



UNDERSTANDING DIGITAL READINESS OF **SMALL** HEALTHCARE PROVIDERS

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Acknowledgements

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CONTENTS

1	Glossary	06
2	Executive Summary	07
3	Introduction	09
4	About the Survey	10
5	Key Insights from the Survey	12
6	Barriers to Furthering Digital Adoption	18
7	Recommendations for Stakeholder Action	22
8	References	24

Glossary

AB-PMJAY	: Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana
ABDM	: Ayushman Bharat Digital Mission
ABHA	: Ayushman Bharat Health Account
AHPI	: Association of Healthcare Providers (India)
ARTIST	: Asian Research and Training Institute for Skill Transfer
CAPEX	: Capital Expenditure
CHE	: Current Health Expenditure
CO-WIN	: COVID Vaccine Intelligence Network
DVDMS	: Drugs and Vaccines Distribution Management Systems
EMR	: Electronic Medical Records
FOGSI	: Federation of Obstetric and Gynaecological Societies of India
HFR	: Health Facility Registry
HMIS	: Health Management Information System
HPR	: Healthcare Professionals Registry
ITI	: Industrial Training Institutes
JAM	: Jan Dhan Yojana, Aadhaar and Mobile number
LMIS	: Logistic Management Information System
KIIs	: Key Informant Interviews
MoHFW	: Ministry of Health and Family Welfare
NABH	: National Accreditation Board for Hospitals
NBFC	: Non-Banking Financial Company
NSTI	: National Skill Training Institute
UHC	: Universal Health Coverage
WHO	: World Health Organization

Executive Summary

'Digital health,' the intersection between technology intervention and healthcare, has the potential to support equitable, affordable and effective healthcare systems. The Indian government is taking several steps toward the digitisation of the healthcare sector to enable the achievement of Universal Health Coverage (UHC). The Jan Dhan Yojana, Aadhaar and Mobile number (JAM) trinity and the National Broadband Mission form the backbone of these efforts, while the Ayushman Bharat Digital Mission (ABDM) aims to strengthen the emerging integrated digital health ecosystem for providers and citizens.

The government's commitment toward healthcare digitisation necessitates action from all healthcare providers, in particular private providers, as low-cost private hospitals and clinics constitute close to 70% of healthcare delivery. However, targeted efforts are needed to understand the status quo as well as the future requirements of private facilities to aid the transition.

To understand the digital readiness of private sector hospitals, a dipstick survey was conducted with 45 respondents operating small-to-entry-level hospitals (about 50 beds) across Tier 1, Tier 2 and Tier 3 cities in Karnataka. The survey, along with in-depth interviews of 15 respondents out of the 45 survey respondents, set out to examine the providers' attitudes toward digital adoption, measuring its present levels and their willingness to expand adoption, and identify the challenges they faced with digital adoption.

Though the government continues to further its commitments, the survey results highlight an information gap due to a lack of comprehensive communication of the scheme provisions. While 26% of the respondents were registered under the Health Facility Registry (HFR), Key Informant Interviewees revealed that they were not fully aware of ABDM provisions and held misplaced notions of mandatory compliance with Ayushman Bharat-Pradhan Mantri Jan Arogya Yojna (AB-PMJAY).

Nevertheless, digitisation efforts are underway in most facilities, with respondents claiming to leverage both hardware and software for basic operations and in select departments. For instance, digital tools are leveraged for operations such as billing (66.7%) and maintenance of records (60%). Only around 15% of the respondents claimed that all operations are digitised with nearly all staff members interacting via digital tools. All respondents, irrespective of digitisation status, continued to maintain paper-based records as a backup, while 16% of the respondents relied entirely on paper-based records.

While recognising the merit of advanced operations such as digital consultation, 70% of respondents still prefer to hold in-person consultations and follow-ups. At present, infrastructural issues such as network connectivity and the slow rate of adoption from the patient's end slow the transition. The willingness to adopt further digitisation is inhibited

DIGITAL READINESS OF SMALL HEALTHCARE PROVIDERS

by challenges such as associated costs, paucity of skilled employees to operate digital solutions and perform troubleshooting, and low availability of customisable software that addresses the needs of small-to-entry-level hospitals.

Philanthropic organisations can play a critical role in systematically enabling this set of providers to better adopt digital tools by (1) facilitating the creation of a technologically skilled cadre of workers, (2) creating a cadre of digitally skilled professionals, (3) providing financial incentives for low-cost hospitals willing to digitise and, (4) generating awareness about government schemes that promote digitisation and increase willingness to adopt by successful demonstration of the value proposition.

Introduction

There has been a global recognition that information and communications technologies (ICT) present new opportunities for the achievement of all 17 Sustainable Development Goals. There is also a growing consensus in the global health community that the strategic and innovative use of digital ICT is an essential enabling factor of the World Health Organization's (WHO) triple billion targets (WHO 2021): to ensure that by 2023, 1 billion more people benefit from universal health coverage, 1 billion more people are better protected from health emergencies, and 1 billion more people enjoy better health and wellbeing.

The potential of technology to support equitable, affordable, and effective healthcare systems creates an intersection between technology and health, termed 'digital health.' In its implementation, digital health applies technology-based solutions in the form of (1) *hardware* such as smartphone-enabled pacemakers, portable vital sign monitors, remote analysers for blood or urine samples, and screening devices; (2) *software* such as mobile health and telemedicine applications and behaviour change solutions; and (3) *services* that provide end-to-end health solutions using a combination of hardware and software development. Digital solutions are also leveraged for increasing the efficiency of healthcare service delivery through self-learning or e-training platforms, platforms for increasing the efficiency of hospitals and other care delivery mechanisms such as Electronic Medical Records, billing and payments software, and Hospital and Lab Management Information systems (HMIS/LMIS).

