UNIVERSIDADE ABERTA

A framework to achieve mobile business success

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Mestrado em Gestão / MBA

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Dissertação orientada pelo Professor Doutor Pedro Isaías

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Resumo

Num contexto de sociedade que continua a evoluir cada vez mais rápido, é apenas natural que o comércio acompanhe. Note-se a evolução etimológica que acompanha a palavra inglesa para negócio: *business; e-business, m-business*. A Internet trouxe um grande leque de possibilidades de sucesso para as organizações, empreendedores, equipas de gestão e consumidores. Em paralelo com a facilidade de acesso que esta nova cultura trouxe, nasce também uma nova personalidade associada aos consumidores, uma personalidade mais exigente.

As possibilidades infinitas da Internet faz com que, para empreendedores e equipas de gestão, o estudo de mercado tenha de ser constante. Por isso mesmo, hoje, quais são os fatores chave de sucesso para o *m-business*? Quais são os fatores mais importantes na mente da amostra considerada neste estudo da comunidade online? Será que esses fatores estão correlacionados? E como? Quais são os fatores a que se deve prestar atenção?

Os resultados mostram que há um conjunto de funcionalidades que se agrupam em três fatores principais: “confiança no negócio em si”; serviço ao cliente”; “trabalho de desenvolvimento web”. São ainda apresentadas diferentes correlações entre as variáveis, a ter em conta aquando da entrada no *m-business*.

Palavras-chave: *mobile business*; fatores críticos de sucesso; aplicações móveis; características de aplicações; empreendedorismo.

Abstract

Following in the footsteps of society's rapid evolution, business is undergoing a dramatic transformation of its own: from business, to e-business and now, mobile business. The Internet has brought forth a new and broad possibility of success to organizations, business owners, management teams and consumers. Furthermore, the accessibility to information has also created an increasing amount of consumers who are more informed and enlightened, and demand accountability and integrity.

The infinite possibilities of the Internet for business entrepreneurs and management teams require more frequent studies for this market. The emerging questions are: what are really the key factors for the success of mobile business? What are the most important factors to a studied sample from the online community? Are any of those factors correlated, and if so, how? What factors should business pay close attention to?

The results show that there are three main factors grouping the different features of mobile business and apps: trust for the business itself, costumer care, and web development work. Furthermore, different correlations are presented between the variables, which are essential to consider when entering m-business.

Keywords: mobile business; key factors of success; app; app features; entrepreneurship.

Acronyms

ATM: Automated Teller Machine

BYOD: Bring Your Own Device

CEO: Chief Executive Office

CIO: Chief Information Officer

e-Banking: Electronic Banking

e-Business: Electronic Business

e-Commerce: Electronic Commerce

4G: Fourth Generation

IBM: International Business Machines Corporation

IT: Information Technology

m-Banking: Mobile Banking

m-Business: Mobile Business

m-Commerce: Mobile Commerce

PASW: Predictive Analytics Software

PC: Personal Computer

PCA: Principal Component Analysis

SMS: Short Message Service

SPSS: Statistical Package for the Social Sciences

3G: Third Generation

UK: United Kingdom

US: United States

VIF: Variance Inflation Factor

WebRTC: Web Real-Time Communication

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1. Introduction

"The role of the business owner or management team is to anticipate, recognize, or sense an opportunity to create a product or to deliver a service that is felt to be unique, important, and of value (meaningful) to a targeted customer or customers." (Bissonette, 2012)

In a new reality in which society demands for answers that keep up with its fast pace as well as geographic flexibility, mobile business has been this answer to many business owners or management teams.

Steve Jobs, Mark Zuckerberg, amongst others, are references to this new virtual world where everyone meets with no borders, bringing to birth the demand for everything-no-borders.

Let us have a look at the evolution of the word business: business; e-Business; m-Business. The evolving of the word reflects this demanding society and its need for answers now, on the go and with no borders.

M-Business is believed to not just be business evolution but to be growing as an "accessory" to the traditional and online commerce, too.

Having a smartphone or tablet nowadays became more than a trend – to be a necessity and a pleasure. According to *Barómetro de Telecomunicações da Markest* (2015), the penetration of smartphones in the Portuguese market has increased 83% since December 2012. December 2012, approximately 32.5% of the population that owned a mobile phone had a smartphone. This number increased to 40.4% in December of 2013, to 50.4% in December 2014 and to 59.4% in May 2015. From the ages of 15 to 24 years old is where we can find the highest rate of penetration of smartphones, an average over 55%.

According to the Portuguese Association of Companies of Distribution, during the first semester of 2014, 123,261,000 euros was spent in smartphones, a growth of 63,9% comparing to the first semester of 2013 (Gaspar, 2014).

Generally, the adoption of mobile business has been of great advantage to both the consumers and businesses itself as it has greatly contributed to the success of many businesses (Asimakopoulos, Boretos, & Mourlas, 2014:15).

However, in this new virtual world concept where there are infinite possibilities and almost a worldwide number of potential costumers (users) to reach, a few questions remain: what is it that is most important for these users? What is it that will capture their attention in an infinite virtual world? What is it that, in an almost infinite world of offers, will make them stick with one particular business – and come back to that particular business? What are the key factors for these users so that business owners and management teams can achieve success?

This study's research question is "*What are the key factors needed so that companies succeed their way through mobile business?".*

Align with the research question, there were defined a few goals for this research:

- analyse the reality of mobile business,
- identify the key factors for the success of mobile business
- find the relation between the use of mobile business and the loyalty of the consumer;
- find the relation between m-business and the consumer satisfaction;
- develop a framework that helps business entrepreneurs and management teams.

Therefore, this dissertation is developed in 3 different stages. In the first stage, a literature review is conducted to understand the findings already achieved and directly related it to mobile business, and to understand the general environment around the topic proposed to be researched.

In the second stage of this dissertation, there will be collected data regarding what the key factors of success for mobile business are. The data will be collected through online questionnaires carefully drawn and then distributed in the online community. Lastly, in the third stage, the data collected will be then analyzed and the outstanding main factors to the users will be revealed.

2. LITERATURE REVIEW

2.1. Success

“The accomplishment of an aim or purpose” (Oxford Living Dictionaries, 2017).

2.2. Mobile Business, Its Evolution and Concept

During the recent years, mobile phones have gone through and enormous changes, in terms of the technology and functions that are available to the consumers. The recent market shares between Sony, Samsung, and Apple among other manufacturers have paved way for new innovations and the demand for the mobile phones and their related applications (Mehmood, 2015:2). According to the European Mobile Industry Observatory Report of 2011, the mobile penetration rates in Europe is at 128%, which is higher than in the United States, which stands at 104% and Japan, which stands at 100% (Mehmood, 2015:2). Studies have revealed that an increase in mobile penetration can result in an increase in the economic growth of a country. According to the research done by Waverman, Meschi, & Fuss (2005), a 10% increase in the mobile phone penetration can increase the economic growth of a country by 1.2%.

With the development of 3G (Third Generation) technology in the mobile industry, the whole network of the mobile commerce with all the players including the customers, network operators, service providers, and application developers among other players had to change their strategies (Nel & Boshoff, 2015:67). This has forced the businesses to change from the traditional business model to the mobile business model also referred to as e-commerce. Now, we have 4G technology and this has completely changed the way people search for information. “Google recently announced that more information searches are performed on mobile devices than on the desktop computers in the United States and nine other countries (Lin, 2016:1). Due to these reasons, many businesses are now moving from the traditional business model, even the use of desktop, to the mobile business. But then, what exactly is mobile business?

Mobile business has been defined in several ways by different authors. Kalakota and Whinston (1997:413), define e-commerce as “the ability to buy and sell products or information on the Internet or other online sources.” Other authors

define it as “a business transaction with the exchange of anything of value through a mobile network.” (Mehmood, 2015:3).

Li Yan (2005), defined mobile business as a transaction that have a definite utility or value, that is administered through a mobile terminal equipment on the mobile telecommunication network. Mylonopoulos & Doukids (2003:6) defined mobile commerce as “the ability to make payments over mobile networks.” Ming & Qi (2008), defined mobile business to be an extension of e-commerce where products and services are managed through the use of wireless mobile equipment without the place or time constraints so as to increase the efficiency or profitability of a business process. Chung-Shing & Ho (2010:37) defined mobile business as “the buying and selling of goods and services through wireless handheld devices or any transaction with a monetary value that is conducted via a mobile network.”

Mylonopoulos & Doukids (2003:6) however feel that the definition of mobile business is vague and that a new definition needs to be developed. This is because of two reasons. The first reason is that most of the mobile business model lies in the future with a constant evolution in mobile technology (Mylonopoulos & Doukids, 2003:5). The second reason is that the rapid pace and uncertainties of mobile technology makes the users assimilate the innovations in mobile technology in unprecedented ways (Mylonopoulos & Doukids, 2003:5). The general consensus is that mobile business is the use of mobile phones to carry out any form of business transaction between two parties (Chung-Shing & Ho, 2010:37).

2.3. The Impact of Mobile Business

Mobile technology has completely changed the way business operates in today’s competitive business environment. According to Rich McBee, the CEO of Mitel, a company that provides mobile solutions to the multinational corporations, “73% of senior executives see their mobile device as critical to how they do business,” (Kridel, 2015:1). According to the International Data Corporation, an analyst firm, by the year 2017, 75% of organizations’ internal applications will be primarily designed for tablets and smartphones with PC usage becoming just an

afterthought (Kridel, 2015:1). This kind of overwhelming adoption of mobile business is having a huge impact on every part of the business process/chain.

2.3.1. Business Model

The business world had pretty much stayed the same for about a century after the Industrial Revolution (Mehmood, 2015:3). Mobile technology is growing at an exponential rate and the business world cannott help but be swept away by this tidal wave (Ying-Feng & Ching-Wen, 2006:1350). One might think that the business world has come so far but if you go back only five years, you will be shocked to find out that mobile phones were being used primarily for casual pursuits rather than business or commercial purposes. This was the time for the birth of App Generation which was primarily used for game purposes and not business (Mehmood, 2015:3).

In today's business environment, mobile technology is the "big thing" and Google has refurbished its algorithms so as to prioritize the websites that make mobile browsing easier. "Ubiquitous and rapidly evolving mobile technologies such as smartphones allow people to work anytime, anywhere, and on any task" (Reyt & Wiesenfeld, 2015:739). Every aspect of the business can now be handled using mobile phones from remote locations, given that the devices are loaded with the right software. All aspects of customer relations, content marketing, all the way to back-end processes such as invoicing and shipping just at the click of a button (Sung & Cho, 2012:32). But then mobile technology is not just for the business owners, it is also for the consumers. With the rise of Millennials, many more consumers are making use of mobile devices to do their shopping, find local businesses, as well as share their shopping experiences with their friends, acquaintances, and strangers on social media such as Facebook and Twitter. Mobile technology has therefore completely rewritten the book on the business model (Wang et al., 2014:1336).

