MARKET ASSESSMENT

HEALTH TECH SECTOR

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RESOURCE EDGE

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Assumptions

- 1 USD = 225.31 PKR
- Sales growth of Pharmaceutical sector for 2020-21 and 2021-22 assumed at 10% in line with the historical trend.

Executive Summary

Health Tech, defined broadly, includes any technology enabled healthcare product and services that can be delivered or consumed outside of a hospital or physician's office, with the exception of hospital and practice management software. Two other terms that are also often mentioned alongside Health Tech in the context of healthcare are Med Tech and Bio Tech. While Med Tech is mostly used inside the hospital, biotech is mostly focused on developing new drugs, like vaccines, and predicting their effect on human beings, based on different factors. Both Med Tech and Bio Tech are focused towards diagnosis and treatment, rather than prevention. Based on the market assessment and potential, this report prioritizes the Health Tech and Med Tech verticals for investment in the existing and untapped opportunities to contribute to the growth of the sector.

In line with the rapid growth in Health Tech globally, especially after the Covid pandemic, Pakistan's Health Tech market is also evolving and is on a growth trajectory. Pakistan's digital health market size is projected to reach USD 779 million in 2023. With a CAGR of over 15%, the market volume is expected to be close to USD 1.4 billion by 2027[1]. Over 375[2] startups are estimated to be currently working in different areas of Health Tech in Pakistan. Driven by factors like a large population base with a high mobile penetration and low health access, the Pakistan Health Tech market has caught the attention of international investors like Integra Partners from USA, Sturgeon Capital from UK and Nunc Gestion from France[3]. Health Tech companies in Pakistan have been raising funding since 2014-15. This has picked up pace during and post Covid in line with the increased interest and awareness of the health tech vertical globally. Since 2020, 18 Pakistani Health Tech startups have raised funding of just under USD 35 million. Out of these, MedzNMore, servicing both the B2C and B2B e-pharmacy customers has raised the highest funding of a little over USD 14 Million[4]. A few startups originating in other countries, like Healthx[5] and The Health Bank[6], have also entered the Pakistani market and this trend is likely to continue.

Based on the primary and secondary research findings, the Health Tech market has been segmented into sub-verticals based on different types of solutions that are or can be offered. Med Tech has been added as a separate vertical. These sub-verticals have further been categorized into three groups, i.e. active, emerging and untapped sub-verticals. This categorization has been done based on factors like number of startups operating in the sub-vertical, level of activity, funding raised and market potential based on insights from the informant interviews and secondary research. Definitions of different sub-verticals can be referred to in Annexure F. The market opportunity in all the sub-verticals in different categories i.e. active, emerging and untapped has been assessed and quantified based on the findings from the primary and secondary research. In order for the AP team to be able to objectively compare the investment potential between different sub-verticals, the investment potential in different sub-verticals has been categorized as high, medium and low, based on an assessment of different factors like market opportunity, current level of

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[1] *https://www.statista.com/outlook/dmo/digital-health/pakistan*

[2] *https://tracxn.com/explore/HealthTech-Startups-in-Pakistan*

[3] *https://airtable.com/shrsy589UNNLpKHXD/tblhdIGjrR9k0NWHM/viwJ3XTiKVYqEkxxW*

[4] *https://airtable.com/shrsy589UNNLpKHXD/tblhdIGjrR9k0NWHM/viwJ3XTiKVYqEkxxW*

[5] *https://www.healthxpakistan.com/*

[6] *https://www.thbglobal.com/*

competition, scalability as well as any specific challenges or constraints which can impact growth in a sub-vertical. The investment potential for different sub-verticals is shown in the visual below:

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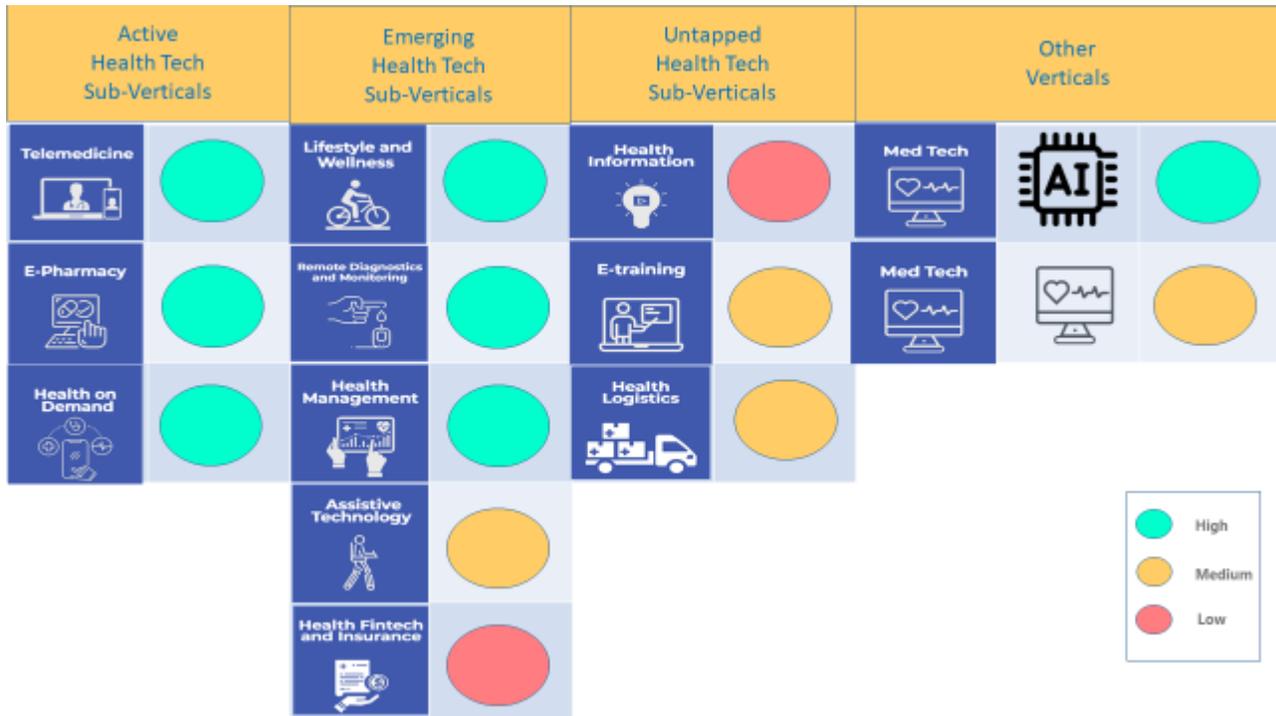
Fig. 1: Health Tech and Allied Vertical Investment Potential Snapshot

Over and above assessing the investment potential in different sub-verticals, recommendations based on specific findings across different sub-verticals have been made, which are as follows:

- For investing in telemedicine sub-vertical, prefer startups having a B2B component within their business and a funding or a subsidy model in place for serving users with low health access.

- All the active sub-verticals have a high potential for investing. A number of startups in these sub-verticals are consolidating their offerings by adding services from other active sub-verticals and moving towards becoming a Super App. This will make their offering similar to each other. Therefore, before investing in a Super App, AP team should look for clear differentiation which builds competitive advantage for a startup in comparison to other players.

- A number of sub-verticals, like Remote Diagnostics and Monitoring, Health Management, and AI have export potential over and above the potential in domestic market.

- Femtech solutions, i.e. solutions catering to females across different sub-verticals need to be evaluated based on the potential in the context of the relevant sub-vertical. A Femtech super app combining different Health Tech services for females is a high potential opportunity.

- While there are no clear demarcations between the sub-verticals that startups and SGBs can enter, the sub-verticals that are well-suited for SGBs based on their capabilities and growth objectives include Health on Demand services with the focus on home based services, Lifestyle and Wellness with the focus on hybrid models, Remote Diagnostics and Monitoring with the focus on local B2C business, Health Management , Health Information, Health Logistics, Medical Devices as well as niche businesses in Femtech.

- For allocation of funds within startups or SGBs, it is important to identify the key growth challenge(s) and prioritize the funding accordingly. Some of the main areas where funds can be allocated include product development and technology, marketing and sales, human resource, building infrastructure and meeting working capital requirements. AP team can validate the key growth challenge and priority identified by the startup or SGB during the Business Model Validation as part of the Due Diligence Process.

The study has also identified some challenges and constraints which can be addressed by AP through its programming initiatives which are as follows:

- Plan and implement outreach initiatives for Health Tech startups in the ecosystem, like setting up a business and market advisory helpdesk, organizing periodic sessions or webinars with Health Tech industry leaders and connecting startups and SGBs with mentors from the industry to address the broad based challenge of access to information regarding different aspects of business and vertical related market information that the health startups in the Health Tech ecosystem face.

- Develop a curated database of professional service providers which can be shared, without any liability, with the startups and SGBs within or beyond AP's cohort startups to help address the challenge of accessibility and identification of professional business development and growth service providers in areas like marketing, HR, technology as well as financial and tax services, as the information regarding different types of professional service providers is not readily available and is extremely fragmented.

- Support selected startups and SGBs to participate in international as well as local exhibitions and trade shows which are attended by local and international delegates. This will help them gain market exposure and access, particularly to export markets, which is a key challenge that the startups and SGBs face. The support can be in the form of financial support as well as capability building for prospecting at these events.

1   Introduction

The market study of the Health Tech sector in Pakistan has been carried out as part of the overall initiative by Accelerate Prosperity (AP) to support and promote startups and Small and Growing Businesses (SGBs) in Pakistan. Market analysis has been carried out to develop the current and emerging landscape of the Health Tech vertical in Pakistan. This assessment of the Health Tech landscape has been done from the perspective of assessing the opportunities and challenges for new startups as well as SGBs.

1.1   Objectives

The objectives of the market analysis of the Health Tech sector were to:

-    Identify untapped, innovative and disruptive business opportunities that can be tapped by startups and SGBs including female-led businesses.
-    Quantify the size and scope of the market opportunity in Health Tech and allied verticals.
-    Outline trends and best practices in different areas of Health Tech at the local, regional, and global levels.
-    Identify key challenges and constraints for startups and share recommendations to address these.

Based on these objectives, the report will serve as a Health Tech sector brief that will support AP's financing and programming initiatives in the sector.

1.2   Project Approach

The overall landscape of the Health Tech sector has been assessed taking a segmentation approach and the overall landscape has been segmented into key sub-verticals. Based on a detailed assessment of the Health Tech landscape, these sub-verticals have been categorized. Besides the currently active sub-verticals within the sector, the report also identifies emerging as well as untapped sub-verticals. The opportunity in all the sub-verticals has been assessed and quantified based on market insights, key country indicators as well as regional and global data. The report also addresses other constraints which can be addressed through AP's programming initiatives.

1.3   Understanding Health Tech

Health Tech, also called digital health interchangeably, broadly includes any technology enabled healthcare product or service that can be delivered or consumed outside of a hospital or physician's office. However, one notable exception which is included in the Health Tech spectrum is the hospital and practice management software. Thus, it covers a wide spectrum of healthcare solutions where technology is the key enabler. It is also important to understand that healthcare technology is not synonymous with Health Tech. In this regard, two other terms which are often used with Health Tech are Med Tech and Bio Tech. It is important to understand the key differences between these three terms. Table 1 below explains the key differences between the three areas[7].

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[7] *https://www.ideamotive.co/blog/medtech-vs-healthtech-vs-biotech-what-are-the-differences*

	Health Tech	Med Tech	Bio Tech
Where is it used	Outside the hospital (except for practice management software)	Inside the hospital	In the lab and pharmacy
Forms of Technology	Apps, wearables, databases	Medical Devices, tools, instruments, prostheses	Drugs, Modified organisms, genetic screening
Purpose	Prevention, personal care, monitoring	Treatment, diagnosing, monitoring, enhancing lives through artificial body parts	Treatment
Regulation	Not regulated or badly regulated	Regulated	Heavily regulated

Table 1: Key Differences: Health Tech, Med Tech and Bio Tech

Based on the market assessment and potential, **this report prioritizes Health Tech and the associated vertical of Med Tech for investment**. Biotechnology research being carried out in Pakistan for development of drugs, vaccines and diagnostics tests for human use, besides agriculture and veterinary science is largely driven by established pharmaceutical companies and by biotechnology SGBs at a limited level. Within Biotech, the area of Bioinformatics, which involves the application of computational and analysis tools to capture and interpret biological data, can be provided business advisory support.

2   Research Methodology

The information collected, analyzed and presented in this report has been gathered through primary and secondary research techniques. Primary research was carried out through 40 key informant in-depth interviews (IDI's) and field visits with various stakeholders including early stage and growth stage Health Tech start-ups and SGBs, investors, health care practitioners and providers, health technology professionals, IT and telecom industry experts, government and development organizations. The list of informants is attached in Annexure A. Key informants were asked several questions about the state of healthcare and digital health in their area of expertise and within the scope of the project as well as asked to share their outlook of the Health Tech sector in Pakistan. The interview guide is attached in Annexure B. Secondary desk-based research focusing on the healthcare and Health Tech ecosystem in Pakistan and other developing and developed countries was also carried out. The literature review covered articles, research publications, websites, published data, news items, webinars and videos related to the project scope. The areas covered in the literature review included the global Health Tech landscape, information related to the Pakistani Health Tech market, key market statistics as well as best practices and relevant information from other markets. Based on the qualitative findings as well as key data from literature review, a broad outline of the Health Tech landscape in Pakistan was developed first. Using a solutions based segmentation approach, the market was then segmented into different sub-verticals identified based on the solutions offered to users. The sub-verticals were then categorized into active, emerging and untapped sub-verticals based on

the level of activity and then the opportunity and potential in each of the sub-vertical based on different factors was assessed. General guidelines as well as recommendation addressing the key challenges and constraints faced by startups and SGB's in the Health Tech ecosystem have been shared.

3   Overview of the World Health Tech Market

The Covid-19 pandemic has brought to light the key areas which are now driving the rapid market growth of Health Tech. With ever increasing access and dependence on smartphones around the world, patients are rapidly adopting digitalization in other verticals to fulfill their needs and expect the same in healthcare. There is also a renewed focus and increase in awareness regarding mental and physical well-being. Consequently, individuals are now more involved in managing their own health and require enabling resources to do so. Driven by aging populations in the developed world, there is a global shortage of healthcare professionals that could reach up to 10 million by 2030[8]. This requires automation and digitalization in order to be managed effectively. On the other hand, health care access continues to be a key challenge in the developing countries. However, rapid increase in mobile and digital connectivity in most of these geographies is an opportunity to address this challenge. Based on the above, the Health Tech market is projected for a fast track growth globally. Statistics related to the world Health Tech market size and growth are attached in Annexure C along with some key global health care trends which are likely to drive growth in the healthcare industry globally and ultimately in Pakistan as well. India is a market similar to Pakistan in terms of lifestyles, but a much more evolved Health Tech market. Key indicators of the Indian Health Tech market, which is projected for a fast track growth, are shown in Annexure D.

4   Pakistan in Numbers

This section highlights the key statistics related to Pakistan's demographic, digital and health indicators based on which the Total Addressable Market (TAM) and Serviceable Addressable Market (SAM) for different solutions have been estimated in the later sections.

4.1   Key Demographic Indicators

At **227.3 million**, Pakistan is the fifth most populous country in the world with an estimated growth rate of **1.95%**. At this rate, it is estimated that Pakistan's population will touch 300 million by 2040. Thus, the absolute size, along with the projected population growth, is a factor which contributes to Pakistan's attractiveness as a market for a number of verticals including healthcare services. Pakistan's urbanization rate is just under 38%. The urban centers are the hubs for industry, trade and commerce and hence have a much more developed infrastructure and better access to facilities like education and health facilities. Fig. 2 shows Pakistan's key population indicators[9]. Pakistan has a young population with over 60% population under 30[10].