The COVID-19 pandemic exacerbated the need and uptake of digital solutions globally. Massive disruptions within healthcare, both directly as a result of the outbreak and indirectly because of public health measures to mitigate transmission, caused rapid dynamic fluctuations in demand, capacity, and even contextual aspects of healthcare. Therefore, the traditional face-to-face patient-physician care model had to be re-examined in many countries, with digital technology and new models of care being rapidly deployed to meet the various challenges of the pandemic (Gunasekeran et al. 2021).

Over the past few years, various initiatives by the Government of India (GoI) have made a strong push for digitisation. The Jan Dhan-Mobile-Aadhar (JAM) trinity to increase digital and financial inclusion enabled the creation of over 460 million Jan Dhan bank accounts, 1.31 billion Aadhar cards and 1.2 billion mobile subscriptions (Ministry of Finance 2022; UIDAI 2022; Deloitte 2022). Similarly, the comprehensive digital health service, Ayushman Bharat Digital Mission (ABDM), is laying the foundation for the country's digital health ecosystem. A central part of the mission is establishing the backbone of digital health – unified health records – leading to the creation of 246 million Ayushman Bharat Health Account (ABHA) numbers as on 6th October 2022 (MoHFW 2022). Other schemes like PM-Wani and Pradhan Mantri Gramin Digital Saksharta Abhiyan focus on providing affordable solutions to avail digital services. Digital platforms have been developed for

DIGITAL READINESS OF SMALL HEALTHCARE PROVIDERS

specific health services, for example, eSanjeevani for Outpatient Department management and eNikshay for efficient management of the National Tuberculosis Elimination Programme, amongst others.

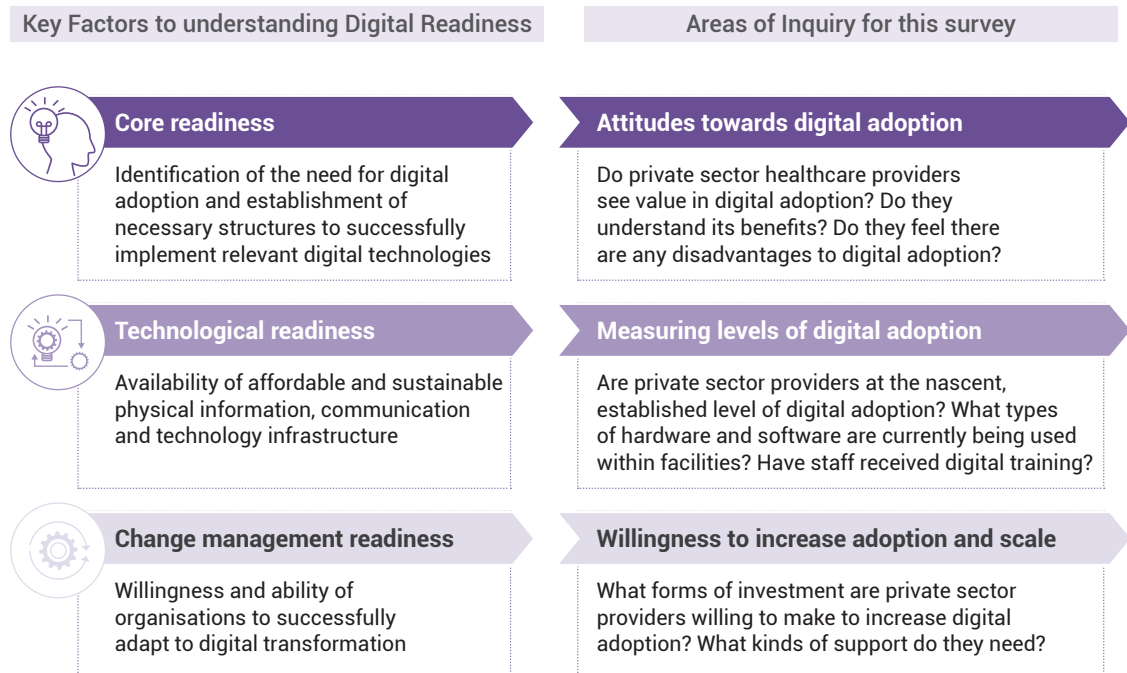
India is at the cusp of a digital health revolution, the success of which is dependent on integrating all relevant stakeholders within the healthcare ecosystem under a common digital umbrella. This is especially important for private healthcare providers as they constitute nearly 70% of healthcare delivery (Press Information Bureau 2019). In 2020, over 80% of Indian patients' healthcare needs were fulfilled at private facilities through out-of-pocket expenses. In 2017, 72.1% of India's Current Health Expenditure (CHE) was financed by the domestic private health sector, i.e. by households, non-profit organisations, and corporations. Furthermore, private infrastructure accounts for nearly 62% of all of India's health infrastructure (Jaffrelot & Jumle 2020). The government and other stakeholders have also acknowledged the critical role of private healthcare providers in achieving UHC. Digitisation of healthcare within the private sector will not only simplify patient processes within hospitals but also enable a host of other facilities like digital consultation and digitisation of medical records, which further support the portability of information, thus driving more patient-centric care.

Stakeholders within the digital health ecosystem agree that a better understanding of the end user profile is crucial for designing specific solutions. Stakeholders also confirm that the real cost of digital uptake for doctors and hospitals is not the tool or the software, but its implementation and integration into existing hospital systems; in other words, the cost of change. Yet, there is very little data on private sector healthcare providers' readiness for digital adoption (Sattva Analysis). A deeper understanding of the current status of digital adoption, and the challenges and opportunities concerning digital solutions will enable more effective designing of solutions and facilitate smoother uptake. Understanding the ecosystem, infrastructure, resources and the current state of digital health is important for a successful transition. Hence, Sattva conducted a preliminary dipstick survey to understand the current status and outlook on the digital readiness of private sector healthcare providers.

