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MOBILE BANKING PRODUCT SUSTAINABILITY

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ABSTRACT

MOBILE BANKING PRODUCT SUSTAINABILITY

(Under the academic advice of Dr. ANDREAS CHARITOU)

Tzerkezou_Demosthenous_Satrakis_Elia_Petrallis

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ABBREVIATIONS

ABP	Applied Business Project
MBA	Master's in Business Administration
UCY	University of Cyprus
BoC / Bank	Bank of Cyprus
API	Application Programming Interface
EU	European Union
ATM	Automatic Teller Machine
ESG	Environmental, Social, and Governance
SMART	Specific, Measurable, Achievable, Realistic and within a Timeframe
ERM	Enterprise Risk Management
CSR	Corporate Social Responsibility
ABC	Activity Based Cost
OH	Overhead
NPV	Net Present Value
KPI	Key Performance Indicator
MVP	Minimum Viable Product

CHAPTER 1 - WHY

We strongly believe that local, traditional, and systemic organizations like the Bank of Cyprus are here to serve their customers and support the economy of the country, in the best, most efficient, and sustainable way. The involvement of the Bank with its loyal and longstanding customer base, and the genuine interest of the Bank towards these customers, is what differentiates BoC from its competition. No matter what the product or service, the mindset remains the same, having the customers and their best experience as the central point of interest. This could not be different in the case of the BoC Mobile Banking, which offers a product which is accessible by everyone, at anytime, anywhere, and without additional fees. Mobile Banking is a product which develops over time. At the same time, it acts as the mean, the digital channel to develop and offer to customers and potential customers new banking services and financial transactions. As a result, its importance to be sustainable is twofold and impacts a broader area of the BoC across all business lines and control functions towards digital banking evolution.

To achieve a good product, Gordon Bethune, former CEO of Continental Airlines, writes in his book "From Worst to First"¹(Sinek, 2009) that you require people who like coming to work. Great companies do not hire skilled people and motivate them, they hire already motivated people and inspire them. This motivation, inspiration and love towards their job can be summarised in the story of the two stonemasons, as illustrated in the book of Simon Sinek, "Start with Why". Both stonemasons work towards the building of a Cathedral, and perform a monotonous, backbreaking job in the scorching sun. When asked if they like their jobs, the one replies, "it's a job, it pays the bills", while the other replies "I love my job, I'm building a

¹ Sinek, S., 2009. *Start with why*. 2nd ed. New York: Penguin Group, pp.83-114.

Cathedral”. The difference between them is that the first one would most likely change his job if a better opportunity arose (i.e., better paying), while the second one has a sense of purpose and a connection with his job, and feels he is part of something bigger (i.e., contributing to the building of the Cathedral). This sense of purpose connects the person with his job making him more efficient and loyal, while also creating a bond, camaraderie, and trust between himself and his colleagues. That camaraderie and trust brings success. People working together for a common purpose. When people inside the company know why they come to work, people outside the company are vastly more likely to understand why the company is special. Hence, trust, and a connection, is built between the employees of a company and the customers. So, one cornerstone of sustainability is the trust built with the employees and customers.

When Herb Kelleher, the visionary behind Southwest Airlines, was asked who comes first for him, the shareholders or the employees, that was an easy question for him²(Sinek, 2009) .Herb said that the employees come first and if they are treated right, they treat the outside world right, the outside world uses the company’s products again, and that makes the shareholders happy. It is like the story of the trapeze artist. No matter how experienced or proficient a trapeze artist, she will not attempt a new death-defying leap without first trying it with a net below her. Plus, she will use the net each time when performing the said trick. The net will catch her fall and provide a psychological benefit. It will give the confidence to try something never done before. The more she trusts the net, the more she will take personal risks to make her act better. The trust provided by the circus management to her, is also given to others. Soon all performers feel confident to try new things and push themselves further. That collective push results in a better show. An overall better show means more customers and the business thrives. But not without trust, not without that net, practical or emotional, provided by the leadership.

² Sinek, S., 2009. *Start with why*. 2nd ed. New York: Penguin Group, pp.83-114.

The second cornerstone of sustainability is creativity. The role of the leader is not to come up with all the great ideas. The role of the leader is to create an environment in which great ideas can happen, grow, and evolve. It is the people inside the company, those on the front lines, who are best qualified to find new ways of doing things. The people who answer the phones at the BoC 1Bank call centre, and those who talk with customers at the BoC branches, can give more feedback about the kind of questions they get and the problems they face in practice, than any executive. If the people inside a company are told to come to work and just do their job, that is all they will ever do. If they are constantly reminded why the company was founded and are told to always look for ways to bring that cause to life while performing their job, then they will do more than just their job.

The present Applied Business Project (ABP) is leveraging information pertaining to the first years of Mobile Banking services by the BoC and aims to analyse and propose targeted suggestions in the areas of planning, control and decision making, towards achieving Mobile Banking sustainability. This co-relates with supporting the domestic technology development, research and innovation, and significantly increased access to information and communication technology³ (Infrastructure and Industrialization, 2021). With Mobile Banking, the bank services can be offered to a broader range of people, locals and internationals at any point of time and space. This light house of technology development can attract further research and innovation in this field either from the well-established academic researchers or aspiring youth to be involved in further developing the island's resources and talent in the spectrum of technological development.

³ United Nations Sustainable Development. 2021. *Infrastructure and Industrialization*. [online] Available at: <<https://www.un.org/sustainabledevelopment/infrastructure-industrialization/>>

CHAPTER 2- METHODOLOGY

In order to achieve the goals of this ABP, it was important to use a well-grounded methodology. Saunders Research Onion as depicted in the below diagram was used⁴ (Thesismind, 2019), starting from the outside layer and proceeding towards the inner layer.

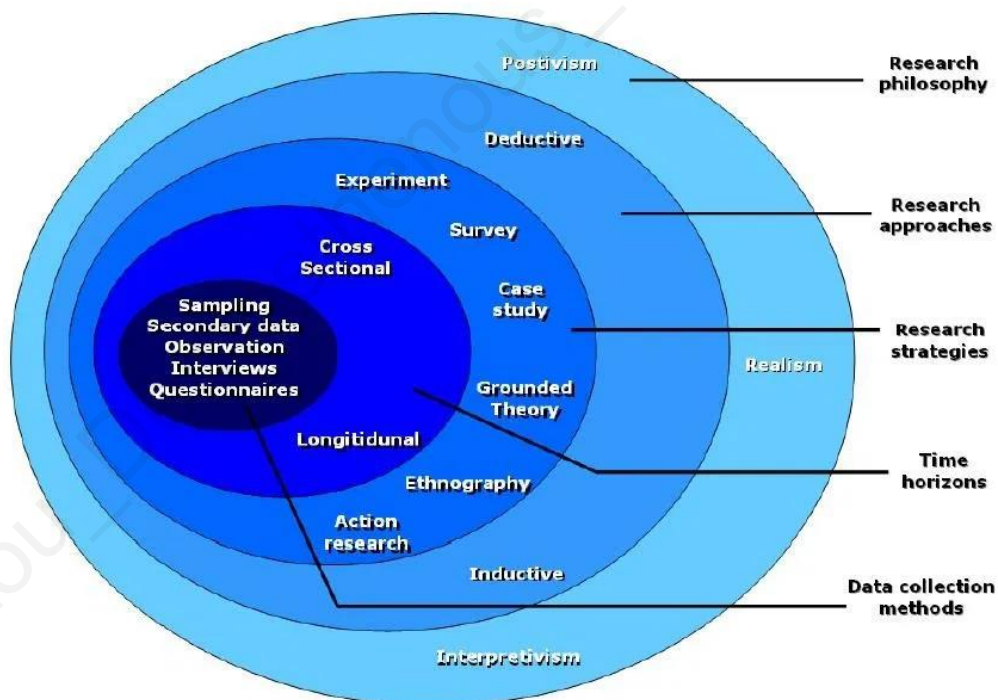


Figure 1: Saunders Research Onion

⁴ Thesismind, 2019. *Analysis of Saunders Research Onion*. [online] Thesismind. Available at: <<https://thesismind.com/analysis-of-saunders-research-onion/>>

At the outer layer of the research methodology, the research philosophy of interpretivism is used since emphasis is given in the ABP on the qualitative analysis, over quantitative or statistical analysis, to obtain the results. Of course, the ABP is based on business statistics but the macroenvironmental analysis of the Mobile Banking ecosystem has a broader consideration. In the second layer, our research applies the deductive approach, starting with theory, research on the strategic position of the Bank in Mobile Banking, and moving to test through data collection of market demand and cost analysis, to confirm or reject the hypothesis. In the third layer, the research strategy, a survey is used to collect large volume of data that is apt for statistical analysis and help answer the hypothesis in a cost-effective manner. Regarding the survey, a statistical methodology was followed based on the quotas from the Cyprus Statistical Service⁵ (Statistical Service - Home Page, 2021), to capture data covering a wide spectrum of demographic data, for better results. This was aimed at collecting as much “real” and actual data as possible, that is closer to the reality, and which reflect the Cypriot market. Quotas were locked in the degree of (+-3%) and those were Gender, Age, District. The exact quotas that were followed are as per the tables below.

Gender	
Male	49%
Female	51%

Age Groups	
Up to 21	12%
22-26	14%
27-35	34%
36-54	23%
55+	17%

District	
Famagusta	6%
Larnaca	17%
Limassol	28%
Nicosia	39%
Paphos	11%

Table 1: Cyprus Statistical Service quotas

In the fourth layer, the time horizon, is cross-sectional since the research and data collection is made in a short period of time as per the duration of the ABP. Finally, the inner layer, i.e., regarding research choices, mixed methods are used since both quantitative and qualitative data are being collected in all four areas (Strategy, Market, Cost and Risk).

⁵ Mof.gov.cy. 2021. *Statistical Service - Home Page*. [online] Available at: https://www.mof.gov.cy/mof/cystat/statistics.nsf/index_en/index_en?OpenDocument

CHAPTER 3 - STRATEGIC POSITION

With regards to the relevant strategic position, we note that socio-cultural changes show that younger generations prefer the use of the Mobile App for their bank transactions instead of visiting a bank branch⁶ (Valenti and Alderman, 2021). This general preference towards online outlets and services, appears to have been greatly enhanced by the circumstances of social distancing brought about by the COVID-19 pandemic, and the various legal and regulatory amendments set forth by Cyprus and the EU in general (e.g., mandatory acceptance of card payments by Cyprus businesses, digital signature services etc. - See Chapter 6 *Risk Management* for further analysis).

As a result, it is expected that an increasing number of people will turn to Mobile App services, leading to an increase in demand. This increase in demand depicts that traditional product offered at the branch (i.e., physical stores) should now also be available on the Mobile App. As also stated above, the ongoing pandemic accelerated this transition to Mobile Banking. The driving forces, meaning the likes of growing use of digital channels, increasing globalization of the industry, and technological changes, will increase demand for Mobile Banking while also making competition more intense.

Digital channels are being used more frequently by customers to perform their daily banking actions. To illustrate this, at the end of March 2021, 85.1% of the number of transactions involving deposits, cash withdrawals, and transfers within and outside the Bank were carried out through digital channels (an increase of approximately 21% - from 64.6% in September 2017, when the digital transformation program was launched). In addition, 75.4% of retail customers

⁶ Valenti, J. and Alderman, R., 2021. *Will the shift to digitalization in banking stick?*. [online] Deloitte Insights. Available at: <<https://www2.deloitte.com/uk/en/insights/industry/financial-services/digitalization-in-banking.html>>

choose digital channels to carry out their transactions (an increase of approximately 16% - from 59.6% in September 2017). It is also worth noting that at the end of March 2021, active users of the BoC mobile banking app and active QuickPay users increased by 20% and 73% respectively, on an annual basis⁷(BANK OF CYPRUS | Cyprus Mail, 2021).

The increasing globalization of the industry is illustrated by the numerous online banking institutions with various offered services e.g., Revolut, which have greatly penetrated the Cypriot market. Revolut claims to have 160,000 customers in Cyprus regarding its e-payment services⁸ (Revolut takes on Cyprus banks, 2021).

Technological changes driven by regulations like Open Banking⁹ (About Open Banking Europe, 2021) (cooperation and facilitation between banks and other service providers) also impact the banking industry. Open Banking leverages Application Programming Interfaces (APIs) to provide banking related services in a safe and secure way based on information collected from different banking institutions to the Customer. Global Risks are also relevant for BoC's Mobile App in relation to cybersecurity failure (short-term i.e., 1-2 years), IT infrastructure breakdown (medium-term i.e., 3-5 years) and adverse tech advances (long-term i.e., 5-10 years¹⁰) (Schwab and Zahidi, 2021).

The higher or lower industry profitability therefore depends on the long view strategy. Based on these three driving forces, scenarios can be developed. One of them is that more and more

⁷ Cyprus Mail. 2021. *BANK OF CYPRUS | Cyprus Mail*. [online] Available at: <<https://cyprus-mail.com/2021/08/28/bank-of-cyprus-2/>>

⁸ FinancialMirror. 2021. *Revolut takes on Cyprus banks*. [online] Available at: <<https://www.financialmirror.com/2021/02/17/revolut-takes-on-cyprus-banks/>>

⁹ Openbankingeurope.eu. 2021. *About Open Banking Europe*. [online] Available at: <<https://www.openbankingeurope.eu/who-we-are/>>

¹⁰ Schwab, K. and Zahidi, S., 2021. *The Global Risks Report 2021*. 16th ed. [ebook] World Economic Forum, pp.10-11. Available at: <https://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2021.pdf>

customers use digital channels like the Mobile App and are not satisfied by the services offered by the BoC Mobile App and prefer to use e-payment services from an online banking institution (e.g., Revolut) or a local competitor, thus negatively impacting also services outside of the Mobile App, like loans and investment areas. The alternative scenario is that customers are satisfied with the Mobile App, and the Mobile App is used more and more thus reducing the need for many brick and mortar branches.

3.1 Competitors

From a customer perspective, local competition is most important but at the same time the recent banking license of Revolut creates potential impact to the loan and debit card products of BoC.

The analysis of the competitive environment is the process of finding which is the competition in the market and assessing the current and prospective competitors regarding their strengths and weaknesses. The main purpose of this process is to assist a business to acquire the information needed to design a strategy. A very useful tool in order to evaluate and categorize external factors is the Porter's Five-Forces Model of Competition.

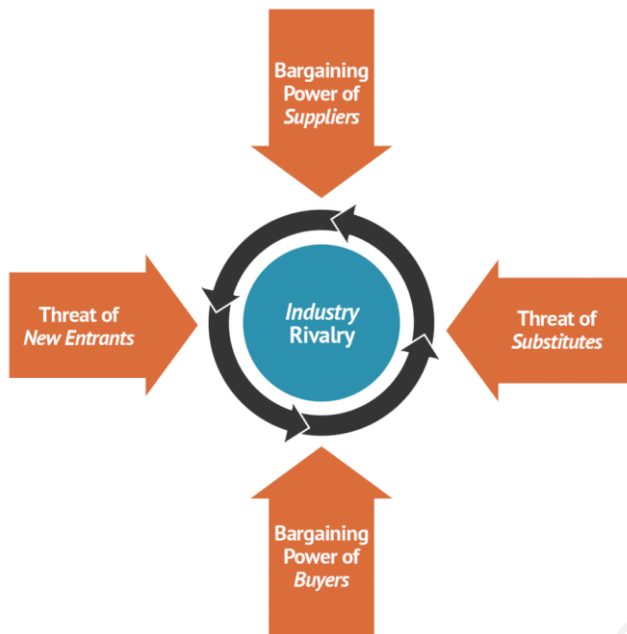


Figure 2: Porter's Five Forces

More specifically, this model aims to identify the competitive pressures that influence a company, as well as allowing it to obtain a better knowledge of the industry environment. The five forces of the model include the competition in the industry, potential new entrants, the threat of substitutes, the power of suppliers and the power of customers.