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[8] *Tech Trends in Practice: The 25 Technologies that are Driving the 4th Industrial Revolution by Bernard Marr: John Wiley & Sons:2021*

[9] *https://www.slideshare.net/DataReportal/digital-2022-pakistan-february-2022-v01-251182073*
[10] *https://worldpopulationreview.com/countries/pakistan-population*

Fig. 2: Pakistan's Key Demographic Indicators
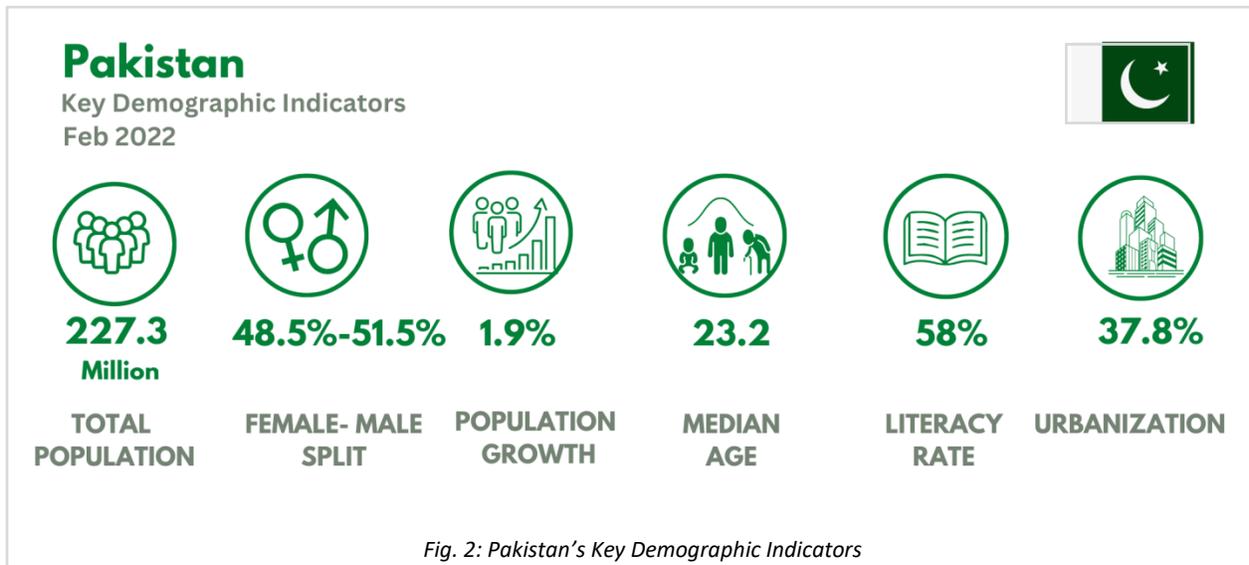
4.2   Connectivity

Pakistan is a country with a high mobile penetration having **187** million connections in a population of 223 million[11] as shown in Fig. 3. As of 2021, the smartphone penetration (with broadband accessibility) is estimated at **52%**[12] and outnumbers feature phones. Female subscribers lag behind males in mobile subscription comprising 21% of the total mobile subscriber base[13]. However, based on the inputs from the telecom sector informants, this number is likely to be highly understated as it is a common practice to have the mobile connection used by females to be issued in the name of a male family member. Thus, it can be assumed that the mobile connectivity in females is much higher than the officially stated numbers. Pakistan has **82.9** million internet users with 99.2% accessing social media over mobile devices. The high mobile, smartphones and internet penetration make Pakistan an attractive market for technology driven solutions across different verticals including Health Tech. With high mobile and internet penetration, there is also a high reach for key online and social media platforms. Google reports **71.70** million as the reach for the audience that can be targeted through Youtube Ads. Meta reports **43.55** million as potential audience reach for Facebook Ads[14]. WhatsApp is estimated to have **46.2** million users in Pakistan.[15]. Usage of these platforms serves as a catalyst for adoption of digital solutions in different verticals including Health Tech.

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[11] *https://www.slideshare.net/DataReportal/digital-2022-pakistan-february-2022-v01-251182073*
[12] *https://www.pta.gov.pk/en/annual-reports*
[13] *https://www.pta.gov.pk/en/annual-reports*
[14] *https://www.slideshare.net/DataReportal/digital-2022-pakistan-february-2022-v01-251182073*
[15] *https://www.verint.com/blog/what-countries-are-the-biggest-whatsapp-users/*
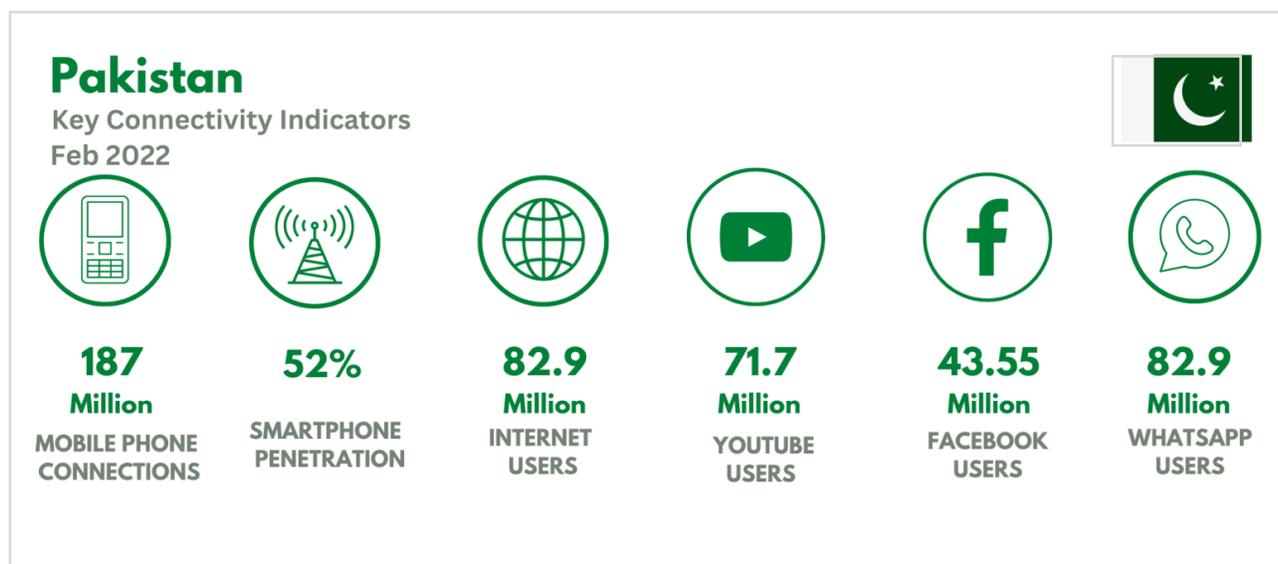
Fig. 3: Pakistan Mobile Connectivity Indicators

4.3   Health Care Spending

Pakistan's current healthcare spending is **3%** of GDP, well below the World Health Organization's (WHO) recommendation that a country should spend at least **6%** of its GDP on healthcare[16]. Out of this 3%, Pakistan's public sector healthcare spending accounted for **1.2** percent of GDP in 2021-22[17]. As a result, the burden of healthcare spending largely falls upon the private households. The annual per capita Current Health Expenditure (CHE) for Pakistan as per the National Health Accounts (NHA) 2019-20 was **USD 40.7**. Out of this, 59.7 percent of the health expenditures is made through private sector, out of which 88.6 percent is out of pocket (OOP) health expenditures by private household which comes out to be over **53%** of the total spending[18]. Total Out-of-Pocket (OOP) healthcare expense in Pakistan was Rs. **775.41** billion in 2019-20[19]. In line with the historical healthcare industry annual growth rate of 10 percent, the OOP health spend is expected to have reached **USD 4.27 billion** in 2021-22. The key statistics related to the OOP health spend are shown in Fig. 4. Within the OOP health spend by type of health care, outpatient expense is the biggest head of spend at over **73%.** Medicines and vaccines are the biggest head of spend by service and take up over **50%** of the spending, followed by doctors' fee. At **58.89%**, urban households spent more on the OOP health spend as compared to the rural households, despite the urbanization rate being 37%, as shared in the demographics section. OOP spend for females, at **52.84 %** was slightly higher as compared to males. The high out of pocket expenses, high outpatient expenses, high contribution of urban households and spend on females can be tapped by Health Tech startups and SGBs. At the same time, the low healthcare spend in rural areas also points towards low access and can be an opportunity to improve the health access.

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[16] *https://www.fitchsolutions.com/healthcare/pakistans-healthcare-budget-set-decrease-placing-further-pressure-already-underperforming-healthcare-system-19-08 2022?fSWebArticleValidation=true&mkt_tok=NzMyLUNLSC03NjcAAAGIIyYC4FCFm3rQJ11UhqwVIPlLQlwgX1RVk9fScoLjskTQsEAFkIr6Fa-1VNBFa7cCbB4-uYmhxPRAEjPP2p45qHBYPQ-4qAh7o6qotCXFyXmJNmpL7Q*

[17] *https://www.finance.gov.pk/survey/chapter_22/PES11-HEALTH.pdf*

[18] *https://www.brecorder.com/news/40207582/current-health-expenditure-per-capita-stands-at-rs6432-pbs*

[19] *https://www.pbs.gov.pk/sites/default/files/national_accounts/national_health_accounts/NHA-Pakistan_2019-20.pdf*

Out of Pocket Health Expenditure Split
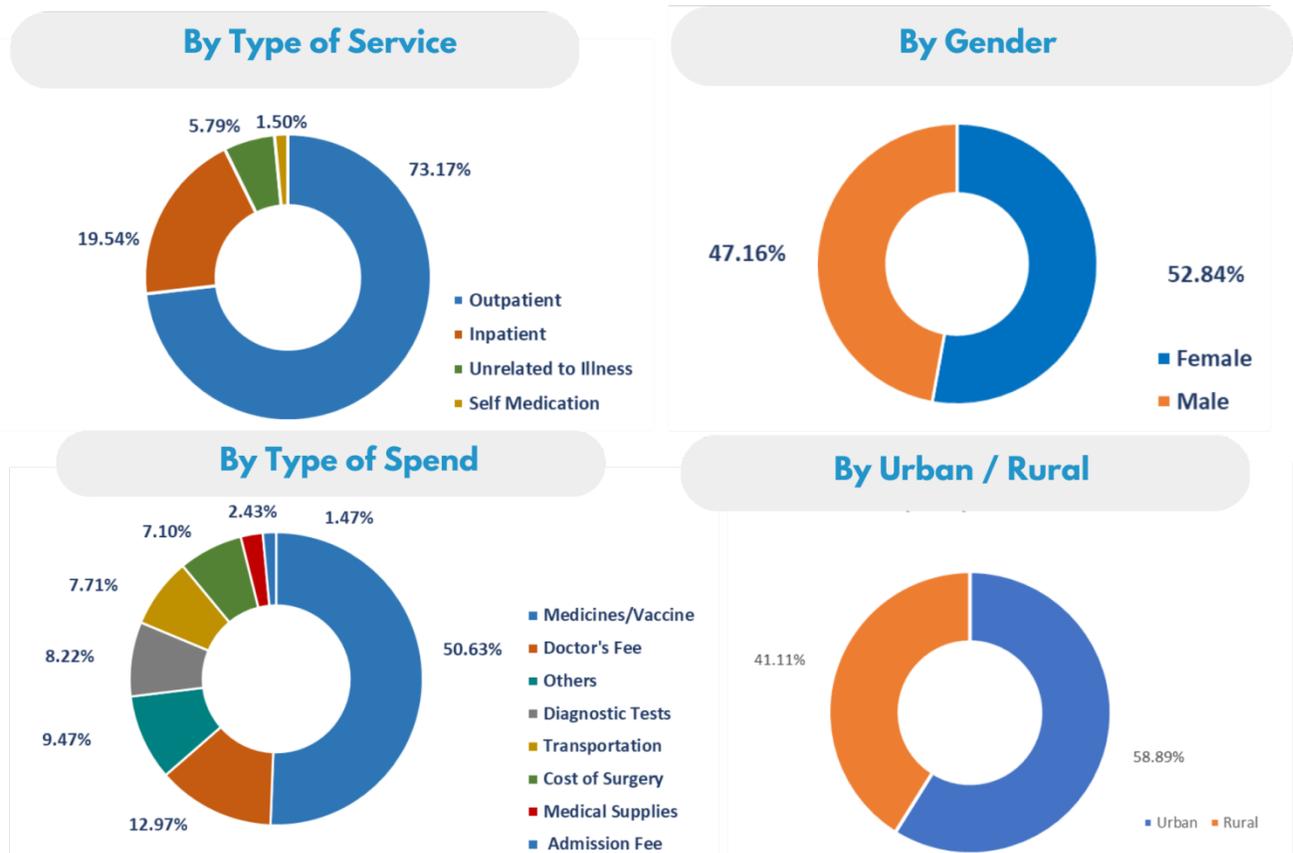
Fig. 4: Out of Pocket (OOP) Spend by Private Households 2019-20

4.4   Key Health Indicators

Fig. 5 shows the number of registered medical personnel in Pakistan in 2021[20]. Based on the current numbers, the number of doctors per 1,000 population stands at 1.19 which is slightly above the WHO guidelines of 1 physician per 1,000 population. However, the on-ground physician coverage is much lower as 80% of the students in medical colleges are females out of which only 40% come into medical practice. In addition, 15% of the qualified doctors move abroad.[21]

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[20] *https://www.finance.gov.pk/survey/chapter_22/PES11-HEALTH.pdf*
[21] *Quoted by Sehat Kahani.*
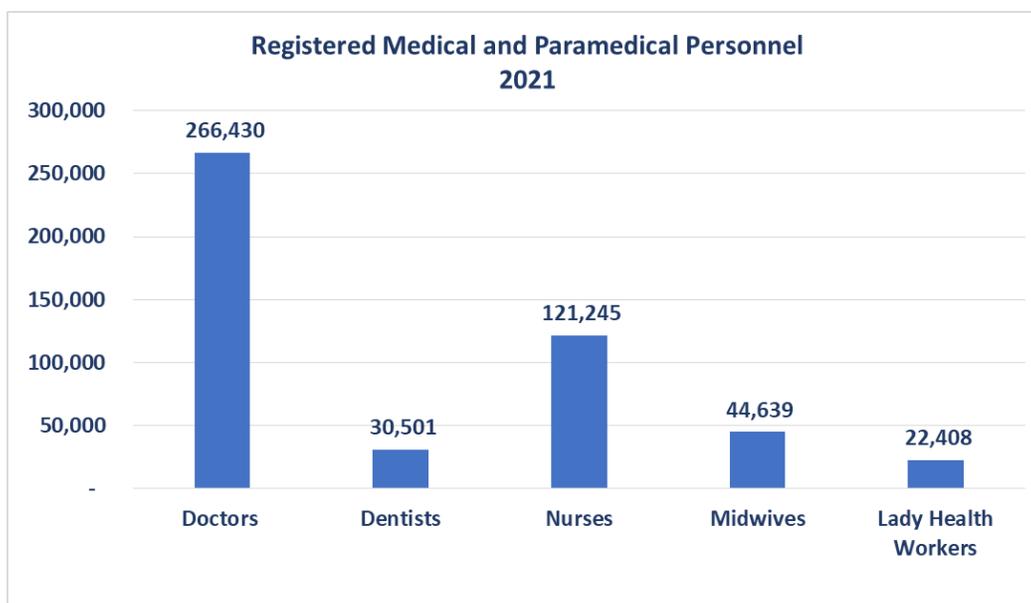
Fig. 5: Registered Medical and Paramedical Personnel in Pakistan 2021

Pakistan's mortality rate for children under 5 years of age at **65 per 1000** live births[22], is the highest in the South Asia region. Hence access to physician and healthcare facilities is a key challenge in the Pakistan market. With a growing population, the size of the aging population is also increasing. It is estimated that 4.5% of the population in the country is over 65 years of age. It is, however, expected to reach to **8.5%** by 2030[23]. Managing this medically and socially vulnerable population group poses a great challenge. Thus, addressing the needs of the elderly through different types of Health Tech solutions and services is an opportunity. Pakistan is facing the burden of both infectious and lifestyle diseases. As per World Health Organization's) country profile for Pakistan, non-communicable disease , NCDs are projected to account for **58%** of all deaths in the country[24]. It is estimated that there are **33 million** people living with Type-2 diabetes in Pakistan, the third largest diabetes population globally. An additional **11 million adults** in Pakistan have impaired glucose tolerance, while approximately 8·9 million people with diabetes remain undiagnosed[25]. **18%** of people in Pakistan suffer from hypertension[26]. According to the most recent WHO data on heart attack ratio in Pakistan, over **240,000** people died from coronary heart disease in 2020, accounting for 16.5 percent of all fatalities[27]. According to World Health Organization (WHO), mental disorders account for more than 4% of the total disease burden in Pakistan with the mental health burden higher among women. It is estimated that **24 million** people in Pakistan are in need of psychiatric assistance. According to the WHO data, Pakistan has only 0.19 psychiatrists per 100,000 persons, one of the lowest in the whole world[28]. Given the high population size and high incidence of NCD's, healthcare

[22] *https://data.worldbank.org/indicator/SH.DYN.MORT?locations=PK*

[23] *https://pide.org.pk/blog/ageing-in-pakistan-a-curse-or-blessing/#_ftn1*

[24] *https://apps.who.int/iris/bitstream/handle/10665/274512/9789241514620-eng.pdf?sequence=1&isAllowed=y*

[25] *https://www.thelancet.com/journals/landia/article/PIIS2213-8587(22)00102-4/fulltext#:~:text=estimated%20that%20there%20are%2033,people%20with%20diabetes%20remain%20undiagnosed.*

[26] *https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2880743/#:~:text=The%20National%20Health%20Survey%20of,a%20wide%20range%20of%20diseases*.

