

SWOT analysis table

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	Strengths	Weaknesses	Opportunities	Threats
Project Details	<ul style="list-style-type: none"> • Representation of all provinces • Good representation from academia signifies innovation • A higher proportion of internal and international funding as compared to national funding • More internal funding shows interest from the sustainability perspective • More focus on research and implementation n showcases competitiveness • More representation from family medicine domain • More digital health-based interventions focusing on noncommunicable diseases • More interventions targeted at the general population as opposed to any particular age group 	<ul style="list-style-type: none"> • System development not at par with research focus which can impact scalability and sustainability • The low representation of specialized field as compared to general health/family medicine. • Lack of use of geospatial technology and analysis. • Lack of big data sets hence resulting in less efficient data mining machine learning and artificial intelligence models. • Two-thirds (66%) of the Pakistani population has functional phones, yet the majority of the interventions were smartphone based • Lack of skilled human resources for digital health 	<ul style="list-style-type: none"> • A recent influx of digital health interventions in Pakistan in both implementation and research domain • Capacity building opportunities for application system developers • Opportunity for open source applications for high accessibility of digital health based interventions • The higher opportunity of digital health working with different health domains, both pragmatic and research. • Focus on neglected health outcomes like mental health. • Higher opportunity to work in maternal newborn and child health • Replication of successful digital health projects from other countries. • More projects focusing on artificial intelligence/ machine learning models. • Merging diverse Digital health components can provide more effective results 	<ul style="list-style-type: none"> • Unwillingness towards sharing data for impact maximization • Most projects reflecting older/conventional technologies thus risking sustainability and scalability issues • Higher in-house development limits value addition and impact • More international funding may generate copyrights/IP issues • Scarcity of funding • Low conversion of digital health-based interventions for scale-up and commercialization. • No policy for geospatial mapping at national level • Lack of a clear understanding of digital health among key stakeholders. • The high cost of digital health-based interventions. • Lack of availability of data related to digital health interventions at national and provincial levels. • Lack of infrastructure in basic/ primary health units and tertiary centers to

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		<ul style="list-style-type: none">• Low mobile phone network coverage in some areas		implement digital health interventions.
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	<ul style="list-style-type: none"> • Balanced coverage of Interventions from all Socioeconomic classes • Application domains comparable to international trends showcase the relevance • Balanced representation of both technology hardware and software in digital health interventions • Increased technology interventions over time • Participant recruitment is more straight forward in Pakistan and thus not identified as a barrier • Scalability at the provincial /national level in most projects • High ratio of scale-up of completed projects •Availability of technology infrastructure to scale digital health interventions Adequate resource allocations 	<ul style="list-style-type: none"> • Absence of national digital health framework 	<p>and high impact (interoperability)</p>	
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	<p>(costs) to various intervention components</p> <ul style="list-style-type: none"> • Presence of more open source applications 			
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<p>Project Team Details</p>	<ul style="list-style-type: none"> • Diversity among professionals 	<ul style="list-style-type: none"> • Less representation of regularized interventions 	<ul style="list-style-type: none"> • Students' involvement can make them career-oriented 	<ul style="list-style-type: none"> • Individual developers-led projects may lack the insight of a health care professional regarding healthcare needs and challenges and vice versa
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	<ul style="list-style-type: none"> • Reflects better collaboration The abundance of IT experts ensures intervention is technologically sound and has excellent reliability. 	<p>shows gaps at the governance level .</p> <ul style="list-style-type: none"> • The low representation of individuals with a research background in the team, IT experts and clinicians may not have the skills to evaluate the impact of the project 	<ul style="list-style-type: none"> • Towards digital health, medical, and engineering. • The curriculum should teach digital health and its significance Collaboration across sectors to utilize each other's expertise – including Academia, pragmatic and industry • More involvement professional from both Healthcare and Engineering in Digital health 	
<p>Project Evaluation</p>	<ul style="list-style-type: none"> • A higher proportion of evaluation of studies/ projects for digital health • A high proportion of projects at scale up stage 	<ul style="list-style-type: none"> • Data not reported or published at national or international forums 	<ul style="list-style-type: none"> • Availability of relevant tools for study evaluations including big data. • Application of artificial intelligence/ machine learning in future digital health projects Installation and setup of app/project to a national database 	<ul style="list-style-type: none"> • Reliance on conventional tools • Restricted access to projects to the national database • Risks arising from lack of structured programs/certifications for managing large data sets • Low evidence-based evaluation of digital health interventions

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			<ul style="list-style-type: none"> Commercialization / generalization of scale-up projects Stringent monitoring and reporting 	
Ethics in Digital health	<ul style="list-style-type: none"> Responsiveness towards ethical requirements Data access restricted to relevant personnel Mindfulness towards data retention and archiving. 	<ul style="list-style-type: none"> Around 1/10th (10%) of the studies/projects didn't administer consent The low representation of government regulators within regional ethical committees. 	<ul style="list-style-type: none"> Standardization of consent forms and procedure The national body regulating ethical challenges related to digital health Develop regulations for formally initiating digital health projects. 	<ul style="list-style-type: none"> Lack of proper ethical regulatory framework to determine if consent is required or not and data retention policy Local institute committee can influence/bias ethical decisions