About the Survey

For the scope of this survey, 'digital readiness' is defined as "the ability of the stakeholder group to smoothly imbibe the digitisation of health systems with the least resistance from the stakeholders and associated systems for its effective and sustainable use to achieve the targeted outcomes" (Sundar 2020). Adapted from previous digital readiness assessments (Yusif et al. 2020, pp.189-214), this study looks at three key factors to determine digital readiness and further develops them into three key areas of inquiry that guide this survey.

Figure 1: Digital Readiness Assessment - Key Factors and Areas of Inquiry



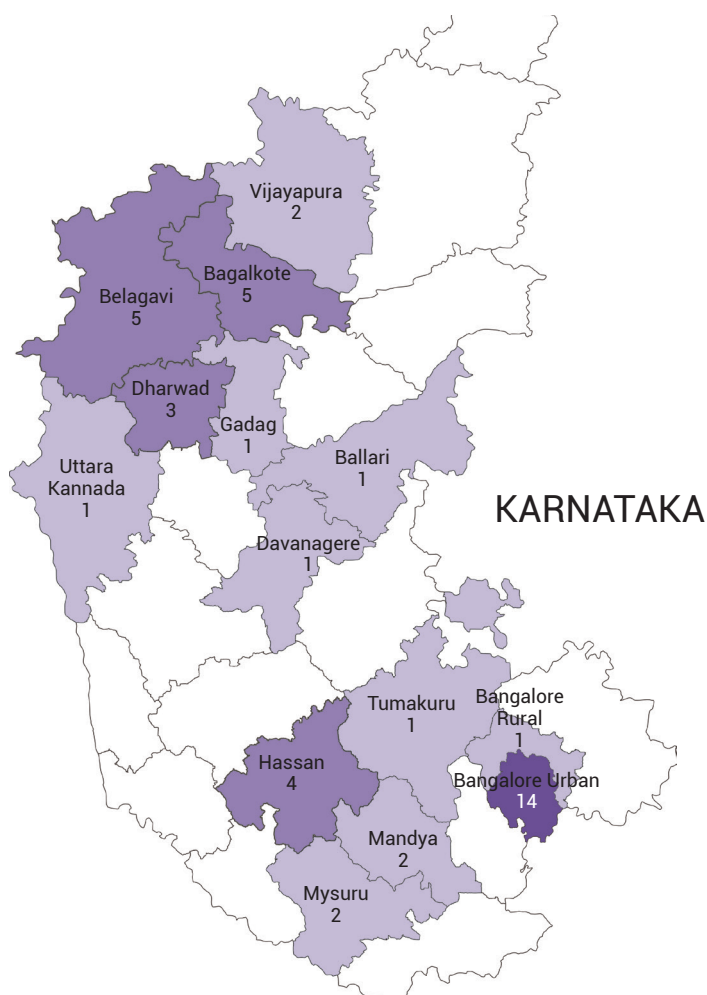
(Adapted from a study by Yusif et al. 2020)

health providers in India; the majority are small scale, employing less than ten workers and with a strong urban bias (Chaudhuri & Datta 2020). Further, Karnataka, Uttar Pradesh and Maharashtra are the top three states with the highest dependence on private health infrastructure in the country (Jaffrelot & Jumle 2020). For the purpose of this study, we have focused on private hospitals with about 50 beds in Tier 1, 2 and 3 cities in Karnataka. In order to get a representative sample of digital readiness, data was collected through a mixed methods approach, combining a self-administered questionnaire and semi-structured Key Informant Interviews (KIIs).

The Asian Research and Training Institute for Skill Transfer (ARTIST) team, supported the data collection process by providing access to private sector providers. The institute facilitated the KIIs and enlisted respondents for the self-administered surveys.

Sattva collected and analysed results from 45 self-administered surveys and 15 KIIs. Most of the respondents (64.5%) were facility heads, directors, board members, and owners of private sector hospitals, primarily in the age group of 30-45 years (42%). They represented hospitals of varying sizes, most of which have less than 30 beds and under 10 doctors. Of the 45 responses, 14 are from hospitals in Bengaluru, the largest city in Karnataka, while the others are located in Tier 2 and 3 cities like Belgaum, Hassan, and Mysore.