[27] *https://mmi.edu.pk/blog/heart-attack-cases-in-pakistan/*

[28] **https://www.emro.who.int/pak/pakistan-news/who-pakistan-celebrates-world-mental-health-day.html**

solutions addressing the prevention and treatment of the NCD offer a significant opportunity.   :

5   Pakistan's Health Tech Market

The evolution of the Health Tech sector in Pakistan can be traced back to 2014 when Dawaai.pk started its operations as Pakistan's first online pharmacy. This was followed by Marham, Oladoc and Healthwire entering the market with online appointment booking apps. In the telemedicine sub-vertical, doctHERs, and later Sehat Kahani launched hybrid telemedicine services connecting patients in brick and mortar locations in underserved communities with a doctor online. In line with the international trends, the demand for Health Tech solutions in Pakistan also grew sharply during and post Covid pandemic. In addition, the adoption of Health Tech in Pakistan has also been accelerated by increased usage of digital platforms for other products and services, like for example, Foodpanda in food delivery services, Uber and Careem for ride hailing, Airlift, Panda Mart and Krave Mart in grocery delivery as well as online market places like Daraz. Success of some of the early Health Tech pioneers has also encouraged a number of new startups to enter the Health Tech space in different sub-verticals.

Pakistan's digital health market is projected to reach **USD 779 million** in 2023. With a CAGR of **15.67%**, Pakistan's health market size is expected to be **USD 1.394 billion** by 2027[29]. As of January 2023, there are estimated to be **376** Health Tech startups working in different areas of Health Tech in Pakistan[30]. Following the rise in the number of local startups in the Pakistan market and assessing the market's potential, a number of startups originating in other countries have also started to enter this market. In October 2022, Healthx[31] has launched its operations in Pakistan after successfully launching in 10 countries, offering services like telemedicine, e-pharmacy, health on demand and home health for individuals and families, corporations and insurance companies. Earlier, The Health Bank[32] also launched its remote monitoring and wellness services portfolio in Pakistan after a successful launch in UAE.

5.1   Funding in Pakistan's Health Tech Sector Startups

With the global interest in Health Tech post Covid and driven by the opportunities in Pakistan's Health Tech sector based on low health access and high mobile penetration, Pakistan's Health Tech ecosystem has caught the attention of international investors. Starting from 2014-15, a total of 29 Health Tech startups in Pakistan have raised funding of **USD 37.36 million** out of which **USD 34.26 million** has been raised from 2020 till date by 18 startups[33]. Fig. 6 shows the leading startups which have recently raised funding. A link to the complete list is attached in Annexure E. Some case studies from Pakistan's Health Tech ecosystem are shared in section 6.2

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[29] *https://www.statista.com/outlook/dmo/digital-health/pakistan*
[30] *https://tracxn.com/explore/HealthTech-Startups-in-Pakistan*
[31] *www.healthx.com.pk*
[32] *www.thbglobal.com*
[33] *https://airtable.com/shrsy589UNNLpKHXD/tblhdIGjrR9k0NWHM/viwJ3XTiKVYqEkxxW*
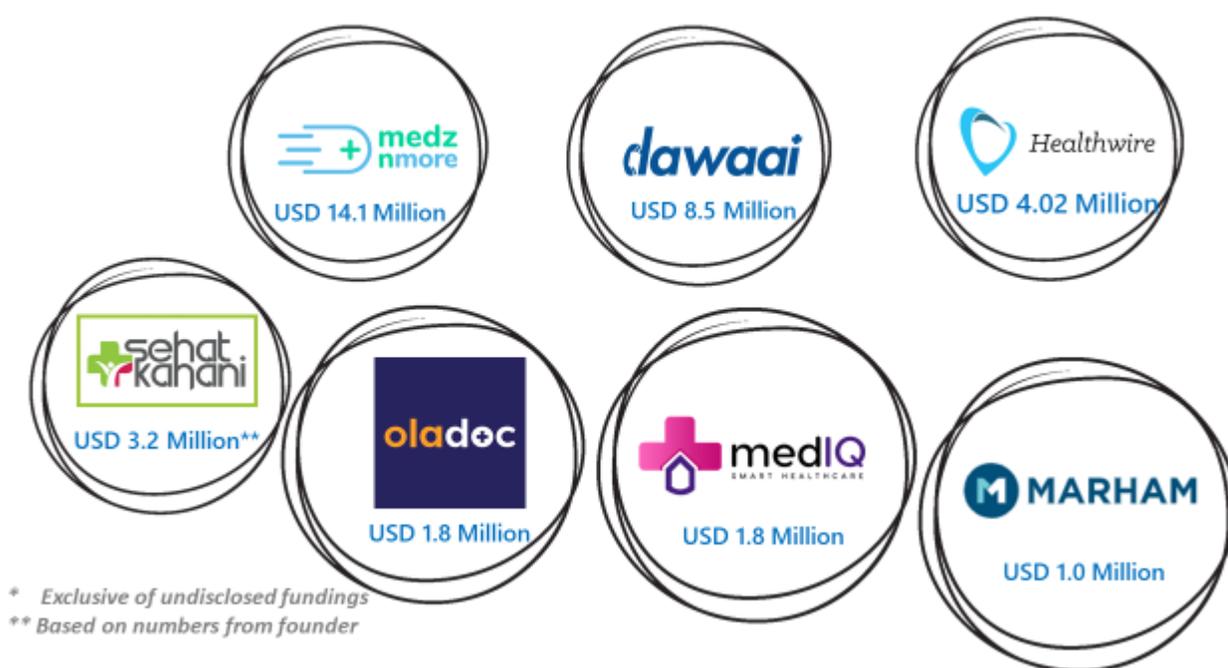
Fig. 6:: Leading startups funded in Health Tech in Pakistan*

6   Segmentation of Health Tech Solutions

In order to gain a better understanding of the Pakistan Health Tech landscape and in order to identify and evaluate the opportunities in the vertical, segmentation of the Pakistan health tech sector has been carried out which forms the basis of the assessment of the opportunities in the vertical. Based on the informant interviews conducted and the literature review, a broad outline of the Pakistan's Health Tech landscape was developed. With the information gathered and based on the learnings from segmentation studies for other verticals, a solutions-based segmentation approach has been adopted segmenting the market based upon the solutions offered to users to address different healthcare problems. The solutions based sub-verticals have been identified after a detailed assessment of the landscape. The verticals and sub-verticals are broad and may have a number of smaller niches within them to target needs of different groups within a segment, whether by feature or by a demographic group.

The sub-verticals have further been categorized into three groups, i.e. Active, Emerging and Untapped sub-verticals, first time that this approach has been applied to the health tech vertical. The categorization of sub-verticals has been done based on the number of startups in each one of them, level of activity, funding raised and potential based on insights from the informant interviews and secondary research. The allied vertical of Med Tech has also been included. As discussed earlier, Biotechnology vertical will not be prioritized for investment. Adopting a solutions based segmentation approach and further categorization of the sub-verticals will enable AP to place the current and upcoming health tech startups into one of these sub-verticals as well as enable diversification and optimal management of the portfolio and prevent from over investment in any one or a group of sub-verticals. A segmentation map of Health Tech sub-verticals by category as well as other health care verticals is shown in Fig. 7. Operational definitions of the sub-verticals can be referred to in Annexure F.

Solutions Based Segmentation Map: Health Tech and Allied Verticals

Fig.7: Solutions based Segmentation Map of Health Tech Sub-Verticals and Allied Verticals

6.1   Mapping of Health Tech and Other Verticals

The startups and SGBs working in the different sub-verticals of Health Tech in the Pakistan market have been mapped based on the segmentation of Health Tech and allied verticals. The maps for the different groups of sub-verticals as per the categories of Health Tech sub-verticals and other verticals identified are shared below.

6.1.1 Active Health Tech Sub-Verticals
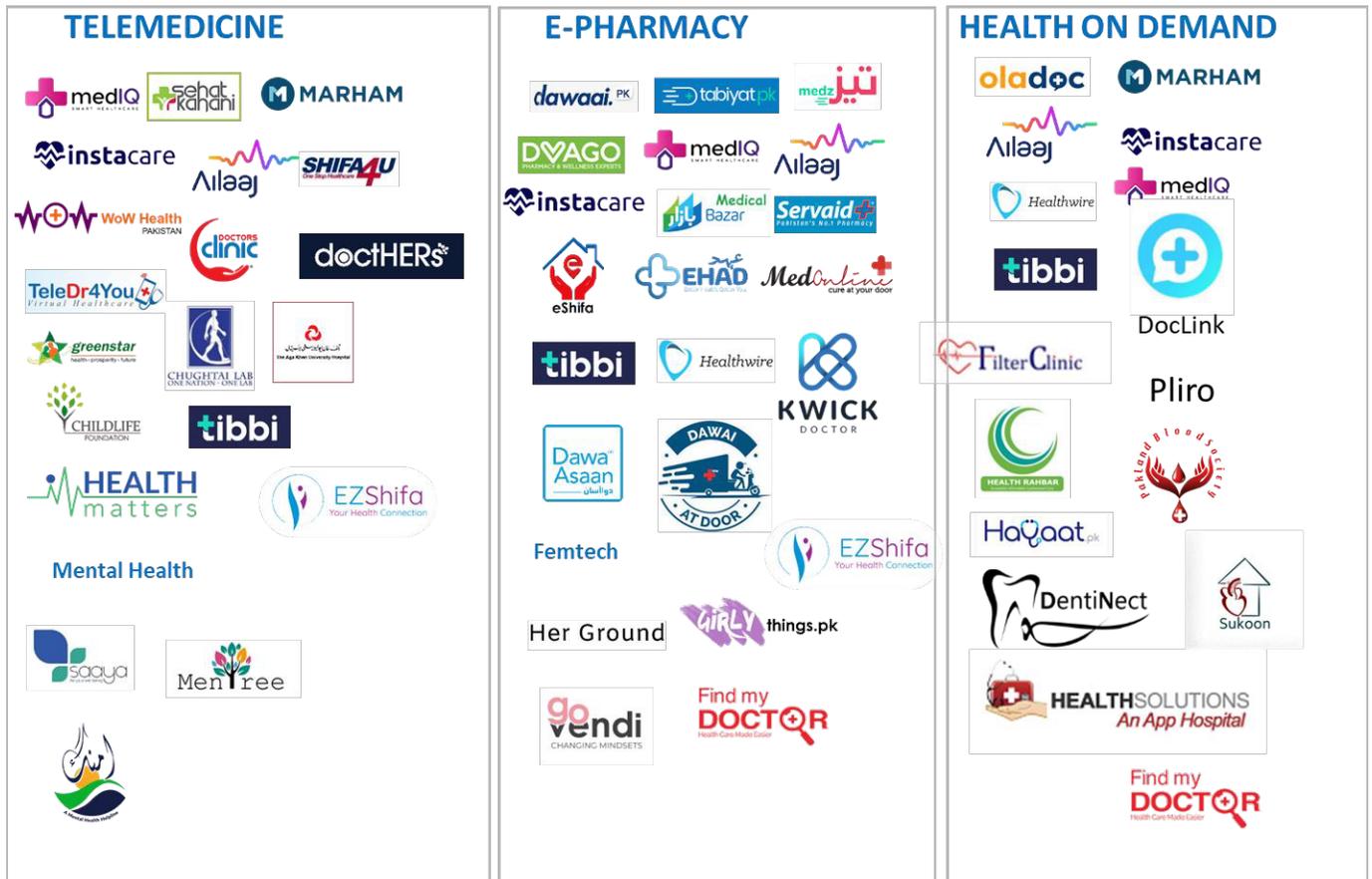
Fig.8: Map of Startups / SGBs in Active Health Tech Sub-Verticals

6.1.2 Emerging Health Tech Sub-Verticals

Fig.9: Map of Startups / SGBs in Emerging Health Tech Sub-Verticals

6.1.3 Untapped Health Tech Sub-Verticals
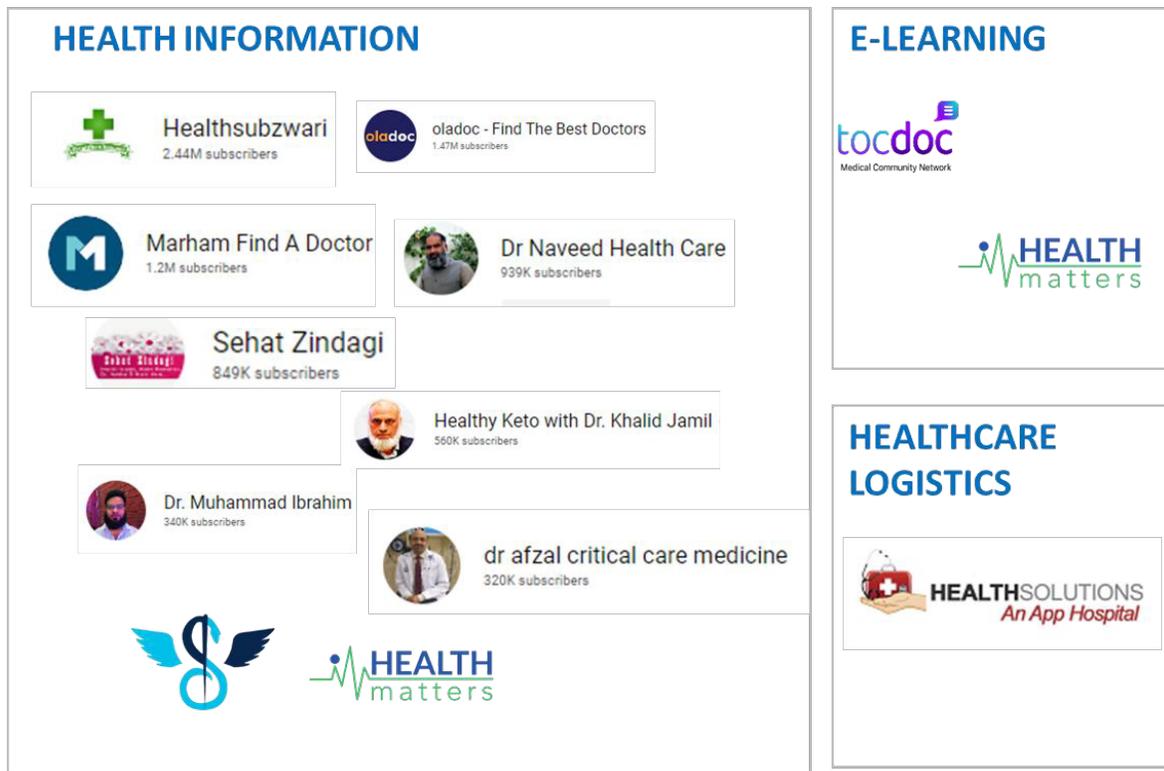
Fig.10: Map of Startups / SGBs in Untapped Health Tech Sub-Verticals

6.1.4 Other Verticals
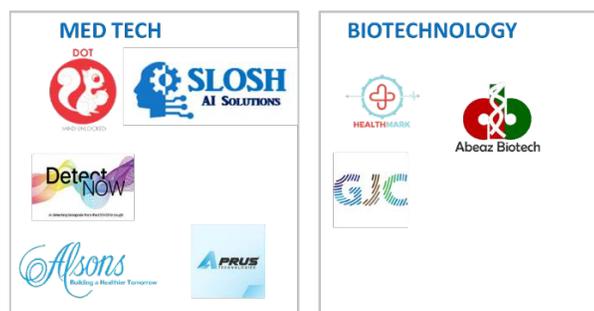
Fig.11: Map of Startups / SGBs in Other Verticals

6.2 Case Studies

Based on the findings from primary and secondary research, some case studies from the Pakistan Health Tech sector have been selected and shared. These case studies are from a mix of sub-verticals with examples of scalable business models, different types of growth initiatives as well as addressing and overcoming key challenges. The case studies discuss the key building blocks that were put in place by the startup as well as key takeaways for AP team's consideration.