2.3.2. Marketing

Mobile devices are replacing the traditional marketing media (Mijung, Jun & Chan-Olmsted, 2010:2). The mobile marketing has seen an explosive growth in the recent years with corporations spending billions of U.S. dollars on mobile advertisement. Corporations are using permission-based mobile ads through SMS (short message service). For instance, in 2009, Google acquired Admob, a mobile ads platform that delivers ads to mobile devices (Wang et al., 2014:1335). In the United States, text message messaging has exponentially grown over the recent year. In 2006, numbers were at 70.1 million and rose to 88.6 million in 2007 (Sung & Cho, 2012:31). According to eMarketer, “the market for mobile ads is estimated at $2.6 billion in 2012 and $10.8 billion in 2016” (Wang et al., 2014:1335).

Many firms are adopting mobile marketing because of its ability to reach a wide population (Mijung, Jun & Chan-Olmsted, 2010:2). Nearly everyone owns a mobile phone and using text messages to market has shown to have a very wide reach compared to the other forms of advertisement. It is estimated that the use of mobile marketing and advertisement is going to keep on increasing especially in the developing countries where the mobile phone penetration is higher than the developed countries (Mijung, Jun & Chan-Olmsted, 2010:2). It is estimated that in the near future, almost every adult will own a phone and mobile advertisement will continue to rise (Sung & Cho, 2012:33).

2.3.3. Communication

Mobile phones have also impacted on communication within the organizations. Mobile email is one of the communication uses of mobile phones in organizations (Mehmood, 2015:5). “Although a majority of the work email processing is executed on the desktop, mobile email is still one of the first mobile business applications that are used on a large scale and persistently in enterprise settings” (Franssila, 2013:185).

Text messages are also being used for communication within organizations. Text messages are more effective than emails in case of urgent communication.

The open rate for text messages is at 98% and that it is read within 15 minutes upn receiving them on average (Reyt & Wiesenfeld, 2015:741). As such, mobile phones have made communication efficient. Team members can communicate faster through text messages making them work faster. In addition, mobile phones have improved customer care services. People can reach the customer care personnel faster and at any time using their mobile phones. In fact, most of the customer services in corporations are offered through mobile phones (Reyt & Wiesenfeld, 2015:741).

2.3.4. Payment

MasterCard, Paypal, and LevelUp are some of the leading companies providing mobile payment services. Recently, Apple Inc. introduced Apple Pay in order to get into this competitive mobile payment business. By the end of the year 2014, Apple Pay accounted for 1.7% of all the mobile payments made especially in the Beverages and Food corporations such as McDonald's, barely three months after its introduction (Shen & Yazdanifard, 2015:490). Many other companies such as Xiaomi, Google, and Starbucks have also entered the mobile payment industry (Shen & Yazdanifard, 2015:490).

The increase in the use of mobile devices for online retail has called for an equally efficient mode of payment (Tao, 2013:1886). As a result, individuals order and pay for their products online using their mobile services. Large retail companies like Walmart have made this possible by providing platforms that allow customers to pay for their products using their mobile phones. It is estimated that mobile payment may even phase out cash payment or even credit card payment (Kent, 2012:316).

2.3.5. Banking

With the fast pace of technology advances, as well as changing lifestyle and demographics, “the traditional branch banking is giving way to e-banking (electronic banking) and more recently m-banking (mobile banking)” (Bhatt, 2016:1). Corporations, consumers, and the government continue to demand more effective and efficient payment services and systems. As a result, most banks, if not all, have made very significant efforts so to improve mobile banking platforms (Shen & Yazdanifard, 2015:490). These kind of efforts have resulted in app developers to be involved in an app race for the mobile banking.

A wide range of banking apps exists that help the workers to better manage and understand their finances and spending habits (Isac, 2013:199). More and more customers are turning to mobile banking in order to stay up to date with their needs. Banks who have failed to adapt are losing customers who are moving to other banks who can provide them with mobile banking services (Shen & Yazdanifard, 2015:491). Mobile banking is reshaping the landscape for the banking sector with the customers taking a center stage. Although customers still expect banks to have a lot of ATMs across the nation for cash withdrawal, they want to be able to check their balances and carry out other transactions like money transfer as quickly as possible and that is where mobile banking comes in. The traditional physical banks are facing a risk of being phased out (Yan-Mei, & Ning, 2011:3)

It has been observed that most of the customers who have adopted mobile banking are the younger generation (Isac, 2013:200). However, the older generations have also significantly adopted the mobile banking. According to Illia, Ngniatedema and Zhentu (2015:111), “only half of adults in the U.S. use online banking, with the other half still visiting physical branches for their banking services.” A Pew Research survey revealed that 54% of young adults between the age of 18 and 29 used mobile banking while the figure dropped to 40% for the older adults between the age of 30 and 49. Also the level of ownership was the same in the two groups (Illia, Ngniatedema & Zhentu, 2015:111).

A study done by ath Power on small business banking found out that the millennial small business owners are disrupting the whole banking industry (Mehmood, 2015:2). The study revealed that 72% of millennial use mobile banking for their business while 42% of their adult counterparts used mobile banking (Federal Reserve, 2016:3). The same study revealed that 54% of mobile banking users with smartphones cited mobile banking to be one of the three most important ways through which they interact with their bank. In a Bank of America survey, 64% of the respondents said that they assessed a banking service with their mobile phones a few times a week (Stewart, 2016).

2.3.6. Organization Behaviour

Beyond the office laptop or the smartphone, many organizations have implemented information systems, and custom mobile technology in order to keep operations running smoothly. This advancement in mobile technology has resulted in the decrease of the time that is needed to complete certain tasks and in some instances, eliminate some of the business functions (Mehmood, 2015:2). Organizations need to change their structures in order to adapt to these changes. This is done through modifying the requirements of certain positions and even removing some jobs. The employees are given training on the new mobile software. The organizations may also come up with new departments or jobs to specialize in the new areas of the mobile technology. In some situations, these implementations of mobile technology render some duties obsolete (Stewart, 2016).

Generally, organizational workers have to change their mindset to adapt to the new mobile technology. They need to change how they relate with one another. The managers have to change their mindsets and move away from managing-by-seeing. They need to adopt the managing-by-results approach. The managers should learn how to give instructions through mobile phones (Reyt & Wiesenfeld, 2015:740). On the other hand, the employees need to learn how to receive instructions through mobile phones. The organizational employees should also learn how to relate with customers through phones, given that many

customers use phones rather than come physically to the place of business (Ebibi et al., 2012:276). In short, everyone in the organization from the managers to the employees should change their behavior so as to better relate with the new crop of customers who are increasingly requiring organizations to give them efficient services through their mobile devices (Illia, Ngniatedema & Zhentu, 2015:111).

Employees are also using their own devices to for both personal and work use. This has been termed as Bring Your Own Device, BYOD (Steelman, Lacity & Sabherwal, 2016:85). These policies enable the employees to use their own mobile devices as well as applications for business tasks. “The introduction of consumer software and collaboration tools into the organization is quickly expanding from bring-your-own-device and consumer applications to bring-your-own modified and original applications” (Steelman, Lacity & Sabherwal, 2016:86). However, some CIOs have remained concerned about the potential threats that BOYD brings (Magruder et al., 2015:56). For instance, “484 senior IT leaders in a 2013 Society for Information Management (SIM) survey ranked BYOD among the five most worrisome technology issues” (Steelman, Lacity & Sabherwal, 2016:86). Since then, BOYD had dropped from top ten of SIM surveys as managers are focusing more on the potential that mobile technology is bringing to their organization. The organizations are able to cut on the technology costs and let the employees use their own devices (Steelman, Lacity &Sabherwal, 2016:85).

The Bring-Your-Own-Device (BYOD) deployments have also enabled the company to be successful in reducing the costs associated with the purchase of expensive devices to be used in conducting business. However, BYOD brings with it a few challenges given that the employee may have to use his or her own cellular data. This may discourage employees from fully using their devices for business purposes and as such reduce efficiency. Businesses should therefore try to cater for some of the cellular data costs (Androulidakism & Kandus, 2011:258). On the bright side, the cost of cellular data is increasingly reducing as more and more people get access to Wi-Fi, which off-loads the higher monthly cellular data costs. More and more employees even prefer to use their own mobile for work purposes instead of carrying around multiple devices (Byrom et al., 2016:20). In addition, the employees even feel that they are in position to obtain better devices

and install the kind of applications they want on their own devices as opposed to the ones provided by the organization which may restrict the kind of applications installed limiting its uses (Magruder et al., 2015:60)

These mobile devices have brought with them new capabilities. With location, context-based tools, and calendar, employees can be able to identify all the information the clients wants to know without having to physically go to the office (Roberts, 2016:60). Employees all need to use a mobile device to access all the information and the process, customer service has significantly improved. With the availability of the unified communication tools that can be used to access the company's directory, employees can be able to quickly locate the manager and other employees within the organization if the need arises, which enables faster communication among staff (Kridel, 2015:1).

Mobile technology has also the potential to decrease the time required for project completion within organizations. According to Webtorials, 18% of projects are delayed because the team cannot collaborate effectively. In the case of an organization with a lot of workers on the go, the main reason to why there are delays in project completion is that 25% of the workers are always out of the office at any given point in time (Kridel, 2015:1). Mobile devices give organizations a good solution to minimizing these kinds of delays. They help in the collaboration of opportunities even including video.

For instance, when tablets and smartphones are being used as videoconferencing endpoints, the employees are now able to participate in a given project from any location they are (Asimakopoulos, Boretos, & Mourlas, 2014:14). In addition, businesses are able to save on the cost of providing the road warriors with dedicated videoconferencing endpoints; most of which would sit unused for most of the time (Kridel, 2015:1). Furthermore, the service workers can be able to use video taken by their mobile devices to better assess the challenges that are being faced by the customers and share then with their other colleagues in different locations. An emerging technology referred to as Web Real-Time Communications (WebRTC) presents an option for businesses to embed video-calling functionality within the mobile applications (Research and Markets, 2016:1).

This technology has the potential of further making video conferencing much easier.

2.3.7. Economies Success

Currently, the United States and China are the leading economies. The U.S. has been the leading economy for a while. However, China was relatively poorer and countries like Japan were ahead of China. In recent years, China has surpassed Japan as become the second-largest economy in the world, only behind the United States. Business between the United States and China have also increased (Sgriccia et al., 2007:60). One of the success factors that have attributed to the success of these two economies is mobile device technology (Wallace, 2016:22). The abundance and use of mobile devices within the workforce, both issued by the company and personally owned, has been explosive. Statistics indicated that “55.7 million U.S. consumers owned smartphones during the three months ending in August 2010” (Kahle-Piasecki, Chao & Ariss, 2012:57). In the same 2010 period, the smartphone use in China had even stronger potential for growth. “Total domestic sales of smartphones have reached $13.48 million in the second quarter alone with a sequential growth rate of 27.5%” (Kahle-Piasecki, Chao & Ariss, 2012:57).

According to a report issued by China Internet Network Information Centre (CNNIC) in July 2010, the number of mobile Internet users has reached 277 million, accounting for 66% of the Internet population (420 million) (Zhou, 2011:241). The propagation of smartphones in the two countries led businesses to consider new ways of conducting mobile business or m-business. This led to the better performance of business, which resulted in the growth of the economies, especially the Chinese economy.