Figure 2: Distribution of Survey Respondents across Karnataka

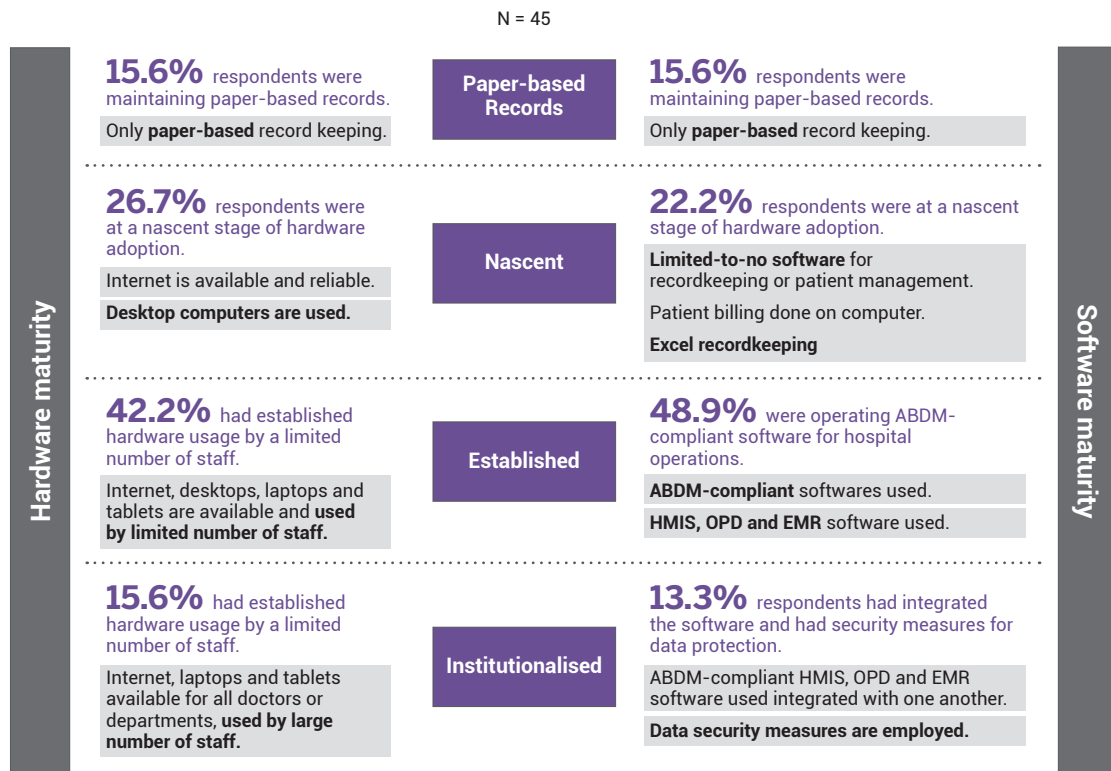


Key Insights from the Survey

Although 42% of private sector providers are in the 'established' stage of digital adoption, the use of digital tools is limited to basic operations such as billing and payments.

In order to establish a scale for digital adoption, we adapted an existing WHO global benchmarking index to identify four levels of hardware and software adoption in hospitals. **Adoption of hardware and software among respondents was found to be proportional.** 42.2% and 48.9% of survey respondents mentioned having 'established' levels of hardware and software adoption respectively.

Figure 3: The Status of Hardware and Software Adoption in Hospitals



Note: The primary distinction between 'established' and 'institutionalised' digital adoption lies in the interoperability and integration of hardware and software across the various core functions of the hospital. Digital adoption is said to be 'institutionalised' in a hospital if the data from the software for HMIS, patient management, billing, and laboratory management can be cross-referenced across platforms.

15.6% of respondents continue to use only paper-based records while only 15.6% and 13.3% of respondents claimed to have institutionalised levels of hardware and software adoption respectively. These results were further qualified through the KIIs. We learned that while many of the surveyed doctors or facility heads might be using digital tools themselves or for their specific departments, it might not be true for the entire hospital.

“We have Electronic Medical Records (EMR) for OB-GYN patients which I manage myself, however, it is not interoperable and is not used by other departments in the hospital.”

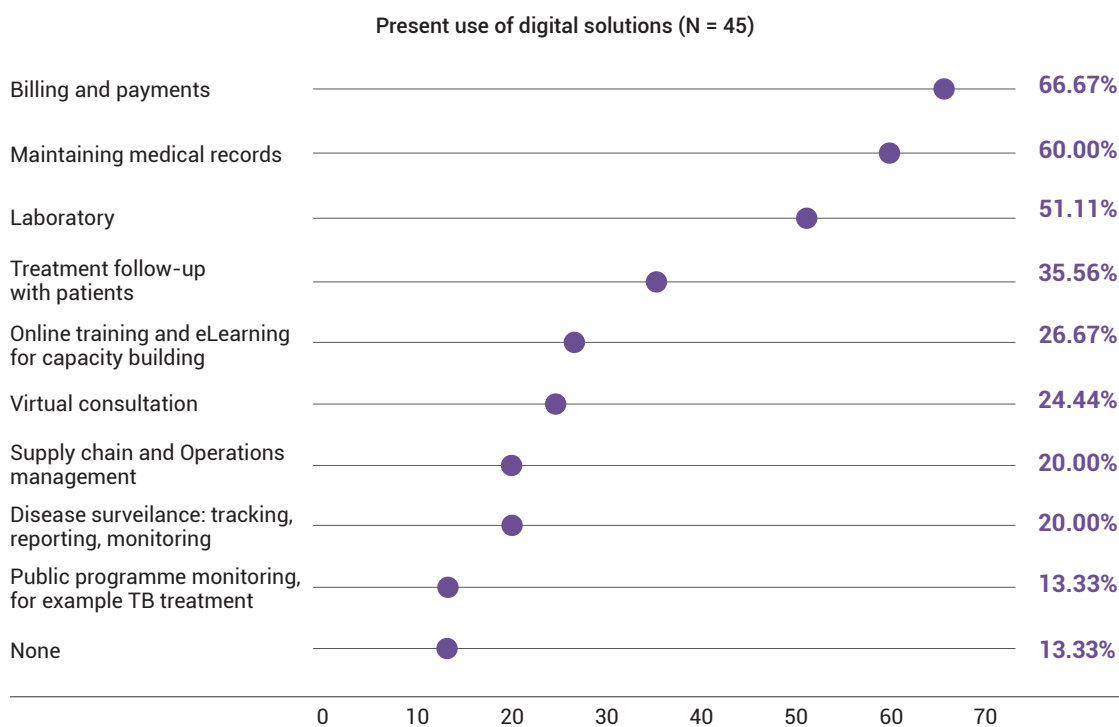
– Dr Bharati Rajshekhar

Thus, while specific doctors might have adopted digital solutions, unless hospitals mandate digital adoption and provide specific measures to ensure the integration of all systems into digital platforms, there is limited scope for increase.

DIGITAL READINESS OF SMALL HEALTHCARE PROVIDERS

Both the survey results and in-depth interviews confirmed that digital tools are mostly used for billing and payment purposes (66.7%) and maintaining medical records (60%), which are not necessarily longitudinal in nature.

Figure 4: Areas of Current Digital Incorporation



Billing and payments remain the most digitised aspect of these hospitals primarily due to (1) the relative ease of use of its software, as a result of which it can be operated by non-medical staff and (2) digitised billing and patient discharge summary, helping with seamless insurance claims settlement.