6.2.1 Case Study 1: Sehat Kahani

Sehat Kahani has been one of the early entrants in Pakistan's health tech industry. This case study covers how Sehat Kahani tapped the opportunity to serve users with limited health care access and also leveraged Covid-19 as an opportunity. Sehat Kahani also kept refining their business model over time, adding new customer segments to make it sustainable and scalable. The startup has also gained a lot of recognition internationally and has been recognized on a number of international platforms and in many ways considered the face of the Pakistan health tech industry internationally which has also helped it in its funding initiatives.

SEHAT KAHANI	
SUB-VERTICAL	
Telemedicine	
YEAR FOUNDED	
2017	
BACKGROUND	
Sehat Kahani was founded by two female doctors, as a mobile-based telehealth solution connecting women doctors with patients in underserved communities.	

KEY BUSINESS BUILDING BLOCKS
Sehat Kahani started by launching a dedicated mobile-enabled healthcare service, creating a network of brick and mortar e-hubs (walk-in clinics) in communities with low health access with qualified nurses or health workers who facilitate to connect users to female doctors online.
A key innovation carried out by Sehat Kahani was to bring qualified female doctors who were not practicing back into the health workforce. Pakistan faces a severe gap of qualified physicians in relation to the country's healthcare needs. As quoted by Sehat Kahani, 80% of students in Pakistan's medical colleges in Pakistan are female. However, out of these, only 40% come into medical practice. Another 15% of the doctors move abroad. Sehat Kahani enabled the female doctors to practice medicine from home, recruiting some from even outside the country.
In order to scale up and increase its reach, Sehat Kahani then launched a mobile and web-based telemedicine solution through which the patients can be virtually connected through their mobile to a doctor within 60 seconds which is their USP.
Sehat Kahani's telemedicine services registered a sharp growth during Covid when they partnered with the government to provide free Covid related consultation and advisory services which also gave them a lot of media exposure.
Besides serving the users with low health access, Sehat Kahani diversified its portfolio and forged strong partnerships with corporate clients and insurance companies making their services accessible to employees of over 600 organizations. Sehat Kahani's business model with corporate clients and insurance companies is a retainer model based upon the services required and number of employees. Sehat Kahani is also providing white label services to other providers serving the underserved communities. They are providing these services to NGO's like Greenstar Social Marketing as well as the Government of Azad Jammu and Kashmir (AJK).
Sehat Kahani's offering now has three elements, the B2C app, the app for corporate clients (which also provides dashboards for the corporate clients), and the brick and mortar e-hubs for underserved communities. These different elements help them to focus on their different user groups.
RESULTS
Sehat Kahani now employs over **7,500** healthcare professionals. It operates over **150** e-hubs or walk-in clinics nationwide and has carried out **70.8** million consultations with **17** million users. It has also been recognized on a number of global platforms.
FUNDING SECURED
As per numbers from the founders, Sehat Kahani has so far secured **USD 3.2 million** funding, out of which **USD 1.7 million** is in equity and the rest is soft funding.
FUTURE PLANS
Sehat Kahani is working towards becoming a Super App adding functionalities like e-pharmacy, home lab tests and claims management for insurance companies. Sehat Kahani also has some international expansion plans in the pipeline.
KEY TAKEAWAYS FOR AP
1. At the start of their journey, Sehat Kahani capitalized on the opportunity of testing the concept of providing telemedicine with a very basic infrastructure. Identifying a scalable opportunity and testing it with bare minimum resources is a positive attribute which AP

	should look for while evaluating growth stage startups for investing. Early stage startups, which have identified an untapped opportunity, should be supported by helping them to assess its scalability (based on market potential for different sub-verticals shared in the report) and providing incubation support to enable them to test the proof of concept.
2.	Sehat Kahani leveraged the Covid-19 pandemic as an opportunity by collaborating with the government to provide free telemedicine services which helped them to get noticed and created the awareness for the startup as a pioneer in telemedicine. Being able to address a challenge in the external environment with swift execution which, at times, can even stretch the startup's resources, is a capability AP should look for in growth stage startups. Early stage startups should be encouraged and trained to monitor the external environment closely to be able to identify any emerging opportunity and capitalize on it quickly.
3.	Sehat Kahani's initiative of bringing the female doctors who were not practicing, back into the workforce to manage their human resource requirements is a prime example of applying innovative thinking. Sehat Kahani also very effectively highlighted this in their communication which helped them gain recognition and support locally and internationally. AP should look for a track record of applying innovative approaches while engaging with growth stage startups and help foster innovation among the early stage startups.
4.	Sehat Kahani very successfully adapted and refined their business model, capitalizing on the opportunity in the B2B and corporate sectors as well as providing white label services for other providers in the low health access communities. This has given scalability as well as financial sustainability and profitability to their business, serving two very diverse user groups within the same vertical. They have also consistently invested in technology which has helped them to successfully maintain their competitive advantage in each of their user segments. A business model with diverse income streams catering to different market segments helps startups to build scalability as well as financial sustainability. AP should give this factor due weightage while evaluating growth stage startup and encourage this in early stage startups.

6.2.2 Case Study 2: MedzNMore

MedzNMore was one of the later entrants to the e-pharmacy sub-vertical. A number of players had already entered this sub-vertical before MedzNMore and a few of them have also been successful. The case study covers how MedzN More was able to identify an untapped area within the sub-vertical and build a very successful business around it.

MEDZNMORE	
SUB-VERTICAL	
E-Pharmacy	
YEAR FOUNDED	
2020	
BACKGROUND	

E -Pharmacy has been among one the earliest segments to evolve in health tech globally as well as in Pakistan. It is also one of the high potential segments within the Pakistan health tech industry with annual national pharmaceutical sales for 2021-22 estimated to be **USD 2.24 Billion** [34] (based on a projected 10% growth on 2019-20 numbers in line with the historical trend).

KEY BUSINESS BUILDING BLOCKS

While there are a number of players in the B2C E-pharmacy segment with Dawaai.pk having been one of the first and the more successful players, MedzNMore took a two pronged approach and besides the B2C E-pharmacy business, also targeted the B2B business in the sub-vertical, delivering to pharmacies and focusing to address the supply chain gaps within the retail pharmaceuticals distribution.

MedzNMore has two sub brands.

Tabiyat.pk is MedzNMore's B2C platform which offers nationwide delivery. Tez Medz is their B2B platform which is serving pharmacies.

Besides operating in the increasingly competitive B2C space and competing with other B2C e-pharmacies, MedzNMore has kept a strong focus on serving the B2B segment of retail pharmacies which face a number of supply chain issues like inconsistent distribution, counterfeit medicines from traditional distribution channels and limited access to technology.

MedzNMore is currently serving **10,000** pharmacies in Karachi, Lahore, Rawalpindi /Islamabad through **7** warehouses in these cities.

MedzNMore has invested in a proprietary tech stack in four key areas including Customer and

[34] https://www.pbs.gov.pk/sites/default/files/national_accounts/national_health_accounts/NHA-Pakistan_2019-20.pdf

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Retailer App, Sales Agent App, Rider/Driver App and a customized Warehouse and Supply Chain System enabling them to serve both B2C and B2B customers.
RESULTS
Starting operations in Q1 2021, MedzNMore's operations have reached an annualized GMV of **USD 55 Million** in Q2 2022 with **4 million** units shipped monthly.
FUNDING SECURED
MedzNMore has secured the highest funding of USD **14.1 Million** in the Pakistan Health Tech Sector in two funding rounds of USD 11.5 Million USD and USD 2.6 Million.
FUTURE PLANS
MedzNMore is planning to further expand its B2B operation beyond the metro cities of Karachi, Lahore and Islamabad/Rawalpindi to Tier 2 urban centers (e.g. Peshawar, Multan, and Hyderabad etc.). MedzNMore has also recently announced opening of three brick and mortar healthcare hubs in the metro cities of Karachi, Lahore and Islamabad, with a pharmacy along with other related services like face to face physician consultations and diagnostics with which they want to test the potential of a hybrid B2C model.
KEY TAKEAWAYS
1. MedzNMore has very successfully identified and capitalized on the untapped opportunity of B2B customers within the E-Pharmacy sub-vertical diversifying from the cluttered and relatively easier to enter B2C e-pharmacy space. This has helped them to scale up in a short time. Being able to identify and successfully enter an untapped niche within a sub-vertical should be given due weightage while evaluating a growth stage startup. Early stage startups should be encouraged and trained to look for untapped areas or differentiation, particularly within competitive sub-verticals, rather than just replicating the offerings of the leading players in the sub-vertical.
2. MedzNMore invested in a proprietary tech stack which gives them a competitive advantage to serve both B2C and B2B customers. AP should consider investment in tech stack to build competitive advantage a critical success factor for startups.

6.2.3 Case Study 3: Saaya Health

Saaya Health has been one of the first startups to identify and address the mental health issues through Health Tech. The case study covers how Saaya Health leveraged that opportunity and also very effectively tapped into the potential in the corporate sector as well as implementing a successful international business expansion model.

SAAYA HEALTH	
SUB-VERTICAL	
Telemedicine / Wellness Programs	
SEGMENT	
Mental Health	
YEAR FOUNDED	
2018	
BACKGROUND	

Saaya Health was founded by three founders belonging to mental health practice, business and technology backgrounds. It started its operation in Pakistan and Bahrain and offers both B2B and B2C solutions. Its primary offering is a digital employee assistance program which covers:
  - Online mental health counseling sessions for corporate employees
  - Identification of workplace stressors
  - Wellness training for corporates
  - Onsite mental health workshops	

KEY BUSINESS BUILDING BLOCKS	
In order to build a sustainable business, Saaya Health focuses on corporate clientele in Pakistan and GCC.	
In Pakistan, Saaya Health has signed corporate agreements for employee assistance with large employee base companies like HBL, Reckitt, and Engro and is rapidly building its client base.	
Saaya Health has also expanded its operations to Sri Lanka market through a franchise based model.	
RESULTS	
Saaya Health is running a profitable operation driven by corporate clients with regular acquisition of new corporate clients.	
FUNDING SECURED	
Saaya Health is primarily running a bootstrapped operation with only USD 65,000 raised from an angel investor soon after it was founded. Besides that it is focusing on revenue from the corporate clients for its business operations.	
FUTURE PLANS	
Saaya Health is working on launching wellness programs in some areas of non-communicable diseases like diabetes. They are also looking to expand into other markets using a franchise model.	

KEY TAKEAWAYS FOR AP
1. Focusing mainly on B2B business has helped Saaya Health to build a sustainable and profitable operation with minimal funding. The key learning for AP is that while a majority of startups focus on B2C business models, startups can also build and scale up profitably by tapping on the potential of B2B customer base.
2. Saaya Health has successfully expanded the business into an international market using a franchise model. International expansion can be tapped by growth stage startups to fast track their growth after consolidating in the domestic market. Early stage startups should be provided the training and exposure to target international markets.

6.2.4 Case Study 4: Marham.pk

Marham has been one of the early entrants in Pakistan's Health Tech landscape identifying the opportunity in the Health on Demand sub-vertical. It has very successfully scaled up, starting from being a Facebook community to a Health on Demand app and then a Super App.

MARHAM.PK	
SUB-VERTICALS	
Health On Demand / Telemedicine / E-Pharmacy / Health Awareness	
YEAR FOUNDED	
2016	
BACKGROUND	
Marham is one of the early entrants in Pakistan's Health Tech industry. Marham originally started as a Facebook community for information exchange related to finding doctors for different conditions before the Marham App was launched by three co-founders from business and technology background.	
KEY BUSINESS BUILDING BLOCKS	
Marham's core offering is online booking of physical appointments with doctors across the country in all main urban centers.	
Marham has further strengthened its offering and moved towards becoming a "Super App" by adding telemedicine, home lab tests booking, medicine delivery and booking of inpatient procedures in hospitals to its portfolio.	
Marham also offers a free helpline (via text) on their app/website and on their Facebook page for any queries.	
Marham is also very focused on creating engagement through creating health related content which is posted regularly on their Facebook page and Youtube channel. Marham has **1.25 million** subscribers on their Youtube channel and **1.2 million** followers on their Facebook page, highest among all VC backed startups in Pakistan across all verticals.	
RESULTS	
Marham is receiving **2 million** searches on their app every month.	
FUNDING	
Marham has raised a total of **USD 1.15 million**, raising USD 1 million in the latest round in Aug 2021 from Indus Valley Capital and other investors, and an earlier investment coming in from angel investors.	
FUTURE PLANS	
Marham is in the process of consolidating its services in other areas besides appointment bookings.	
Long term plans also include setting up one or more tertiary care hospital.	
KEY TAKEAWAYS FOR AP	
1. Marham identified an untapped opportunity and were among the pioneers in the health on demand sub-vertical in Pakistan. Marham very effectively set up a Facebook community to first test the concept before launching the app. Key	

	takeaway here for AP is that it is important for startups to find innovative and cost effective ways to carry out the proof of concept.
3.	Building communities on Facebook and Youtube with engaging content helped Marham to achieve strong organic reach and build brand awareness and equity. AP should look for brand building initiatives besides tactical or promotional advertising by startups in their marketing and social media plans.
4.	Marham very effectively diversified and entered other sub-verticals to become one of the first health tech Super Apps. While evaluating any of the startups that are moving towards becoming a Super App, AP needs to make sure that Super App is able to create clear differentiation vis-à-vis their competition.