Mobile devices are not just contributing to the success of businesses in isolation, they are also contributing to the success of the economy as well (Sgriccia et al., 2007:60).

2.3.8. Customer Satisfaction

Customer satisfaction has significantly improved with the adoption of mobile business (Dahlberg et al., 2011). The service workers no longer need to set aside time so that they can be able to go back to the office in order to find out the answers to the questions that had come in when they were not in the office. Customer satisfaction increases because the employees are also better equipped to provide them with the answers they need on the spot (Kridel, 2015:1). The revenue for the business increases because no sales are lost due to frustrated customers who are turning to the competitors (Roberts, 2016:61).

Mobile technology has enabled businesses to provide multichannel services to customers. By using mobile devices to access the Internet, users can be able to utilize a variety of services such mobile banking, mobile games, as well as instant messaging (Zhou, 2011:241). In a multichannel context, the mobile services can be used as an alternative or a complementary service to the existing services. “Firms implementing a multichannel strategy may prefer that clients use the mobile channel as a complementary channel to the online channel rather than as a substitute, given the potential benefits for a firm offering the use of multiple channels to the same client” (Nel & Boshoff, 2015:67).

In such a case, the customers do not have to consider the channels offered by the business in isolation. They are given different alternatives on which they can be able to access the services that they need from an organization (Roberts, 2016:60). Rather than the customers having to evaluate one best alternative to use, they use a variety of them and are able to use different channels depending on their preferences and convenience (Wang et al., 2014:1300).

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2.4. Disadvantages of Mobile Business

A few studies have recognized and already discussed the disadvantages of mobile business.

For Kahle-Piasecki, L. et al (2012:61) “since m-business allows for mobilization, the workforce becomes more distributed; the further the workforce is distributed, the harder it is for the company to manage (…), wireless mobility

steals employees' time with family because this makes it possible for them to take their work to home, thus potentially weakening the family relationships and losing social interaction (…), limited by some distinct disadvantages – speed of delivery, small screen size and security".

And for Tsai, H., Gururajan, R. (2007:21), mobile technology encounters limitations. For example, high costs, slow speed, difficulties in typing text using a phone keypad, cumbersome navigation, and unreliable service are the top five dissatisfactions for mobile users (…) On the business side, the challenges for developing m-commerce include different terminals, multi-transaction services, flexible location, flexible service and configurations, users' experience and enterprise integration.

2.5. Success of Business and the Importance of the Customer

"What makes a difference between a merely satisfactory delivery and a great delivery of a new innovative idea to the marketplace? Well, if you ask Richard Branson, philanthropist, entrepreneur, and founder of the Virgin Group, his response would most likely focus on ensuring that you have a structure in place that ensures definite attention to detail" (Bissonette, 2012:437)

"The convergence of the Internet and mobile communications, in particular, brought about a variety of wireless data communication capabilities, which led to a paradigm shift in the way that individuals communicate and work" (Nandi & Nandi, 2015:235). This has translated into business success. Business success means that "what we are doing well today should be done even better and more wisely tomorrow, especially compared to the competition, to fully satisfy all interest groups" (Zdrilić & Dulčić, 2016:146).

Malcolm Goodman mentions that "the pursuit of business success now requires a holistic integration of creative management and marketing management skills and this challenges organizations to pursue and adopt new attitudes and skills." (Kotler et al., 2009).

2.6. The Business Opportunity

For businesses, success means a clear dedication from the managers or leaders to the continuous improvements of all the key processes, innovation, and creativity, team motivation, motivation levels, work conditions, and the general organizational culture (Nandi & Nandi, 2015:235). At the employee level, success always starts with a commitment to achieving results, continuous learning, readiness in taking of responsibilities, and the aim to improve in anything that they do (Zdrilić & Dulčić, 2016:146).

The relationship between the employee and the employer is also one of the important things for the successes of the business. “In relationships between employers and employees, which are all too often characterized by vagueness, both parties have to ensure an advanced performance” (Jochims, 2016:189).

In today’s competitive business environment, technology utilization is one of the most important business success factors (Xiaobo et al., 2010:97). “It’s unanimous that technology continues to transform ways of doing all things business” (Wallace, 2016:22). Mobile technology is the latest technology in the business and as such, the adoption of mobile technology can therefore be used to measure the success of a business (Wu, Straub & Liang, 2015:498).

However, for Clarke, I. (2008:53), long-term m-commerce business success is likely to come from consumer-oriented, rather than technology-based strategies.

For Chris Murray (2016), all it takes is to “explain the value and justify the cost – People don’t mind paying; they just don’t like to overpay”.

Therefore, “marketing is crucial for business success focusing on understanding customers or ‘meeting needs profitably’, since value is defined by customers”. (Kotler et al., 2009).

Even in less developed countries, mobile devices penetration has a very high penetration and this is something that have caused businesses to rethink their business models in order to serve the changing needs of the customers and maintain a competitive advantage (Kumar et al., 2015:17). Businesses have integrated the use of mobile devices, both inside and outside of the organization. Mobile devices are used by employees to communicate amongst themselves (Franssila, 2013:185). On the other hand, customers can use mobile devices to

shop and even pay for the services (Shen & Yazdanifard, 2015:490). Banks have also allowed the customers to be more in charge of their bank accounts by allowing them to use mobile devices to access their accounts (Olasina, 2015:60). Generally, the adoption of mobile business has been of great advantage to both the consumers and the business itself as it has greatly contributed to the success of many businesses (Asimakopoulos, Boretos, & Mourlas, 2014:15).

3. RESEARCH METHODOLOGY

3.1. Research Topic

With the previous literature review, it was possible to understand the environment of the topic under the light of research and how to prepare a good methodology of research.

This dissertation aims to respond to the question “what are the key factors for the success of mobile business?” while being able to share a framework that would help business owners and management teams find key factors to consider when entering mobile business.

Aligned with the research question, a few goals were defined for this research:

- Analyze the reality of mobile business,
- Identify the key factors for the success of mobile business
- Find the relation between the use of mobile business and the loyalty of the consumer
- Find the relation between m-business and the consumer satisfaction
- Develop a framework that helps business entrepreneurs and management teams

3.2. Strategy

The constant change of the m-business environment and the fast pace with which its literature becomes outdated was a factor to debate on whether this research should be developed as a qualitative or quantitative method of study. Under the light of the main goal, to develop a framework that would help business entrepreneurs and management teams learn the key factors to consider when entering m-business, this research was developed using a quantitative method. Quantitative is predominantly used as a synonym for any data collection technique (such as a questionnaire) or data analysis procedure (such as graphs or statistics) that generates or uses numerical data. In contrast, qualitative is used predominantly as a synonym for any data collection technique (such as an interview) or data analysis procedure (such as categorizing data) that generates or uses non-numerical data. Qualitative therefore can refer to data other than words,

such as pictures and video clips. (Saunders, 2009:182). The collected data would have to be standardized, allowing easy comparison. Therefore, survey was the chosen strategy. The survey strategy “allows you to collect quantitative data, which you can analyze quantitatively using descriptive and inferential statistics (Sections 12.4 and 12.5). In addition, the data collected using a survey strategy can be used to suggest possible reasons for particular relationships between variables and to produce models of these relationships” (Saunders, 2009:144).

3.3. Data Collection

The data was collected through the use of an online questionnaire, which included different question types, varying from nominal (single choice and multi choice), binomial, Likert scale, and ratio scale questions.

The self-administered questionnaire was the tool chosen in order to be able to collect answers from a good amount of geographically dispersed respondents, with as little contamination or distortion of the answers.

For distribution of the questionnaire the preferred method was the use of online surveys because the online community is where the potential costumers of a potential mobile business exist, as a result the online participants were the ideal target-respondents for this survey. The use of snowball survey invitation method minimized the potential bias of targeting only specific types of respondents and made it possible to reach respondents in different social circles. When dealing with hidden populations, those difficult to approach and reach, snowball sampling presents the great benefit of enhancing the identification and augmenting the number of participants by resorting to their target population to engage other people (Isaías, 2013).

The questionnaire was divided in three main parts: part I collected data related to the personal information of the respondents; part II collected data related to the mobile accessibility and mobile use behaviour of the respondents; part III collected data about the relevance of different factors that could be key for a mobile business success. The pre-test was conducted from five respondents in order to test its reliability, receiving feedback and improving the questionnaire. The

potential respondents were invited to take the final version of the questionnaire online.

3.4. Sample

There were a total of 159 responses who submitted the completed questionnaire. The sample was categorized by age and gender so that it was possible to identify different needs/concerns of different target-market groups.

3.5. Quantitative Data: Methods and Statistical Techniques Used

The data was cleaned and coded and the quantitative statistical tests were used to analyze the data. All statistical analyses were conducted using the PASW Statistics software (IBM SPSS Statistics, Version 20.0, IBM Corp., Armonk, NY, USA).

Descriptive statistics, bi-variate analysis and factor analysis were used to analyze data in this study.

Factor analysis is one of the more widely used procedures in the market researcher's arsenal of analytic tools. It is a multivariate statistical technique that is concerned with the identification of structure within a set of observed variables. The number of variables for further research can be minimized while the amount of information in the analysis is maximized. The original set of variables can be reduced to a small set which accounts for most of the variance of the initial set. When the amount of data is so large as to be beyond comprehension, factor analysis can be used to search data for qualitative and quantitative distinctions (Stewart, 1981:51).

Bivariate analysis is a kind of data analysis that explores the association and empirical relationship between two variables (Babbie, 2009:436).

Bi-variate analyses including Chi-Square, Spearman correlation and Mann-Whitney test were conducted to investigate the relationship between any two variables.

Factor analysis (principal component extraction method with a direct oblimin rotation) was also used to reduce the number of variables and eliminate the multicollinearity problem.

For the different analysis conducted a significance level was set at 0.05, or 95% confidence. Means are reported ± of their standard errors.

If a respondent was missing the answer for a question, he or she was excluded from that specific test.

4. RESULTS

This questionnaire (Attachment II) was opened from November 15th 2016 to December 21st 2016. In total 159 respondents submitted the completed questionnaire.

4.1. Country of Residency

The results reveal that the participants of the survey resided in 19 different countries (Figure 1). There were more respondents from Portugal, Canada, UK and Taiwan with 26%, 18%, 12% and 12%, respectively.

