.
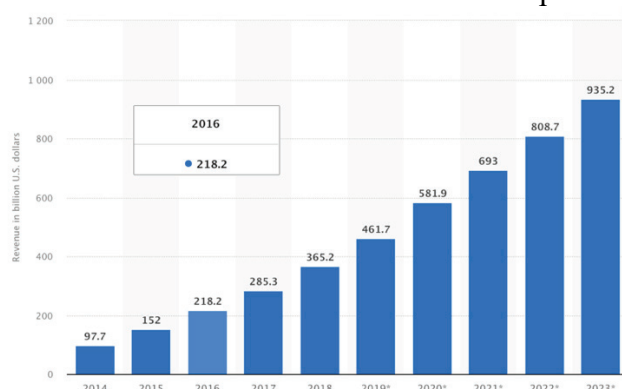

Figure 2. Worldwide mobile app revenues in 2014 to 2023
Source: https://www.statista.com

This represents a general overview over the past, current and future forecasts regarding the revenues received through a mobile app, using different conversion channels. Unfortunately, all this information and statistics rely more on the level of adoption based on the geographical location of the marketplace or zones where the mobile is available for download and use. According to the adoption rate (Key Objectives for E-Commerce Platforms, https://bluecanyonpartners.com) mentioned in Figure 3, we can observe how it differs starting from zones and reaching to separate countries, depending to their government opinion regarding it.

Figure 3. Mobile Payment Adoption Rate
Source: https://www.merchantsavvy.co.uk/mobile-payment-stats-trends/

4. IMPACT OF MOBILE APPLICATIONS
Each developed software is meant to have a specific result in the context where it will be applied. One of the main goals of any e-commerce platforms are (Agile software development, https://en.wikipedia.org):
- Find customers/consumers for placed goods
- Merchandise placed goods on the platform
- Research/Understand market needs for new goods

The entire flow for achieving those scopes, in a simplified form, can be represented as an agile process represented in Figure 4.

Figure 4. Mobile Payment Adoption Rate

Based on previous diagram we can remark that consumers need changes very frequent and the entire process of user engagement and user retention must be a cycled, in order to compete with other modern platforms. Basically, each step defines the following description:

- Discovery
  - Defines the process how the customers find about the service or product
- Evaluation
  - Defines how customers evaluate what to buy and what information they need to decide
- Purchase
  - Defines the payment flow or how the consumers exchange their money for the desired good
- Delivery
  - Defines the logistic part of how the consumers receive their purchase and in what terms it will reach its final destination
- Support
  - Interaction with customers in order to confirm that they have received their product and didn't meet any user experience issues during the entire process

Mobile applications or the mobile market tend to be used more rather than the web browsers. This represent a good field to fulfil the previous mentioned goals. The basic "Merchandise placed goods on the platform" we can consider a minimal way to add additional revenue to our platform. The biggest points that can be used for the mobile applications represent finding new customers/consumers and researching/understanding the market. These goals can be easy achieved and tracked with the minimal efforts and some investments.

Modern matching engines based on user preferences and analytics offer product owners to provide to their customers the most desired good and at most suitable price to pay. This instrument or technic is used mostly by any ecommerce platform and it highly recommended to be implemented. Having an excellent ecommerce platform doesn't worth anything without having any customers and sales. The killer feature or strategic point in mobile market is the

monetization part that can be used in order to engage and attract new users. Over 20-30% of the mobile applications use the monetization as source of revenue, on this point with some small investment and covering specific use cases ecommerce platforms can study the interest on specific products and attract new people.

5. COMMON E-COMMERCE FEATURES USED IN MOBILE APPS

In present there are a lot of integrated e-commerce services within the mobile apps (https://www.redbytes.in/ecommerce-mobile-app-features-list). In the following Table 1, there are mentioned the most common used features among them.