60% of the survey respondents claimed to maintain EMR, while 24.4% and 35.6% of the respondents reported employing digital mediums to interact with patients and conduct follow-ups. However, interviews revealed that all hospitals primarily maintained paper-based records. Concerns such as potential loss of data due to hardware or software breakdown were the primary reason for maintaining parallel systems of paper-based records even in hospitals with an established digital system. For consultations and treatment follow-ups, doctors relied heavily on mediums like WhatsApp. As mentioned earlier, EMR software was used in some places but not fully integrated across all departments and services. Its use and integration were found to be primarily dependent on the doctor's preference and comfort.

While 26.7% of the facilities are registered under the ABDM, healthcare providers are not fully aware of the scheme, leading to low adoption. There are instances of conflating ABDM with PMJAY.

Overall awareness of ABDM remains low amongst the respondents. They were unsure about its provisions and registration details. In certain instances, there were even misconceptions of mandatory compliance with PMJAY if one were to register with ABDM.

Doctors expressed a lack of comprehensive awareness-raising efforts for the value proposition and provisions of ABDM by local government authorities. A few interview respondents who were aware of ABDM mentioned that doctors choose to opt out because of negative experiences with government portals. They indicated that the user interface (UI) of most government portals is slow or difficult to navigate, leading to reduced usage of voluntary platforms such as ABDM.

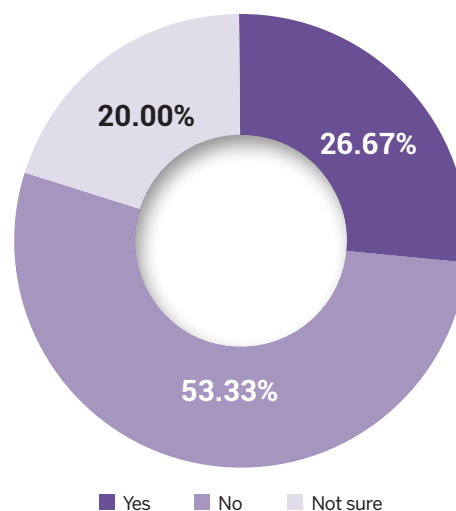
Furthermore, the respondents mentioned that they have not received any scaffolding support to ease the transition. Without the necessary support and clarity, the facilities find the transition burdensome.

“We are interested to register but would definitely need more information on the ABDM before joining.”

– Dr Praneetha K A

Figure 5: Status of Registration in Ayushman Bharat Digital Mission's Health Facility Registry

Ayushman Bharat Digital Mission - Health Facility Registry Status (N = 45)

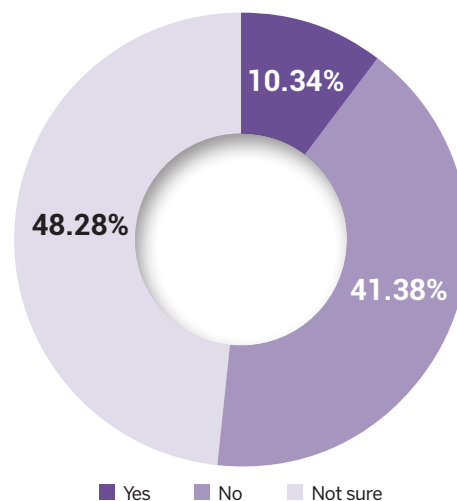


Moreover, even as a large proportion of hospitals develop their hardware and software capacity, only 10.3% of the respondents reported using ABDM-compliant software.

DIGITAL READINESS OF SMALL HEALTHCARE PROVIDERS

Figure 6: Status of Software Compliance with Ayushman Bharat Digital Mission Standards

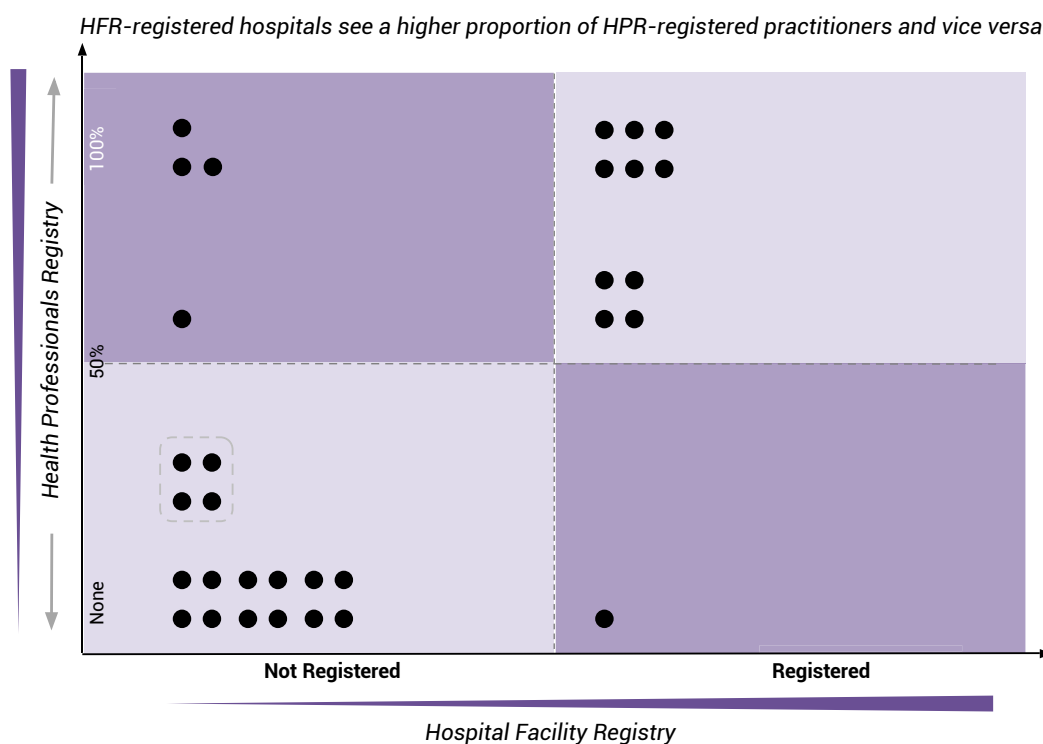
Ayushman Bharat Digital Mission Compliance Status of Digital Solutions (N = 45)



A deep dive into the data revealed that the doctors working in ABDM's HFR-registered hospitals are more likely to have registered with the HPR as opposed to those employed in non-HFR-registered hospitals.