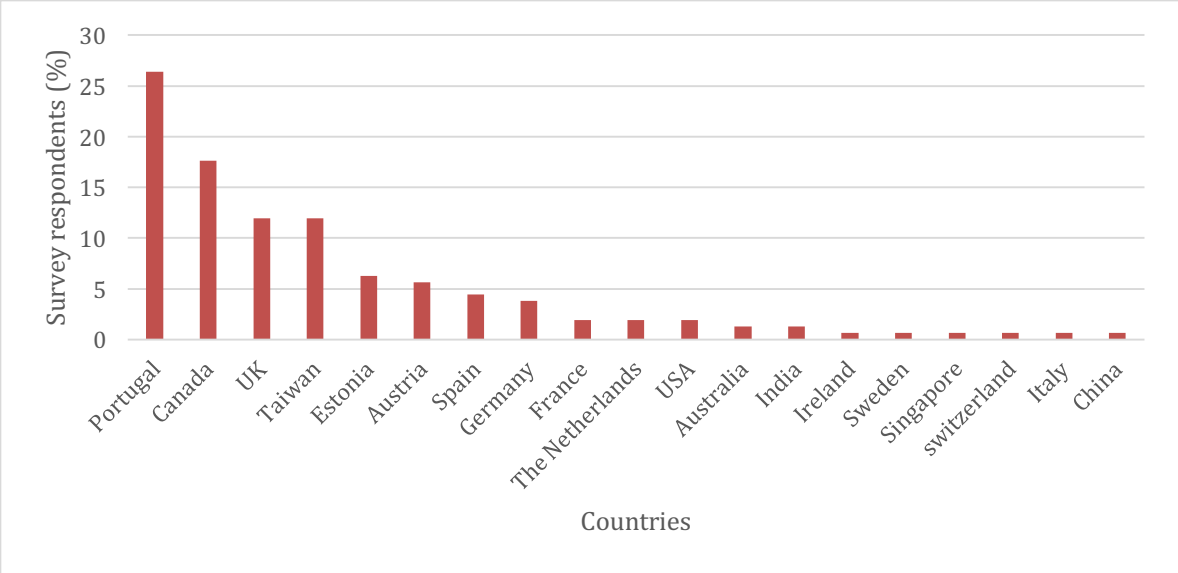

Figure 1 Country of residency of the survey respondents

4.2. Age of the Respondents

Participants' ages ranged from 14 to 72 years old. The average age of the respondents was 30.25 ± 0.73 (Mean ± S.E.) years old. The mode age of the respondents was 27 years old, and their median age was also 27 years old.

4.3. Gender of the Respondents

More than half of the respondents, 57.2%, were female, and 42.8% were male.

4.4. Frequency of the Use of Different Devices to Connect to the Internet

Survey participants were asked to indicate the frequency of the use of different devices to connect to the Internet (see Figure 2). Among the devices used to access the Internet Smartphones and Laptop Computers were used the most frequently. Tablets and Desktop computers were used the least frequently. Tablets had the most number of respondents indicate that they do not have the device, 36.48%, which explains the relatively large number of responses indicating that a participant has never connected to the Internet with this type of device.

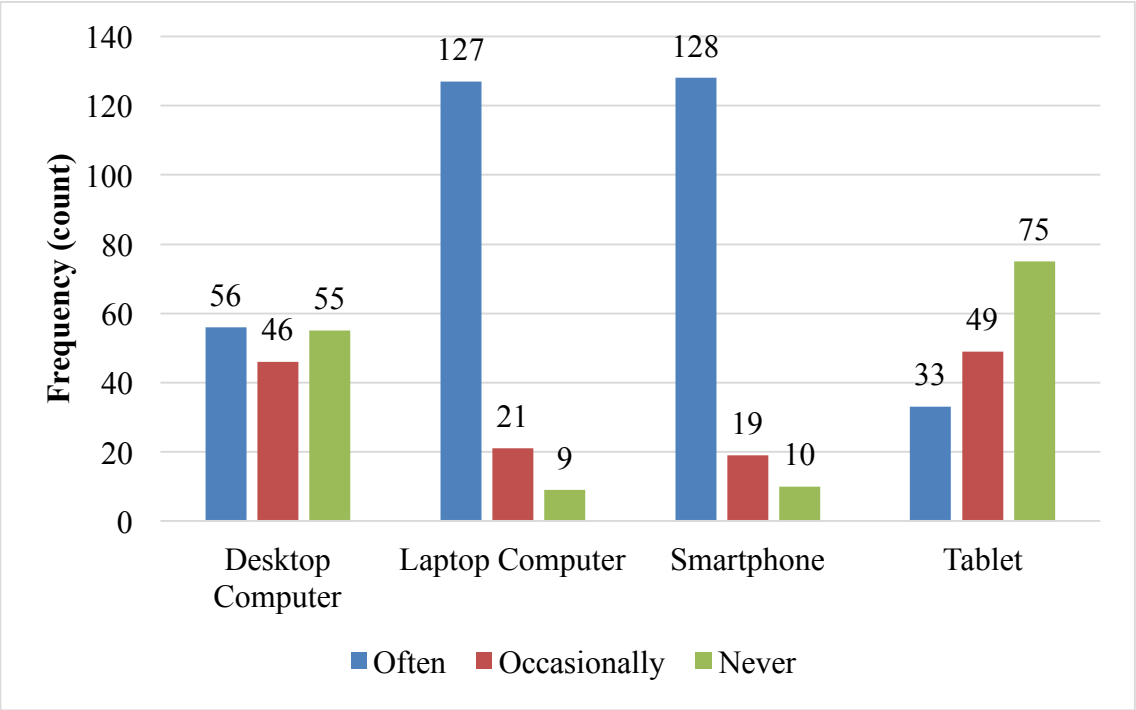

Figure 2 The frequency of Internet device usage among survey participants

4.5. The Operating System of the Device Used to Take the Survey

The operating system of the devices used to take the survey is broken down by type in the Figure 3. As evidenced below, the most popular devices were Windows computers, representing 33.96% of the participants' devices.

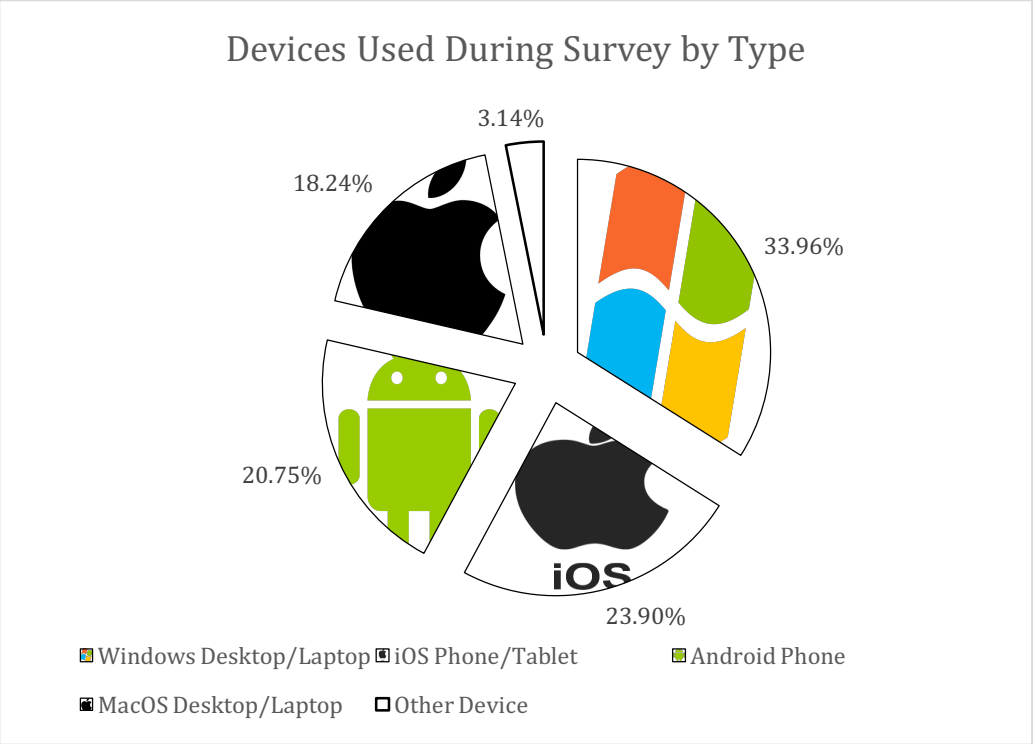

Figure 3 The operating system of the devices used to take the Survey

4.6. The Frequency of the Use of Mobile Devices for Different Internet-Based Activities

From the total survey participants, 71.07% of them used their mobile devices (smartphones and tablets) to make a payment or bank transference in the last 30 days prior to the survey.

More than half of the respondents, 55.97%, purchased a product or service online in the last 30 days prior to taking the survey. However, only 16.35% of the respondents used a price check app on their mobile devices.

Most of the respondents, 88.05%, used their mobile devices to manage their social media accounts (e.g., Facebook, Twitter, LinkedIn). About three quarter of the respondents used their mobile devices to stream audio or video (with the frequency of 69.81% and 76.10%, respectively), and 71.70% of the respondents participated in a video call or chat using their mobile devices in the last 30 days prior to taking the survey.

About half of the respondents, 46.54%, used their mobile devices to play a game while 88.05% of them used their devices to read the news online. Most of the respondents, 81.76%, used navigation or location-based information on their mobile device in the 30 days prior to taking the survey but only one third of them, 37.11%, used a ride-sharing application during the same period.

More than half of the respondents, 61.01%, used their mobile devices to transfer files. The least frequent use belong to the control of a household device with only 10.06% of the respondents indicating the use of their mobile device for that purpose in the 30 days prior to taking the survey.

4.7. The Frequency of Online Purchase

The respondents were asked to report the frequency of their online purchase in a typical month on a Likert scale of 1=never, 2=rarely, 3=sometimes, 4=often, and 5=always. The results indicated that about half of the respondents, 44.94%, sometimes made an online purchase (including ordering/reserving online and paying in the store) while one-fourth of the respondents, 27.21%, rarely purchased anything online compared to one-fifth of the respondents, 20.25%, who often made an online purchase (Figure 4).

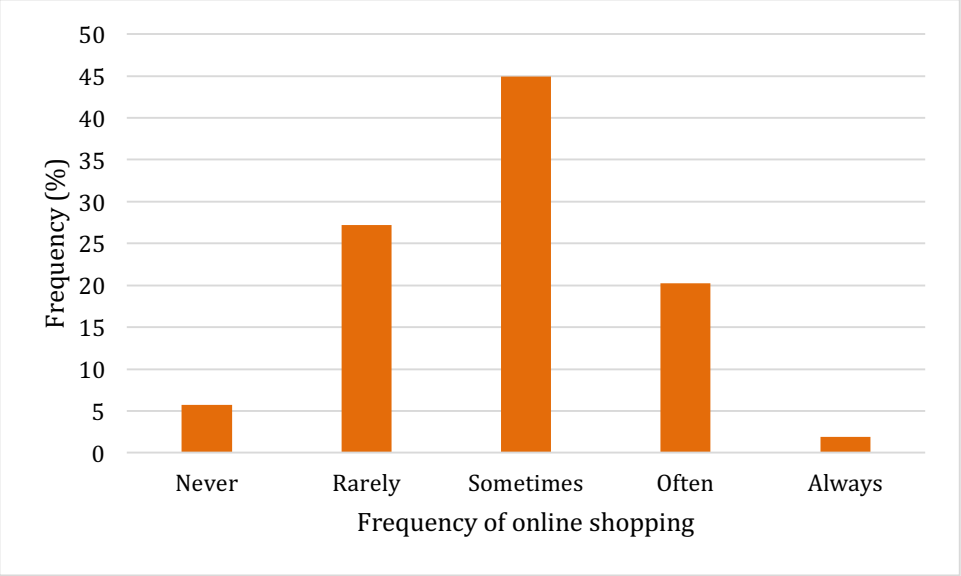

Figure 4 Frequency of the online purchase in a typical month

4.8. Time Spent on Smartphones and Tablets in a Weekday

The participants were asked to select one of the options provided for the amount of time that they spend using their smartphones and tablets in a typical weekday (options included not using the device at all, using it for one hour or less, 2-3 hours, 3-5 hours, and more than 4 hours). The respondents who did not use the device, did not have access to the device.