Table 1. Common e-commerce services used within mobile apps

Feature	Description
Proper customization	Every e-commerce mobile app should an outstanding user experience for the promotion of the e-commerce business. For example, in case of a shopping app the user should have a flawless navigation along with a smooth experience so that no complexities are present during the shopping.
Trouble-free registration process	Most of the users do not like the long and complicated sign-up process and some apps require a lot of information for the registration process. The whole process of registration to checkout should be simple in nature like that of Amazon. The user should be able to directly get to the main page and choose the products. Moreover, the registration should need only a mobile
Loading speed	Speed has become the meaning of life in the world that is constantly dynamic. Slow loading apps could be a horrible debacle for businesses that aim big. Make sure all app contents are optimized to fit the standards of underlying device environment and do not take more than 3 seconds to appear to users.
Feedback system	The users should be able to provide feedback on your app as this is essential for your business. It should be made in such a way that the users can report any kind of issue in the system like bugs or can provide review about your products. From this, you will get some idea about your products and the improvements that are needed in your app. The feedback of the users can help with the improvement of the app in the near future.
Indelible user experience	Products is not the only thing users are looking for, they also want to feel satisfied and delighted having a great experience inside the app. To make them addicted, try to carve unique features that offer value and rewards to users.
Push notifications	This can be considered as the most effective and easiest way to attract the users back to your store. With the help of push notifications, certain promotions can be made of the fresh arrivals or discounts are offered on the products that are stored in the cart.
Ratings and Reviews	The users should be allowed to review and rate the features of your app. The customers should be allowed to provide negative feedbacks about your services and products as this will help with the improvement of your business.
Relevant and	The content of the app should be more concise in nature because

Authoritative App Content	users do not like contents that are too pushy in nature.
Advanced search options	Usually, Ecommerce apps have thousands of products listed across hundreds of categories. To make it fast and easier for customers to discover their favorite items, the app must offer advanced search options along with precise filters.
Wish List Button	This is considered as an essential feature. Using this feature, users can bookmark the items they wish to buy. By enabling this feature, you can notify the users about the offers that are applicable on the products in the wish bucket.
Log in via Social Media	The users should be allowed to log in via Facebook Connect or any other social media into their mobile app. Options should be given to the users for retrieving their passwords or usernames and for reminding the users about the social network platform they used for setting up the app.
Featured product	Featuring the latest trending products and discount offers via vivid sliders and banners have become a hallmark of successful ecommerce apps.
Quick checkout	This feature is a must for your e-commerce mobile app. With the help of this feature, the users can complete their order with the information that is already provided in their profile which includes the billing and the shipping address of the user.
Multi-currency payment options	The customers should be given multiple options of payment during the time of checkout with utmost security and safety. Popular modes of payment are cash on delivery, credit/debit card system, smart card, E-wallet, net banking, mobile payment, PayPal and Paytm.
Accurate Analytics	Every business must have a follow-up system that helps measure success, growth and progress periodically. Having a clear picture of business activities helps you scale and improve your customer persuasion tactics.

Source: https://www.redbytes.in/ecommerce-mobile-app-features-list/

6. MOBILE DEVELOPMENT FRAMEWORKS

Selecting a mobile development framework is an important key for creating an e-commerce application. It depends on many factors like development time, cost, maintenance and time to implement new features dominating the mobile market places. These frameworks can be classified in two major categories, native mobile development and hybrid mobile development.

Native mobile development frameworks are:
- Google Android Native Development (https://developer.android.com)
- Apple iOS Native Development (https://developer.apple.com)

Hybrid mobile development frameworks have a lot more of ramification. The main scope of this approach is to use a single code base and achieve same results for both platforms Android and iOS. The main dominant hybrid frameworks in the mobile world at the moment are:
- React Native (https://en.wikipedia.org/wiki/Mobile_app_development)
- Flutter (https://en.wikipedia.org/wiki/Mobile_app_development)
- Xamarin (https://dotnet.microsoft.com/apps/xamarin)
- Ionic (https://ionicframework.com/)

Each development platform has its advantages and disadvantages. These differences we can see in the following Table 2.

Table 2. Common e-commerce services used within mobile apps

Criteria	Native Development	Hybrid Development
Cost	High development cost	Medium-High development cost
Number of developers	Need to have at least one developer for platform in order to support each platform	It is enough to have a developer to support multiple platforms
Development Time	Fast	Medium
Native mobile features	Complete adoption	Partially adoption
Performance	High	Medium
Maintenance	High	Medium
Product Complexity Support	High	Medium
Dependency on third-parties	None	Depend
Access to hardware capabilities	Available	Depend on third-party integrations

7. CONCLUSION

With the number of advantages of mobile commerce and current trends in using mobile application in e-commerce, we can say that it will continue to grow in 2021 and beyond, attracting more customers and generating more sales. A number of companies have already started investing in a dedicated mobile application or are planning to do it. The results obtained from this study indicate that mobile applications have a great influence on ease of e-commerce platforms. This impact depends on many factors as it was described in this paper. Depending on the path the entity is using it could improve the business and help to achieve new levels. As a recommendation I would suggest to add a mobile application version to the roadmap of any e-commerce platform.

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