The strongest force of the model is the competition in the industry i.e. direct competitors which offer similar products/services to a certain customer base. In the case of the BoC Mobile Application, its main rivals at a local level are Hellenic Bank, Astrobank, and Alpha Bank. The basic transactional features that are offered through other Cyprus mobile banking applications are like those offered by the app of BoC, and include the check balance feature, the transfer of funds, the payments of utility bills etc. BoC and Hellenic Bank are the leading banks on the island as they hold an important percentage of the customer base of Cyprus. Hellenic Bank has a big customer base in the Cypriot market, and thus it is the main local competitor of BoC. In the last year,

Hellenic bank, in cooperation with Microsoft Azure, has upgraded its mobile application in order to provide its customers with a more user-friendly experience, and improved agility¹¹ (Hellenic Bank drives new mobile banking experience with Azure, 2021). The additional characteristics that Hellenic Bank included in its application are the biometric login (Face ID, or fingerprint), seamless approvals and contact pay. It is noted that the BoC mobile app had already incorporated those features into its ecosystem. Although this improvement of the mobile app of Hellenic Bank made it more competitive, the BoC mobile app differentiates itself as it offers additional features (see below) that are not offered by other mobile banking applications in Cyprus.

The BoC mobile app has a competitive advantage over the other Cypriot banks and their mobile applications, since through the BoC application customers can use some services of the Bank without the need of physical presence at a branch. For example, customers can easily and safely make a home or car insurance. The newest addition to the BoC mobile app is the customer onboarding process, through which anyone can become a customer of BoC, simply by following a procedure through the app (with no physical presence at a store). The BoC seems to understand, respect and address the issues associated with the valuable customer's time in modern society and tries to facilitate the process of creating a new customer account. In this manner, BoC can gain more customers as the process is easier and quicker in comparison to visiting a branch.

Nowadays, due to globalization and technological advancement, people have easier access to international services through the internet, which access has also been enhanced due to the social distancing resulting from the COVID-19 pandemic, and the relevant shifting of many functions to online outlets. Furthermore, the finance industry has been taken over by innovative and advanced technologies, and software platforms are constantly evolving. With the surge of

¹¹ Microsoft Customers Stories. 2021. *Hellenic Bank drives new mobile banking experience with Azure*. [online] Available at: <<https://customers.microsoft.com/EN-IN/story/1388780480357286037-hellenic-bank-banking-capital-markets-azure-en-cyprus>>

Financial Technologies (“FinTechs”), the banking industry encounters new threats of substitute services¹² (Walden, 2021). The BoC must take into consideration that there is a variety of international substitute services that Cypriots may choose from, for instance, Revolut, N26, Curve etc. There is a threat that bank customers may switch to alternatives if the price-performance ratio of FinTech companies is superior and if the advantages from substitute services enhance customer satisfaction. More specifically, FinTechs may offer more efficient, faster, but also more innovative solutions for the customer.

In the last years, Revolut has penetrated the Cypriot market and many Cypriots have created an account and use Revolut for their everyday transactions. Revolut, in its capacity as predominantly an Electronic Money Institution and a mobile app-based provider, is a leader in user experience and for this reason, it creates a big challenge for the traditional banks. The competitive edge of Revolut is the way it combines a range of financial products and services into a single app, with a user interface that is simple, user friendly, and adaptable to a variety of consumer requirements. Revolut managed to attract a massive number of customers by providing unique and convenient features, such as the creation of an account in sixty seconds including the automatic ordering of a debit card (delivered by post), a zero-fee Automatic Teller Machine (ATM) withdrawals process from any bank, the transfer of money abroad with cheaper exchange rates, etc. Furthermore, Revolut expanded its customer base by giving referral bonuses. More specifically, users can receive bonuses of up to fifty euro for each friend they refer to the company, who successfully become a Revolut customer. Furthermore, interbank exchange rates, spending insights, and stock trading are some additional features that Revolut offers to its users, which features are increasing the customers’ satisfaction. Although Revolut might be considered as a strong substitute service, the recent banking license of Revolut further creates potential impacts to the

¹² Walden, S., 2021. *What Is Fintech And How Does It Affect How I Bank?*. [online] Forbes Advisor. Available at: <<https://www.forbes.com/advisor/banking/what-is-fintech/>>

loan and debit card products of BoC. Hence, Revolut may soon be one of the main competitors of BoC.

Supplier bargaining power is one of the elements that shape an industry's competitive attractiveness. Technology companies are the supply base as those are providing the software and the hardware of a mobile banking app. The computer hardware company IBM was selected by BoC as a strategic partner in order to develop its mobile app. The partnership of BoC with IBM aimed to standardize and automate its internal IT infrastructure, optimize service management practices, etc. ¹³ (Saunders, 2017). BoC is leveraging the knowledge of IBM to boost the speed and effectiveness of the app in order to provide a much better customer experience by enriching the technological capabilities of the app. Apple Store and Google Play are the providers of Boc mobile app to the end-user. Almost every single bank institution that offers mobile banking services is collaborating with those two providers / platforms (Apple Store and Google Play). In conclusion, the bargaining power of suppliers in the case of BoC is mainly influenced by the partnership with IBM. The bargaining power of supplier of BoC seems to be strong, as IBM is providing a unique architecture to the mobile app and improves its quality and performance, as it is one of the leading hardware companies in the world.

3.2 Stakeholders

The term stakeholder covers a wide spectrum of persons, entities, organizations, and collective groups such as society in general (with its various subgroups), and the environment. Stakeholders are any person who / which may be affected by the operation of a business and/or the materialization of a project, and may include the environment, through any effect / impact that

¹³ Saunders, K., 2017. Bank of Cyprus Taps IBM Technology and Expertise to Fuel and Accelerate Digital Transformation. [online] IBM Newsroom. Available at: <https://newsroom.ibm.com/2017-07-27-Bank-of-Cyprus-Taps-IBM-Technology-and-Expertise-to-Fuel-and-Accelerate-Digital-Transformation>

the project may have on it¹⁴ (What are stakeholders? - Stakeholders - GCSE Business Revision - Other - BBC Bitesize, 2021). More specific examples of stakeholders in relation to a business include the customers, the employees, the shareholders / owners, any partners and suppliers, as well as the society and nature (e.g. through the corporate social responsibility of the business, and its environmental, social, governmental initiatives).

In relation to BoC and its mobile application operations, the immediate stakeholders are the users of the app / customers, the relevant employees of the Bank, the shareholders of the Bank and its Board of Directors / management, also any external service providers (such as software security companies) and other suppliers, the immediate and general regulators of the Bank (i.e., Cyprus Central Bank, European Central Bank), as well as the society and the environment.

With regards to the users / customers, based also on the effected market research and the relevant questionnaire, the Bank should aim at modernizing its mobile app interface, making it user friendly, and minimizing any system bugs / malfunctions and delays. The heavy use of social media on mobile devices by young people appears to be an indication for the Bank to model its interface on the general structure of a social media application. This would make the Bank's app more user friendly and intuitive. The user is already familiar with the social media app interface and any banking app modeled to resemble intuitive functions of the social app (such as navigation through app pages or scrolling, pinch to zoom, swiping up to delete / dispose etc.) would make the banking app intuitive and user satisfaction would increase, as operation would appear to the user as seamless. Additionally, the optimization of the Bank's mobile app and making it more user friendly for younger users, will have an added benefit for the Bank, since if younger users are accustomed to using BoC apps and online services, they will do so also later in their life, and this incorporation of the BoC app in their everyday life, shall have a spillover effect to the other

¹⁴ BBC Bitesize. 2021. *What are stakeholders? - Stakeholders - GCSE Business Revision - Other - BBC Bitesize.* [online] Available at: <<https://www.bbc.co.uk/bitesize/guides/z4gcd2p/revision/1>>

members of their family. More specifically, these young users are those who will currently assist users in a higher age group, who may be less tech savvy, to navigate in the online banking services framework and effectively use it, due also to the digitalization and online transactions laws and regulations (and the impact of the pandemic regarding reliance on online services). Furthermore, the young users shall transfer this inherent use of the BoC app to their children and family later in their life. Hence, additionally to being effective and efficient, the app needs to be modern in design and function, in order to deliver a fun user experience which will make the app and associated service more “desirable” to the consumer. Much like the products of the Apple computer company (which are generally perceived as stylish and desirable), the BoC can create an enhanced market image through its app, which will be modern in design and ultimately perceived as “cool” and desirable.

A similar concept has been adopted by the BoC in their new vertical card lineup. These cards incorporate modern design features which appear to make them more appealing to the public. Such features include the new vertical design (the card has a vertical orientation instead of the traditional horizontal) which also is aimed at the user having a better experience at POS terminals and electronic payment apps. Additionally, the card utilizes minimalist aesthetics, with information being printed on the back (not stamped), leaving the front with a clean and uncluttered design. Furthermore, the card is designed with highly visible edges, with a contrasting color to the rest of the card, which is both a practical element (locating the card in a wallet) and is a modern design element. While the card provides all the modern functions which the public demands, it can be observed that the BoC has also incorporated a lot of pure design elements, towards delivering a better user experience and towards creating a more desirable product / service¹⁵ (BoC, New era, new cards, 2021). It is noted that a similar feature is also provided by Revolut, which offers more exclusive card designs (i.e., cards with distinctive design

¹⁵ Bankofcyprus.com.cy. 2021. *New era, new cards*. [online] Available at: <<https://www.bankofcyprus.com.cy/en-gb/Personal/cards/campaigns/newcards/>>

and / or made from better materials – e.g., metal cards) with added features, if the user opts for a higher subscription level. Bearing in mind the above examples, the BoC could incorporate, by analogy, the above design concepts, and functionality optimization into its mobile app interface and services, thus keeping these modern, distinctive, efficient, and functional.

Regarding the BoC employees, who are involved in the creation and operation of the app, these need to be utilized according to their knowledge and competence, so that they have the best possible job satisfaction. Accordingly, the employees need to feel that they are evolving and need to be offered adequate opportunities and remuneration. This can be achieved by including employees during Business Analysis for a new mobile app feature since ultimately the employees know what works well and what needs to further improve or change completely. Sequentially, the employees can be involved in testing and piloting the new feature before official release. Moreover, by showing to the employees the benefits of the new mobile app feature in twofold. As customers of the bank using banking services faster, online and more secure and as enabling them to utilize their time more productive since manual, repetitive and long processes will now be replaced and offered by the mobile app. Thus, the employees shall feel appreciated, and shall feel as being part of a successful project, which in turn will contribute to their job satisfaction. Through the utilization of competent and happy employees, the BoC app shall flourish and become more effective and efficient, in line with the recent and increasing digitization requirements, and the demands of the modern user. The establishing of a strong and happy workforce in the mobile app framework, and the associated mobile app development and success, shall present a corresponding benefit and profitability to the owners and directors of the Bank. The business success of the Bank in the mobile banking sector shall have a beneficial extension to all utilized suppliers and service providers, which shall be able to provide services and ongoing assistance to the Bank.

Finally, through the above development of the Mobile Banking app and the associated further success of the Bank in this sector, this shall allow the Bank to proceed with enhanced CSR

initiatives and ESG factors, thus benefiting the society and the environment, nature and wildlife. The Bank is already involved in the Business4Climate European program, which aims at reducing greenhouse emissions by 8% until 2030, and relevantly reducing the carbon footprint of the Bank¹⁶ (BoC, Our Environment, 2021). The operation and promotion of online transactions and online banking services shall contribute to the reduction of greenhouse emissions in general, inter alia by reducing unnecessary transport of consumers to physical stores (bank premises and other general retail / physical stores). Hence the Bank shall actively contribute to this effort, also through the establishment of a more efficient and user-friendly app.

Furthermore, the Bank may become even more involved in ESG (Environmental, Social, and Governance) initiatives which will boost the social image of the company, and actively counter any potential image throughout the public which may associate the Bank with a strictly profit orientated entity. Thus, through its involvement with ESG factors, the Bank will project and strengthen the correct corporate image, and thus will be perceived as a company which actively contributes to social issues, e.g., countering COVID-19 and its adverse effect on people and markets, and environmental matters e.g., promotion of renewable energy in Cyprus (which is an EU regulation target by 2030) and the reduction of greenhouse emissions. As an added benefit to this enhanced social corporate image through ESG factors, the Bank shall also increase its goodwill and its stock value, through the attraction of ESG orientated outside investors (i.e., the Bank shall enjoy the attention of investors who target companies which rank high in ESG factors implementation). From a practical standpoint, the Bank could incorporate ESG elements into the existing services offered through the mobile app. The Bank could provide better rates for loan applications, which shall be made via the mobile app, and which shall have as a purpose various environmental, and energy efficiency ventures. These may include loans for the purchase of a hybrid or electric vehicles, and/or loans towards the renovation of a house and its relevant

¹⁶ Bankofcyprus.com. 2021. *Our Environment*. [online] Available at: <<https://www.bankofcyprus.com/en-GB/csr/Our-Environment/>>

upgrading regarding its energy efficiency (e.g., installation of energy efficient windows / heating elements), and/or loans for the upgrading of business premises towards optimal energy efficiency, from a building construction and/or equipment standpoint. The Bank should also relevantly advertise these ESG related loan services, thus further promoting the operation of the app, and promoting the ESG initiative.

Additionally, it is noted that the owners of BoC are the shareholders, with these essentially being the public, as the company is a public company limited. Accordingly, the interest of the shareholders is profit maximization, however in the CSR and ESG framework effected by the Bank. As also stated above, the appropriate implementation of ESG elements shall continue to project the correct corporate image of the company, thus attracting investment and also striking a balance between profit maximization practices and environmental and social commitments of BoC. With regards to the Regulators, it is noted that due to the market share held in Cyprus by BoC, the Bank's projects and mode of operation have a bearing on the operation of the CBC, and it's appropriate supervision of the market. Hence, BoC should work alongside the Regulators, viewing them as supervising entities which facilitate the business rather than entities which aim at arbitrarily limiting the Bank's scope of operations. The said fruitful cooperation shall generate clarity in the requirements between supervisor and supervised entity, including clarity regarding appropriate reporting and other regulatory requirements (e.g., liquidity and capital adequacy ratio / requirements etc.).

3.3 Strategic Resources

A strategic resource is an asset that is valuable, rare, difficult to imitate, and non-substitutable¹⁷ (Edwards, 2021). Three standard company resources that combine to create competitive advantage are the financial strength of the company, its enterprise knowledge, and its workforce¹⁸ (Three Basic Strategic Resources in Business, 2020). The following Strategic Resources are applicable to the BoC Mobile Banking service. The operation of network effects, whereby BoC leverages the big market share of approximately 61% of the population, who are users of the Mobile App. This means that the Mobile Banking product value is increased, based on the size of the customer base. It also makes it difficult for new competitors, who have not yet managed to build their customer base. Additionally, BoC illustrates differentiation and an imitation resistant value chain, and the Bank extensively relies on internal research and development towards introducing new features in the Mobile App. This means that the real resource is the knowledge and experience of the employees, who perform key value chain activities.

¹⁷ Edwards, J., 2021. *Resource-Based Theory*. [online] Opentextbc.ca. Available at: <<https://opentextbc.ca/strategicmanagement/chapter/resource-based-theory/>>

¹⁸ Small Business - Chron.com. 2020. *Three Basic Strategic Resources in Business*. [online] Available at: <<https://smallbusiness.chron.com/three-basic-strategic-resources-business-47141.html>>

CHAPTER 4 - MARKET RESEARCH

The purpose of the Questionnaire, which was utilized in relation to the present ABP, was to find out if users are satisfied with the current BoC Mobile App and relevant services, also to find out which new features are of interest to the public, and furthermore to obtain insights on the competition of BoC. The Questionnaire was formulated in such a way, to obtain the above information and data from the answers provided by the public. The format of the Questionnaire is available in the Appendix, and its content has been reviewed and agreed upon with the BoC representative. The Questionnaire was built using Google Forms and was available in both the English and Greek languages. The team members contacted their network and asked for the Questionnaire to be completed anonymously. Furthermore, the network of colleagues and friends of each member was also asked to spread the Questionnaire to their environment, and additionally the Questionnaire was also posted on social media for an increased participation. The intended objective was for the participants to provide practical insight and feedback concerning the operation of the BoC Mobile App, while simultaneously providing recommendations towards a more customer-oriented and efficient Mobile App. The Questionnaire remained online receiving responses for approximately a period of 10 days.

The number of responses was 249, which makes the analysis and conclusions of the survey only indicative of the tendencies in the market, since these conclusions derive from this small sample in relation to the population. This means that the results are not to be considered as absolute, but rather as providing an indication regarding the relevant tendencies in the Cyprus market, and the feedback in relation to the BoC Mobile App.

The Analysis includes the following areas:

- 1) Customer satisfaction with current features.
- 2) Market awareness regarding features to be released soon.
- 3) Market demand for new features.

- 4) Major competitors in the local market.
- 5) Online banking institutions: supplementary or competitive?