Results presented in Figure 5 indicates that 40.25% of the participants spent 2-3 hours in a typical weekday on their smartphones, and about half of them spent their smartphone 3 hours or more in a weekday.

Daily Tablet usage was considerably less than smartphone usage. Most of the participants did not own a tablet, 41.02%, or spent less than an hour on their tablet, 30.77% (see Figure 5).

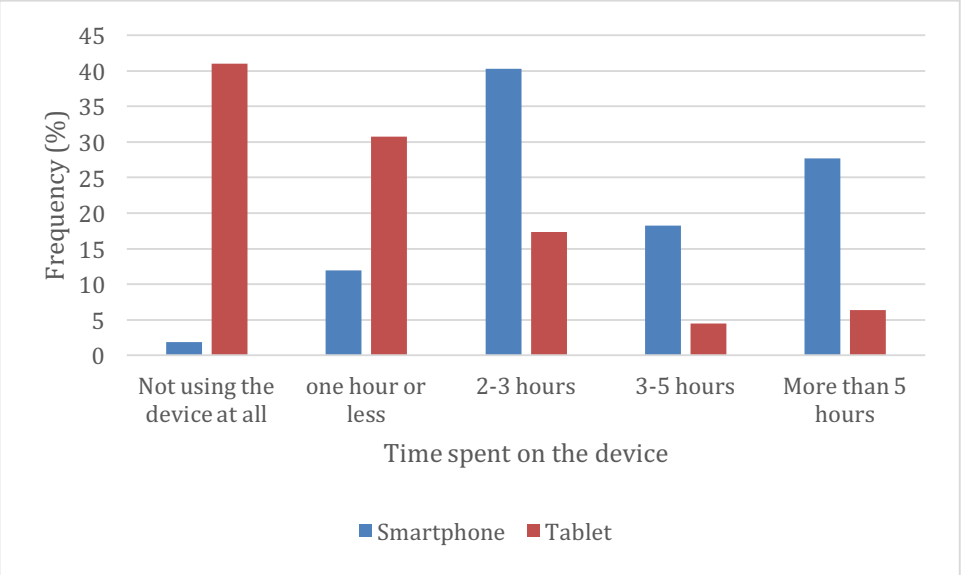

Figure 5 The frequency of the time spent on smartphones and tablets in a typical weekday

4.9. Preferred Method of Accessing the Internet when Using Smartphones or Tablets

Respondents' preferred method for accessing the Internet on a mobile device such as a smartphone or tablet is depicted below (Figure 6). Participants preferred to use a browser when surfing online, with 90.07% of responses. When accessing social media, "Using an App" was the preferred choice with 82.24% of the responses. When buying a product, 67.14% of respondents indicated that they preferred using a browser when purchasing a product rather than using an App.

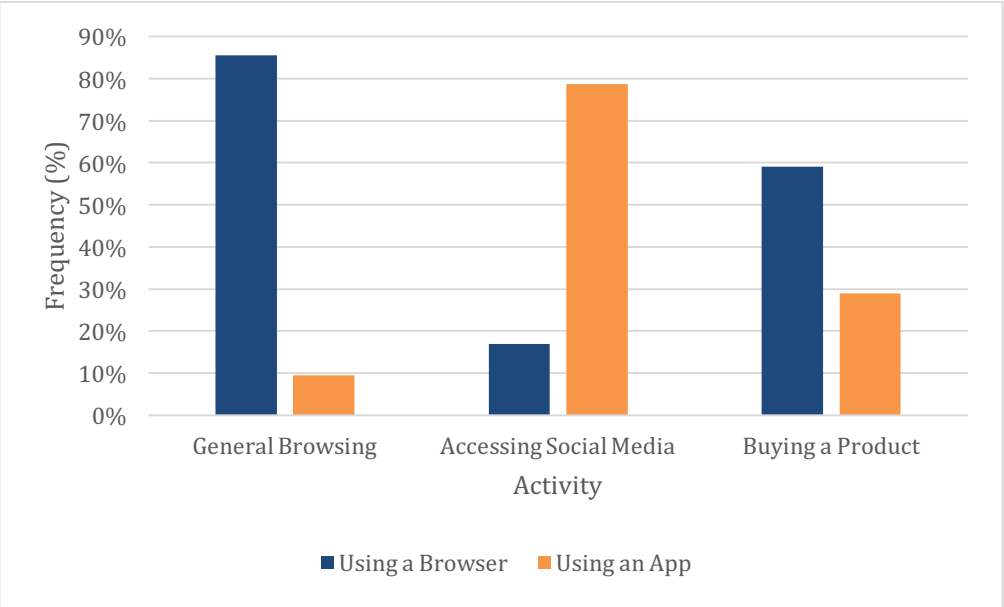

Figure 6 Preferred method of accessing the Internet when using a smartphone or tablet considering the type of activity

4.10. Number of Apps or Games Used on the Mobile Devices in a Typical Week

Respondents indicated that on average they used 8.88 ± 0.81 apps or games on their mobile devices in a typical week. The results were ranged from no apps or game use to 80 apps or game usage in a typical week with a median of 6 apps or games and a mode of 10 apps or games.

4.11. The Importance of Different Mobile App Features

Participants were asked to rate the importance of different mobile app features including navigation, functionality, look and feel, speed, stability, content, and special deals on a scale of 1=not at all important to 7=extremely important (Figure 7).

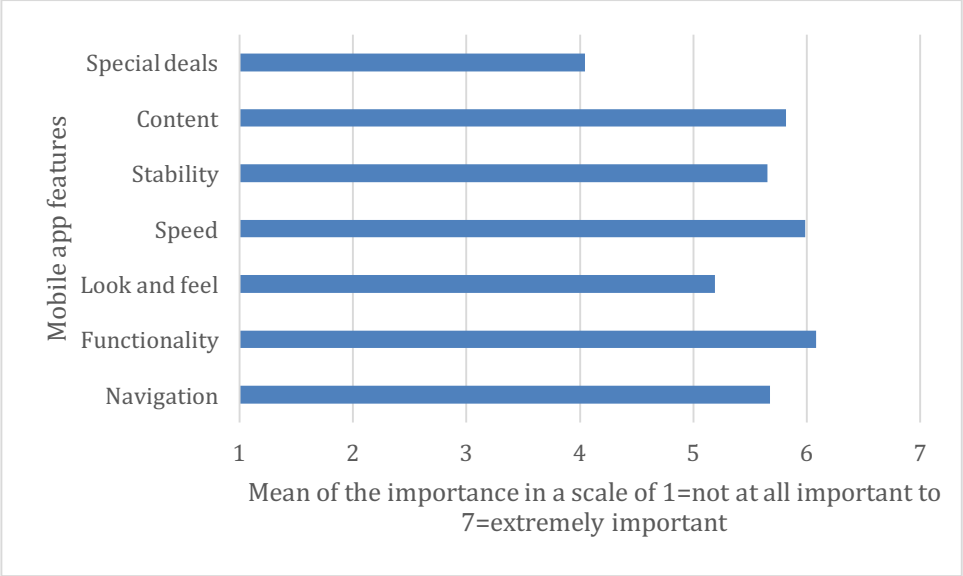

Figure 7 Importance of different app features for respondents

4.12. The Importance of Access to a Mobile-Friendly Website and App Developed

In a question about the importance of access to a mobile-friendly website and app developed for the website, more respondents considered access to a mobile-friendly website as an important feature than having an app developed for the website (Figure 8).

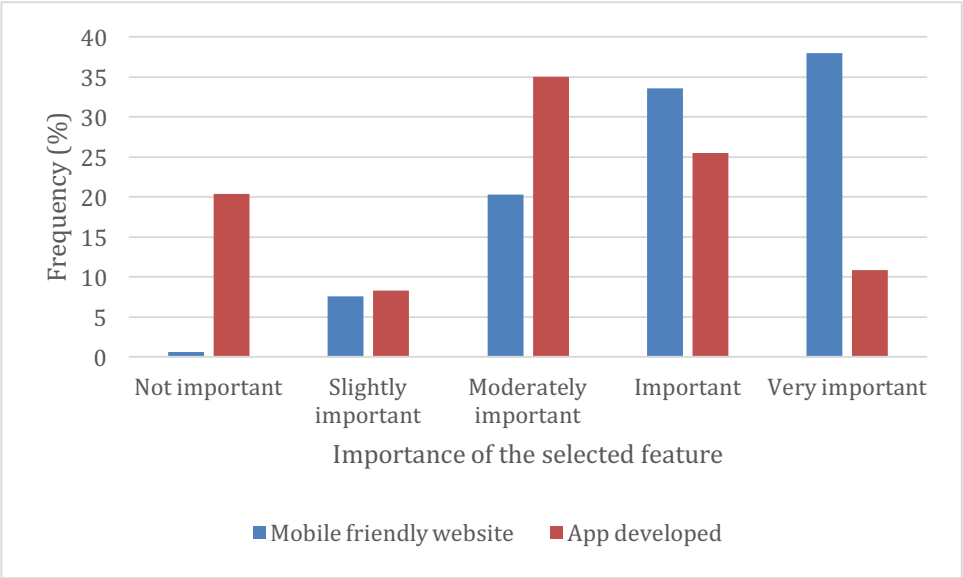

Figure 8 Importance of access to a mobile-friendly website and app developed for the website

4.13. Payment Method Used More Often

Credit cards, debit cards and PayPal were the most frequent payment methods used and preferred in our study (Figure 9). However, based on the results cash on delivery was more preferred than used method of the payment.