7   Investment Opportunity Assessment

Assessment of the investment opportunities in different sub-verticals based on findings from the primary and secondary research as well as segmentation of the sub-verticals is shared in this section. The findings have been shared for the different categories of sub-verticals based on the segmentation, i.e. active, emerging and untapped. The market opportunity in different sub-verticals is quantified in this section with recommendations related to the sub-verticals. Market indicators shared in Section 4, as well as sub-vertical data at global and regional level have been used to quantify the opportunity size for different sub-verticals. In order to make the recommendations actionable and in order for the AP team to be able to objectively compare the investment potential between different sub-verticals, these have further been categorized as high, medium and low, based on a qualitative assessment of different factors like market opportunity, scalability potential, current level of competition as well as any specific challenges or constraint which can impact growth in a sub-vertical.

7.1   Active Health Tech Sub-Verticals

This section discusses the recommendations pertaining to the active sub-verticals within the Health Tech vertical i.e. telemedicine, e-pharmacy and health on demand.

7.1.1   Unpacking the Telemedicine Sub-Vertical

Telemedicine is a key sub-vertical within the Health Tech vertical which has been in focus globally during the Covid pandemic. The size of the global telemedicine market is estimated to have crossed **USD 80 billion** in 2020, with market size projected to grow five times to roughly **USD 400 billion** by 2027[35]. The telemedicine market in India was estimated to be **USD 1.91** billion in 2022[36]. Based on the statistics shared in section 4.3 , from the projected out of pocket health spend of **USD 4.27 billion** by private households in 2021-22 in Pakistan, doctor's fees component at **12.97%** is **USD 553 million**. There is wide range of fees that the patients pay for doctor's consultation, which can range from as low as Rs. 50 in public hospitals to as high as Rs. 4,000-5,000 per consultation[37]by leading private consultants. With a high mobile penetration of **187 million** connections[38] and high smartphone penetration estimated at **52**%[39], telemedicine has the potential to provide access to underserved communities as well as take share from conventional physical consultations. It is already an active sub-vertical with a number of players operating in it. However, in order for AP to better address the opportunities within this sub-vertical, it is important to understand the different user segments within the sub-vertical. Fig. 12 highlights the key considerations for the different user segments within the sub-vertical.

As shown, the potential users for telemedicine can be divided into two broad user groups. The first is the lower income or bottom of the pyramid users in underserved areas. There are physical and financial accessibility challenges in serving this group of users. The telemedicine service delivery model for the

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[35] *https://www.fortunebusinessinsights.com/industry-reports/telemedicine-market-101067*
[36] *https://www.statista.com/statistics/1174720/india-telemedicine-market-size/*
[37] *Based on the prevalent market rates*
[38] *https://www.slideshare.net/DataReportal/digital-2022-pakistan-february-2022-v01-251182073*
[39] *https://www.pta.gov.pk/en/annual-reports* *(PTA Annual Report 2021)*

bottom of the pyramid patients with telemedicine services is essentially a hybrid model in which patients can come to a brick and mortar location and be connected to doctors via mobile/internet. These brick and
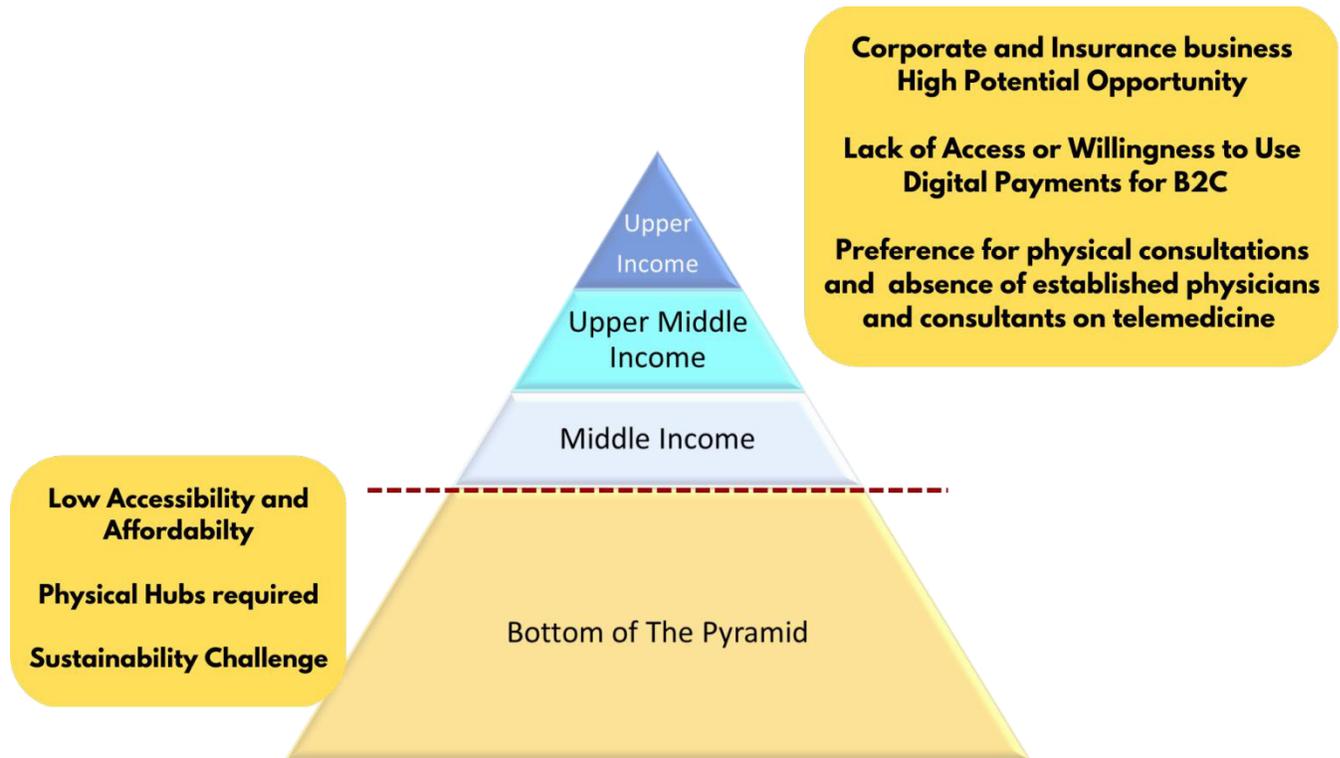
Fig. 12: Telemedicine: Key Considerations

mortar hubs have high infrastructure setup and maintenance costs. In order to serve this sub-segment, the startups need to closely look at the financial viability and sustainability of serving these users. The startups/SGBs may either need to work on slim profit margins or may require funding or subsidy by a funding agency or government support to serve these users. There is also an opportunity in the sub-vertical to provide white label (outsourced) telemedicine services to other providers like NGO's or government who may be looking to provide these services as part of their mandate to improve access to healthcare. For example, Sehat Kahani is providing white label services to organizations like Greenstar Social Marketing as well as the Government of Azad Jammu and Kashmir (AJK). Startups can adopt different business models for providing these services to NGO's or the government. One of the models can be that the organization/NGO can set up the brick and mortar telemedicine hub and the startup can run the facility and charge a retainer fee. Another model could be that the startup sets up and runs the facility themselves and charges the service fee covering the fixed and operating costs for the facility and equipment.

The other user segment is the upper and middle income groups, where the users already have access and capacity to pay for the doctors they want to consult. Based on the findings from the informant interviews, following are some considerations which impact the adoption of services in this user group:

- For a large majority of patients, physical interaction with the physician and experience is still important and there is a loyalty and trust factor involved in consulting the family physician or a reputed consultant.

- A large majority of the senior and experienced practitioners are still not willing to adopt telemedicine services and prefer to see their patients physically.

- Limited access and adoption of digital payments for health-related issues, particularly in population segments like females and older users.

- Promoting services to create awareness and to retain B2C users requires heavy marketing investment from startup or SGB resulting in high burn rate.

However, offering these services to corporate clients with large employee base and to insurance companies providing health insurance coverage to companies is a high potential business opportunity, which Sehat Kahani and MedIQ have tapped successfully.

Recommendation for AP

For investing in telemedicine sub-vertical, prefer startups having a hybrid business model with both B2C and B2B components within their business model which helps to improve profitability, sustainability and scalability. For serving the bottom of the pyramid users, the startup should have a funding or subsidy model in place.

7.1.2 E-Pharmacy

E -Pharmacy has been among one the earliest sub-verticals to evolve globally as well as in Pakistan following the rise of e-commerce in other verticals. The Indian e-pharmacy market was estimated to be **USD 700 Million** in 2020[40]. In Pakistan also, it is also one of the high potential segments within the Health Tech industry as the annual national pharmaceutical sales for 2021-22 is estimated to be **USD 2.24 Billion** **[41]**(based on a projected 10% growth on 2019-20 numbers in line with the historical trend). Dawaai.pk was the first startup to enter this sub-vertical in 2014 which was followed by the entry of a number of other players as shown in the market map in Section 6.1.1. These players have largely focused on the B2C market. However, MedzNMore tapped the B2B market servicing the pharmacy channel addressing the fulfillment issues faced by the pharmacies serviced by traditional distributors. There are also some niche players within the sub-vertical like HerGround which focus on supplies related to female hygiene. A number of players operating traditional pharmacies have also started serving online. However these mostly operate in a limited geographical area.

Recommendation for AP

Invest in E-Pharmacy as it is a high potential sub-vertical for investment. However, considering the large number of players in the sub-vertical, look for clear differentiation like price, product offering, service quality, geography and strong brand equity which build long term competitive advantage and scalability.

7.1.3 Health on Demand

As discussed in Section 4.3, of the total healthcare spend in Pakistan, over 50% of is out of pocket spend by private households. Total OOP spend in Pakistan was **PKR 775.41 billion** in 2019-20[42] and is expected to

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[40] *https://www.digitalcreed.in/indian-Health Tech-industry/*
[41] *https://www.pbs.gov.pk/sites/default/files/national_accounts/national_health_accounts/NHA-Pakistan_2019-20.pdf*
[42] *https://www.pbs.gov.pk/sites/default/files/national_accounts/national_health_accounts/NHA-Pakistan_2019-20.pdf*

have reached **USD 4.27 billion** in 2021-22 in line with historical healthcare industry annual growth rate of 10%. As shown in Section 4.3, out of this, doctor's fees and diagnostics tests comprise **12.97%** and **8.22%** i.e. **USD 553 million** and **USD 350 million** respectively. The pandemic has also accelerated the acceptance of on demand home-based care and diagnostics services in Pakistan. With increased usage of services like booking online doctor appointments, home lab tests and other services, the health on demand segment is likely to grow significantly. As more and more labs offer home test facility, the percentage of tests conducted at home are likely to increase. Similarly booking of other services like nursing care and attendants especially for the elderly and physiotherapy services which are still not very organized have a high demand[43], particularly in major urban centers like Karachi, Lahore and Islamabad. Marham.pk has also added booking of inpatient procedures at hospitals to their services which is an opportunity area for other startups as well. Thus, the health on demand segment, which started with online booking of consultation appointments, is rapidly growing into the other areas including home lab tests and other home services as well as booking of inpatient procedures.

Recommendation for AP

Invest in Health on Demand as it is a high potential sub-vertical for investing. Besides online booking of physical consultations and home lab tests, strongly consider startups with a portfolio in the emerging opportunity areas.

7.1.4 Consolidation across Sub-Verticals: The Super App Phenomenon

With the increased adoption of different Health Tech services during and post Covid, particularly in the active Health Tech sub-verticals, a number of Health Tech startups are consolidating and adding services from other sub-verticals to their offering. This is one of the biggest trends currently happening in Pakistan's Health Tech vertical, particularly across the active sub-verticals. While some of the startups did start with a multi-segment offering, a number of leading Health Tech startups that started in one of the sub-verticals have now consolidated across other sub-verticals. These include startups like Dawaai.pk, Marham.pk, Oladoc, Ailaaj, Instacare, Healthwire and FindMyDoctor.pk. This follows the trend in other verticals where startups like Careem, Uber, Bykea and Foodpanda added other services besides their core offering to move towards becoming a "Super App". This trend is likely to gain further momentum in the Health Tech sub-vertical. Sehat Kahani, a leading startup in telemedicine is also working in this direction, planning to add e-pharmacy and health on demand to their portfolio. A number of international companies extending their operations into Pakistan like HealthX are also focusing on a multi sub-vertical offerings. As a result, the offerings of a number of startups will become more and more similar with this consolidation. The consolidation across sub-verticals by established players will also create an entry barrier for new startups for to entry into a single sub-vertical among these.

This revenue potential for a Super App would depend upon the market potential of the sub-verticals that a startup decides to add to its portfolio, and very importantly, how well does the startup compete with other Super Apps with similar offering. For example, if a startup operating in e-pharmacy sub-vertical adds telemedicine and health on demand, its revenue growth will depend on the market potential of these sub-

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[43] *Based on discussions with healthcare practitioners.*

verticals and the Share of Market (SOM) that they are able to capture in the newly added sub-verticals based on its offering.

Recommendation for AP

All the active sub-verticals have a high potential for investing. However, as startups consolidate their offering across the active-sub-verticals towards becoming a Super App, look for clear differentiation like price, product offering, service quality, geography and strong brand equity which builds competitive advantage in comparison to other players with a similar offering and has an impact on their scalability. Investment in technology to ensure a seamless experience across different services and marketing to create awareness and engagement can be the priority areas for funds allocation.

7.2   Emerging Health Tech Sub-Verticals

This section discusses the recommendations pertaining to the emerging sub-verticals within the Health Tech vertical.

7.2.1 Lifestyle and Wellness

With a global focus on preventative care, the market for lifestyle and wellness solutions is growing rapidly. The global health and wellness market, which also includes non-Health Tech verticals, was estimated to be **USD 5.59 trillion** in 2022 and is projected to reach approximately **USD 7 trillion** by 2025[44]. Despite a high incidence of Non-Communicable Diseases (NCD's) in Pakistan at **58%**[45], including diseases like diabetes, hypertension and cardiovascular diseases, the market for wellness services is largely untapped so far. Solutions focusing on wellness in areas like diabetes and hypertension management, diet, nutrition, fitness and healthy lifestyle management through the use of home devices and wearables, which are becoming increasingly common and affordable, offer a huge opportunity particularly in the urban market. For diabetes, the estimated market size based on the diabetes incidence rate shared in section 4.4 and targeting only urban population with mobile phones, the estimated **Total Addressable Market (TAM) is 12.21 million** users. Targeting the top 20% of the estimated market based on willingness to pay, the **SAM is 2.44 million** users. A relevant international example is that of Breathe Well Being[46], a startup in India which is running a successful diabetes management program for over 10,000 patients. In Pakistan, The Health Bank, a UAE based startup which has started its operations in Pakistan has started a subscription-based diabetes management program helping the patients to manage diabetes through coaching, diet plans and remote monitoring. Wellness programs addressing Hypertension and Cardiovascular Management can be targeted to urban population between 35 and 65 for which the **TAM is 9.58 million** users. Targeting 15% out of this, the SAM comes out to be **1.43 million users**. Subscription based programs in the area of diet, nutrition and fitness can be targeted to young and middle-aged group from 25 to 50 years of age in urban areas, which offers a TAM of **27.22 million** users. Targeting 10% out of this TAM for these services, the SAM comes out to be **2.77 million** users. These programs have a huge opportunity for both B2C and corporate markets. In addition, female health and wellness is also an opportunity area. The TAM for female population including both rural and urban areas between ages 15-60 is **63.77 million**.

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[44] *https://www.statista.com/statistics/491362/health-wellness-market-value/*

[45] *https://apps.who.int/iris/bitstream/handle/10665/274512/9789241514620-eng.pdf?sequence=1&isAllowed=y*

[46] *https://www.breathewellbeing.in/*

Recommendation for AP

Invest in Wellness and Lifestyle sub-vertical as it is a high potential sub-vertical for investing. Within the sub-vertical, Diabetes Management, Hypertension Management, Cardiovascular Disease, Female Health and Wellness, General Fitness, Diet and Nutrition are all high opportunity areas.