4.1 Customer satisfaction with current features

a. BoC Mobile Banking User Experience (Overall)

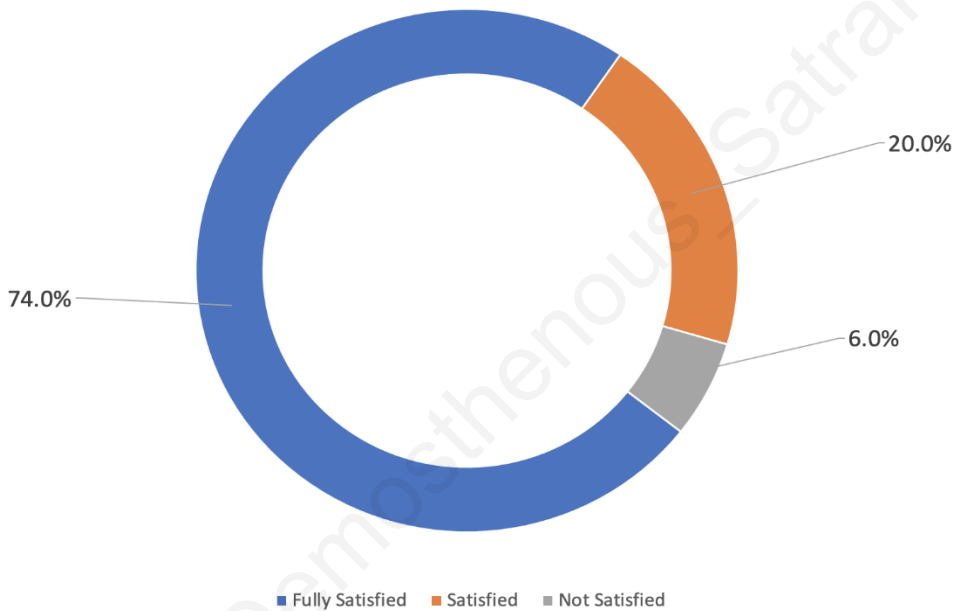


Figure 3: BoC Mobile Banking User Experience (Overall)

The Analysis of the customer satisfaction in the current BoC Mobile App, clearly indicates increased levels of satisfaction for most of the sample (74%). This shows a tendency that most of the Mobile App users are very satisfied with the current Mobile App.

b. Negative user experience examples

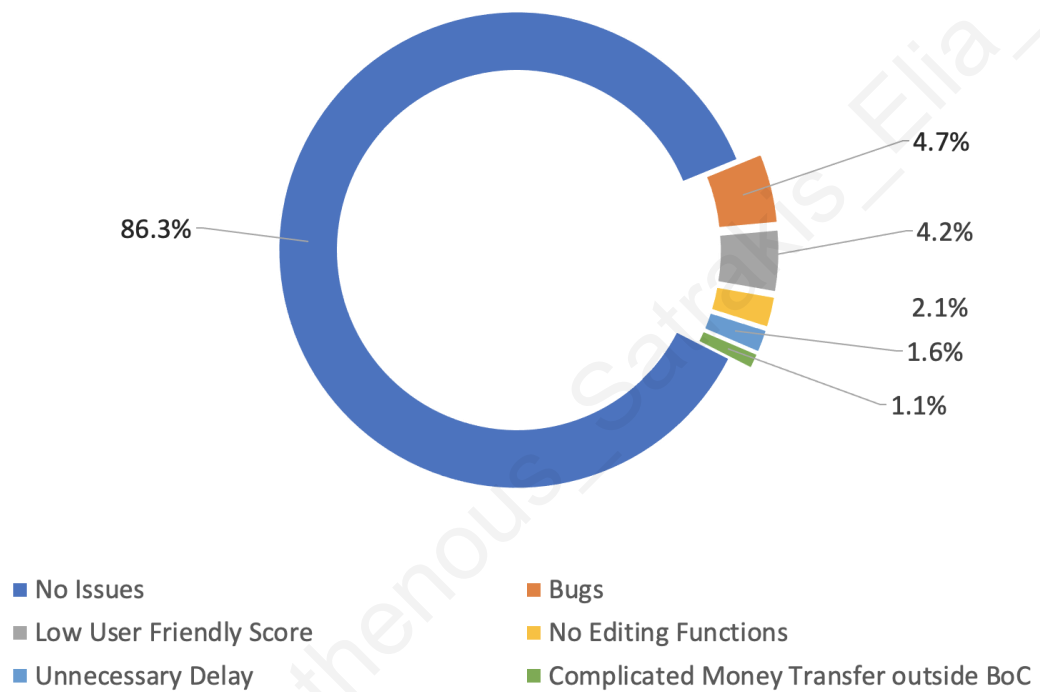


Figure 4: Negative user experience examples

This corresponds with Figure 4 which shows that 86,3% of the sample did not report any negative experiences with the Mobile App. The general conclusion from the above is that the BoC Mobile App enjoys great levels of user satisfaction.

c. Customer Satisfaction comparison in different age groups and academic levels

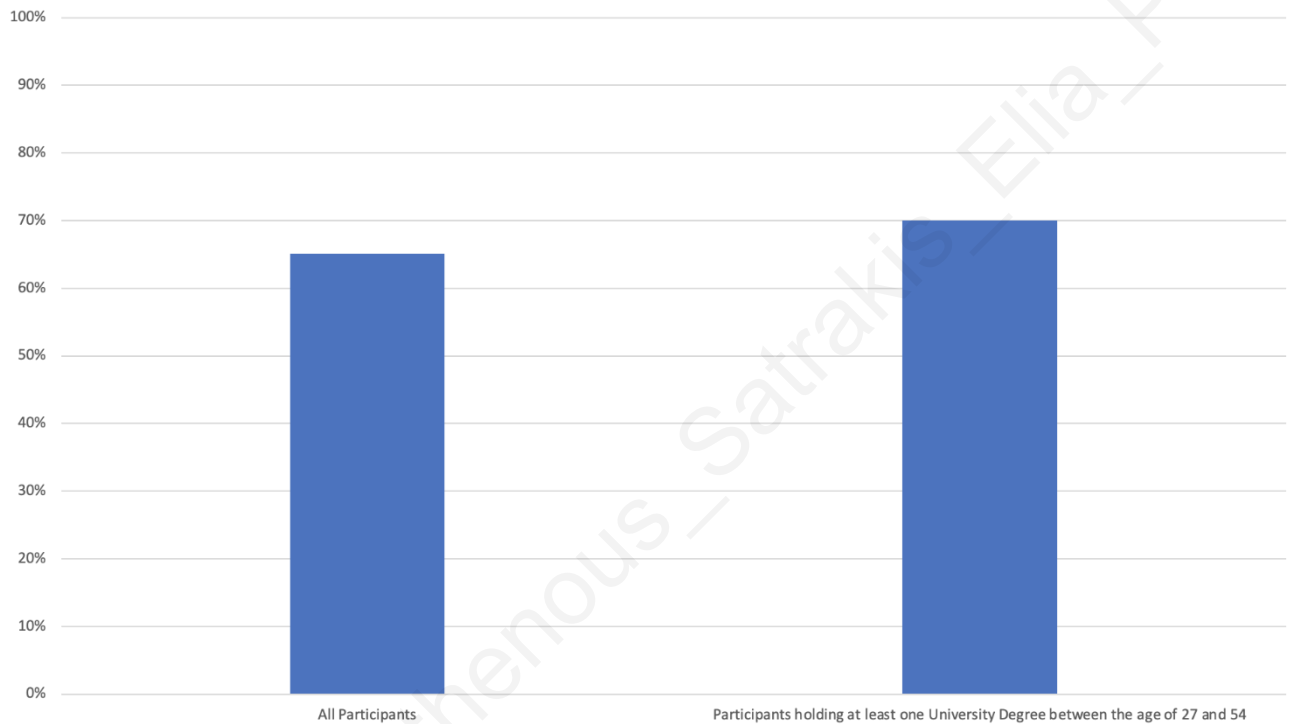


Figure 5: Customer Satisfaction comparison in different age groups and academic levels

After the analysis of the questionnaire on customer satisfaction, we wanted to emphasize the level of customer satisfaction in relation to some demographic variations. The demographics that showed a significant deviation from the general sample were the combination of education level and the age group between 27 to 54. Therefore, after applying a weighting system on the responses, it was shown that people holding at least one University degree between the ages of 27 and 54 registered 5% points higher (in customer satisfaction level) than the corresponding value of the general participants.

4.2 Market awareness regarding features recently released

Through the questionnaire we have examined whether the Cypriot consumers are aware of the new features of the BoC App. Those features were, Customer Onboarding and House/Car Insurance, which have recently been released and are offered through the app to the public. Customer Onboarding is the way how an individual or company can become a BoC Customer via the BoC Mobile App. The relevant person may open an account, obtain a credit card, as well as obtain 1Bank login credentials, without the requirement of visiting any brick-and-mortar BoC branch. Additionally, in a similar way, a person may purchase a House/Car Insurance cover, using the BoC Mobile App.

a. Customer Onboarding

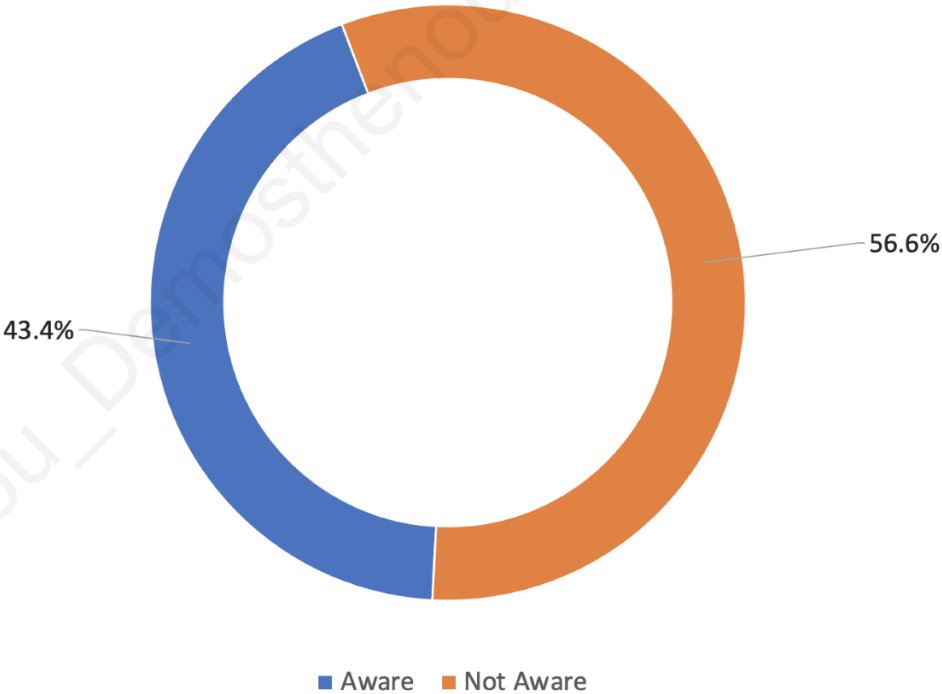


Figure 6: Customer Onboarding

b. House/Motor Insurance

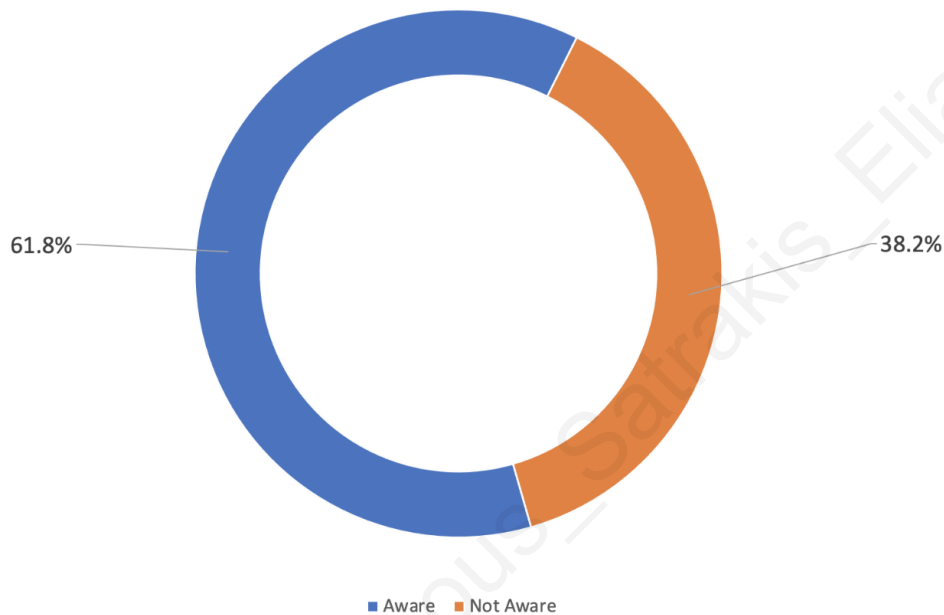


Figure 7: House/Motor Insurance

For both features / services, the questionnaire results show that there is a considerable section of the public who are unaware that these new services are offered (i.e., approximately 57% regarding the customer onboarding, and 38% for the insurance service). Accordingly, BoC could proceed with steps to raise awareness among the public, optimally prior to the release of new features, by utilizing digital marketing campaigns.

A digital marketing campaign (including marketing campaigns through social media outlets) could be applied by BoC in order to rapidly increase awareness regarding those abovementioned features. Even though a digital marketing campaign appears to not be a straightforward procedure, there are a few actions that could be followed to reach a desirable outcome, as listed below.

- Define the Brand,

- Build buyer personas,
- Develop S.M.A.R.T goals towards feature awareness (i.e., goals that are **S**pecific, **M**easurable, **A**chievable, **R**easonable, **T**ime-based),
- Choose the best digital marketing tools that best suit the style / nature of the bank and their customers,
- Brainstorm the Strategy
- Launch digital marketing campaigns
- Track the results.

Some of the digital marketing tools that are available throughout the market are:

- Social Media Campaigns (through which a broad target audience / market can be located by utilizing various social media platforms)
- Influencer marketing. It is shown that this type of digital marketing is performing very well in combination with a social media campaign. This combination is trending and gains considerable momentum, especially in the age of the pandemic, with an increasing number of active social media users and new popular platforms (e.g., Tik Tok), creating an even bigger audience for the influencers to approach / target.
- Email Marketing. Even though this seems outdated in the social media era, it still holds considerable value when it comes to targeted marketing, since a dedicated email campaign could be executed for existing BoC customers. The existing customers could take immediate interest in the new features and provide momentum for the services to also reach new customers (e.g., through word of mouth).
- SEO (Search Engine Optimization). This advanced digital tool could again locate and target customers online who are searching for exactly the specific features or similar/relevant information.