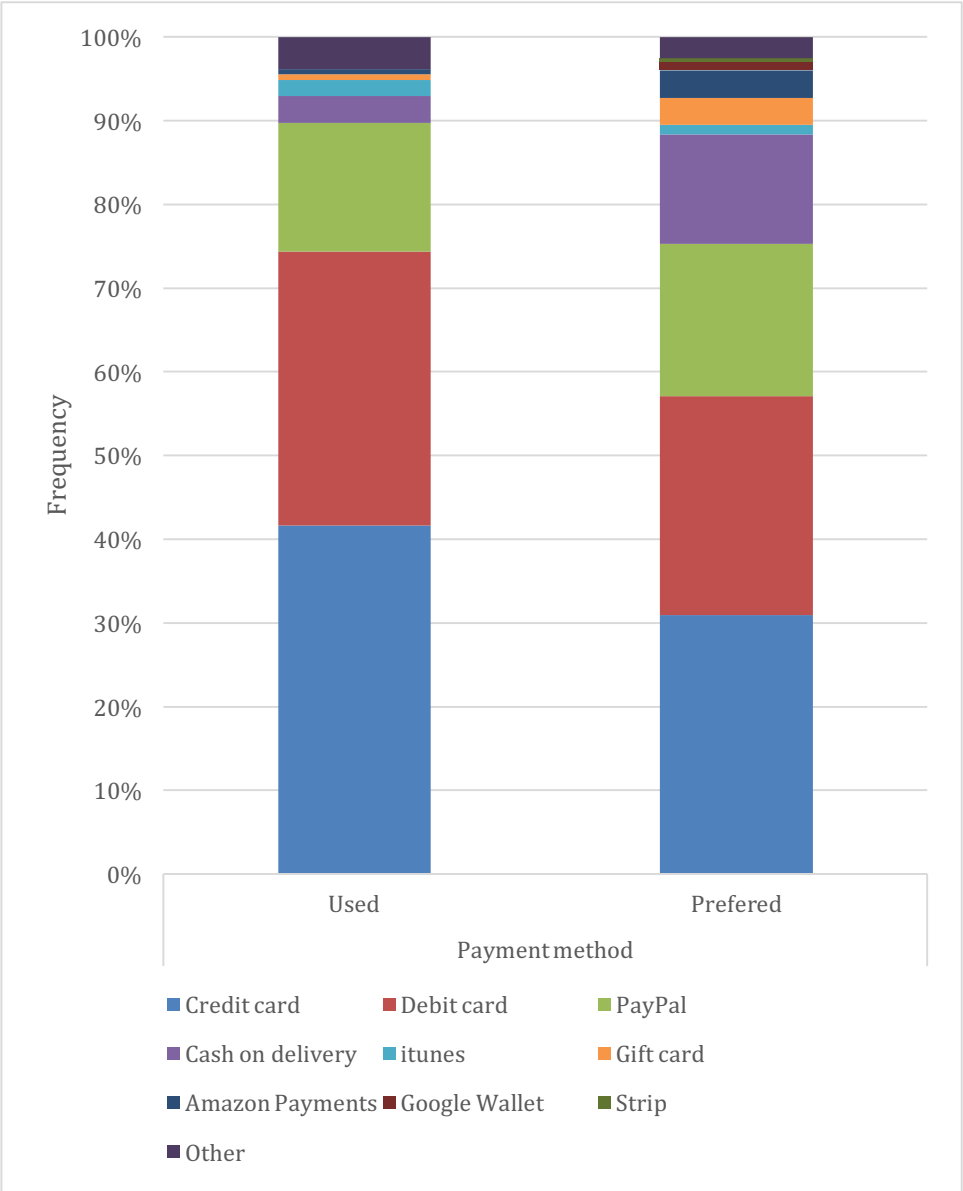

Figure 9 Used and preferred payment methods

4.14. Age and the Time Spent on Smartphones

There was a negative relationship between the age of the respondents and the time that they spent on their mobile devices in a typical weekday, r_s= -0.16, p = 0.04. Results indicated that older respondents spent less time on their mobile devices during a weekday.

4.15. Gender and the Time Spent on Smartphones

The Mann-Whitney test indicated that male respondents spend more time in their mobile devices in a weekday (Mdn = 3.00) than female respondents do (Mdn = 2.00), U = 2356, z = −2,700, p<0.01.

4.16. Gender and the Use of Price-Check Application

A Chi-Square test revealed that the gender of the respondents was not independent from the use of price check app, χ^2(1, N=159) = 4.48, p=.03. More male respondents (16) used the application than what was expected (11) however fewer female respondents (10) used the price check application than what was expected (15). The results indicated that 23.5% of the male respondent used the price check applications compared to 10.99% of the female respondents who used the app.

4.17. Gender and Use of the Game Apps

A Chi-Square test indicated that the gender of the respondents was not independent from playing game on their mobile phones, χ^2(1, N=159) = 11.07, p=.001. There were more male respondents (42) playing games on their mobile devices than what we were expecting (32). However, there were fewer female respondents (32) playing game on their mobile devices than what we were expecting (42). Results indicated that 61.76% of the male respondents used their mobile device to play a game compared to 35.16% of the female respondents who used their mobile device for this purpose.

4.18. Gender and the Use of Navigation Apps

Chi-Square indicated that the gender of the respondents was not independent from the use of navigation apps on their mobile phone, χ^2(1, N=159) = 5.03, p=.025. There were more male respondents (61) using the navigation apps on their mobile devices than what we were expecting (56). However, there were fewer female respondents (69) using the navigation apps on their mobile devices than what we were expecting (74). The results indicated that 89.7% of the male

respondent used the navigation applications compared to 75.8% of the female respondents who used the app.

4.19. Age and the Use of Streaming Audio Apps

A Mann-Whitney test indicated that the age of the respondents who streamed audio online (Mdn = 27) was significantly different from the age of respondents who did not stream audio (Mdn = 29), U = 1908, z = −2,85, p<0.05.

4.20. Age and the Use of Ride-Sharing Apps

A Mann-Whitney test indicated that the age of the respondents who use ride-sharing apps (Mdn = 26) was significantly different from the age of respondents who did not use ride-sharing apps (Mdn = 28), U = 1944, z = −3,60, p<0.01.

4.21. Age and Controlling a Household Device

Mann-Whitney test indicated that the age of the respondents who control a household device (Mdn = 25.5) was significantly different from the age of respondents who did not (Mdn = 27), U = 703, z = −2,54, p<0.05.

4.22. Age and the Time Spent in Tablets During a Weekday

There was a positive relationship between the age of the respondents and the time that they spent on their tablets in a typical weekday, r_s = .19, p = 0.02. Results indicated that older respondents spend more time on their mobile devices during a weekday.

4.23. Time Spent on Smartphones and Time Spent on Tablets

Spearman test indicates a positive relation between the time spent on smartphones and the time spent on tablets, r_s = .22, p = 0.01. Results show that those who spend more time on their smartphones, also spend more time on their tablets.

4.24. Age and the Importance of App Features for Customers

Table 1 shows the correlation coefficients and the significance levels between the age of the respondents and the importance that they consider for different mobile app features. It also reports the correlation between the variables referring to the importance of the mobile app features with each other.

Table 1. Correlation coefficients between age and the variables referring to the importance of different app features for our respondents (N = 152)

	Age	Notifications	mandatory login	rating of app	customer service line	physical shop near you	good word of mouth	engagement with others	personalised information	tutorials provided	language(s)	good return policy	free shipping	security	design/layout	reliability (no bugs)
Age	1.000	-.003	.129	.152	.098	.193*	.063	-.017	.135	.178*	.100	-.012	-.041	.092	.122	.067
Notifications	-.003	1.000	.462**	.429**	.411**	.067	.183*	.302**	.162*	.372**	.190*	.345**	.233**	.354**	.386**	.356**
mandatory login	.129	.462**	1.000	.345**	.430**	.483**	.457**	.440**	.277**	.482**	.472**	.240**	.393**	.254**	.334**	.510**
rating of app	.152	.429**	.345**	1.000	.423**	.293**	.245**	.356**	.262**	.436**	.302**	.307**	.211*	.310**	.339**	.255**
customer service line	.098	.411**	.430**	.423**	1.000	.444**	.280**	.363**	.363**	.524**	.425**	.278**	.406**	.242**	.358**	.406**
physical shop near you	.193*	.067	.483**	.293**	.444**	1.000	.389**	.384**	.491**	.505**	.482**	.127	.377**	.200*	.268**	.433**
good word of mouth	.063	.183*	.457**	.245**	.280**	.389**	1.000	.544**	.331**	.482**	.506**	.174*	.341**	.149	.141	.420**
engagement with others	-.017	.302**	.440**	.356**	.363**	.384**	.544**	1.000	.490**	.581**	.425**	.341**	.413**	.357**	.387**	.602**

	Age	Notifications	mandatory login	rating of app	customer service line	physical shop near you	good word of mouth	engagement with others	personalised information	tutorials provided	language(s)	good return policy	free shipping	security	design/layout	reliability (no bugs)
personalised information	.135	.162*	.277**	.262**	.363**	.491**	.331**	.490**	1.000	.561**	.495**	.220**	.500**	.389**	.379**	.518**
tutorials provided	.178*	.372**	.482**	.436**	.524**	.505**	.482**	.581**	.561**	1.000	.539**	.334**	.442**	.444**	.512**	.619**
language(s)	.100	.190*	.472**	.302**	.425**	.482**	.506**	.425**	.495**	.539**	1.000	.250**	.566**	.323**	.347**	.525**
good return policy	-.012	.345**	.240**	.307**	.278**	.127	.174*	.341**	.220**	.334**	.250**	1.000	.274**	.486**	.531**	.384**
free shipping	-.041	.233**	.393**	.211*	.406**	.377**	.341**	.413**	.500**	.442**	.566**	.274**	1.000	.367**	.314**	.571**
security (protection of personal information)	.092	.354**	.254**	.310**	.242**	.200*	.149	.357**	.389**	.444**	.323**	.486**	.367**	1.000	.800**	.544**
design/layout	.122	.386**	.334**	.339**	.358**	.268**	.141	.387**	.379**	.512**	.347**	.531**	.314**	.800**	1.000	.619**
reliability (no bugs)	.067	.356**	.510**	.255**	.406**	.433**	.420**	.602**	.518**	.619**	.525**	.384**	.571**	.544**	.619**	1.000

*p < 0.05, **p<0.01

4.25. Gender and the Frequency of Online Purchase

With Mann-Whitney test it was indicated that there is a significant difference between the male respondents (Mdn = 3,00) and female respondents (Mdn = 2,74) in the frequency of their online purchase, U = 2530, z = −1,98, p<0.05.

4.26. Gender and the Importance of Navigation Feature

A Mann-Whitney test indicated that there is a significant difference between male respondents (M = 83.36) and female respondents (M = 69.49) when to the importance of navigation feature, U = 2251,5, z = −2,03, p<0.05.

4.27. Gender and the Importance of Special Deals

When to observe the importance of special deals, a Mann-Whitney test indicates that there is a significant difference between female respondents (M =79.74) than male respondents (M = 65.50), by a significant result U =2112, z = −2,04, p<0.05.

4.28. Age and the Preference of Browser or App to Access Social Media

A Mann-Whitney test indicated a significant difference between the age of the respondents who used a browser (M = 95.35) to access social media accounts and those who used an application (M = 72.43) to access social media, U = 11178,5, z = −2,47, p<0.05. Older respondents used browsers more often than younger respondents to access social media.

4.29. Age and the Importance of a Mobile-Friendly Website or App

A Spearman's test indicated that there was a positive relationship between the respondents that say to be important the existence of a mobile-friendly website and say to be important the existence of an app, r_s = .31, p = 0.00. Results

indicated that for respondents who value the importance of a mobile-friendly website, it is also important for them that there is an app developed.

4.30. Purchasing Online and the Importance of a Good Return Policy

The Spearman's test indicated that there was a positive relationship between how often a respondent purchases online and the importance of a good return policy, r_s = .17, p = 0.04. Results indicated that for respondents who would purchase more often, it would be important that a company's app offers good return policy.

4.31. Gender and the Payment Method Used More Often

A Chi-Square test indicated that the gender of the respondents was not independent from the payment method used more often, χ^2(1, N=140) = 9.64, p=.008.