7.2.2 Remote Monitoring and Diagnostics

As far as patient care is concerned, there is an increasing shift globally to move from hospital care to ambulatory care and ultimately to remote diagnostics and monitoring. In Pakistan, the use of medical devices at home, mainly in the high-income urban areas, is becoming increasingly common[47]. These include devices like Blood Pressure Monitor, Pulse Oxymeter and Blood Glucose Monitor. In addition, wearables like Fitbit, smart watches and other devices monitoring critical functions are also becoming increasingly affordable and accessible. Thus, driven by increased usage and availability of home devices and wearables, the demand for these services is likely to grow. Over and above, with the ongoing research and development in the area of IoT, more and more Internet of Medical Things (IoMT) devices which facilitate remote diagnostics and monitoring are likely to become increasingly accessible and affordable.

Within this sub-vertical, there are two business models which cater to different market segments and both have potentials for growth. First is in the domestic market, where the increased use of home diagnostics devices particularly in high income metro cities like Karachi, Lahore and Islamabad can be tapped with a B2C model. High potential prospects include elderly patients and patients with chronic diseases like cancer. The elderly patients in the metro cities with an estimated population of 31 million, and with 4.5 % population over the age of 65, the **TAM is 1.4 million** Targeting even 10% of this TAM, based on willingness to pay, the SAM for these services within Pakistan is **0.14 million** users. Startups like The Health Bank have already launched programs to provide support to the elderly through regular health management monitoring and tracking. Distacare is an upcoming startup focused on providing remote patient management support to the elderly who have families outside Pakistan. The other segment is the international remote patient monitoring market which is estimated to be **USD 53.6 billion**, growing at a CAGR of 26.7%[48]. Remote monitoring and patient management services are being provided by startups and SGBs from Pakistan, India and some other developing countries through a B2B model to hospitals in North America to monitor and track their patient base in order to help optimize the traffic in their ER's and consequently better manage the insurance costs. 2C Health Solutions is one such company which is based in USA but its remote monitoring services are being operated out of Pakistan.

Recommendation for AP

Invest in Remote Diagnostics and Monitoring as it is a high potential emerging sub-vertical for investing. centers in domestic market with a B2C model as well as those serving international markets with a B2B model are both high opportunity areas for startups and SGBs.

7.2.3 Health Management

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[47] *Based on discussion with physicians and pharmacies.*
[48] *https://www.marketsandmarkets.com/Market-Reports/remote-patient-monitoring-market-77155492.html*

The global healthcare information systems market was estimated at **USD 268.1 billion** in 2021 and is projected to grow at a CAGR of 7.8% from 2022 to 2030 to reach **USD 528.5 billion**[49]. It is estimated that there are **1,279** public and **700** private hospitals in Pakistan[50]. The revenue of public hospitals is estimated to be **USD 2.63 billion** and that of private hospitals to be **USD 503 million** in 2021-22, assuming a year on year growth rate of 10 percent over 2017-18 numbers[51]. The key areas within health management include electronic health records, patient scheduling, billing and digital communication with patients. There are a number of startups and SGBs working to provide healthcare management systems in different areas to hospitals and physicians in the domestic as well as international market. Healthwire, in addition to its health on demand services, is providing healthcare management system to over 100 hospitals within Pakistan[52]. Based on inputs from different industry sources, their revenue for health management systems is estimated to be approximately USD 300 - 500,000. Pak Health Consultants is providing solutions in the areas of health care project commissioning and management as well as operations management. CloudKlinik is providing EHR solutions to hospitals and doctor practices in Qatar. Ascend BPO is providing billing solutions to hospitals in USA. With hospitals increasingly moving toward digitalization and digital transformation, all the health management areas including EHR, Patient Billing and Health ERP for hospitals and health service providers are likely to grow in demand within and outside the country.

Recommendation for AP

Invest in Health Management, as it is a high potential sub-vertical for investing. Domestic and international markets are both high opportunity areas.

7.2.4 Assistive Technology

The global Assistive Technology market was valued at **USD 21.8 billion** in 2021 and is projected to grow at a CAGR of 4.8% to reach USD 28.8 billion by 2028[53].The market size of assistive technology in India was estimated to be USD 670 million[54] in 2016[55]. As per UNDP, **6.2%**, or of Pakistanis have some form of disability[56], which translates to **14.07 million** persons based on the current population estimate shared in Section 4.1. The percentage split of the persons with disabilities (PWD) by type of disability is shown in the Fig. 13[57].

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[49] *https://www.precedenceresearch.com/healthcare-information-systems-market*

[50] *https://2016.export.gov/industry/health/healthcareresourceguide/eg_main_108609.asp*

[51] *https://www.pbs.gov.pk/sites/default/files/national_health_accounts_2017_18.pdf*

[52] *https://healthwire.pk/hospital-management-system*

[53] *https://www.globenewswire.com/en/news-release/2022/08/18/2500857/0/en/Global-Assistive-Technology-Market-Will-Surpass-USD-28-8-Billion-at-4-8-CAGR-Growth-Says-Vantage-Market-Research.html*

[54] Based on the prevalent exchange rate of USD to Indian Rupee (INR) at the time of publication https://www.exchangerates.org.uk/USD-INR-spot-exchange-rates-history-2016.html

[55] *https://timesofindia.indiatimes.com/business/india-business/market-size-of-assistive-technology-for-persons-with-disability-is-rs-4500-crore/articleshow/51062327.cms*

[56] *https://tribune.com.pk/story/2365146/pakistani-people-with-disabilities*

[57] *https://www.pbs.gov.pk/sites/default/files/disability/disablity_data_28252021.pdf*

PWD Split by Disability

- Physical Disability
- Mentally Challenged
- Deaf and Mute
- Blind
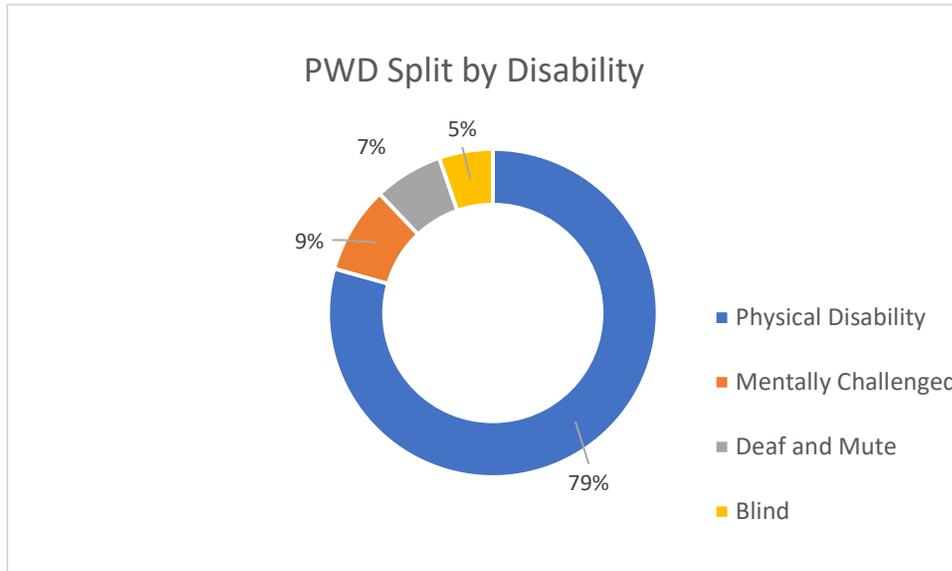
Fig. 13   Split of PWD's by Disability

Startups like Arm Rehab Technologies and Bioniks are working on developing prosthetics and artificial limbs locally. Arm Rehab Technologies, a startup working on locally developing robotic artificial hands, estimates the number of persons without arms at **400,000**. Assistive devices for the elderly is also an area of opportunity for import substitution, besides devices to help the blind, deaf and mute as well as the mentally challenged, like for example those impacted with autism. For commercialization of assistive devices, both a B2B model, which involves working with hospitals, healthcare institutions, NGO's and philanthropic organizations as well as a direct B2C model can be applied. The quality of the final product and pricing is the key consideration in this area.

Recommendation for AP

Assistive Technology is a medium potential investment as product quality vis-à-vis imported options as well as final pricing of devices, approvals and certification as well as commercialization plan by startup/SGBs are key considerations that need to be evaluated before investment decision.

7.2.5 Health Fintech / Insurance

In Pakistan, where over half of the health expenditure is paid out of pocket by private households, patients and their families remain vulnerable to catastrophic health care costs in case of health care emergencies. However, based on the information gathered during primary research, use of health insurance is largely limited to the corporate sector for providing healthcare coverage to its employees and their dependents. Other than that, mostly self-financing as well as friends and family are relied upon for managing health emergencies. In recent years, startups have come up in Pakistan with off-the-shelf or customized health insurance using digital platforms. However, these are also mostly limited to corporate and institutional customers. With a high mobile penetration, there is an opportunity to scale up the use of digital wallets and mobile top up for Health Tech services like telemedicine. With a mobile phone subscriber base of 189 million, even at a 5% adoption, the market potential for health insurance in mobile subscribers is **9.45 million** users. Jazz (Mobilink) in collaboration with Micro Ensure has introduced a health insurance package

for its subscribers where the subscribers can avail health insurance without too much paperwork.[58]. Jazz has also launched corporate health insurance packages[59] and working with companies like EFU to increase insurance access to its users[60]. However, based upon the information gathered during the research, while a number of initiatives have been launched by the mobile operators over the years with high marketing investments to leverage the large user for health services including health information and health insurance, adoption has been extremely low. While there may still be an opportunity to develop and launch insurtech products, development of such products are most likely to be driven by telecom providers, fintechs, insurance companies and microfinance banks rather than startups or SGBs and require high marketing investment required to create awareness.

Recommendation for AP

Health Fintech / Insurance is a low potential investment based on low adoption of digital insurance products so far and is likely to be driven by mobile operators, insurance companies and microfinance banks.

7.3   Untapped Health Tech Sub-Verticals

This section discusses the recommendations pertaining to the untapped sub-verticals within the Health Tech vertical.

7.3.1 Health Information

The reliance on digital channels for health information during the Covid pandemic has led to an increase in the consumption of health information content. Based on the high mobile and internet penetration, there is also a high reach for key online and social media platforms, like Youtube (**71.70** million), Facebook (**43.55** million)[61] and WhatsApp (**46.2**)[62]in Pakistan. The trend of high consumption of content on platforms like Youtube and WhatsApp has created the opportunity to connect to this user base through digital platforms to provide information about topics such as preventative health, wellness, maternal and child health as well as common medical conditions and procedures.

There are a number of health channels operating from Pakistan across platforms with high viewership. Most of these are individual run channels. However, Marham and Oladoc, startups which started out in the Health on Demand segment are notable as they feature among the leading Youtube health channels in Pakistan with **1.54 million** and **1.25 million** subscribers respectively. Marham also has **1.2 million** followers on its Facebook page. Being active in this sub-vertical complements their core services and also helps them to build brand equity and thought leadership for their core services.

Developing content to create awareness about different health issues like general health, maternal and child health, mental health besides other health issues is an opportunity for startups and solopreneurs to create engaging content for which Youtube monetization[63] can be tapped as a revenue stream. The number of followers plays a critical role in the monetization, which starts to become significant once the channel has

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[58] *https://www.jazzcash.com.pk/mobile-account/insurance/sehat-sahulat-2/*
[59] *https://jazz.com.pk/business/solutions/digital-solutions/digital-health-insurance*
[60] *https://www.efulife.com/efu-life-jazz-launch-hifazat-program-increase-insurance-penetration-financial-inclusion/*
[61] *https://www.slideshare.net/DataReportal/digital-2022-pakistan-february-2022-v01-251182073*
[62] *https://www.verint.com/blog/what-countries-are-the-biggest-whatsapp-users/*
[63] *https://influencermarketinghub.com/youtube-monetization/*

100K+ subscribers and can be in the range of USD 2,400 – 4,000 per month and can cross USD 60,000 annually once it crosses a million subscribers[64]. The primary source of monetization is the payment for the ads that Google runs on channels with high number of followers translating into high viewership. Once the Youtube channel has gained a following and built credibility, the Youtuber running the channel can also become an influencer and can endorse products and services. They can also work as a white label content developer for brands or NGO's and can also manage their channels.

The investment required in setting up the infrastructure for a health information channel is minimal. However, the revenue scalability is also relatively limited compared to some other sub-verticals. Hence it is better suited for solopreneurs or those working with a very small support team. However, it can be a good complementary sub-vertical for startups operating in some other sub-verticals to help them build their awareness and brand equity in order to drive trial and conversion.

Recommendation for AP

Health Awareness Content is a low potential investment. It is a good complementary sub-vertical for startups in some of the active and emerging segments to build brand equity. Startups and SGBs in this area can be provided business advisory support.

7.3.2 E-Learning

E-learning solutions have proved useful in providing remote training to community health workers during the Covid pandemic. Healthcare education solutions market, which was **USD 8.3 billion** in 2021, is projected to grow at a CAGR of 7.60% and reach **USD 14.9 billion** by 2029[65]. The growth in healthcare education solutions market is likely to be driven by the rapidly changing technologies in the healthcare industry, resulting in increased training needs, as well as the increase in adoption of digital learning, making it possible to provide training to healthcare professionals based in remote areas. Pakistan has a large base of over **450,000** health care professionals including **266,430** registered doctors and **30,501** dentists[66] .While some of the established hospitals and healthcare facilities have strong training systems; making ongoing e-learning accessible to a large medical and paramedical population, particularly to those who are in private practice, working for smaller healthcare facilities or are in remote locations, is an opportunity. Learning management system (LMS) can be set up for remote training of healthcare professionals and can be offered to health practitioners and healthcare institutions on a subscription model, with Continuing Medical Education (CME) credits. Internationally Otrac Nigeria[67] has an LMS with expertise in offering continuing medical education applications for healthcare practitioners. Emerging technologies like Virtual Reality (VR) and Augmented Reality (AR) can also be used for training purposes.

Recommendation for AP

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[64] .*https://mint.intuit.com/blog/relationships/how-much-do-youtubers-make/*

[65] *https://www.globenewswire.com/en/news-release/2022/09/21/2520529/0/en/Healthcare-Education-Solutions-Market-to-Surge-USD-14870-44-Million-by-2029-Share-Size-Key-Growth-Drivers-Future-Trends-Industry-Value-and-Applications-Overview.html*

[66] *https://www.finance.gov.pk/survey/chapter_22/PES11-HEALTH.pdf*

[67] *https://vc4a.com/ventures/otrac/*

E-Learning is a medium potential investment. Setting up of a subscription based LMS with CME credits is an opportunity.