4.3 Market Demand for New Features

Regarding the House/Motor Insurance service, it was vital to examine the demand for such a Mobile app feature and further, examine its usability. Out of 249 respondents, the results were close to unanimous, with 96.8% of responses being that they had not used these features, and only 3.2% had used the features. Additionally, the questionnaire included a question aiming at understanding the reason people show diminished interest in / knowledge about, the features (see Figure 9).

a. Interest in/Use of the House/Motor Insurance Feature

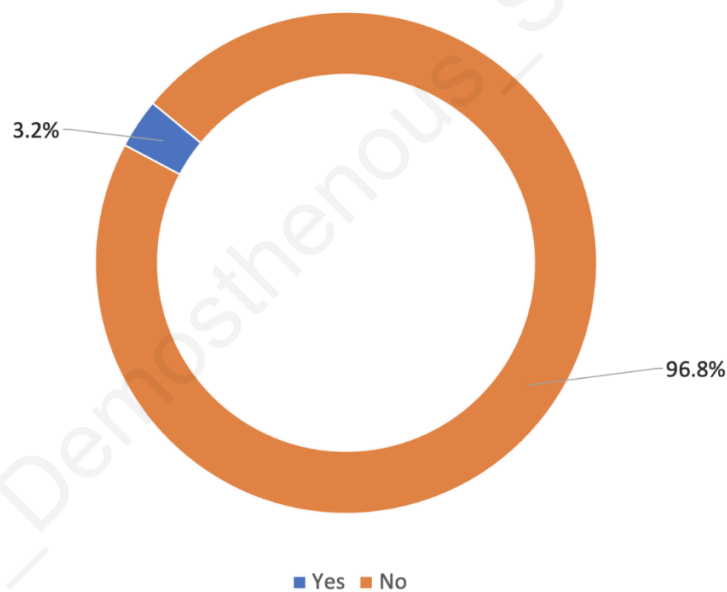


Figure 8: Interest in/Use of the House/Motor Insurance Feature

This tendency appears to be based on the current way the insurance market works in Cyprus, especially on the fact that it appears to be heavily dependent on the relationship the customer has with his/her insurance agent. Cypriots are accustomed to matters connected to insurance being dealt with / arranged by their insurance agent, who is always a short phone call away. Hence, Cypriots are not used to making any effort in arranging new insurance policies, except for

calling their agent. The conclusion is that although the Mobile App opens the market for these insurance products to more users/customers, the market appears to not yet be fully ready i.e., there is no high demand currently for this feature.

b. Reason for not using the House/Motor Insurance Feature

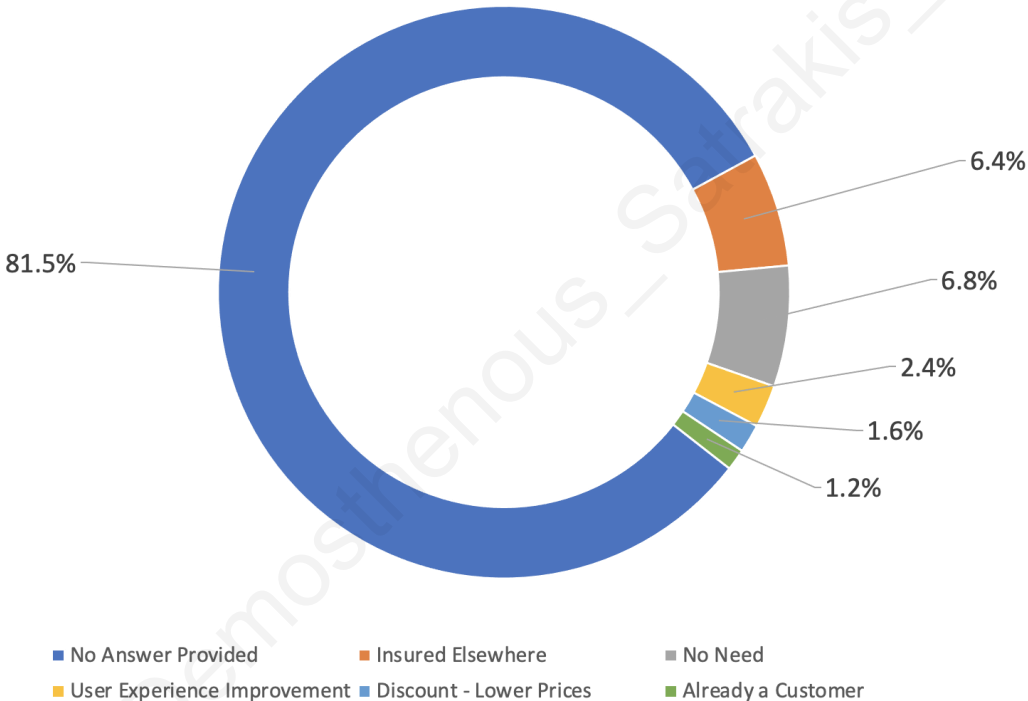


Figure 9: Reason for not using the House/Motor Insurance Feature

c. Customer Reaction for New or Potential Features (likelihood / tendency for use)

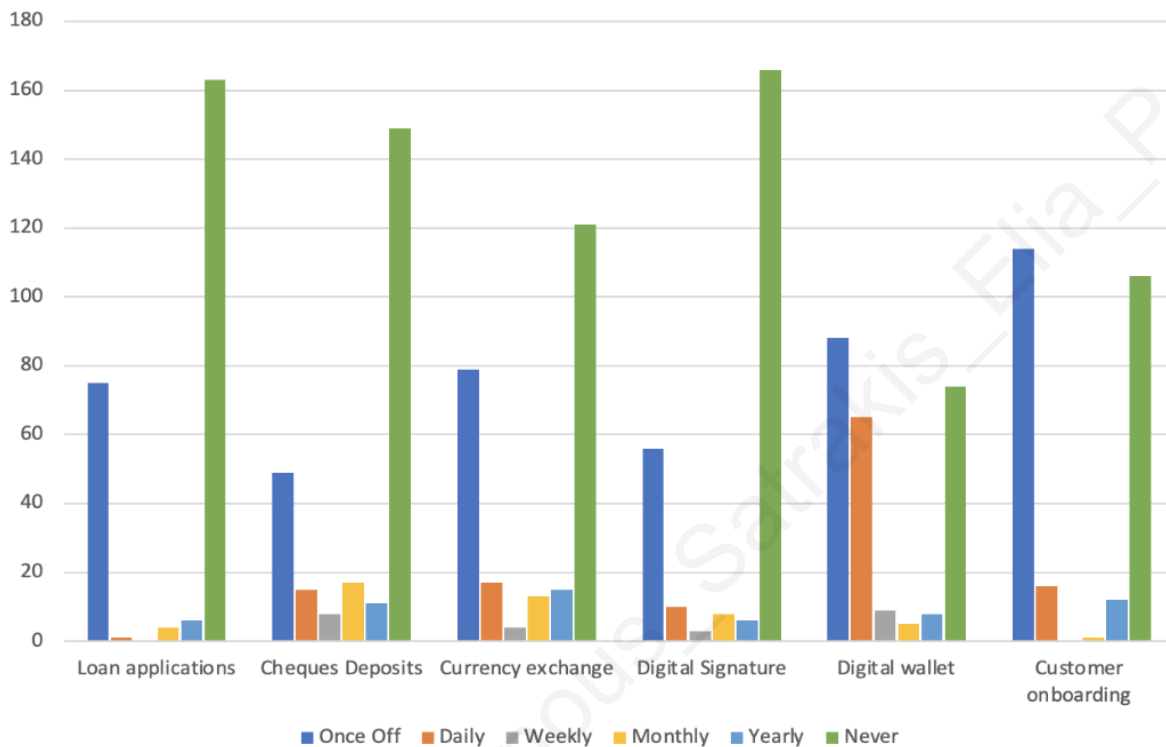


Figure 10: Customer Reaction for New or Potential Features

From the analysis based on the above, we can see that although customers use the mobile app and digital channels overall regarding check of balance and payments, the market appears not yet ready for more elaborated activities like applying for loan via the Mobile App. It is noted however that the COVID-19 affected economy, with diminished economic activity, should be borne in mind regarding this conclusion. Regarding loan applications, cheques deposits and digital signature, the tendency shows that users are not ready to use the Mobile App. This may also be explained by the notion that customers / users are not yet familiar with the process / product / possibility to go digital. Hence, the public needs to be educated accordingly, which will also be partially achieved by the general digitalization regulations and laws promoted by authorities (see Chapter 6 *Risk Management*) and the BoC should additionally proceed with digital marketing to increase traffic. On the other hand, currency exchange and customer onboarding have a substantial percentage of users who tend to use these features, at least once. Finally, the use of a digital

wallet via the mobile app, with the associated utilization for daily mobile payments, which tasks gain momentum, have been confirmed by the results of the questionnaire.

4.4 Major Competitors in the Local Market

It may be clearly seen below that BoC is a market leader, with a 61,4% share of the Cypriot market. Even though Hellenic bank is the biggest competitor of BoC it is clearly shown that there is a considerable gap between the market share of BoC (61.4%) and that of Hellenic (28.9%). The chart below is derived from the limited data of the questionnaire / sample, with publicized data from other sources showing that the difference is not as big as depicted below.

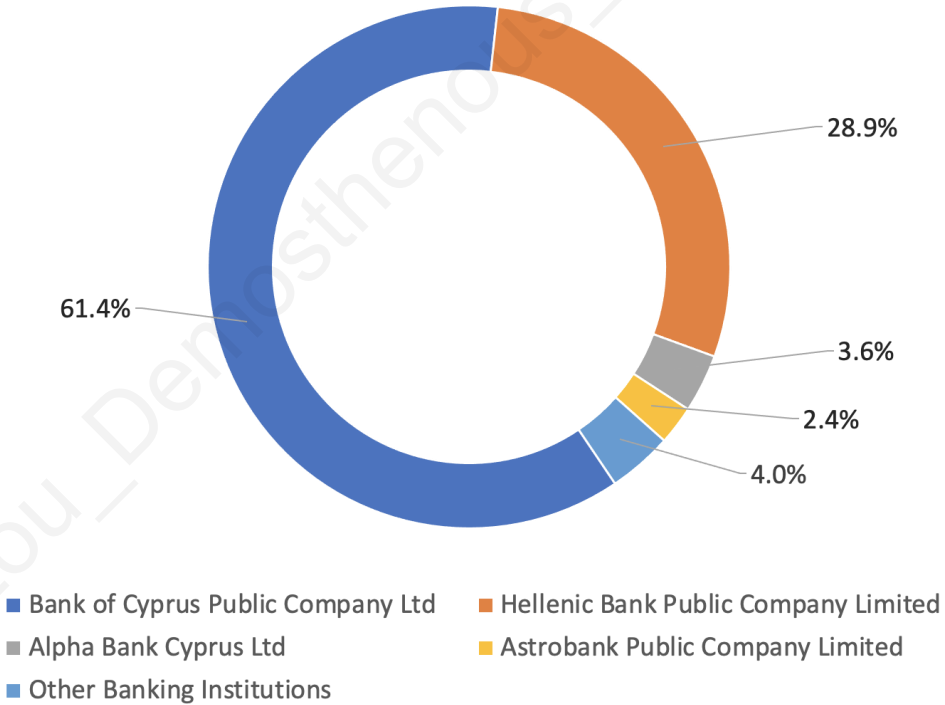


Figure 11: Major Competitors

4.5 Online banking institutions: supplementary or competitive?

It is clearly shown that Revolut has penetrated the Cypriot market through promoting their various online services (mobile phone based) ahead of the competition. It is shown from the chart below that 95% of the people who answered the questionnaire about online banking institutions have indicated Revolut as their relevant provider, at least for some services. The highlighted services that are mostly used are, money transfers and online payments (see Figure 13 below) covering the 90,4% of all the online banking features that people are using.

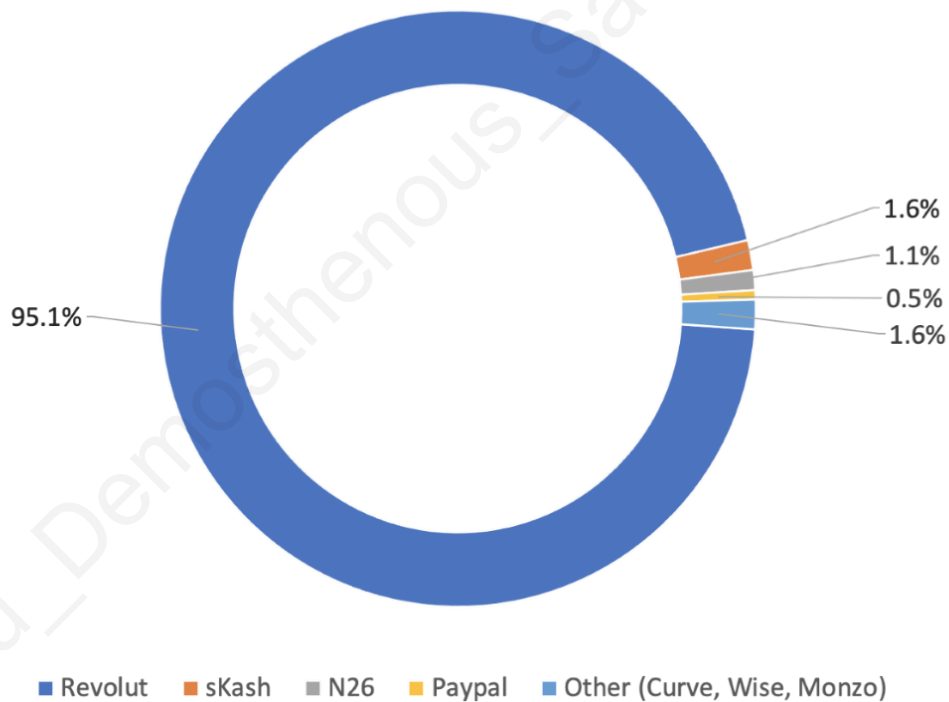


Figure 12: Online banking institutions

a. Most Used Features of Online Banking Institutions

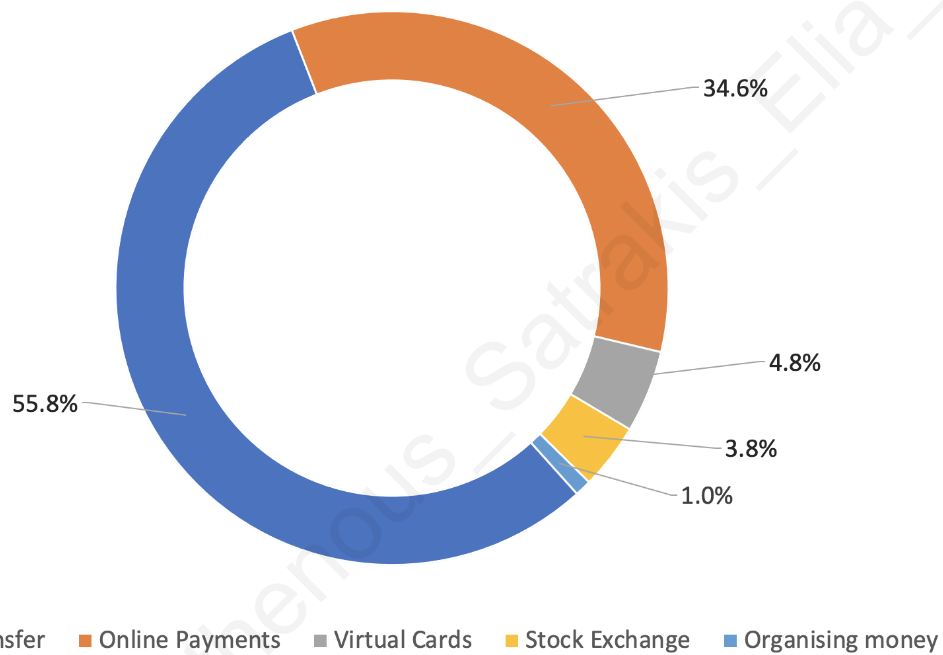


Figure 13: Most Used Features of Online Banking Institutions

When analyzing the results of the survey, there is a tendency (based on the Online Banking Institutions features mostly used) showing that the Online Banking Institutions do not offer supplementary services in relation to the BoC Mobile App, but rather are direct competitors. In principle, both the Money Transfer and Online Payments features of Revolut are similar features to the transfer to BoC customers (or to third parties) feature of the BoC Mobile App. The key differentiator however, i.e., the strategic resource for Revolut, is that their features appear to be perceived as more user friendly, they apply to more cases and offer a sense of enhanced security or rather less risk, since they are not directly associated with the primary bank account of the user (i.e., a Revolut account is often perceived as a supplementary / secondary account).

CHAPTER 5 – PLANNING, CONTROLLING AND DECISION MAKING

One of the most important factors for a product to be and remain sustainable is a clear and sound understanding of its cost, at all times, including during planning, controlling and decision making. Planning involves establishing goals and specifying how to achieve them. Controlling involves gathering feedback to ensure that the plan is being properly executed or modified as circumstances change. Decision making involves selecting a course of action from competing alternatives¹⁹ (Brewer, 2019).

There are six (6) perspectives of the business context, to apply tools and methods for planning, controlling and decision making. The ethical perspective, the lubricant that keeps economy running. Without fundamental trust in the integrity of the business, the economy would operate much less efficiently. This would happen if employees could not be trusted with confidential information, if employees accepted bribes from suppliers, and company CEOs routinely lied in their annual reports and financial statements. The strategic perspective, the game plan which creates customer value propositions on how the company distinguishes itself from competitors. The plans, controls and decisions made by managers are all influenced by the company's strategy. The Enterprise Risk Management (ERM) perspective, the process used by the company to identify risks and develop responses to be reasonably assured to meet its goals. Although these responses cannot eliminate risks, they enable companies to proactively manage risks rather than passively reacting to unfortunate events which have already occurred. The Corporate Social Responsibility (CSR) perspective, the benefit towards all stakeholders, not only the investors, whose interests are tied to the company's performance. A manager must establish plans, implement controls and make decisions that consider impacts on all stakeholders. The process management perspective, the value chain of the company, how functional departments of a company interact to form business processes. For example, if a Mobile App Product Manager plans to design a new feature,

¹⁹ Brewer, P., 2019. *Introduction to managerial accounting*. 8th ed. New York, pp.4-157.

they must communicate with the other IT teams to ensure that the feature can be implemented, with the marketing department to ensure that there is marked demand for this feature and with the accounting department to ensure that the new feature will increase revenue or save costs. Finally, the leadership perspective, uniting the team members' behaviors around pursuing strategic goals and making optimal decisions. This is achieved by better understanding the influence of intrinsic motivation, extrinsic incentives and cognitive bias in human behavior.

