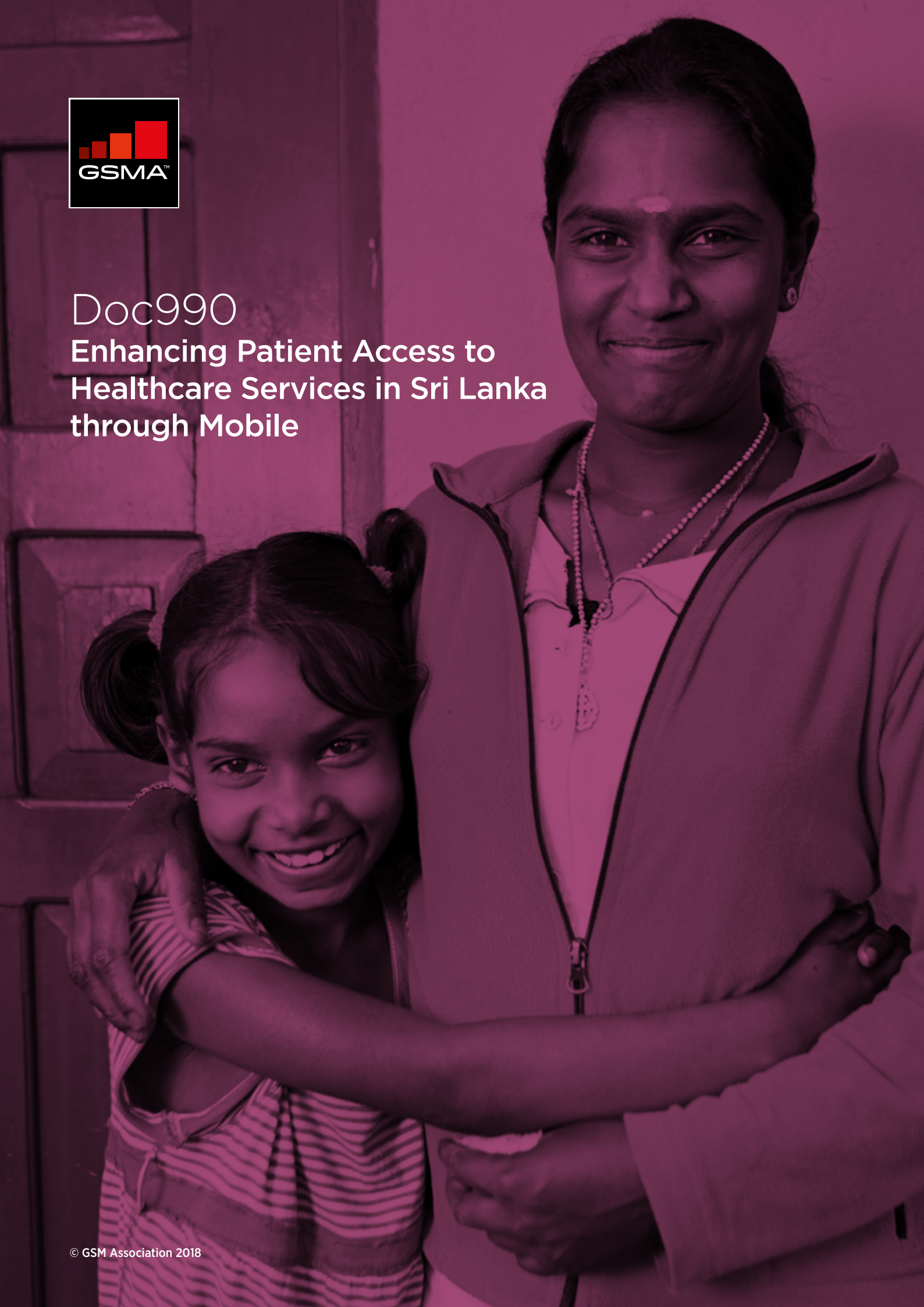


Doc990

Enhancing Patient Access to Healthcare Services in Sri Lanka through Mobile

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LIST OF ABBREVIATIONS

2G	Second generation mobile networks
3G	Third generation mobile networks
App	Mobile application
ATL	Above-the-line
B2B	Business to business
B2B2C	Business to business to consumer
B2C	Business to consumer
BI	Business intelligence
BTL	Below-the-line
FMCG	Fast-moving consumer goods
IT	Information technology
IVR	Interactive voice response
MoH	Ministry of Health
MoM	Month over month
NCDs	Noncommunicable diseases
Rs	Sri Lankan rupee
SMS	Short message service
UHC	Universal health coverage
USSD	Unstructured Supplementary Service Data
YoY	Year on year

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Executive summary

In Sri Lanka, high broadband adoption and smartphone penetration present an opportunity to use mobile app-based services to address some of the country's challenges with the provision of healthcare. These include rapid growth of the elderly population, increased prevalence of noncommunicable diseases (NCDs) and higher levels of healthcare-seeking behaviour due to increased prosperity. Digital health tools help to improve efficiencies and drive cost savings for both healthcare providers and patients.

Doc 990 is a mobile-based digital health platform operated by Digital Health (DHPL), a joint venture partnership between four entities: Digital Holdings Lanka, a subsidiary of mobile operator Dialog Axiata, Asiri Hospital Holdings (Asiri), Nawaloka Hospitals and Durdans Hospitals in Sri Lanka. This joint venture is the first cross-sector partnership of its kind in Sri Lanka's healthcare industry.