Hence, it can be inferred that the hospital's awareness of ABDM and compliance with government schemes are likely to impact the doctors' awareness of and compliance with the same.

Figure 7: Relationship between the Hospital's Registration under Health Facility Registry and Doctor's Registration with Healthcare Professionals Registry

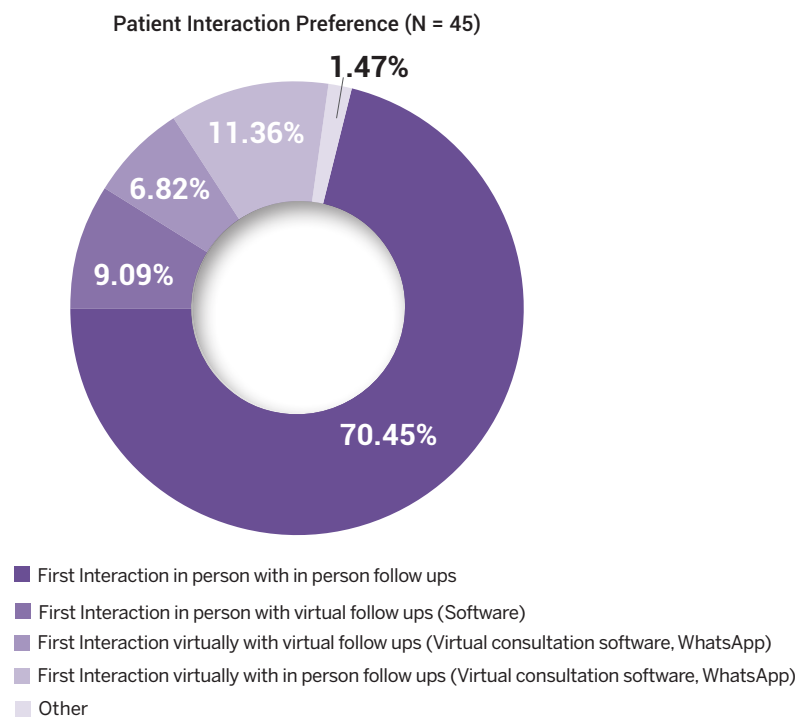


There is a likelihood of doctors registering with the HPR if the hospital they are associated with is also registered with the HFR.

70.5% of the respondents preferred in-person consultations and follow-ups; however, virtual consultations are gaining traction post-COVID, with doctors predominantly using WhatsApp to communicate with patients.

Post-COVID-19, doctors and patients alike are slowly getting acclimatised to digital consultations and a hybrid system is gaining popularity. That said, the preference for conducting in-person consultations and follow-ups remains high at 70.5%.

Figure 8: Doctors' preferred mode of patient interaction



During the interview, respondents highlighted infrastructural and behavioural reasons for preferring physical over digital consultations. Infrastructurally, there are concerns regarding stable network connectivity, especially for respondents from Tier 2 and 3 cities.

Furthermore, respondents mentioned that transitioning to online consultations would require a change in behaviour for both doctors and patients. Doctors are becoming increasingly empathetic to the struggles of patients, especially those from low-income communities who travel greater distances for preliminary consultations. They expressed openness to conducting basic consultations and follow-ups virtually. However, demand from the citizens needs to increase as well. The interviews revealed that the communities were still reluctant to use such digital services. The reluctance comes from the comfort and

trust established in the practice of physical visits. Most importantly, the patients feel they can provide a detailed account of the medical concern and are more likely to be examined in a thorough manner in person.

“We have an app for online bookings but people still call the front desk for booking appointments. How can we move to digital consultation in such scenarios?”

– Dr Vidya Bhatt

Barriers to Furthering Digital Adoption

In addition to the surveys, in-depth interviews with 15 respondents revealed additional challenges around digital adoption in their respective hospitals.

1. Limited availability of relevant digital health solutions that cater to the needs of these hospitals:

While only one respondent discontinued using software altogether claiming it to be cumbersome and time-consuming, all interview respondents mentioned trying and substituting multiple softwares. Respondents also resorted to customising external software or developing their own through local third-party IT vendors. Additionally, respondents mentioned that each customisation comes with a high cost and that they are not completely satisfied with the results.

2. High price point of available digital health solutions and change management cost:

The private hospitals considered for this exercise are small-to-entry-level ones operating on thinner margins, which presents a significant challenge in making an upfront capital expenditure (CAPEX) investment to digitise the hospital. Although the respondents recognise the benefits of and need for digitisation, the perceived CAPEX cost to set up hardware infrastructure along with the expensive software subscription fees deters their efforts to digitise the facility.

“The OPD software that we are using presently requires us to fill in extensive details about the medical history and examination findings, however, since it is not customised to an OB-GYN setup it is very difficult to operate. We spoke to the provider organisation for customisations but were not very satisfied with the results for the price we paid.”

– Dr Shobha V Shyavi

3. Limited availability of digitally skilled talent pool who can serve as hospital support staff to facilitate the digitisation effort in Tier 2 and Tier 3 locations:

As doctors have limited time due to continuous patient interactions, they cited the need for additional support staff to aid the facility's digitisation efforts. This would include digitising old records, documenting basic details such as the demographics of new patients, and conducting follow-ups. Ten respondents stated a willingness to hire additional resources for this purpose; however, there is a dearth of skilled manpower with the necessary technical skills to operate and maintain digital health systems, particularly in Tier 2 and 3 cities.