5.1 Activity Based Cost (ABC) System

One tool which is valuable for any business, and is further described and used below, is the Activity Based Cost (ABC) System. Most companies, either offering products or services, do not put enough effort and focus in analyzing and identifying the precise product costs. Some companies use a traditional way of calculating the cost which is splitting the overhead costs based on one driver to the different products or services. Then the direct cost of each product or service is added to have the final cost per product or service. A more accurate way of doing this is based on the ABC system. The ABC system starts from the products/product features, then moves to the overall relevant overhead (OH) costs, then to the Activity groups and finally to the Activity group drivers to allocate weight per Activity group driver to each product/product feature.

In the case of Bank of Cyprus and Mobile Banking, there is no clear view of the recurring costs. There are project costs (planned and actual) required to implement several features according to the project scope and product roadmap but there is no detailed understanding of the recurring costs. The way we approached this analysis was by selecting the Mobile App features which are used most by the customers and establishing a good understanding of the steps required from the user to fulfill the action of the feature i.e., which are the underlying, background activities happening and utilizing resources, thus generating cost.

The Mobile App features selected are the following:

1. Check Balance
2. Transfer of money (to other BoC customers, or customers of other Banks)
3. QuickPay
4. Customer Onboarding (Account opening, card issuance and 1bank first login)
5. Motor/Home Insurance

These Mobile App features amount to 80% of the overall Mobile App utilization. As a result, the actual 80% of the Mobile App OH costs are used as part of this analysis. For each Mobile App feature, the Customer Journey i.e., the steps followed by the user to fulfill the feature actions are shown in a diagram format in the Appendix.

Subsequently, all Feature steps and underlying activities were further analyzed to identify the following:

1. Which activities are unique for only one feature i.e., fall under the feature's direct cost?
2. Which activities are not unique i.e., are used in more than one feature i.e., fall under the Mobile App Overhead costs?
3. Which activities of point (1) or (2) have the exact same driver and as a result can be grouped into Activity groups?

Here it was extremely important to identify the cost driver per activity i.e., what creates the cost in this activity and make sure activities with apparently similar but actually different drivers are not grouped together. This follows the "Hierarchy of Activities principle"²⁰ (Brewer, 2019) where there are different levels of activities i.e., Unit-, Batch- Product and Facility-level.

²⁰ Brewer, P., 2019. *Introduction to managerial accounting*. 8th ed. New York, pp.4-157.

4. Which activities cost is negligible and for the purposes of this Analysis are to be ignored?

In summary, the features of Customer Onboarding, Motor and Home Insurance were excluded since these are newly released features. As a result, although they are very important and forecasted to be highly utilized i.e., have high cost, currently do not utilize any of the Mobile App resources in Production (Run). Various Mobile App OH Costs were also not pointed out since their cost is minimum e.g., Google/Apple Store subscription, Call Center office equipment, SMS cost or included in another OH cost e.g., Building related Utilities. For a detailed Analysis of the steps and drivers, please refer to the Appendix Matrix.

As a result, the ABC System is shown below (it is noted that as per the Bank's calculations the Utilities are included in the Labor and IT System maintenance cost respectively):

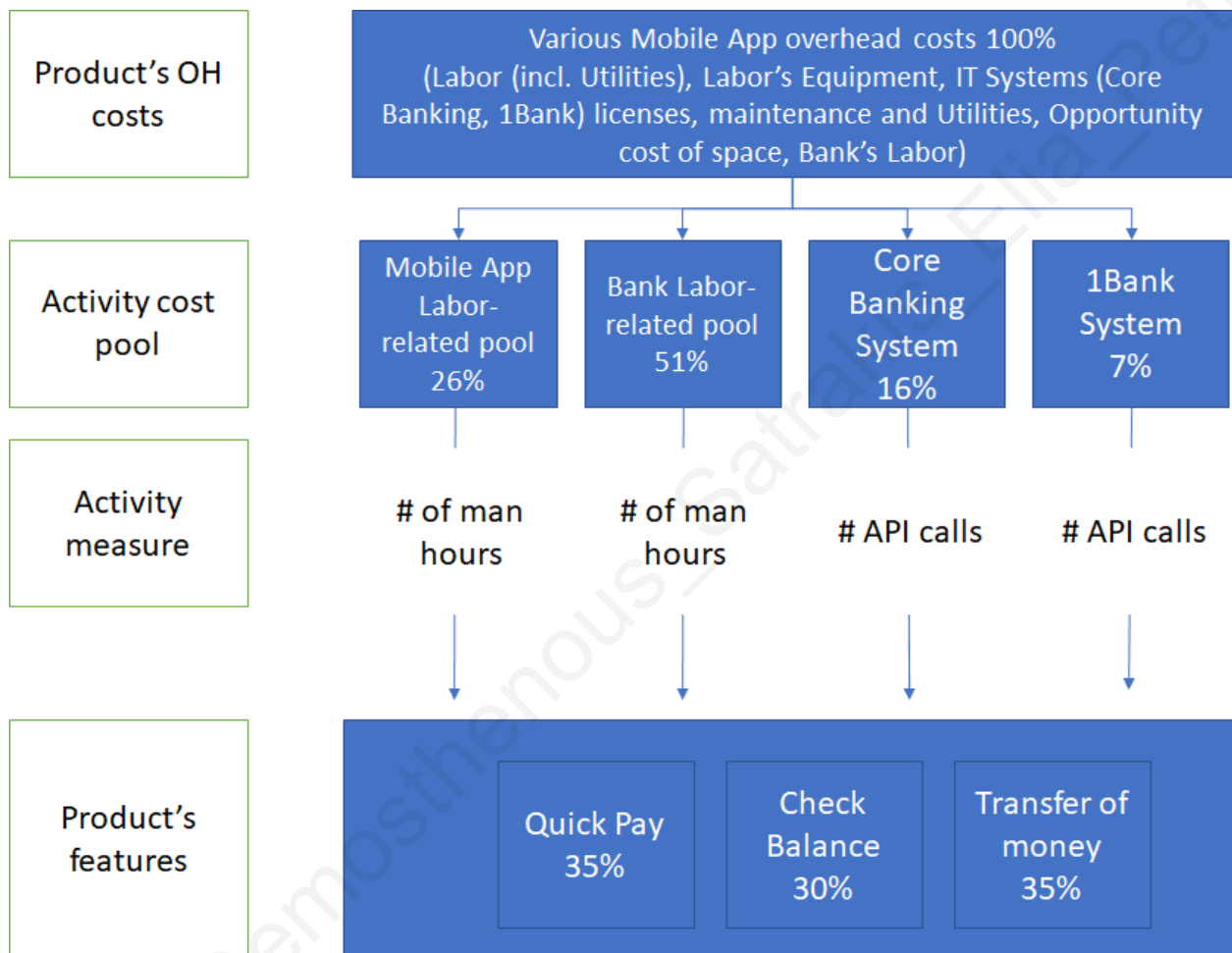


Figure 14: Mobile Banking Activity Based Cost System

From the ABC System, the various OH costs are assigned to the Activity cost pools. The Mobile App's team labor, utilities, equipment, and the opportunity cost of the office space not being offered for rent to a third party, are allocated to the Activity cost pool of the Mobile App Labor-related pool. This is the 26% of the overall OH costs. Any other Bank related labor and relevant other OH costs are assigned to the Bank Labor related pool, with these being 51% of the overall OH costs. The IT systems OH costs of licenses, maintenance, security, quality control, and utilities are assigned to the Core Banking system activity pool with 16% and to 1Bank system activity pool with 7%.

From the Activity cost pools, based on the utilization from each feature (the ratio), a percentage of each Activity cost pool is assigned to each feature. The Mobile App Labor and Bank Labor related Activity cost pools, based on the Activity measure, are equally assigned to the 3 features (33%). The Core Banking and 1Bank Activity cost pools, based on the utilization of this resources from each feature, are assigned to Check Balance with 20% and the remaining 80% equally assigned to QuickPay (40%) and Transfer of money (40%).

From the available data we conclude that the OH costs of the Mobile App are the following:

1. QuickPay 35% of the overall Mobile App OH costs
2. Check Balance 30% of the overall Mobile App OH costs
3. Transfer of money 35% of the overall Mobile App OH costs

Since no Direct Costs are assignable to the Mobile App features, the above figures are the overall Mobile App costs (direct + OH costs).

When enough data is also available for Customer Onboarding and Car/Home insurance (or any other feature in this matter) the ABC system can be used and tailored to identify in a more accurate way the OH cost of a Mobile App feature.

In the case of Mobile App, it became evident during the Analysis, as per the below project costs, that the initial (project) cost is much higher than the recurring annual cost.

Project	Project Cost
Mobile App project	800% of the Mobile App recurring cost

Table 2: Mobile App project costs

To conclude, a detailed and exhaustive cost-benefit analysis should be performed prior to initiating any new project for a product feature in the Mobile App roadmap. This cost-benefit analysis should consider the associated risks and controls on a recurring basis, the planned

project budget, and actual project expenditure, against the delivered value of the project. With regards to financial costs and benefits, the Net Present Value (NPV) can be used to choose projects with a positive NPV. The NPV safeguards the Mobile App team with the following three guiding principles²¹ (Brealey, Myers and Allen, 2020):

1. Any investment which does not recognize the time value of money is not considered sensible.
2. NPV depends only on the forecasted cash flows from the project and the opportunity cost of capital. Any investment rule that is affected by the manager's taste or the profitability of other independent projects will lead to inferior decisions.
3. Since present values are measured in today's euros you can "add up" and calculate the overall projects' NPV, to arrive at the NPV of the combined investment. This way, a poor project will never be selected only because it is packaged/combined with a good project because the combined NPV will be lower than the good project's NPV.

Finally, it is important to clarify that NPV does not hold all the answers, and managers correctly do not accept the cash flow forecasts at face value²² (Brealey, Myers and Allen, 2020). It is vital for sustainability of the Mobile App to better understand what could go wrong with the project. This can be done with the use of sensitivity analysis, break-even analysis, or the Monte Carlo simulation. Sensitivity analysis looks at optimistic and pessimistic variations of the variables one by one. Scenario analysis identifies interrelations between some variables for a more consistent outcome. Break-even analysis is an alternative presentation way of the sensitivity analysis, i.e.,

²¹ Brealey, R., Myers, S. and Allen, F., 2020. *Principles of corporate finance*. 13th ed. New York: McGraw-Hill Education, pp.21-271.

²² Brealey, R., Myers, S. and Allen, F., 2020. *Principles of corporate finance*. 13th ed. New York: McGraw-Hill Education, pp.21-271.

how bad things can get before the NPV turns negative. The Monte Carlo simulation considers all plausible combinations of variables as a more exhaustive alternative to scenario analysis.

5.2 Incremental Costs and Revenues Comparison for decision making

One of the major organizational goals is to create value. To create value, organizations need to set strategic goals. The strategic goals with regards to Customer onboarding are to optimize the Customer journey, thus improving Customer satisfaction, and potentially increase the market share and reduce costs by automating relevant processes. Managerial decisions affect these goals. The Decision-Making process starts with²³ (Charitou, 2020):

1. Clarifying the decision problem.
2. Specifying the criterion.
3. Identifying the alternatives.
4. Developing a decision model.
5. Collecting the relevant data, and
6. Selecting the best alternative as per the set goals.

The case in point is to decide whether to offer to a specific and calculated percentage of Customers, the Customer onboarding on the Mobile app, or continue for all Customers with the current processes. For decision making purposes, incremental vs sunk costs are used. Incremental costs are costs which are different in the two possible approaches e.g., accommodation per night is 150 euro at one hotel and 100 euro at another, so the incremental

²³ Charitou, A., 2020. Managerial Information for Decision Making. In: P. Brewer, ed., *Introduction to Managerial Accounting*, 8th ed. New York, pp.506-555.

cost is 50 euro for the first hotel. Sunk costs are costs that do not differ between the two alternatives The Customer Onboarding by its own is cost driven, there are no direct revenues. Revenues are realized afterwards with the use of other products or services. As a result, the decision making is based on the incremental costs of the two possible approaches, against the strategic goals.

Incremental Analysis

Cost description	Current/Alt. A	Mobile App/ Alt. B	Incr. or Sunk
License allocated	0%	2%	Incr.
Project implementation Efforts allocated (once-off)	0%	61%	Incr.
Annual subscription	0%	9%	Incr.
Annual efforts	100%	0%	Incr.
Total cost comparison	100%	72% of Alt. A cost	-

Table 3: Incremental Analysis for Customer onboarding

For example, if the incremental cost of alternative A i.e., the current method of going to the brick-and-mortar branch of BoC is 1000 Euro, the incremental cost of alternative B via the Mobile App is 720 Euro.

In the longer run, it is also important to assess if the Net Present Value (NPV) is greater than zero.

NPV for Mobile App/ Alternative B

			Year 1	Year 2	Year 3	Year 4	Year 5
Corporate Tax Rate:			12,5%	12,5%	12,5%	12,5%	12,5%
Mobile App Customer Onboarding		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Software & Professional Serv.		-15%	0	0	0	0	0
<u>Recurring Expenses</u>							
Software as a Service		0	-3%	-3%	-3%	-3%	-3%
Tax savings on expenses			0,4%	0,4%	0,4%	0,4%	0,4%
Cost savings			35%	35%	35%	35%	35%
Totals		-15%	32%	32%	32%	32%	32%
Opportunity cost of capittal	12,00%						
NPV at		-15%	28,52%	25,46%	22,73%	20,29%	18,12%
NPV		100%					

Table 4: Net Present Value for Customer Onboarding on Mobile App

Over 5 years, the NPV for the Customer Onboarding on Mobile App based on the above incremental costs and cost savings is greater than 0. Following the decision-making process and according to the strategic goals, the best alternative is to implement Customer Onboarding on Mobile App, to reduce internal costs and offer a better Customer Experience. The last phase after the decision is taken and implemented is to assess/control if Customer Onboarding on Mobile App fulfilled the Key Performance Indicators (KPIs) and achieved the goals.

Customer onboarding via the Mobile App was considered because with the current processes the Customer Journey is not ideal (it requires the Customers to physically visit the Bank Branch and queue) and there is manual work (paper-based proof documents, enter data in IT system) which is time consuming and prone to human error. By offering this on the Mobile App, the Customer Journey is optimized, and bankers' time is saved. Therefore, alternative B (Onboarding through the Mobile App) is better in four organizational goals²⁴ which are described below:

1. Profits: Since the operating costs will be reduced.
2. Growth: With the Onboarding being done through the Mobile App and the ease of use, new customers can be attracted, especially foreigners and young people, who have not yet started using any Cypriot Banking institution.
3. Customers' Satisfaction: By eliminating the need to visit a physical store and queue, saving a lot of time.
4. Safety: With the automaton of the processes, human-error can be eliminated and hence the safety of customers' credentials can be secured.

²⁴ Charitou, A., 2020. Managerial Information for Decision Making. In: P. Brewer, ed., *Introduction to Managerial Accounting*, 8th ed. New York, pp.506-555

House/Motor insurance

The strategic goals with regards to House/Motor insurance are the education of the public regarding the features (public awareness), the reduction of cost, the improvement of the customer journey and the increase of revenue. These goals are envisioned to be achieved via the mobile app, specifically for the increase of revenue. The mobile app can provide penetration to the market based on the extended mobile app users. The other two goals, improvement of customer journey and reduction of cost will also be realized with the use of the mobile app, similarly to the customer onboarding we have previously analyzed. The main difference in this case is that the bank considers having enough capacity to add the mobile app as an additional channel to the current ones. The current channels are visiting the branch of the Bank, via third party Agents, via the Call Center and via the General Insurance website. The bank will leverage the economies of scale of the mobile app in developing and providing this feature to the mobile app users.