7.3.3 Healthcare Logistics

Healthcare Logistics refers to digital solutions that offer logistical arrangements, provision and delivery of medical supplies and products. The global healthcare logistics market size is estimated to be **USD 77.9 billion** with a CAGR of 8.3%, and is projected to reach a market size of USD 158.6 Billion by 2030[68]. Pakistan has a large logistics market estimated at **USD 35 billion** annually[69]. With the rise of e-commerce, and online marketplaces, the logistics vertical in Pakistan has also seen a surge of startups, with a number of them also having been successful in raising funding. With this background, healthcare logistics is a potential opportunity area to improve access to medical supplies. Digitally driven health logistics solutions can offer logistical arrangements, provision and delivery of medical supplies and products. These can include both cold chain and non-cold chain solutions and can include services like emergency response service , an on-demand fleet for transportation of patients, organs and medical supplies (e.g. blood or equipment). Cold chains using IoT based systems to maintain temperature control can help healthcare providers like e-pharmacies with their logistical needs for temperature controlled vehicles on an outsourced basis. Specialized logistics providers with delivery services for blood and other medical supplies, drones for medical supplies deliveries and ambulance hailing app could all be medium to long term opportunities as the technology does exist and is being used internationally. Life Bank operating in Nigeria and Ghana facilitates delivery of supplies of blood, oxygen and medical consumables to patients and hospitals using a WHO-recommended cold chain system and blockchain powered records.[70] Zipline, an American startup operates in Rwanda, Ghana and Nigeria and designs, builds and operates drone aircraft for the delivery of blood, platelets and frozen plasma to hospital and clinics in remote areas within these countries collaborating with the government[71]. Flare[72] is a Kenyan startup which has setup an ambulance hailing app operating in Nairobi, and has also been recognized by the World Economic Forum.[73]

Not many Health Tech companies are active in this sub-vertical in Pakistan currently. Health Solutions is working in the area of arranging blood and other critical supplies as well as having an ambulance available on their app. However, there is an opportunity for commercial replication of international solutions mentioned above. It is worthwhile to point out that Foodpanda, the leading food delivery portal has already tested a drone for food delivery in Islamabad.[74] Drones Robotics, a company based in District Swabi in the province of Khyber Pukhtunkhwa (KPK) is already using drones for agricultural spraying. Relevant best practices in the area of logistics adopted in other verticals within Pakistan can be applied to healthcare logistics too. Even at a 1.5% share of Pakistan's logistics market, it can be a sizeable opportunity at **USD 525 million**.

Recommendation for AP

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[68] *https://www.pharmiweb.com/press-release/2022-07-05/healthcare-logistics-market-size-is-driven-by-rising-demand-for-advanced-medical-equipment-and-reach-the-market-size-of-usd-1586-billion-by-2030-at-a*
[69] *https://www.forbes.com/sites/davidprosser/2022/04/28/oware-raises-33-million-to-solve-pakistans-logistics-problems/?sh=5701f6226c25*
[70] *www.lifebankcares.ng*
[71] *https://time.com/rwanda-drones-zipline/*
[72] *https://flare.co.ke/*
[73] *https://www.youtube.com/watch?v=VtdfPU_BNtc*
[74] *https://www.dawn.com/news/1657718*

Healthcare Logistics can be considered a medium potential investment with replication of international healthcare logistics best practices a key opportunity.

7.4 Other Verticals: Med Tech

Following are the areas within the Med Tech vertical which can be considered for investment.

7.4.1 Medical Devices

Pakistan's market size of medical devices is expected to have reached **USD 600 million** in 2021[75]. It is estimated that about 90 percent of local market demand for medical devices is currently met through imports[76]. A number of local SGBs and startups are working in this area. There is a significant opportunity to replace the imports with local development of these devices and equipment. Startups and SGBs in Med Tech can either do in-house research and development or collaborate with the biomedical engineering departments of different universities and hospitals which can help to manage the R&D costs. However, for any kind of hardware development for medical devices, costing and sourcing considerations need to be kept in mind as developing a medical devices product locally still involves using many imported components since Pakistan has a limited downstream manufacturing infrastructure and supply chain. Foreign exchange volatilities also impact the availability and costing of the components. Locally produced devices also have to comply with international quality and reliability standards in order to compete with the quality standards of imported products. The local approvals and certification process can also be time consuming. In addition, the ability to commercialize these products within the healthcare ecosystem involving public and private healthcare institutions is also a key consideration as currently there is no preference for local products in procurement at the public or private sector healthcare facilities.

Recommendation for AP

Medical Devices is a medium potential investment. Different variables involved like product quality vis-à-vis imported products, pricing and sourcing volatility, lead time for approvals and certification as well as commercialization plans need to be considered before an investment decision is made.

7.4.2 Emerging Technologies (AI, Blockchain etc.)

Emerging technologies like AI and Blockchain are growing rapidly and creating an impact in the Med Tech space. In 2021, the market size of artificial intelligence (AI) in healthcare market was worth around **USD 11 billion** worldwide, growing at a CAGR of 37%, projected to be worth almost **USD 188 billion** by 2030[77]. The global blockchain technology in healthcare market size is anticipated to reach **USD 126 billion** by 2030, growing at a CAGR of 68.1% from 2022 to 2030[78]. Some startups in Pakistan are already working in the area of AI Image Processing, which can help healthcare professionals with effective diagnosis and triaging in many areas. AI Slosh is using AI technology for triaging and identifying issues in the areas of CXR Thorax and Brain Tumor. In addition to medical imaging, Xylexa is also applying AI and data analytics to human

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[75] *https://www.s-ge.com/en/publication/industry-report/2022-e-medt-pakistan-c3-healthcare-medtech-digital-health-tele-medicine*

[76] *https://www.s-ge.com/en/publication/industry-report/2022-e-medt-pakistan-c3-healthcare-medtech-digital-health-tele-medicine*

[77] *https://www.statista.com/statistics/1334826/ai-in-healthcare-market-size-worldwide/*

[78] *https://www.businesswire.com/news/home/20220614005643/en/Global-Blockchain-Technology-In-Healthcare-Market-2022-to-2030---Size-Share-Trends-Analysis-Report---ResearchAndMarkets.com*

genomics and other data for the timely diagnosis and prediction of cancer. Solutions developed locally in the areas of AI, Machine Learning and Blockchain can be offered to different healthcare institutions locally and internationally.

Recommendation for AP

Emerging technologies like AI and Blockchain are a high potential investment, particularly AI. Commercialization model for local and international markets needs to be considered before investment.

Summary

A summary of the investment recommendations across different sub-verticals is shown in Fig. 14. Based on this, AP can work towards maintaining a diversified investment portfolio across active, emerging and untapped sub-verticals, and manage the investment level within different sub-verticals as per the investment potential.

Investment Guideline Snapshot
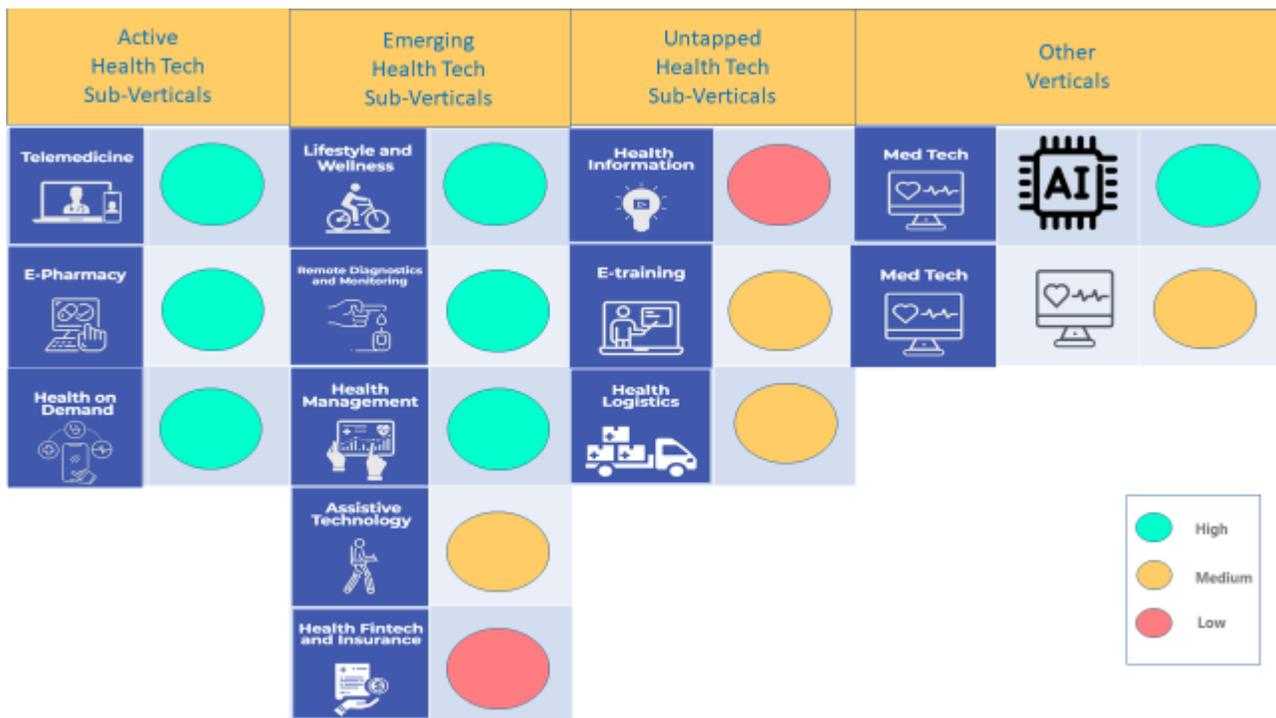
Fig.14: Summary of Investment Guideline across Health Tech and other Verticals

8 General Recommendations and Guidelines

This section includes recommendations and general guidelines across multiple sub-verticals, as well as recommendations for the programming side of AP to address challenges and constraints in the sector.

8.1   Addressing Femtech

Over and above the sub-verticals discussed, Femtech is a term that is often mentioned in the context of Health Tech. Femtech refers to diagnostic tools, products, services, wearables and software that use technology to address women's health issues, including menstrual health, reproductive health, sexual health, maternal health and menopause. Femtech companies can also provide products that encompass general health conditions which affect more women than men or affect them differently than they affect men, such as osteoporosis. Global Femtech market was valued at **USD 22 billion** in December 2021 and is set to grow at a rate of 15% over the next five years[79]. Within a solutions-based segmentation approach, there can be Femtech solutions within different sub-verticals. For example, delivering female hygiene products would fall under the E-pharmacy segment. Mental health therapy sessions for females will fall under the telemedicine segment. As discussed earlier, Femtech is a significant opportunity and there is a lot of potential in different solutions segments targeting female users. These can include telemedicine for female health and mental health, E-pharmacy solutions for female hygiene supplies, female focused wellness programs and health information targeted to females. The TAM for female population including both rural and urban between ages 15-60 is **63.77 million**. The potential for different Femtech solutions needs to be evaluated in the context of the potential of the relevant sub-vertical discussed in section 7 and the SAM can be calculated accordingly. A product offering which combines different Femtech solutions across segments i.e. a "Femtech Super App" on the lines of Nabla[80] in France can be a high potential opportunity and can be tapped by female led startups.

Recommendation for AP

Evaluate Femtech startups based upon potential of the sub-vertical to which it belongs. A Femtech super app across sub-verticals targeted towards females can be a high potential opportunity.

8.2   Suitability for SGBs

While there is no clear demarcation between startups and SGBs in terms of the sub-verticals that they can or should enter; startups and SGBs can have different aspirations from the business that they are running. While startups are generally working on solutions with rapid scalability which may require funding to be raised against equity, SGBs can have a different approach and may prefer to run a bootstrapped operation with a more conservative growth model without diluting equity, as a number of SGBs are family managed businesses and may want to keep it that way. There can, however, be exceptions. Having been in business for a longer duration, SGBs, can, over time, develop expertise in different area which gives them a competitive advantage. These can include:

-   Deep customer and vendor/supplier relationships developed over time.
-   Availability of specialized human resource with specific skills and experience.
-   Market knowledge and experience

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[79] *https://meditechinsights.com/global-Femtech-market/*
[80] *https://techcrunch.com/2021/04/07/nabla-is-building-a-healthcare-super-app-for-women/*

It is also possible for SGBs working in an allied vertical to pivot into a Health Tech related sub-vertical. For example, an SGB in logistics business can enter into health logistics.

Recommendation for AP

Based on the above, some sub-verticals can be well-suited for SGBs though they can certainly enter into other sub-verticals too. Startups can also enter these sub-verticals but may look to build scale and adopt a different business model within the same sub-vertical.

These can include:

- Health on Demand services, with the focus on home-based services.
- Remote Diagnostics and Monitoring, with the focus on local B2C business.
- Lifestyle and Wellness, with the focus on hybrid models.
- Health Management
- Health Information
- Medical Devices
- Health Logistics
- Niche offerings in Femtech

8.3   Allocation and Prioritization of Funds

For the startups and SGBs, establishing priority for allocation of funds is critical. Generally, a startup or SGB may have a funds requirement in multiple areas. However, it is extremely important to identify the key growth challenge(s) and prioritize the funding accordingly, which sometimes may require some hard choices to be made. Overall, the specific use of funds will depend on the needs and goals of the startup, and may vary depending on the stage of evolution that the startup is in and the sub-vertical within which it operates. Following are the broad areas where funds can be prioritized.

a.   **Product Development and Technology**

If the startup has already developed a minimum viable product (MVP), the investment can be prioritized to further develop and improve their products or services, building the app or other products based on which the startup is building its business model and will help it to scale up. This may require research and development, prototyping, and testing or investment in technology.

b.   **Marketing and Sales**

If awareness and reach is the key challenge for the startup, it may require the investment to be deployed to develop and implement marketing and sales strategies. This can include areas like branding, advertising, public relations and customer acquisition efforts like promos, events etc. which help to build awareness, engagement and support user acquisition and retention.

c.   **Talent Acquisition**

If availability of human resources and managerial expertise is impeding growth, funds can be used to hire and retain key employees or bring in advisors and consultants to help grow the business.

d.   **Infrastructure**

Startups or SGBs may require funds to be invested in infrastructure such as office space and office equipment to support the growth of the business.

e.   Working Capital

Startups can use funds as working capital to manage cash flow, building inventory in case of physical products and cover operational expenses to support the business as it grows.

Recommendation for AP

Validate the key growth challenge and priority identified by the startup/SGB during the Business Model Validation as part of the Due Diligence Process.

8.4   Addressing Challenges and Constraints

During the process of gathering primary and secondary information, a number of challenges and constraints faced by startups and SGBs were identified. AP can address these challenges and constraints through its programming initiatives. These challenges and related recommendations are shared below.

8.4.1 Business and Market Knowledge

Like many others verticals, access to information regarding different aspects of setting up a business as well as vertical related market information is a key challenge that the startups and SGBs in Health Tech and allied verticals face. Startups and SGBs often have to invest a lot of time and effort to be able to gather this information, which may or may not be coming from credible sources and can result in wasted resources or misdirected efforts, particularly in the case of early stage startups. While AP does work with a cohort of early stage startups and supports them in building business capability and prepares them for market challenges, there is an opportunity to address this broad-based challenge in the ecosystem.

Recommendation for AP

AP can take initiatives to help bridge the information and knowledge gap which exists at the startups and SGBs' end in the Health Tech ecosystem. Through these initiatives, AP can further extend its outreach beyond the startups within its cohorts or the ones that are funded. These initiatives can be different from the extended engagement initiatives like NHI and ICE that AP already has. Following are some initiatives that can be taken.

-       Set up a Business and Market Advisory Helpdesk which can be accessed by startups or SGB from the Health Tech or allied verticals with any kind of general business or vertical related query. This facility can be in the form of a walk-in helpdesk, a helpline or addressing queries sent online. If required, the queries can also be put up to AP's pool of subject matter experts for their responses.

-       Organize a series of sessions or webinars periodically with Health Tech industry leaders including startup founders from different sub-verticals and other members of the ecosystem. Besides the NHI cohort startups, these sessions can also be attended by other Health Tech startups and SGBs helping them to establish linkages and strengthening the overall Health Tech ecosystem.

- Further extend the concept of subject matter experts by facilitating to connect startups and SGBs from the Health Tech sector with mentors from the industry, subject to their availability, for ongoing or need based guidance.