"In the absence of technologically learned staff, we prefer to first receive the training ourselves and then train our staff to ensure that we would be able to troubleshoot in the future. Moreover, we have to closely monitor the inputs made by the staff to the software. This additional task is burdensome."

– Dr Sujay Heranjal

4. Limited patient demand for digitised services:

Interview respondents cited that the patient community is yet to accept virtual consultation as a mode of receiving healthcare services. Even though the digital divide is slowly being bridged in these communities, phones are not seen as an appropriate medium to seek healthcare services or as the first point for seeking care.

"Although nearly all my current patients have smartphones, they are not yet ready or interested in using them to access healthcare services, thus they are unlikely to fully benefit from digitisation."

– Dr Lakshmi D

5. Limited awareness of digital health flagship programmes such as ABDM:

Most respondents were unaware of ABDM and uncertain of its intricacies. The few respondents who were aware of the scheme expressed scepticism at its value and capabilities. They also expressed interest in learning more about the scheme, however, they did not know where to look or whom to approach for information.

"We are not aware of what ABDM is, the local officials have just asked us to register and we are in the process of doing it."

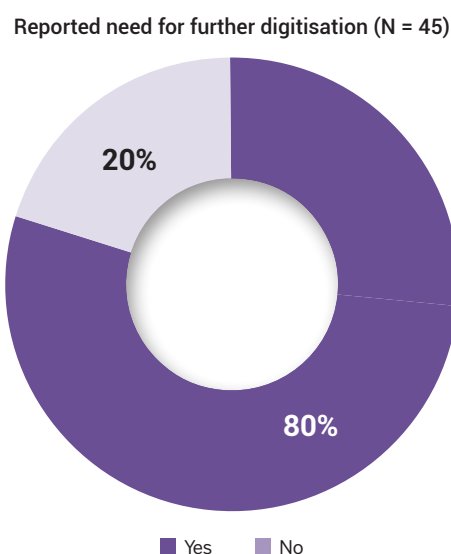
– Dr Anjali Siddesh

DIGITAL READINESS OF SMALL HEALTHCARE PROVIDERS

However, most respondents (80%) acknowledged the need for greater adoption of digital technology and are willing to make financial investments and commit time to the cause.

40 of the 45 survey respondents recognise the advantages of digital adoption, believing that digitisation could significantly reduce clutter and improve record-keeping efficiency, while also reducing the dependency on patients to carry their files for each consultation.

Figure 9: Reported Need for Further Digitisation

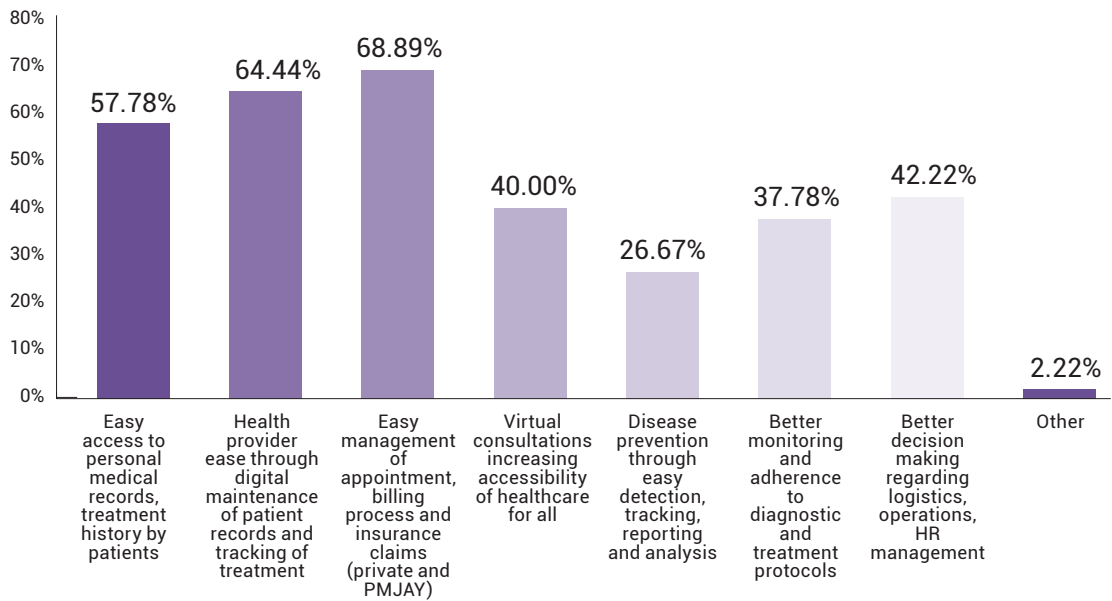


On the other hand, the survey revealed that the value of digitisation is not yet perceived beyond operational activity and patient record management. Its scope for treatment adherence and disease prevention was recognised by only 37.8% and 26.7% of the respondents respectively.

“The hospitals that are collecting any amount of digital information are sitting on a wealth of data which needs to be analysed and put to good use. We could understand the relationship between diseases and geographies and reach critical target populations that need medical assistance. At an individual level, we could better patient care by accessing the continuum of healthcare instead of responding to singular events.”