As far as the current industry best practices, the Bank assessed that on an international scale this depends on the customer base behavior e.g., in the Netherlands, online channels are always used, whereas in Germany customers access local branches (not due to technical limitations but rather on current behavior). On a local scale and the limited competition, the Bank is the first to pursue selling this product via the mobile app.

The Bank postponed the decision to stop any of the current channels after having some feedback from the Motor/House Insurance in the Mobile App. The revenues from the Mobile App should be assessed to decide which of the other 4 channels (one or many) to replace so as to have cost savings from discontinuing this channel. To facilitate this decision, the actual revenues should be assessed (control) according to the forecasted ones (planning) as well as have a view of the costs of the product per channel.

CHAPTER 6 - RISK MANAGEMENT

The provision of modern banking services and innovative banking solutions and products appears to be a cornerstone of a successful banking institution. The effective and efficient provision of online banking services appear impossible if not offered through the mobile and online medium. At present point, further also to the ongoing pandemic, there appears to be a strong propensity by the Cypriot government towards digitalization of the public and private sectors in Cyprus²⁵ (Theopoulou, 2021).

Accordingly, the Cypriot government has enacted legislation, and further issued a relevant ministerial decree, through which most retail businesses and service providers in Cyprus are under the obligation to accept card payments in relation to their business activity²⁶ (Paizanou, 2021). An additional example is the harmonization by the Cypriot parliament of the EU Regulation No 910/2014 which relates to electronic identification and trust services for electronic transactions (e.g., digital signature services - relevant Cyprus law N. 55(I)/2018). Hence, the online presence of banks, and relevant mobile banking services, appear to be crucial elements of success in this new increasingly digitalized setting.

Such regulatory steps clearly illustrate the need for increasingly efficient and effective online services and solutions offered by institutions such as banks, which institutions are already called to expand their online services and solutions to additional features in the digitalized market. Such additional services include, inter alia, electronic identification of clients, digital signature services and general due diligences services for commercial transactions.

²⁵ Theopoulou, T., 2021. *Η ζωή μας, ένα κλικ στο κινητό*. [online] Philenews. Available at: <<https://www.philenews.com/oikonomia/kypros/article/1213408>>

²⁶ Paizanou, E., 2021. *Από 20/09 η υποχρέωση για πληρωμή και με κάρτα*. [online] Philenews. Available at: <<https://www.philenews.com/oikonomia/kypros/article/1275464/apo-20-09-i-yochreosi-ga-pleriomi-kai-me-karta>>

Following the boost in the demand for online services further to the COVID-19 pandemic, and the relevant governmental regulations towards digitalization, institutions such as banks need to be ready to adapt to a rapidly evolving technology framework, and relevant demand by the market. This rapid evolution brings about increased risks associated with the development of software and the relevant launch of online technology services and products. The understanding of the market and the direction where it is headed, along with what is technologically possible, appear to be crucial aspects of a successful software development and launch.

According to our questionnaire, BoC is the main banking institution for approximately 61% of the public, with the overwhelming majority of these clients (i.e., approximately 9 out of 10 individuals) to be also daily users of the Mobile App. Accordingly, BoC may be regarded as holding a dominant position in the online banking services market and can reasonably be considered a dominant provider of such services, following also the acquisition of the Laiki Bank activities after the 2013 financial crisis on the island. Hence, such a dominant position warrants careful risk assessment regarding any new venture or launch, including any shift in the offered digital services and relevant customer support.

Bearing in mind the above, the BoC should always aim at being in the forefront of digital product development/offering and do so through careful market research (including costing procedures, demand trends analysis, projections etc.) and assessment of any applicable risks. Further to this diligent market research and risk assessment, the bank should utilize the bulk of its relevant resources on the carefully selected digital products, and simultaneously it should maintain a contingency plan to aid in times of risk materialization. This would allow the bank to mitigate applicable opportunity risks. An example of such an opportunity risk faced by an organisation would be the risk of a shift in market technology trends, when the organization has heavily invested in a different type of technology, which cannot be adjusted to the new market conditions and demand. In such an event the organisation may become technologically obsolete and eventually lose market share. To compete in the Age of Software it is important to mitigate

this opportunity risk or any risk of this nature with Business Agility. Business Agility is the ability to compete and thrive in the digital age by quickly responding to market changes and emerging opportunities with innovative, digitally enabled business solutions. As Mik Kerster said In Project to Product, “Those who master large scale delivery will define the economic landscape of the 21st century.”²⁷ (Leffingwell, 2021).

A relevant contingency plan in the event of BoC could take the form of outsourced contracts, i.e., engagement of resources outside the company at cost effective rates, to assist the bank in swiftly adjusting to new technology requirements. This contingency engagement of outside resources could be effected to supplement any potential deficiency (or limitation) in the inhouse IT departments of the bank. Essentially, the bank could maintain these contracts if (and to the extent that) without them any new technology requirement would be unattainable due to the resources of the bank being dedicated in existing ventures. In such a way, the provision of digital services by the bank and relevant customer support shall be kept up to date with current technology and unaffected by the heavy allocation of resources in existing ventures. Such contingency engagements could also be utilized regarding the potentiality of the bank dedicating resources in a venture and the venture failing for any reason. In such an event, if the aforesaid contingency plan would not be available, the bank would miss other opportunities due to its potential inability to swiftly adjust to a new venture.

The risk management plan in relation to the mobile app appears rather simple for BoC. The bank should carefully research the market and all other variables pre-launch (i.e., inter alia viability studies, projections, competition, targeted marketing via social media etc.), and relevantly choose appropriate services / products to focus on. Simultaneously the bank should have a technology support company (e.g., IBM, NCR etc - additionally to internal IT) on a retainer basis,

²⁷ Leffingwell, D., 2021. *Business Agility - Scaled Agile Framework*. [online] Scaled Agile Framework. Available at: <<https://www.scaledagileframework.com/business-agility/>>

to support the bank in times of tech emergencies and/or the need of swift adjustment to new technologies / trends.

Another aspect that appears important for BoC is the operational risk associated with launching software and apps which potentially may not adequately address customer needs. The software may offer some service to the customer, but if it is not adequate, the customer may turn to the competition. Being a dominant player on the banking and online banking sector, BoC needs to have a mobile app which is streamlined i.e., changes and adjustments need to be made according to the prevailing demand, so that the mobile app does not become bloated, and the user-friendly factor drops. The application may become boated if new features are added, while other features which may potentially be inefficient / ineffective, are not removed. Additionally, a complex and feature intensive application, which is not streamlined as described above, increases the maintenance cost. To avoid this, it is important for the Agile Mobile App team (dedicated and cross-functional team) to not only focus on features formed during Sprint Planning sessions (periodic planning of product development) but also research and analyse the requirements upfront and validate the solution after the release²⁸ (Madden, 2021). To achieve this, to acquire a clear understanding of what value is being derived from the software development efforts, Value Streams can be of use. From Analysis and Research, it is evident that, for a minor feature to be part of the new release of the Mobile App, many different IT systems require to exchange and process information and several departments to be involved and aligned. By understanding the interdependencies within the value streams, the interacting processes and the different tasks performed within the different teams, quality and velocity improvements can be made while cost

²⁸ Madden, R., 2021. *The Biggest Risk in Software Development*. [online] Uxdx.com. Available at: <<https://uxdx.com/blog/the-biggest-risk-in-product-development>>

and risk can be reduced²⁹ (Oehrlich, 2020). Common Risks in Software Development which are applicable for the Mobile App are unaligned stakeholders and delivering the wrong feature³⁰ (Shuller, 2021). In general, sensing an opportunity involves market research, customer feedback and the leadership team having a rich source of ideas and possibilities to create value.

To leverage such an identified opportunity requires a flexible and lean approach to funding the people and material resources required to produce the Minimum Viable Product (MVP) - an initial solution to test the business hypothesis and deliver a first solid increment of value. As a result, the mitigation action to respond to this Risk is to have a second organizational structure, based on Value Streams which will be initiated to build and evolve products in an innovative and efficient way. The Value Stream setup brings Business, IT, and other cross functions together in a common effort and an identifiable goal which will bring value to BoC.

This team of teams connect to the customer by applying design thinking. The structure of design thinking creates a natural flow from research to rollout. Immersion in the customer experience produces data, which is transformed into insights, which help teams agree on design criteria they use to brainstorm solutions. Assumptions about what is critical to the success of those solutions are examined and then tested with rough prototypes that help teams further develop innovations and prepare them for real-world experiments.

Along the way, design-thinking processes counteract human biases that thwart creativity while addressing the challenges typically faced in reaching superior solutions, lowered costs and risks, and employee buy-in. Recognizing organizations as collections of human beings who are

²⁹ Oehrlich, E., 2020. *Value Stream Management: The good, bad, and ugly for Agile and DevOps leaders*. [online] Enterpriseproject.com. Available at: <<https://enterpriseproject.com/article/2020/11/value-stream-management-truths-for-leaders>>

³⁰ Shuller, M., 2021. *Risk-Value Life Cycle*. [online] Project Management Institute, Inc. Available at: <<https://www.pmi.org/disciplined-agile/lifecycle/risk-value-lifecycle>>

motivated by varying perspectives and emotions, design thinking emphasizes engagement, dialogue, and learning. By involving customers and other stakeholders in the definition of the problem and the development of solutions, design thinking garners a broad commitment to change. And by supplying a structure to the innovation process, design thinking helps innovators collaborate and agree on what is essential to the outcome at every phase. It does this not only by overcoming workplace politics but by shaping the experiences of the innovators, and of their key stakeholders and implementers, at every step. *That* is social technology at work.

Furthermore, the Agile Mobile App team can include during Sprint planning the Risk Evaluation of each requirement or User Story. By doing so, the team can assess if the reward of the User Story justifies the level of Risk to be taken. This way, the team can consider alternatives which can achieve almost the same level of reward with a reduced probability of the risk materializing, or with reduced impact. This attitude of the Agile team can improve requirements prioritization³¹ (Terspaben, 2021). As a matter of fact, it is suggested that this alternatives consideration is performed in a debate form rather than in a brainstorming session. Research has shown that, dissent stimulates new ideas because it encourages to engage more fully with the work of others and reassess our viewpoints³² (Lehrer, 2012).

Finally, in order to assess if the mitigating action reduces the probability of the Risk materializing or reduces the impact of the Risk, it is crucial to measure the Business Agility of the Value Stream. There are three measurement domains required, the flow metrics which shows how fast the Value Stream is creating and delivering value, the Outcome metric which is based on the KPIs of

³¹ Terspaben, Z., 2021. *Software Development Risk Management Plan With Examples*. [online] CAST. Available at: <<https://www.castsoftware.com/research-labs/software-development-risk-management-plan-with-examples>>

³² Lehrer, J., 2012. The Brainstorming Myth. *Business Strategy Review*, 11(4), pp.21-28.

the Value Stream and the Competency metrics to assess the overall progress and to help teams and team of teams (the so-called trains) to improve on technical and business practices.

Another aspect of the operational risk is, further to offering the “right” features in the Mobile App, to also be able to support the customers after product release when using these features for a user-friendly, fast and fun customer journey experience. The underlying support processes and personnel require continuous training on new features to offer a single point of contact for the customer to resolve any incident or raise any service request relevant to the Mobile App. The risk is that despite the investment in new mobile features and heavy involvement of all teams to deliver, this new feature might not be used after several bad customer experiences. The probability of this occurring is substantial and the impact very big, bringing the level of the risk to high or even critical. The risk strategy for this should be to avoid this scenario from materializing. For this to be successfully addressed it is essential that the 1Bank call center is continuously involved and trained on new features in the mobile app and scenario planning of what might go wrong in the Customer Journey are prepared and assessed from the involved teams.

CHAPTER 7 – CONCLUSIONS

Based on the analysis and research during the ABP we conclude that for the Mobile Banking of BoC to be sustainable, from all perspectives including financial, strategic, market and risk perspectives, the following recommendations should be considered and used.

The Bank should promote and provide via the Mobile App, ESG related initiatives like loans for the purchase of electric vehicles at better rates. The marketing department can proactively leverage Digital Marketing in campaigning for upcoming Mobile App features. This is expected to have a twofold benefit for the Bank, i.e., projection of ESG and CSR profile of the Bank, and the promotion / upgrading of the Mobile App and the digital services of the Bank.

The Mobile App Leadership team should build trust and a perception of common purpose among the Mobile App team members and other related teams and infuse creativity in the workplace. This can be achieved by well-planned and implemented remuneration schemes and opportunities to participate in decision making and further expand. The Leadership team should also improve planning and controlling of project cost and have a deeper understanding of the recurring overhead costs and the activity group drivers.

The Mobile App team should plan and anticipate higher demand of product features as a result of the industry driving forces. The Mobile App team should modernize its mobile app interface, making it more user friendly and ready to better compete against FinTechs e.g., Revolut. The Mobile App team should cautiously decide which traditional products to offer via the Mobile App considering market demand, technological trends and cost-benefit analysis outcomes. The Mobile App team should utilize the bulk of its relevant resources on the carefully selected features and simultaneously maintain a contingency plan to aid in times of risk materialization. This contingency plan may be implemented by having an IT partner on a retainer basis, to support

in times of emergency and accordingly assist the Bank to remain at the forefront of technological development and provision of innovative and effective services.

Furthermore, the Bank should monitor the trends and legislation / regulatory developments, in relation to the digitalization of many aspects of the market and relevant transactions. This regulatory framework and legislation (e.g., mandatory facilities for card payments, digital signature services, and due diligence services) inter alia appear to aim at a “cash-less” economy, with digital banking and ancillary digital services, becoming the new norm. This is a vast opportunity and challenge for the Bank which, by applying the appropriate market research, analysis, and costing tools, along with the targeted digital marketing and appropriate strategic decisions, can proceed with the appropriate business steps towards becoming a market leader, also in the digital era.

The above steps, ideas, and processes, coupled with the appropriate and calculated decision making, can actively contribute to the sustainability of the digital product of the BoC.

Appendix I

Mobile Banking Questionnaire

1. **Age range** (please indicate below) : /radio button/

Up to 21 , 22-26, 27-35, 36-54, 55+

2. **Educational level** (please indicate below) : /radio button

High School Graduate, University Degree (BA, BSc, B.Ed., etc.), Master's Degree (MA, MSc, MBA, etc.) and/or PhD

3. **Nationality** (please indicate below) : /list, radio button/

.....

4. Please indicate the district where you live (place of residence) /radio button/

Lefkosia/Lemesos/Paphos/Larnaca/Ammochostos

.....

5. **Which of the below banking / credit institutions operating in Cyprus (in alphabetical order) do you primarily use?** (Please indicate below) /radio button/

- i. **Alpha Bank Cyprus Ltd**
- ii. **Ancoria Bank Limited**
- iii. **Astrobank Public Company Limited**
- iv. **Bank of Cyprus Public Company Ltd**
- v. **Cyprus Development Bank Public Company Limited**
- vi. **Eurobank Cyprus Ltd**
- vii. **Hellenic Bank Public Company Limited**
- viii. **Housing Finance Corporation**
- ix. **National Bank of Greece (Cyprus) Ltd**

- x. **RCB BANK LTD**
- xi. **Other, please indicate**

6. Please indicate other online banking institutes which you may use **/check box/**
- I. **Revolut**
 - II. **Curve**
 - III. **Soas**
 - IV. **Monzo**
 - V. **N26**
 - VI. **Other, please indicate**
 - VII. **Not applicable**

7. If you use a platform such as Revolut, N26, etc. which features of this platform do you use more often? **/check box/**
- I. Money transfer
 - II. Standing orders
 - III. online payments
 - IV. Stock exchange
 - V. virtual cards
 - VI. Other, please indicate ...

If you are a Bank of Cyprus Public Company Ltd customer or prospective customer, please answer the below questions:

8. On a scale of 1 – 10, with 1 being the lowest score i.e., least likely, how likely are you to use **mobile banking services** in your day-to-day banking transactions? **/bar 1-10/**

.....

9. On a scale of 1 – 10, with 1 being the lowest score, how would you rate the overall mobile banking **user experience** of the Mobile App of Bank of Cyprus Public Company Limited? /bar 1-10/

.....

I. If you use a different Banking/Credit Mobile App, on a scale of 1 – 10, with 1 being the lowest score, how would you rate the overall mobile banking **user experience**? /bar 1-10/

.....