4.32. Gender and the Use of PayPal

There were more male respondents (18) used PayPal as a payment method than what we were expecting (11) and there were fewer female respondents (6) using PayPal as a payment method than what was expected (13). The results show that 27.3% of the male respondent used PayPal as a frequent payment method compared to 8.1% of the female respondents who used PayPal.

4.33. Gender and the Use of Debit Card

Fewer male respondents used debit car (19) than what was expected (24) and the opposite was true about female respondents as more female respondents used debit cards (32) than what was expected (27). The results indicated that 28.8% of the male respondent used debit card as a frequent payment method compared to 43.2% of the female respondents who used debit card.

The following graph illustrates the findings related to the payment method used more often and its relation with gender.

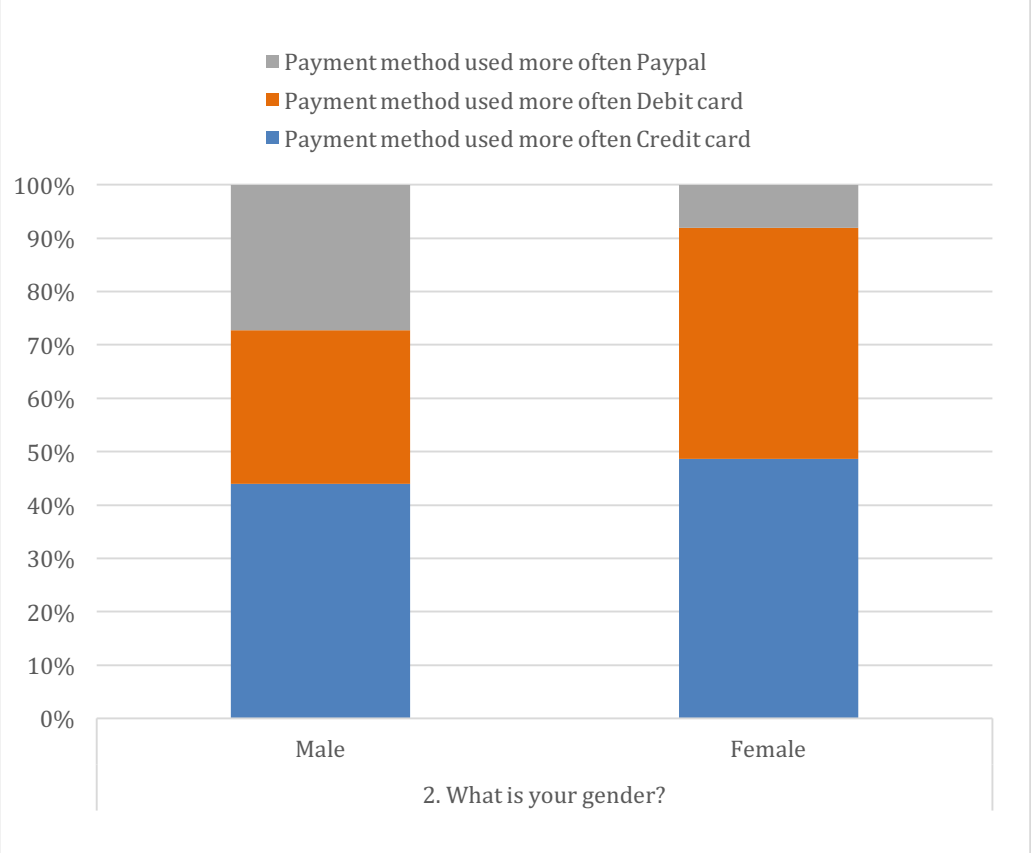

Figure 10 Correlation between gender and payment methods used more often

4.34. Gender and the Use of PayPal as Payment Method Preferred

With Chi-Square test it was found a significant result that indicates that the gender of the respondents was not independent from use of PayPal as a payment method preferred, χ^2 (1, N=159) = 8.849, p=.00. There were more male respondents (30) that would prefer to use PayPal as a payment method than what was expected (21). However, there were fewer female respondents (20) who would prefer to use PayPal as a payment method than what we were expecting (28). Results indicate that 80% of the male respondents prefer PayPal as a payment method compared to 20% of the female respondents who have preference for PayPal as a payment method.

4.35. Age and the Use of Debit Card as Payment Method Preferred

A Mann-Whitney test indicated that the age of the respondents who have preference for debit card as payment method (Mdn = 27) was significantly different from the age of respondents who did not have preference for debit card as payment method (Mdn = 28), U = 2352.5, z = 2.71, $p<0.01$. Results indicate that younger respondents would like to use the debit card option more than older respondents.

4.36. Frequency of Purchasing Online and the Preferred Payment Method

Table 2 shows the correlation coefficients and the significance levels between the frequency of purchasing online and the different payment methods preferred. It also reports the correlation between the variables referring to the preferred payment methods with each other.

Table 2 – Frequency of purchasing online and the referred payment method

	9. In a typical month, how often do you purchase online (including ordering/reserving online and paying in the store)?	17. Cash on delivery	17. Credit card	17. Debit card	17. Google wallet	17. Paypal	17. Strip	17. Other
9. In a typical month, how often do you purchase online (including ordering/reserving online and paying in the store)?		,312	,675	,904	,394	,826	,162	,054
17. Cash on delivery	,312		,776	,623	,347	,001	,064	,145
17. Credit card	,675	,776		,000	,646	,021	,352	,034
17. Debit card	,904	,623	,000		,677	,113	,273	,093
17. Google wallet	,394	,347	,646	,677		,239	,890	,710
17. Paypal	,826	,001	,021	,113	,239		,500	,320
17. Strip	,162	,064	,352	,273	,890	,500		,831
17. Other	,054	,145	,034	,093	,710	,320	,831	

4.37. Factor Analysis: Importance of app features for customers

Participants were asked about the importance of fifteen features (design/layout; personalised information; reliability (no bugs); language(s); mandatory login; rating of app; good word of mouth; physical shop near you; customer service line; notifications; security (protection of personal information); engagement with others (games, reviews, online community); free shipping; good return policy; tutorials provided) that a company should consider in developing its own app to enable customers to use their services in a scale of 1 = not at all important to 7 = extremely important. These variables were selected for the purposes of the factor analysis to reduce the number of variables discussed and to find common themes in the important features for consumers.

The principal component analysis extraction method used in this factor analysis supports the goals of data reduction. The Direct Oblimin Rotation method (Field, 2005) was used in this factor analysis because this method takes into account of potential correlation between the resulting components as is the case in this study. Factor loadings above 0.33 were selected to ensure that the components produced will explain at least 10% of the variance of the variable. The scree plots and eigenvalues were also considered when selecting the number of components. Variance inflation factor (VIF) and tolerance statistics were also calculated to detect multicollinearity problems (Field, 2005).

Table 1 provides a list of the independent variables included in the factor analysis.

Table 3 Definition, mean and standard deviations of independent variables included in the factor analysis

Variables	Definition	Mean	S. D.
The importance of **Notifications** feature in an app	from 1='not at all important' of it' to 7='extremely important'	3,90	1,904
The importance of **mandatory**	from 1='not at all important' of	4,04	1,940

login feature in an app	it' to 7='extremely important'		
The importance of the **rating of app** feature in an app	from 1='not at all important' of it' to 7='extremely important'	3,88	1,828
The importance of **customer service line** feature in an app	from 1='not at all important' of it' to 7='extremely important'	4,50	1,954
The importance of **physical shop near you** feature in an app	from 1='not at all important' of it' to 7='extremely important'	3,63	1,904
The importance of **good word of mouth** feature in an app	from 1='not at all important' of it' to 7='extremely important'	4,78	1,619
The importance of **engagement with others (games, reviews, online community)** feature in an app	from 1='not at all important' of it' to 7='extremely important'	3,87	1,872
The importance of **personalised information** feature in an app	from 1='not at all important' of it' to 7='extremely important'	4,90	1,557
The importance of **tutorials provided** feature in an app	from 1='not at all important' of it' to 7='extremely important'	4,78	1,710
The importance of **language(s)** feature in an app	from 1='not at all important' of it' to 7='extremely important'	4,94	1,633
The importance of **good return policy** feature in an app	from 1='not at all important' of it' to 7='extremely important'	5,74	1,589
The importance of **free shipping** feature in an app	from 1='not at all important' of it' to 7='extremely important'	5,57	1,705
The importance of **security (protection of personal information)** feature in an app	from 1='not at all important' of it' to 7='extremely important'	6,41	1,230
The importance of **design/layout** feature in an app	from 1='not at all important' of it' to 7='extremely important'	5,59	1,365
The importance of **reliability (no bugs)** feature in an app	from 1='not at all important' of it' to 7='extremely important'	6,28	1,365

Originally, fifteen variables were selected for use in the factor analysis (listed in Table 1). However, three of these original variables (security (protection of personal information), tutorials provided, and languages) were cross loaded (loaded in two different components) and they were not included in the any identified components.

Factor analysis with the principal component extraction method was used in this study. This analysis method resulted in the development of three components including ‘trust in the business itself’, ‘customer care’, and ‘web development work’.

Table 2 provides a list of the components and factors loadings. The first component, ‘trust in the business itself’, encompasses the first eight variables listed in Table 2, being ‘notifications’, ‘mandatory login’, ‘rating of app’, ‘customer service line’, ‘physical shop near you’, ‘good word of mouth’, ‘engagement with others (games, reviews, online community)’, and ‘personalised information’. The second component, ‘customer care’, encompasses two variables of the importance of ‘good return policy’ and ‘free shipping’. The third and final component, ‘web development work’, included the two variables of importance of the design/layout and reliability (no bugs).

Table 4 Factor analysis results

	Components		
	1 (trust in the business itself)	2 (customer care)	3 (web development work)
The importance of **Notifications** feature in an app	.840		
The importance of **Mandatory login** feature in an app	.810		
The importance of the **Rating of app** feature in an app	.790		
The importance of **Customer service line** feature in an app	.705		
The importance of **Physical shop near you** feature in an app	.696		
The importance of **Good word of**	.654		

mouth feature in an app			
The importance of **Engagement with others (games, reviews, online community)** feature in an app	.632		
The importance of **Personalised information** feature in an app	.623		
The importance of **Tutorials** provided feature in an app	.578	.501	
The importance of **Language(s)** feature in an app	.542		.455
The importance of **Good return policy** feature in an app		.871	
The importance of **Free shipping** feature in an app		.868	
The importance of **Security (protection of personal information)** feature in an app		.574	.411
The importance of **Design/layout** feature in an app			.824
The importance of **Reliability (no bugs)** feature in an app			.713

Components developed through this method are reviewed in terms of the amount of variance they explain. In this research, the first and second and third components explained 46.96%, 11.76% and 7.31% of the variance, respectively, with the three components together explaining 66.02% of the variance.

5. CONCLUSION

Although managers and business owners were afraid at first about the threats that were posed by the employees using their own device, this kind of concern has reduced over time (Byrom et al., 2016:18). Mobile business has proved to be beneficial and business owners are trying hard to take advantage of its full potential. If the current trend continues, the mobile devices use in business would clearly surpass the use of other technologies like the PC do (Zdrilić & Dulčić, 2016:147). Business will give priority to the mobile devices ahead of the PCs. Customers will be able to access virtually very service using their mobile devices (Magruder et al., 2015:60).