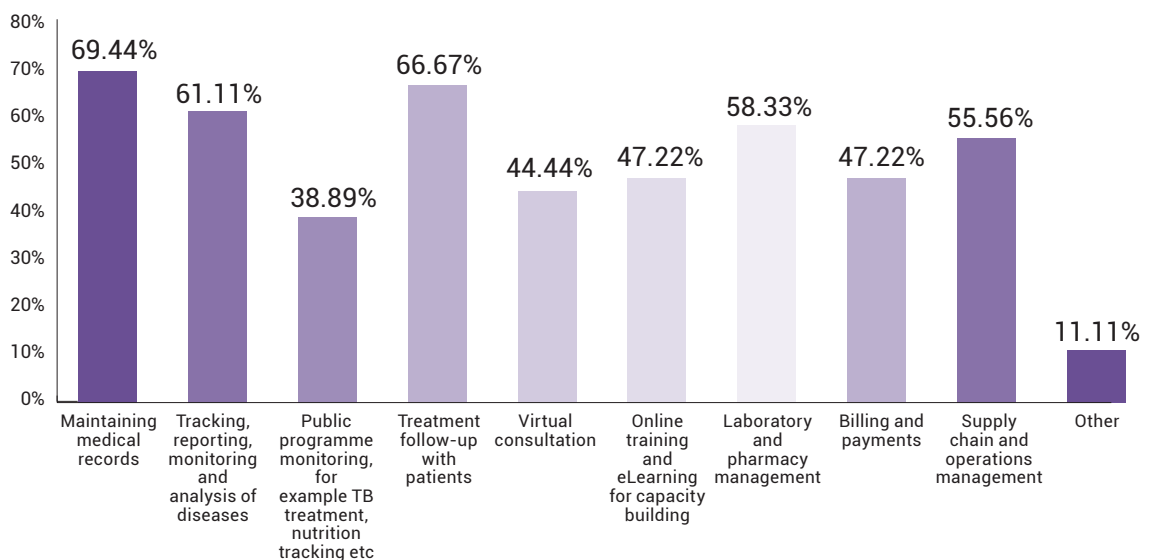
– Dr Hema Divakar

Figure 10: Perceived Advantages of Digital Adoption in Hospitals



When asked to situate where the maximum need for digital solutions was within their facilities, the respondents chose maintenance of medical records (69.4%) and treatment and follow-up (66.7%).

Figure 11: Perceived Need Areas for Further Digitisation in Hospitals



To help fulfil this need, respondents were willing to commit time and carry out capacity building of human resources. They were also willing to increase monetary investments, provided they got a system customised to their needs.

Recommendations for Stakeholder Action

Philanthropy can play a catalytic role in increasing digital health adoption for low-cost private hospitals in underserved geographies.

In India, digital healthcare is still in its nascent stages, and interventions led by the central government, and philanthropic and non-profit organisations are progressing gradually.

The NHA's flagship programme ABDM coupled with the MoHFW's digital healthcare delivery through programmes like eSanjeevani and the National Tele-Mental Health Programme provide the potential to bridge healthcare accessibility-related challenges. The government also relies on digitisation to improve the efficiency of the supply chain and care delivery through platforms like CoWIN and DVDMS. Initiatives by philanthropic organisations such as supporting state capacity building for the adoption of ABDM or development of low-cost digital health solutions focus on the penetration of digital health in the underserved markets.

This study provides an opportunity for philanthropic organisations to spearhead the digital transition in healthcare facilities. Philanthropic entities (including foundations, multilateral organisations, high net-worth individuals and corporate funding as part of corporate social responsibility) have a critical role to play in the digital adoption of hospitals by providing initial support that demonstrates the value proposition of digital health. The initial funding to build the digital capacity of low-cost private hospitals will create a catalytic impact in achieving digital health adoption goals.

1. Strengthen the existing digital health solution basket for low-cost hospitals by establishing benchmarks for product design and standardising the solution ecosystem:

This can be done by encouraging established digital health solution providers serving Tier 1 markets to serve Tier 2 and Tier 3 markets, by creating incentives such as structured channels to test and scale solutions in underserved markets and risk capital for market failures. Philanthropy can also build the capability of local IT vendors serving Tier 2 and Tier 3 markets by funding the development of open-source codes. Philanthropy can also design toolkits and certification programmes for these digital health solution providers to adhere to the basic standards which make the software more user-friendly and customisable for doctors and healthcare facilities.

2. Create a cadre of digitally skilled professionals:

Philanthropy can play an integral role in creating a digitally skilled workforce certified through vocational training in partnership with the National Skill Training Institute (NSTI)

and Industrial Training Institutes (ITI). It can also orchestrate placement and internship opportunities in these hospitals in partnership with associations like the National Accreditation Board for Hospitals (NABH), the Federation of Obstetric and Gynaecological Societies of India (FOGSI), and the Association of Healthcare Providers (AHPI) to match the supply of skilled resources with demand from these low-cost health facilities.

3. Provision of financial incentives for low-cost hospitals willing to digitise:

A common philanthropic fund to incentivise hospitals toward digitisation can also be created. The fund can explore various cost subsidisation models such as offering HMIS or Logistics Management Information System (LMIS) software free of cost or at a discounted rate for the initial few months of adoption, to gain traction. Partnerships with non-banking financial companies (NBFC) can also be considered to design loan instruments specifically catered to the needs of affordable and low-cost private hospitals. These loans can support these hospitals with the upfront change management cost and philanthropy can underwrite the initial risk through an outcome-based financing structure, based on the kind of demography the hospital is serving.

4. Generate awareness of government schemes that promote digitisation and increase willingness to adopt by successful demonstration of the value proposition:

Philanthropic organisations are well-positioned to work in alignment with the government to increase awareness regarding ABDM and digital adoption. This can be done by facilitating the creation of toolkits with well-defined guidelines for easy navigation. They can also work with state capacity building and implementation agencies to create support structures for private healthcare providers in the geography.

Given the nascency of digital health, demonstration of its value proposition becomes crucial. This can be done by creating a cadre of peer champions who have benefitted from digitisation to motivate other hospitals.

The research brought to light the willingness and need for digitisation in small-to-entry-level hospitals in Karnataka, along with the systemic and infrastructural deficits that act as a hurdle for further digitisation. A majority of the facilities are already incorporating digital solutions at a basic operational level; however, there is also a widespread lack of clarity about the digital health solution ecosystem and enablers such as the provisions under ABDM. To aid further digitisation of these markets, a catalytic push is required and philanthropy is uniquely positioned to do the same.

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