10. Are you aware of the onboarding process of the Mobile App of Bank of Cyprus Public Company Limited?

I. On a scale of 1 – 10, with 1 being the lowest score, how would you rate the **onboarding process** (i.e., ease of setting up your mobile banking account with all permissions / activations completed) of the Mobile App of Bank of Cyprus Public Company Limited? /bar 1-10/

.....

II. If you use a different Banking/Credit Mobile App, on a scale of 1 – 10, with 1 being the lowest score, how would you rate the **onboarding process on the Mobile App**? /bar 1-10/

.....

11. Please describe any experience you may have had on the Mobile App of Bank of Cyprus Public Company Limited, which has negatively affected your view regarding how user friendly is the said platform:

.....

.....

.....

12. Are you aware that you can apply for house/car insurance through the Mobile App of Bank of Cyprus?

I. Have you used the home/car insurance provided through the Mobile App of Bank of Cyprus Public Company Limited?

Yes/No

i. [show only if 12 = Yes] On a scale of 1 – 10, with 1 being the lowest score, how would you rate the specific service of home/car insurance provided through the Mobile App of Bank of Cyprus Public Company Limited?

.....

ii. [show only if 12 = no] If you do not use the specific service of home/car insurance provided through Mobile App please briefly indicate the reason and / or any suggested improvement to the service which would render the service more attractive for you:

.....

.....

.....

13. Regarding the below mobile banking services / solutions, please indicate how often do you anticipate using each such service:

(i.e., please indicate how many times per **Week, Month, or Year**)

i. **Loan applications through the Mobile Banking app:**

..... times per

ii. Deposit of cheques through the Mobile Banking app:

..... times per

iii. Possibility of currency exchange through the Mobile Banking app:

..... times per

iv. Digital Signature purchase through the Mobile Banking app:

..... times per

v. Payment facilitation through mobile apps e.g., Apple Pay, Garmin Pay, Fitbit Pay, BoC Wallet etc.

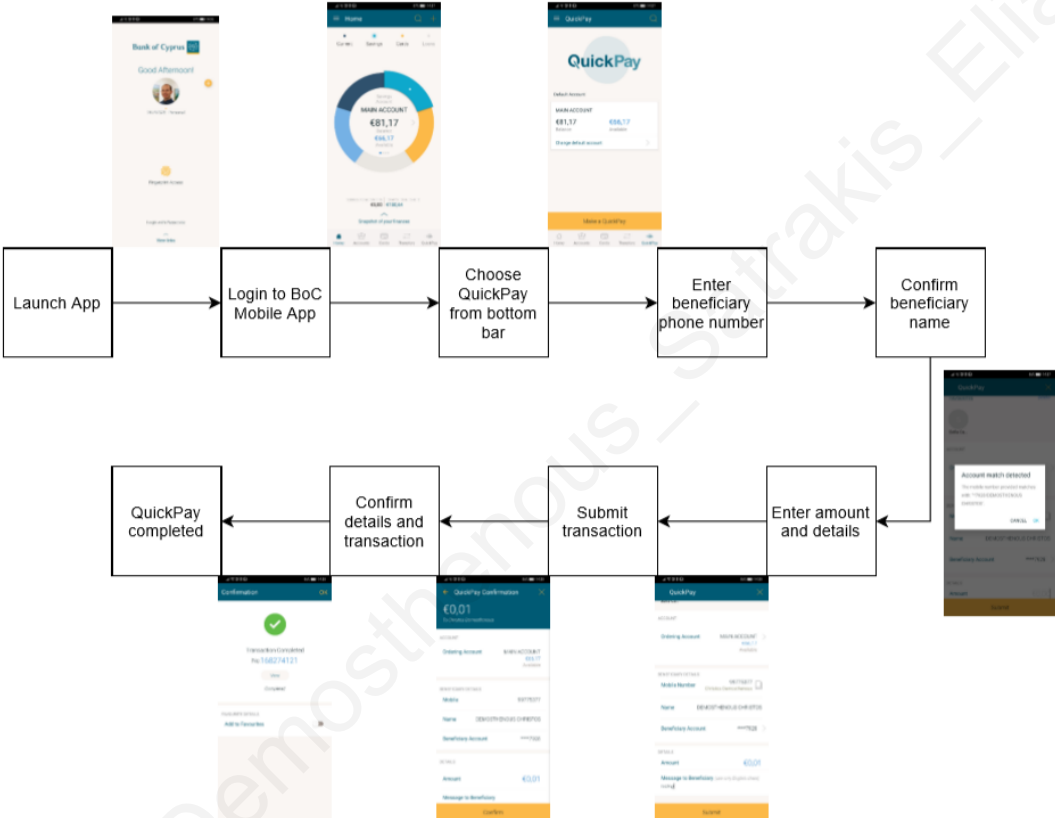
..... times per

vi. Customer onboarding

..... times per

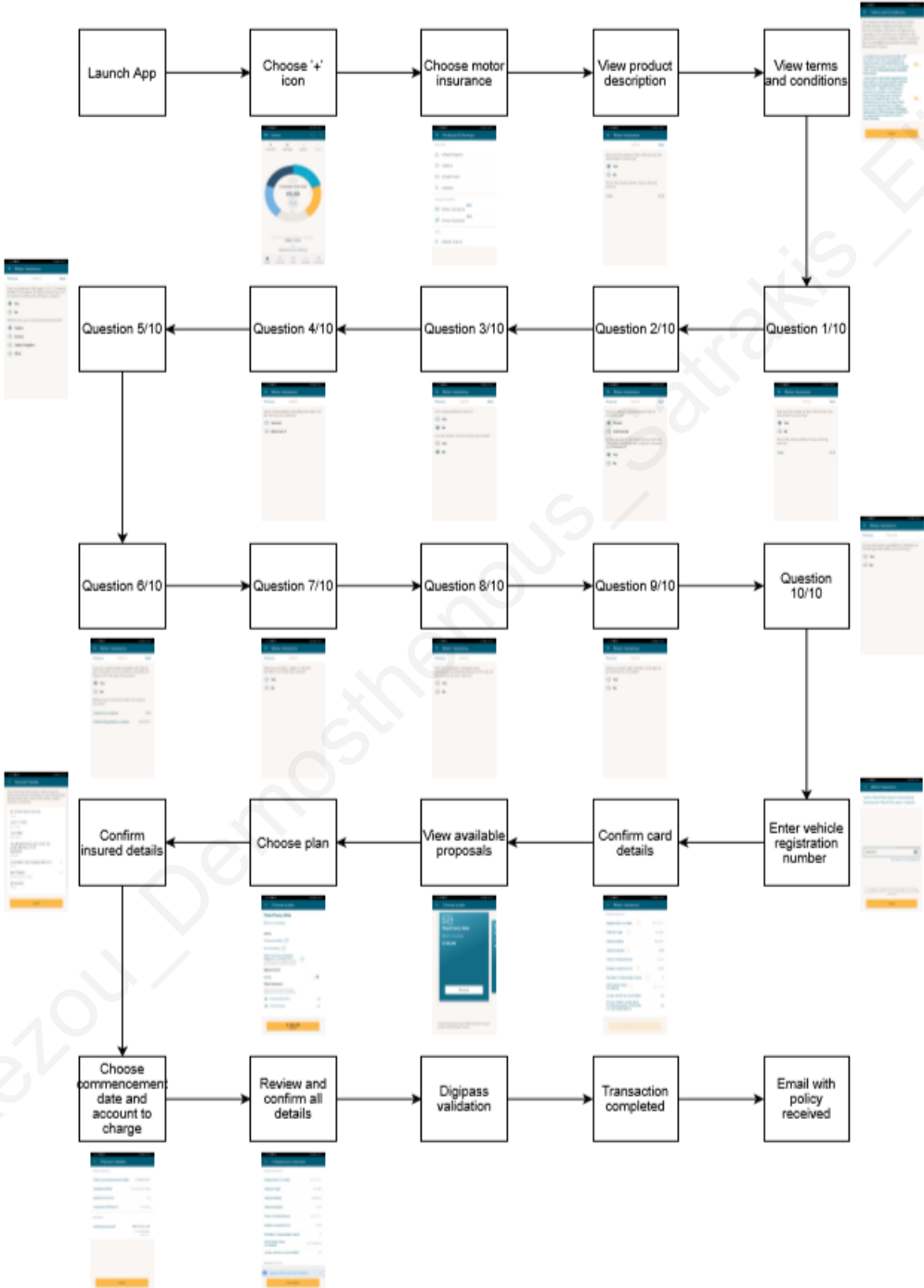
Customer Journey regarding the main features of the Mobile App

QuickPay

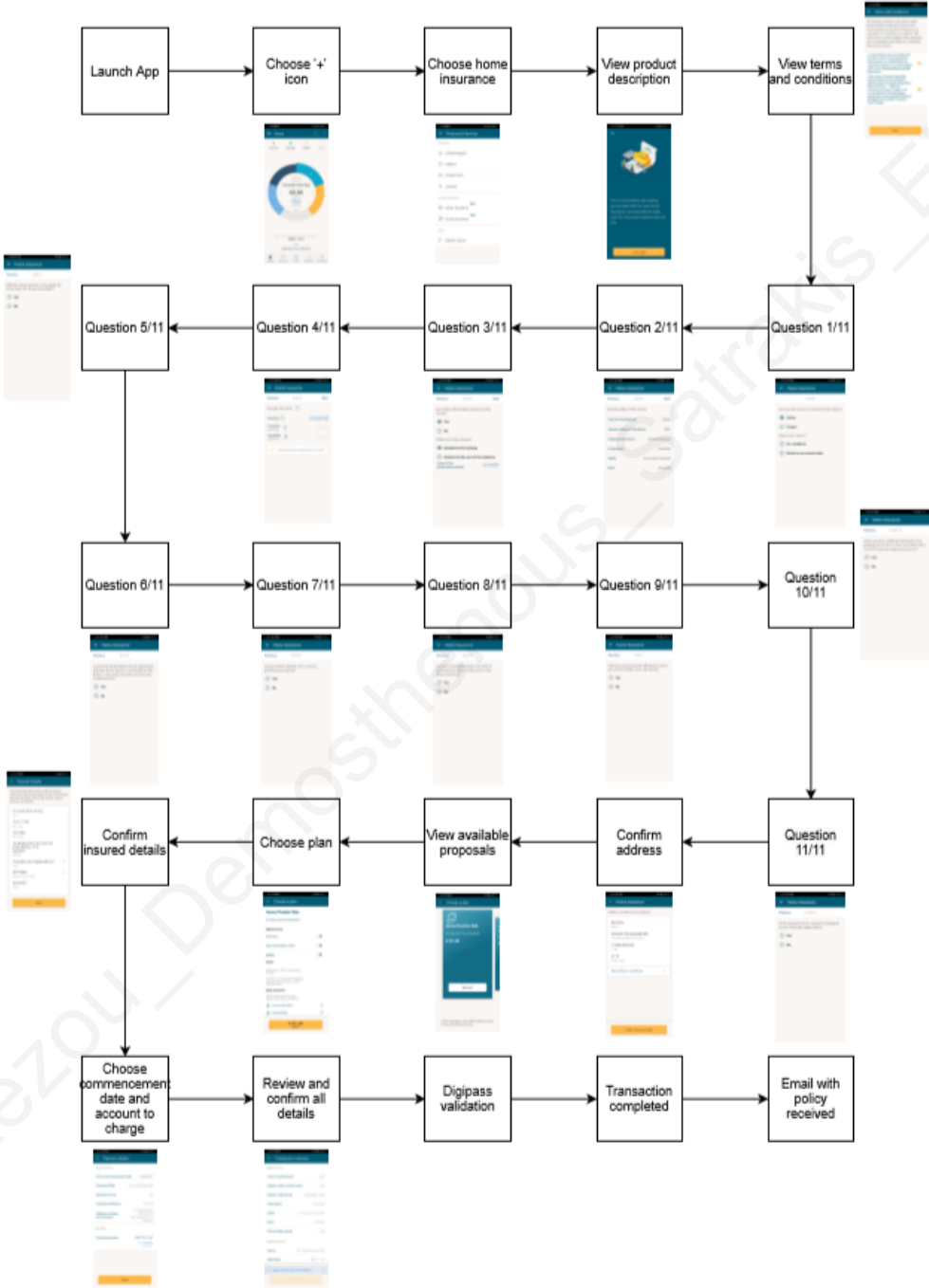


Regarding Check Balance the Customer journey is the first two steps as in the above flow.