8.4.2 Access to Professional Business Development Services

Access to professional business development and growth services like marketing, HR, technology, financial and tax services is a key challenge which startups and SGBs face. The information regarding professional service providers is not readily available and is extremely fragmented. Since a number of startups, especially early stage startups as well as SGBs may have not used professional business development services earlier, they often rely on word of mouth and often end up selecting and working with providers which may not deliver up to the expectations and requirements of the startups and SGBs. This results in wastage of valuable time, effort and financial resources. Hence, connecting them to professional service providers is an opportunity so that the startup or SGB's own financial resources or any funding that they have raised is deployed in a cost-effective manner and contributes towards building the business.

Recommendation for AP

Develop a curated database of professional service providers in key functional areas which can be shared, without any liability, with the startups and SGBs within or beyond AP's cohort startups to help them identify the right service providers and save them the hassle of looking around for reliable service providers. For any startup that AP is funding, it can also look into directly reimbursing the service providers for the services that the startup may require funding for.

8.4.3 Market Exposure and Access

Lack of market exposure and access, particularly to export markets is a key challenge that the startups and SGBs face. As discussed in earlier sections related to the assessment of different sub-verticals, there are opportunities in a number of sub-verticals to export these services to international markets. While a few startups and SGBs are already tapping this opportunity, a large number of startups and SGBs do not have the necessary exposure and access.

Recommendation for AP

AP can support selected startups and SGBs to participate in international and local exhibitions and trade shows. The support can be in the form of financial support required to participate in these exhibitions and trade shows as well as helping them to prepare for prospecting for business opportunities at these events. Within the Middle East region, there are a number of trade shows like Arab Health and Medlab Health Middle East. Similarly, there are many trade shows which take place around the world[81]. Locally, Health Asia is one of the largest trade shows for the health sector which takes place regularly and is attended by a number of international delegates besides professionals from the local healthcare ecosystem. For local participation, AP can support the startups and SGBs by setting up a pavilion at a local event, where Health Tech startups and SGBs can showcase their offerings.

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[81] *https://decemberlabs.com/blog/list-of-digital-health-health-it-medtech-conferences/*

9   Conclusion

Market analysis of the Pakistan Health Tech market has been carried out in this report in order for the AP team to better support the Health Tech startups and SGBs in Pakistan with financial support and programming initiatives. In line with the global growth trend, the Pakistan Health Tech market has also started to evolve and is projected for rapid growth. The market has started to gain attention from international investors based on the market's potential due to a large population, high mobile connectivity and low health access, with a number of Health Tech startups having raised funding. However, the funding has been limited to some Health Tech sub-verticals. Segmentation of the Health Tech and allied verticals has been carried out in this report and various Health Tech sub-verticals along with related verticals like Med Tech have been identified and categorized in this report. Based on the findings of the research, the investment potential in each of these has also been evaluated and recommended. The AP team can prioritize the investment decisions accordingly, managing the portfolio across sub-verticals. Recommendations pertaining to the programming side to address the key challenges and constraints have also been made in order for AP to better support the Health Tech ecosystem in Pakistan.

10 Annexures

Annexure A   List of Key Informants

S. No.	Organization	Name	Designation
1	2 C Health Solutions	Dr. Hedayat	Operations Manager
2	Aga Khan University Hospital	Dr. Unab Khan	Chair, Department of Family Medicine
3	Aga Khan University Hospital	Syed Sohail	CEO Aga Khan Hospital Mombasa Cluster, Kenya. (Ex- AKUH Karachi)
4	Aga Khan University Hospital	Saleem Sayani	Director Technology and Innovation
5	Aga Khan University Hospital	Mohammad Yusuf	Ex - Manager Healthcare Informatics
6	Aga Khan University Hospital	Dr. Asad Mian	Chair, Emergency Medicine, Aga Khan University, Founder and Director, CCIT
7	Aga Khan University Hospital	Dr. Mahreen Sulaiman	Co- Director, CCIT
8	AI Slosh	Aiman Khan	Founder
9	Alsons Technology	Akbar Allana / Rahman Allana	CEO/ Director
10	Arm Rehab Technologies	Muhammad Hamza Shafique	Founder
11	Ascend BPO	Ehsan Mahmood	Founder / CEO
12	Ask A Doctor	Shahrukh Malik	Founder
13	Childlife Foundation	Dr. Ahson Rabbani	CEO
14	Cloud Clinik	Sajjad Kirmani	Founder / CEO
15	Connect Hear	Azima Dhanjee	Founder
16	Create Health	Ali Brohi	Founder
17	Dr. Arif Clinic	Dr. Arif Esbhani	General Physician (Khi)

S. No.	Organization	Name	Designation
18	Dawaai.pk	Furquan Kidawai	Founder and CEO
19	Digital Care	Dr. Zakiuddin Ahmed	CEO
20	Essa Laboratories	Dr. Farah Essa Zaidi	Director
21	Greenstar Social Marketing	Fawad Shamim	General Manager Projects
22	Jazzcash	Ausaf Ahmed	Growth Expert
23	Jubilee Insurance	Dr. Tanveer Rauf	EVP, Health Insurance
24	Marham.pk	Ehsan Imam	Founder
25	MediQ	Dr. Saira Siddique	Founder
26	MicroEnsure	Rehan Butt	CEO
27	Molecular Products Co.	Riaz Ahmed	CEO
28	Ministry of Health, Government of Sindh	Talib Lashari	Technical Advisor and Focal Person, Population Welfare Department, Government of Sindh.
29	Molecular Products Co.	Riaz Ahmed	CEO
30	National Incubation Center	Azfar Hussain	Director NIC Hyderabad ex Project Manager NIC Karachi
31	NED University of Engineering and Technology	Dr. Abul Hassan	Associate Professor, Biomedical Engineeering
32	NED University of Engineering and Technology, Neuro Computational Lab	Khurram Hussain	Marketing and Business Development Manager
33	Pakistan Health Consultants	Fahd Kakakhel	Founder
34	Pakistan Software Houses Association (PASHA)	Badar Khushnood	Chairman (also Ex Country Representative Google)

S. No.	Organization	Name	Designation
35	Saaya health	Sarmad Ahmed	Founder
36	See Vitals	Dr. Nimra Qureshi	Founder / CEO
37	Sehat Kahani	Dr. Iffat Zafar Agha	Founder / COO
38	Sehat Kahani	Dr. Sara Saeed Khurram	Founder / CEO
39	Telenor	Majid Ahmed Siddiqui	Head IoT Business South
40	The Health Bank	Rabia Anwer	Program Manager

Annexure B   Interview Guide

S. No.	Question
1	What is your overall assessment of the Health Tech sector in Pakistan?
2	What in your opinion are the biggest segments within the sector currently?
3	How do you think Covid-19 has transformed Health Tech?
4	How do you see the Pakistan Health Tech sector evolving in future?
5	How can Health Tech help in accessibility of healthcare facilities in Pakistan?
6	What are the areas where local development can promote import substitution?
7	What are the trends that you think will revolutionize Health Tech in future?
8	What would be your estimate of the demand as well as the market size of the Health Tech sector / leading segments?
9	What are some of the biggest opportunities within the Health Tech sector currently?
10	What are some of the unmet needs that the Health Tech sector can address?
11	What are some of the biggest problems that the Health Tech sector in Pakistan can address in future?
12	Is there any best practice / opportunity happening internationally which can be replicated locally?
13	What have been the critical factors which have contributed to the success of the leading startups in healthcare?
14	What have been the key constraints facing the startups in this sector?
15	What steps can be taken to address these challenges?
16	How do you see telemedicine in Pakistan evolving in future? What different dimensions can it take?
17	Is there any best practice / opportunity happening internationally which can be replicated locally?

S. No.	Question
18	What are the big opportunities to reduce the accessibility gap for difficult geographical terrains through Health Tech?
19	What are the opportunities for increasing health awareness for different issues through Health Tech?
20	How do you see classify Health Tech, Med Tech and Bio Tech and how do you see them evolving?

Annexure C   Overview of the World Health Tech Market

There are different estimates of the current size of the world Health Tech market. These estimates are between USD 175 billion[82] and just under 350 billion.[83] The market growth estimates vary widely between just over 15 % [84] up to 28%. Conservative estimates project the market to grow between over USD 250 billion to just under USD 660 billion dollars by 2027. An aggressive estimate by Pitchbook projects the enterprise Health Tech market to USD 1.3 trillion by 2025[85]. The differences may also be due to different classification criteria used. However, what is important is that by all estimates, the market is set for a fast track growth. Besides the Health Tech market, the Med Tech market is currently estimated to be USD 575.80 billion globally of which the largest component is Medical Devices at USD 455 billion or 79% of the market. The Med Tech market is projected to grow at an annual growth rate of 5.95%, resulting in a market volume of USD 768.80 billion by 2027[86]. Some key highlights of projected growth by geographical region area as follows[87] :

- North America is the largest Health Tech Market with a 45% share in 2021 and is projected to grow at a CAGR of 15.82% and will remain the largest market till 2027.
- Asia Pacific is the fastest growing region till 2027. It is projected to grow at a CAGR of 21.12 to reach USD 206 billion by 2027.
- Middle East region is projected to become a market of USD 19.5 billion by 2030.

Key Global Healthcare Trends

Fig. 15 captures the key health trends which are projected at a global level, largely driven by technology, which will be the growth drivers for the healthcare industry in the near future.[88]

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[82] https://skyquestt.com/report/digital-health-market

[83] https://www.statista.com/statistics/1092869/global-digital-health-market-size-forecast/

[84] https://www.prnewswire.com/news-releases/digital-health-market-size-worth-295-4-billion-by-2028--cagr-15-1-grand-view-research-inc-301487217.html

[85] https://pitchbook.com/blog/what-is-healthtech

[86] https://www.statista.com/outlook/hmo/medical-technology/worldwide#:~:text=Revenue%20in%20the%20Medical%20Technology,US%24768.80bn%20by%202027.

[87] https://straitsresearch.com/report/digital-health-market

[88] Tech Trends in Practice: The 25 Technologies that are Driving the 4th Industrial Revolution by Bernard Marr: John Wiley & Sons:2021

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1	**Preventative Care**	Driven by AI and Data , healthcare to move from a reactive model to a more predictive and preventative mode.
2	**Democratized Healthcare**	Better Access through Technology enables people around the world to take charge of their health for free or for very little costs through mobile phones, telehealth, apps, wearables.
3	**Personalized and Precision Healthcare**	With predictive healthcare, it will become easier to deliver more personalized and precision healthcare when individuals' health indicators are monitored and condition predicted in advance.
4	**Digitized Healthcare Management**	Wider digitization of the healthcare environment with things like digital health records facilitating greater remote access to healthcare.
5	**Body and Bio Hacking**	Hacking of human body encompassing areas like gene editing and genomics , advances in prosthetics and lab grown body parts as well as improving mental and physical performance.
6	**Robotics and Nanobots**	Robots and nanobots will play a much larger role in healthcare in the future. Surgeries , Robotic exoskeletons, Nanobots delivering medications within the body only where it is needed.
7	**Internet of Medical Things (IoMT)**	IoMT through wearables and apps will be the key driver in the move towards more preventative,proactive and personalized medicine.

Fig. 15: Key Global Healthcare Trends

Annexure D   Market in Focus: India Health Tech Market

As a market similar to Pakistan in terms of lifestyles and being a much more evolved Health Tech market, it is worthwhile to look at the Indian Health Tech market. India Health Tech market is projected for a fast track growth. A recent digital health initiative by the Govt. of India aims at giving digital health services access to all the citizens Key indicators related to the Indian Health Tech market are shown in Fig. 16.
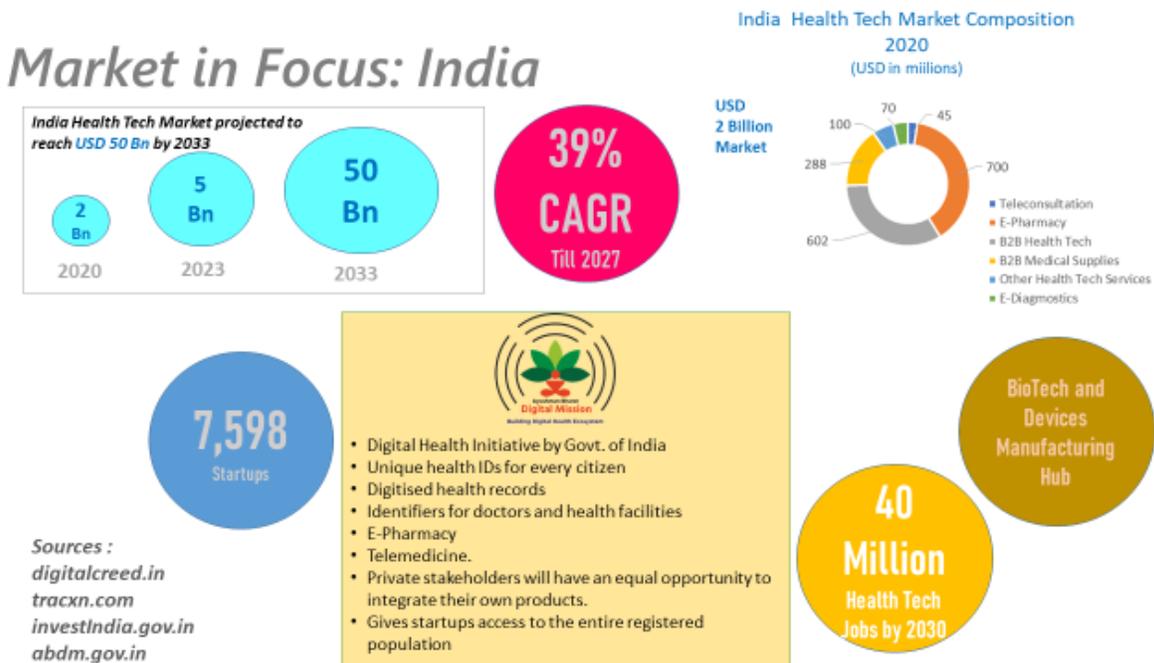

Fig. 16: Market in Focus: India

Annexure E   Details of Funding in the Pakistan Health Tech Sector

https://airtable.com/shrsy589UNNLpKHXD/tblhdIGjrR9k0NWHM/viwJ3XTiKVYqEkxxW

Annexure F   Definitions of Health Tech Sub-Verticals and Other Verticals

Telemedicine	Digital solutions that connect healthcare providers and patients, enabling them to communicate directly through text, online chat platforms, phone calls or video chats.
E-Pharmacy	Digital platforms that offer pharmaceutical products and supplies for purchase and delivery. These platforms enable individuals and families to order prescription and non-prescription medicine and other health related products. Healthcare or medical facilities can also order medical products and supplies
Health on Demand	Health on Demand refers to digital platforms that connect patients to various healthcare solutions online, and facilitate efficient communication and bookings for physical appointments with a chosen doctor, lab tests or other services which can be conducted at home.
Lifestyle and Wellness	Digital platforms and mobile apps that promote and manage a healthy lifestyle, fitness and nutrition, self-assessment and monitoring apps as well as apps and sites that connect users to physical health facilities.
Remote Diagnostics and Monitoring	The process of using technology for identification of medical conditions and monitoring patients outside of a traditional care setting, such as in their own home, or a care home.
Assistive Technology	Digital solutions including software or devices that improve the well-being and functionality of PWDs and the elderly.
Health Management	Digital systems and platforms to manage patients' activities including electronic health records, patient scheduling, billing, digital communication with patients and health ERP.
Health Fintech and Insurance	Digital solutions which make it easier for individuals to access health insurance or to own a medical savings account.
Health Information	Development and distribution of health knowledge, awareness and education through digital platforms.
E-training	Digital solutions that provide training to healthcare workers to improve clinical knowledge and performance.
Health Logistics	Digital solutions that offer logistical arrangements, provision and

	delivery of medical supplies and products.
Med Tech	Design, development and manufacture of medical hardware and software focusing within hospital.
Biotechnology	Development and production of medical products derived from living organisms.