The overarching objective of this dissertation is to uncover the key factors to the success of mobile business. From the results, it is clear that having a smartphone is no longer a trend – it has become a necessity. All of the data are crucial for business owners and management teams when preparing to enter, transition into or succeed in mobile business.

The wide age range of respondents, from teenagers to seniors, indicates a high level of market penetration for mobile business. Furthermore, the fact that the respondents reside in 19 different countries reiterate the notion brought forth by Steve Jobs and Mark Zuckerberg that an increasing amount of people are already part of this virtual world, undefined by borders.

Prior to uncovering the results, it was believed that having both a smartphone and tablet would be more of a necessity than a trend, while PC usage would become more of an afterthought. The results show that this perception is only partially true. Smartphones and laptops were the most frequently used devices. However, along with desktops, tablets were used the least frequent, as the highest number of respondents did not possess tablets. The frequency of laptop and smartphone usage indicates the importance of understanding the operating systems used for desktops/laptops as well as smartphones/tablets so that their websites or apps are compatible with it. The Windows operating system

is still clearly dominant within desktops/laptops, while Apple's iOS has a slightly higher market penetration than Android for smartphones/tablets.

From understanding the significance of smartphones in daily life, the results dive deeper into recognizing the frequency in which people use these personal devices on a typical weekday. The majority spends two to three hours per day on their smartphone, showing how integrated these devices are in consumers' daily lives. Tablets, on the other hand, have yet to establish itself as a primary or secondary device for users, as those who do possess tablets generally spend less than one hour on them during a typical weekday.

The ways in which smartphones are used shows how important it is for companies to transition into mobile business. There are various ways in which people use their smartphones. A high percentage of people already use their smartphones for navigation and direction, video calling, and bank payments and transfers, with social media navigation being the dominant purpose of usage. Besides that, people are also using their smartphones to play games, transfer files, and purchase products or services. It is important for businesses to understand that people have not fully adopted to purchasing on mobile devices, as the majority only make purchases on their smartphones sometimes, not frequently.

The results also discuss the payment methods that people prefer to have and use when making a purchase on their mobile devices. It is necessary for customers to have the option to pay with a credit card, debit card, or through PayPal, as those were the most frequently used payment methods. The ways in which consumers purchase products and services through their smartphones can be through a browser or an app. More people buy through using a browser than an app, which aligns with the fact that it is more important to have a mobile-friendly website than an app developed. However, those who see the importance of having a mobile-friendly site also see the importance for an app developed.

The importance of conducting bivariate analyses will help businesses understand the ways in which people use smartphones, primarily with regards to gender and age. Understanding the difference in habits will help businesses shape their strategies, according to their target market, when transitioning into mobile business.

Comparing male users to female users, a higher of percentage of male users engaged in mobile gaming, making purchases, and using navigation apps on their smartphones than female users. In terms of making payments through smartphones, males were more likely to use PayPal than debit card, while females used debit more. However, paying through credit card is still the most commonly used between both genders.

By separating the results of younger people from older people, it became clear that younger users were more likely to use their smartphones for purposes such as audio streaming and ride share applications than older users. Older users, on the other hand, preferred to use a browser than an app when navigating on their social media networks. As well, they spend more time on their tablets than smartphones.

Finally, factor analysis was also used to reduce the number of variables regarding the importance of app features for customers. The variables used are vital for businesses when developing their own apps, as they must focus on the web development work as well as ensuring that their customers have a positive relationship with them through communication and care.

Despite the growth and stability of mobile business, the main dissatisfactions that mobile users have, including slow speed, unreliable service, and cumbersome navigation, are also the most important features for them. Therefore, companies must cater to their target market, and continuously address the quality of the features of their app or mobile-friendly website in order to properly transition into mobile business and achieve success within.

5.1. Limitations

This study presented a few limitations.

When developing a theoretical contextualization for the study it was understood that the bibliography available on this topic was limited. In addition to this market undergoing constant changes, made it difficult to create a defined survey questionnaire.

Although the snowball distribution method was used for the survey to reach a more diverse demographic, it was still clear that there was a higher level of participation from younger-aged respondents.

Regarding the wide geographic range that this survey reached, the numbers still show that a majority of the responses were from North America and Europe, with smaller levels of participation from Asia and Oceania, and no participation from South America or Africa.

5.2. Suggestions for Future Research

This study opens different possibilities for future research to be developed:

- A model to achieve the success of m-business
- Key factors to achieve mobile business from a business perspective
- Key factors to achieve mobile business success for small businesses
- The role of m-business when to create competitive advantage.

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7. APPENDIX

I. Survey questionnaire “Key factors for mobile business”

Key factors for mobile business

Hello,
You are cordially invited to participate in a survey about “Key Factors Affecting the Mobile Business". Mobile business is “the buying and selling of goods and services through wireless handheld devices or any transaction with a monetary value that is conducted via a mobile network” (Chung-Shing and Ho, 2010).
The data from this survey will be used as part of a Master’s thesis to be completed at Universidade Aberta (Open University), Lisbon, Portugal.
Your participation in this study is on a voluntary basis, and it will take approximately 10 minutes to complete the questionnaire. There are no foreseeable risks associated with this project. Your survey responses will be confidential and data from this research will be reported only in the aggregate and for academic research purposes only. If the questionnaire is submitted, it will be assumed that consent has been given.
Your participation in this survey is greatly appreciated. If you have questions at any time about the survey, you may contact 1400224@estudante.uab.pt.

Kind regards,
Ana Archer Amoroso

* Required

1. **1. In what country do you currently reside?** *

   .....

2. **2. What is your gender?** *

   Mark only one oval.

   - ◯ Female
   - ◯ Male
   - ◯ Other: .....

3. **3. What is your age?** *

   .....

4. **4. Which devices do you use to connect to the Internet?** *

   Mark only one oval per row.

	Do not have access to this type of device	Never	Occasionally	Often
Desktop Computer	◯	◯	◯	◯
Laptop Computer	◯	◯	◯	◯
Smartphone	◯	◯	◯	◯
Tablet	◯	◯	◯	◯

5. **5. In the past 30 days, have you used your mobile device (eg. smartphone, tablet) to do any of the following activities? (Please select all that apply)**
   Check all that apply.

   - [ ] Make a payment or bank transfer
   - [ ] Use a price check app
   - [ ] Manage social media accounts (e.g.. Facebook, Twitter, LinkedIn)
   - [ ] Stream audio content
   - [ ] Stream video content
   - [ ] Purchase a product or service online
   - [ ] Participate in a video call or chat
   - [ ] Play a game
   - [ ] Read news
   - [ ] Use navigation or location-based information
   - [ ] Use a ride-sharing application (e.g.. Lift, Uber, Sidecar)
   - [ ] Control a household device (eg. thermostat, television, house alarm, etc)
   - [ ] Transfer files
   - [ ] I do not do any of the above activities.

6. **6. What type of device are you using to take this survey?**
   Mark only one oval.

   - ◯ iOS Phone
   - ◯ iOS Tablet
   - ◯ Android Phone
   - ◯ Android Tablet
   - ◯ Windows Desktop/Laptop
   - ◯ MacOS Desktop/Laptop
   - ◯ Other Phone/Tablet
   - ◯ Other: .....

7. **7. In a typical weekday, about how much time, in total, do you spend using your smartphone?**
   Mark only one oval.

   - ◯ 1 or less hours
   - ◯ 2-3 hours
   - ◯ 3-5 hours
   - ◯ More than 5 hours
   - ◯ I do not have access to this type of device

8. **8. In a typical weekday, about how much time, in total, do you spend using your tablet?**
   Mark only one oval.

   - ◯ 1 or less hours
   - ◯ 2-3 hours
   - ◯ 3-5 hours
   - ◯ More than 5 hours
   - ◯ I do not have access to this type of device

9. **9. In a typical month, how often do you purchase online (including ordering/reserving online and paying in the store)?**
   Mark only one oval.

   - ◯ Never
   - ◯ Rarely
   - ◯ Sometimes
   - ◯ Often
   - ◯ Always

10. **10. Generally which is your preferred method of accessing the internet when using your smartphone or tablet?**
    Mark only one oval per row.

	Using a Browser	Using an App
General Browsing	◯	◯
Accessing Social Media	◯	◯
Buying a product	◯	◯

11. **11. In a typical week, about how many apps or games do you use on your mobile phone?**

    .....

12. **12. On a scale from 1 (not at all important) to 7 (extremely important), please rate what do you like the most about a mobile app.** *
    Mark only one oval per row.

	1 (Like the least)	2	3	4	5	6	7 (Like the most)	No opinion
Navigation	◯	◯	◯	◯	◯	◯	◯	◯
Functionality	◯	◯	◯	◯	◯	◯	◯	◯
Look and feel	◯	◯	◯	◯	◯	◯	◯	◯
Speed	◯	◯	◯	◯	◯	◯	◯	◯
Stability	◯	◯	◯	◯	◯	◯	◯	◯
Content	◯	◯	◯	◯	◯	◯	◯	◯
Special deals	◯	◯	◯	◯	◯	◯	◯	◯

13. **13. When navigating using your mobile device (smartphone or tablet), how important is that the website is mobile friendly?**
Mark only one oval.

- Not important
- Slightly important
- Moderately important
- Important
- Very important

14. **14. When navigating using your mobile device, how important is it that a company or organisation has an app developed?**
Mark only one oval.

- Not important
- Slightly important
- Moderately important
- Important
- Very important

15. **15. When a company has developed its own app to enable customers to use their services, how important are the following features?**
Mark only one oval per row.

	1-Not at all important	2	3	4	5	6	7-Extremely important	No Opinion
Design/Layout								
Personalised information								
Reliability (no bugs)								
Language(s)								
Mandatory login								
Rating of app								
Good word of mouth								
Physical shop near you								
Customer service line								
Notifications								
Security (protection of personal information)								
Engagement with others (games, reviews, online community)								
Free shipping								
Good return policy								
Tutorials provided								

16. **16. Which payment method do you use more often when buying services/products online?**

Mark only one oval.

- ◯ Amazon Payments
- ◯ Cash on delivery
- ◯ Credit card
- ◯ Debit card
- ◯ Gift card
- ◯ Google wallet
- ◯ iTunes
- ◯ Paypal
- ◯ Strip
- ◯ Other: .....

17. **17. Which payment method do you prefer to be available when you buy a service or a product? (Please select two)**

Check all that apply.

- ☐ Amazon Payments
- ☐ Cash on delivery
- ☐ Credit card
- ☐ Debit card
- ☐ Gift card
- ☐ Google wallet
- ☐ iTunes
- ☐ Paypal
- ☐ Strip
- ☐ Other: .....

18. **18. Is there any other factor that is relevant to your mobile business experience but was not mentioned in this survey?**

Mark only one oval.

- ◯ Yes
- ◯ No

19. **19. If you answered yes in the previous question, please specify.**

.....

.....

.....

.....

.....