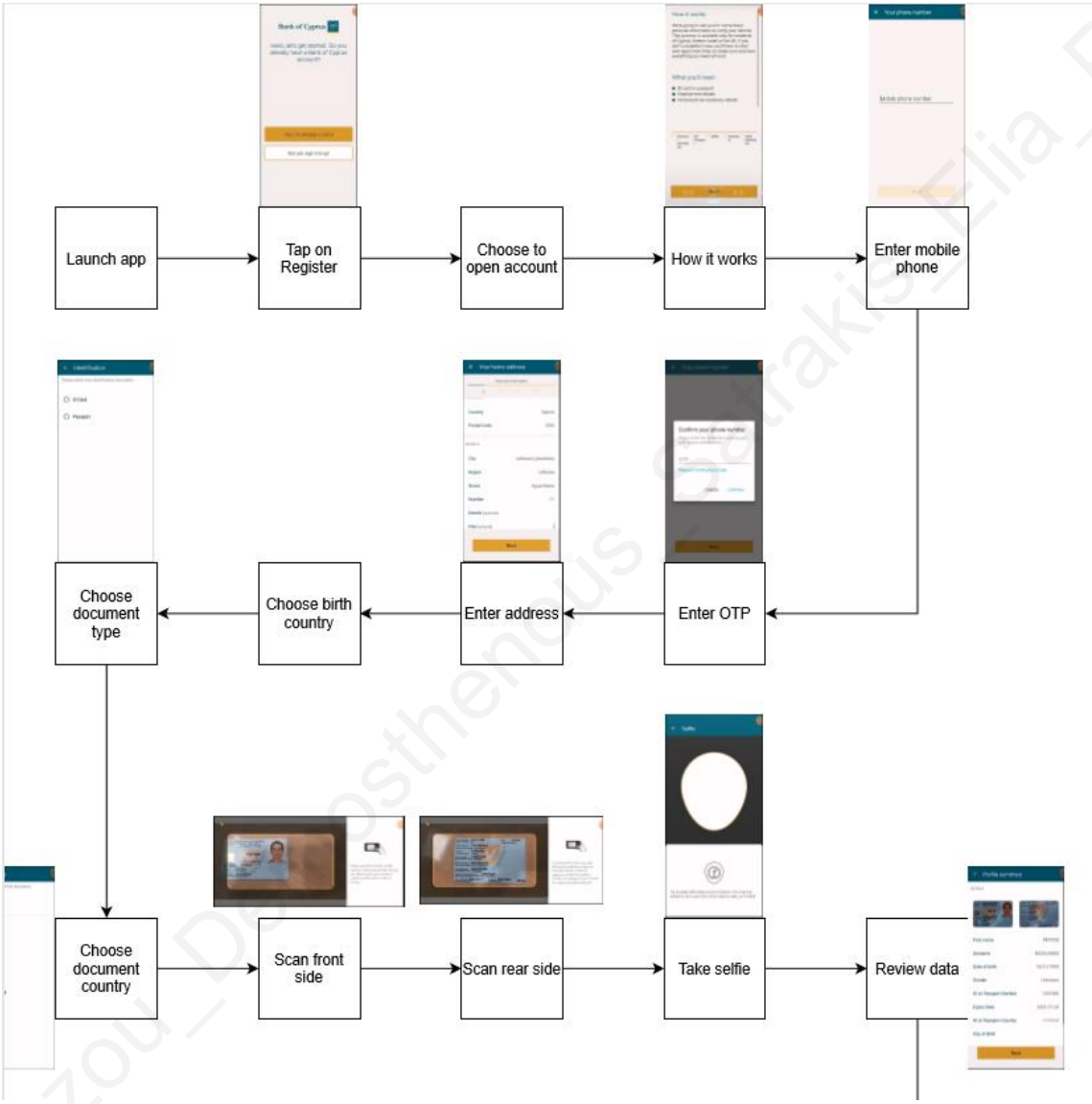
Motor Insurance

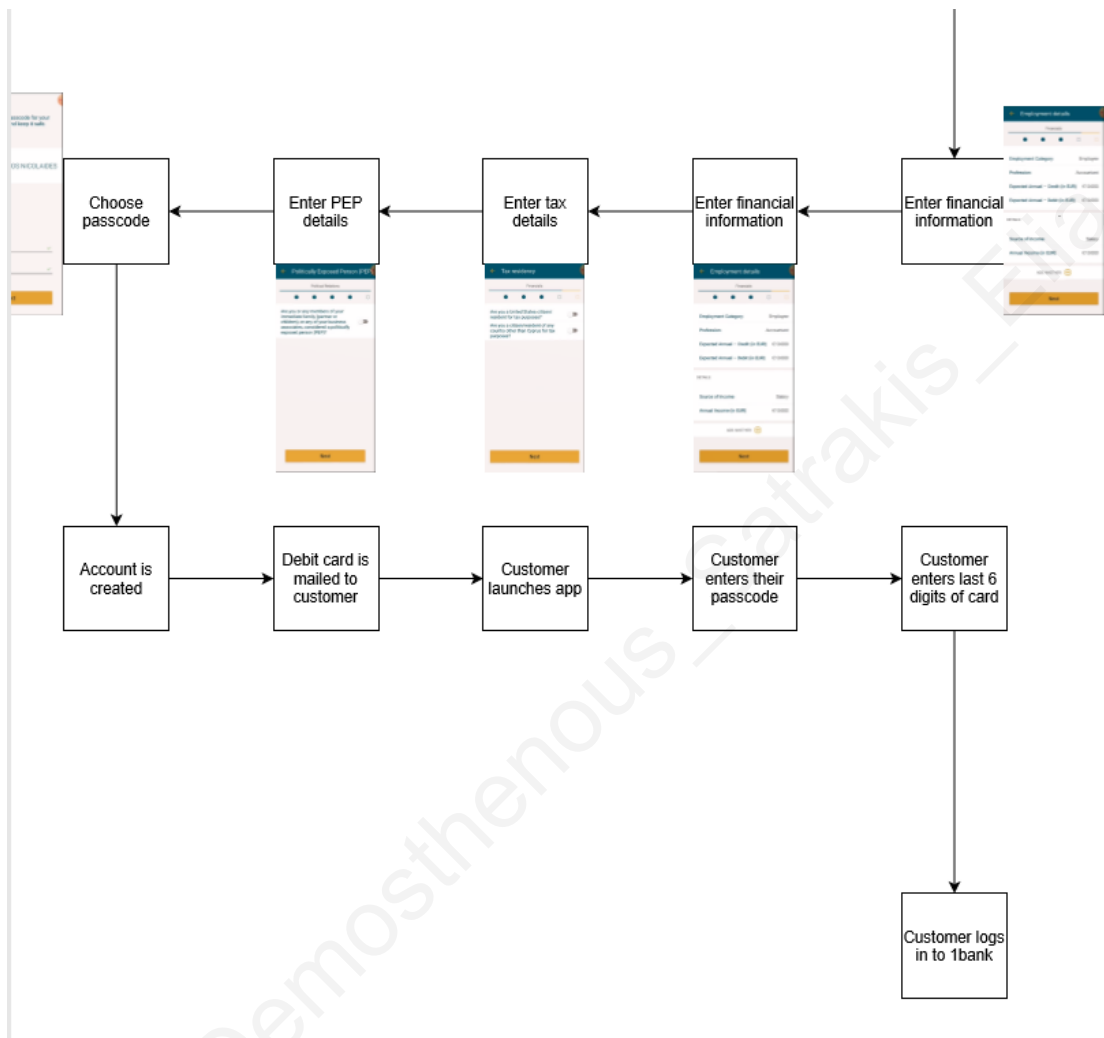


Home Insurance



Customer Onboarding





Activity cost pools and measures

<u>Product feature</u>	<u>Feature step</u>	<u>Activity</u>	<u>Activity Group</u>	<u>Activity Group Driver</u>
Customer Onboarding	Launch App	Check Version	Version Service	1Bank utilization
	Tap on Register	Mobile App	Mobile App	no cost
	Choose to open account	Mobile App	Mobile App	no cost
	How it works	Mobile App	Mobile App	no cost
	Enter mobile phone	Verify Customer Phone	Secure Code Service	SMS cost
	Enter OTP	Validate OTP	Secure Code Service	SMS cost
	Enter address	Enter Permanent Address	Address Service	license based
	Choose birth country	Get Countries	Reference Data Service	no cost
	Choose document type	Get Document Types	Reference Data Service	no cost
	Choose document country	Get Document Countries	Reference Data Service	no cost
	Scan front side	API Call for verification	3rd party app related	license based
	Scan rear side			
	Take selfie			
	Enter financial information	Enter financial information	Reference Data Service	no cost

	Enter tax details	Enter tax details	Reference Data Service	no cost
	Enter PEP details	Enter PEP details	Reference Data Service	no cost
	Create Customer	Create Customer	Bank Core System	Core utilization
	Get Risk Level	Get Risk Level	Bank Core System	Core utilization
	Select Branch/Banker	Auto Select Branch/Banker for customer	Digital Onboarding Service	no cost
	Check Customer	API to e-name checker FCRM	FCRM System	no cost
	Decide STP Eligibility	Decide STP Eligibility	ODM Engine	no cost
	Review data if needed	Manual Approval by Banker	BPM	no cost
	Choose passcode	Customer Defines Passcode	Digital Onboarding Service	no cost
	Create Account	Create Account	Bank Core System	Core utilization
	Create Card	Create Card	Card System	no cost
	Customer launches app	Mobile App	Mobile App	no cost
	Customer enters their passcode	Mobile App	Mobile App	no cost
	Customer enters last 6 digits of card	Mobile App	Mobile App	no cost

	Create Subscriber	Create Subscriber	1Bank Services	1Bank utilization
	Customer logs in to 1bank	intra API to 1Bank	1Bank Services	1Bank utilization
QuickPay	Launch App	Check Version	Version Service	1Bank utilization
	Customer logs in to 1bank	intra API to 1Bank	1Bank Services	1Bank utilization
	Choose QuickPay	Mobile App	Mobile App	no cost
	Enter beneficiary phone number	Mobile App	Mobile App	no cost
	Confirm beneficiary name	intra API to 1Bank	1Bank Services	1Bank utilization
	Enter amount and details	Mobile App	Mobile App	no cost
	Submit transaction	Mobile App	Mobile App	no cost
	Confirm details and transaction	intra API to 1Bank and then to Core	1Bank and Core related	1Bank utilization; Core utilization
	QuickPay completed	Mobile App	Mobile App	no cost
Motor Insurance	Launch App	Check Version	Version Service	1Bank utilization
	Customer logs in to 1bank	intra API to 1Bank	1Bank Services	1Bank utilization
	Choose + icon	Mobile App	Mobile App	no cost
	Choose motor insurance	Mobile App	Mobile App	no cost
	View product description	Mobile App	Mobile App	no cost

	View items and conditions	Mobile App	Mobile App	no cost
	10 Questions	GIC System API Call for Questions (Pricing engine)	GIC System	GIC API call utilization
	Enter vehicle registration number	Mobile App	Mobile App	no cost
	Confirm card details	Mobile App	Mobile App	no cost
	View available proposals	Retrieve Proposals	GIC System	GIC API call utilization
	Choose plan	GIC System API Call for contract prep	GIC System	GIC API call utilization
	Confirm insured details	Mobile App	Mobile App	no cost
	Choose commencement date and account to charge	Mobile App	Mobile App	no cost
	Review and confirm all details	Mobile App	Mobile App	no cost
	Digipass validation	intra API to 1Bank	1Bank Services	1Bank utilization
	Transaction completed	intra API to 1Bank and then to Core; GIC System API Call for contract final.	1Bank/Core/GIC System	1Bank utilization; Core utilization; GIC API utilization
	Email with policy received	API call to GIC Email server	GIC System	GIC API call utilization
Home Insurance	Launch App	Check Version	Version Service	1Bank utilization

Customer logs in to 1bank	intra API to 1Bank	1Bank Services	1Bank utilization
Choose + icon	Mobile App	Mobile App	no cost
Choose home insurance	Mobile App	Mobile App	no cost
View product description	Mobile App	Mobile App	no cost
View items and conditions	Mobile App	Mobile App	no cost
11 Questions	GIC System API Call for Questions (Pricing engine)	GIC System	GIC API call utilization
Confirm address	Mobile App	Mobile App	no cost
View available proposals	Mobile App	GIC System	GIC API call utilization
Choose plan	GIC System API Call for contract prep	GIC System	GIC API call utilization
Confirm insured details	Mobile App	Mobile App	no cost
Choose commencement date and account to charge	Mobile App	Mobile App	no cost
Review and confirm all details	Mobile App	Mobile App	no cost
Digipass validation	intra API to 1Bank	1Bank Services	1Bank utilization
Transaction completed	intra API to 1Bank and then to Core; GIC System API Call for contract final.	1Bank/Core/GI C System	1Bank utilization; Core utilization; GIC API utilization

	Email with policy received	API call to GIC Email server	GIC System	GIC API call utilization
Transfer to 3rd party	Launch App	Check Version	Version Service	1Bank utilization
	Customer logs in to 1bank	intra API to 1Bank	1Bank Services	1Bank utilization
	Choose Transfers	Mobile App	Mobile App	no cost
	Choose to Other Banks	Mobile App	Mobile App	no cost
	Choose Ordering Account	intra API to 1Bank	1Bank Services	1Bank utilization
	Choose Beneficiary Name and IBAN, Amount	Mobile App	Mobile App	no cost
	Confirm amount	intra API to 1Bank	1Bank Services	1Bank utilization
	Enter OTP	intra API to 1Bank	1Bank Services	1Bank utilization
	Transaction completed	intra API to 1Bank and then to Core	1Bank and Core related	1Bank utilization; Core utilization
Check balance	Launch App	Check Version	Version Service	1Bank utilization
	Customer logs in to 1bank	intra API to 1Bank	1Bank Services	1Bank utilization
	Customer Checks Balance	Core sends Balance Update to 1Bank	1Bank and Core related	1Bank utilization; Core utilization

REFERENCES

1. Sinek, S., 2009. *Start with why*. 2nd ed. New York: Penguin Group, pp.83-114.
(Sinek, 2009)
2. Thesismind, 2019. *Analysis of Saunders Research Onion*. [online] Thesismind. Available at: <<https://thesismind.com/analysis-of-saunders-research-onion/>>
(Thesismind, 2019)
3. United Nations Sustainable Development. 2021. *Infrastructure and Industrialization*. [online] Available at: <<https://www.un.org/sustainabledevelopment/infrastructure-industrialization/>>
(Infrastructure and Industrialization, 2021)
4. Cyprus Mail. 2021. *BANK OF CYPRUS | Cyprus Mail*. [online] Available at: <<https://cyprus-mail.com/2021/08/28/bank-of-cyprus-2/>>
(BANK OF CYPRUS | Cyprus Mail, 2021)
5. Valenti, J. and Alderman, R., 2021. *Will the shift to digitalization in banking stick?*. [online] Deloitte Insights. Available at: <<https://www2.deloitte.com/uk/en/insights/industry/financial-services/digitalization-in-banking.html>>
(Valenti and Alderman, 2021)
6. FinancialMirror. 2021. *Revolut takes on Cyprus banks*. [online] Available at: <<https://www.financialmirror.com/2021/02/17/revolut-takes-on-cyprus-banks/>>
(Revolut takes on Cyprus banks, 2021)
7. Openbankingeurope.eu. 2021. *About Open Banking Europe*. [online] Available at: <<https://www.openbankingeurope.eu/who-we-are/>>
(About Open Banking Europe, 2021)

8. Walden, S., 2021. *What Is Fintech And How Does It Affect How I Bank?*. [online] Forbes Advisor. Available at: <<https://www.forbes.com/advisor/banking/what-is-fintech/>>

(Walden, 2021)

9. Schwab, K. and Zahidi, S., 2021. *The Global Risks Report 2021*. 16th ed. [ebook] World Economic Forum, pp.10-11. Available at: <https://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2021.pdf>

(Schwab and Zahidi, 2021)

10. BBC Bitesize. 2021. *What are stakeholders? - Stakeholders - GCSE Business Revision - Other - BBC Bitesize*. [online] Available at: <<https://www.bbc.co.uk/bitesize/guides/z4gcd2p/revision/1>>

(What are stakeholders? - Stakeholders - GCSE Business Revision - Other - BBC Bitesize, 2021)

11. Small Business - Chron.com. 2020. *Three Basic Strategic Resources in Business*. [online] Available at: <<https://smallbusiness.chron.com/three-basic-strategic-resources-business-47141.html>>

(Three Basic Strategic Resources in Business, 2020)

12. Edwards, J., 2021. *Resource-Based Theory*. [online] Opentextbc.ca. Available at: <<https://opentextbc.ca/strategicmanagement/chapter/resource-based-theory/>>

(Edwards, 2021)

13. Bankofcyprus.com.cy. 2021. *New era, new cards*. [online] Available at: <<https://www.bankofcyprus.com.cy/en-gb/Personal/cards/campaigns/newcards/>>

(BoC, New era, new cards, 2021)

14. Bankofcyprus.com. 2021. *Our Environment*. [online] Available at: <<https://www.bankofcyprus.com/en-GB/csr/Our-Environment/>>

- (BoC,Our Environment, 2021)
15. Theopoulou, T., 2021. *Η ζωή μας, ένα κλικ στο κινητό*. [online] Philenews. Available at: <<https://www.philenews.com/oikonomia/kypros/article/1213408>> (Theopoulou, 2021)
16. Paizanou, E., 2021. *Από 20/09 η υποχρέωση για πληρωμή και με κάρτα*. [online] Philenews. Available at: <<https://www.philenews.com/oikonomia/kypros/article/1275464/apo-20-09-i-yprochreosi-ga-pliromi-kai-me-karta>> (Paizanou, 2021)
17. Brewer, P., 2019. *Introduction to managerial accounting*. 8th ed. New York, pp.4-157. (Brewer, 2019)
18. Charitou, A., 2020. Managerial Information for Decision Making. In: P. Brewer, ed., *Introduction to Managerial Accounting*, 8th ed. New York, pp.506-555. (Charitou, 2020)
19. Brealey, R., Myers, S. and Allen, F., 2020. *Principles of corporate finance*. 13th ed. New York: McGraw-Hill Education, pp.21-271. (Brealey, Myers and Allen, 2020)
20. Leffingwell, D., 2021. *Business Agility - Scaled Agile Framework*. [online] Scaled Agile Framework. Available at: <<https://www.scaledagileframework.com/business-agility/>> (Leffingwell, 2021)
21. Madden, R., 2021. *The Biggest Risk in Software Development*. [online] Uxdx.com. Available at: <<https://uxdx.com/blog/the-biggest-risk-in-product-development>> (Madden, 2021)

22. Oehrlich, E., 2020. *Value Stream Management: The good, bad, and ugly for Agile and DevOps leaders*. [online] Enterpriseproject.com. Available at: <<https://enterpriseproject.com/article/2020/11/value-stream-management-truths-for-leaders>>
- (Oehrlich, 2020)
23. Shuller, M., 2021. *Risk-Value Life Cycle*. [online] Project Management Institute, Inc. Available at: <<https://www.pmi.org/disciplined-agile/lifecycle/risk-value-lifecycle>>
- (Shuller, 2021)
24. Terspaben, Z., 2021. *Software Development Risk Management Plan With Examples*. [online] CAST. Available at: <<https://www.castsoftware.com/research-labs/software-development-risk-management-plan-with-examples>>
- (Terspaben, 2021)
25. Lehrer, J., 2012. The Brainstorming Myth. *Business Strategy Review*, 11(4), pp.21-28. (Lehrer, 2012)
26. Mof.gov.cy. 2021. *Statistical Service - Home Page*. [online] Available at: <https://www.mof.gov.cy/mof/cystat/statistics.nsf/index_en/index_en?OpenDocument>
27. Microsoft Customers Stories. 2021. Hellenic Bank drives new mobile banking experience with Azure. [online] Available at: <https://customers.microsoft.com/EN-IN/story/1388780480357286037-hellenic-bank-banking-capital-markets-azure-en-cyprus>
28. Saunders, K., 2017. Bank of Cyprus Taps IBM Technology and Expertise to Fuel and Accelerate Digital Transformation. [online] IBM Newsroom. Available at: <https://newsroom.ibm.com/2017-07-27-Bank-of-Cyprus-Taps-IBM-Technology-and-Expertise-to-Fuel-and-Accelerate-Digital-Transformation>