Doc990 supports digitally enabled appointment management for both patients and hospitals. In Sri Lanka, the process of identifying or searching for a relevant doctor or specialist and booking an appointment remotely via a digital channel is referred to as doctor channelling. Patients can access Doc990 through interactive voice response (IVR), web and app platforms or Doc990 agents. To date, patients can book appointments with over 90 hospitals and 2,500 doctors across 270 medical specialisations. DHPL has a broader ambition to provide integrated e-commerce services for Sri Lanka's healthcare sector.

Although Doc990 was late to the digital health sector, it rapidly gained over 40 per cent of the doctor channelling market share and over 158,000 customers. This case study presents the success factors that allowed Doc990 to become a market leader in digital healthcare in Sri Lanka.

Key insights:

- **Brand association with Sri Lanka's largest mobile operator and top three private hospital groups has strengthened Doc990's brand equity and credibility.** The investment in Doc990 has allowed Dialog Axiata to become a leader in the digital health sector, opening up new revenue streams for the mobile operator. Private hospital groups are also benefiting from increased patient bookings and higher revenues, as well as improved financial reconciliation and automated reporting processes.
- **Targeting one of the largest private hospital groups, Asiri, for the first deployment of Doc990 was an ambitious yet crucial strategic move.** With buy-in from Asiri, Doc990 was able to gain access to 30 per cent of the private sector market share. With demonstrated success at Asiri, Doc990 has since secured contracts with several other private healthcare providers, including the other top three private hospitals in Sri Lanka
- **Using trusted hospital brands and community members to promote Doc990 was an effective way to drive use of the service.** When Doc990 first entered the market, it leveraged the Asiri brand to promote the service, and within six months had established itself as a prominent provider of doctor channeling services. In addition, Doc990 agents, such as pharmacists and shopkeepers, are trusted members of the community and effective promoters of the service.
- **Doc990 benefits patients by reducing the cost and time it takes to access healthcare.** Doc990 saves patients between Rs300 and Rs675 (roughly $1.68–$3.78) in transport costs each time they book a digital appointment, consult with a doctor virtually, have lab results delivered to their phone or use the virtual pharmacy for home delivery of prescription medication. Patients also save between one and three hours of travel and waiting time when they use Doc990's remote healthcare services.

- **Designing the service with end users in mind has extended the reach of Doc990 and made it more accessible for the most vulnerable populations in Sri Lanka.** By enabling free browsing of certain features, delivering discounted healthcare services and medications to patients' homes and building a comprehensive distribution network, DHPL has significantly extended the reach and impact of Doc990. These service design features have enhanced accessibility of Doc990 for underserved communities, including rural and low-income segments, as well as the elderly and disabled populations. In addition, making the service available in local languages has improved access for the majority of the rural Sri Lankan population who do not speak English.

- **Tailoring user interfaces to meet the needs of different users, such as hospital staff, Doc990 agents and patients, who each have different levels of technical and digital literacy, has led to successful adoption of the service.** User interfaces have been simplified for hospital staff and Doc990 agents, and staff is trained on the software for quick navigation and data capturing. Patient-centred design, research and business intelligence revealed the need for new design features. These include using plain language that is easily understood by Sri Lankans, tailoring search features to patient priorities and preferences, and optimising the user interface to allow patients to easily discover new features.

- **Financial incentives drive active engagement from Doc990 distribution agents.** Doc990 agents earn commission for each booking they make and in some cases, agents charge a small fee to make payments for appointments on behalf of the customer. The increased foot traffic in their stores from Doc990 users also gives agents the opportunity to increase sales of medicines or other products they stock. Marketing and communication costs related to the use of Doc990 are fully borne by DHPL. This is intended to reduce any inconvenience for agents and increase their willingness and ability to promote the service. As a result, of a total 380 Doc990 agents, approximately 50 per cent are actively booking appointments for patients.

- **Doc990 is driving increased usage of Dialog's eZ Cash mobile money service.** eZ Cash is one of many payment mechanisms available to Doc990 patients. Steady month-over-month (MoM) growth in the percentage of appointment booking payments made through eZ Cash indicates the growing potential of digital health services to drive the use of mobile money.

- **Agreements to secure the Doc990 IVR short code across all mobile operators has expanded the reach of the service** beyond Dialog Axiata subscribers to the entire Sri Lankan population. Similarly, integration between Doc990 and eChannelling, the competitor doctor channelling service, has enabled patient access to hospitals where Doc990 is not used as the primary booking system.

- **Prioritising a familiar product was a suitable entry strategy into the digital health market.** Hospital staff and patients in Sri Lanka were already familiar with and paying for the existing doctor channelling service. Although DHPL had a vision to offer a more comprehensive digital health service offering, it initially focused on optimising the core Doc990 service, Channel Your Doctor. Following successful uptake and use of this service, DHPL has expanded the Doc990 offering to include several complementary services, such as Tele Doctor Service, Medicine to Your Doorstep, Healthcare to Your Doorstep, My Health Records and Lab Reports.

- **DHPL partners with expert organisations to optimise management and delivery of Doc990.** DHPL has partnered with HealthNetBuy to provide Medicine to Your Doorstep, and with Emergency Calls and Certis Lanka for the Healthcare to Your Doorstep service. These partnerships allow Doc990 patients to access a well-managed prescription delivery service and home-based care services without the need for DHPL to invest in infrastructure and cover the implementation and operating costs of these services. These strategic partnerships have allowed DHPL to focus its energy and resources on the core Doc990 value proposition.



1. Potential of digital health in Sri Lanka

As of 2018, Sri Lanka had a total population of over 20.95 million,[1] approximately 19.6 per cent of which live in urban areas. This high urban population density has placed strain on healthcare centres in and around major cities. At the same time, inequitable distribution of healthcare resources across the country has limited access to specialist care for the majority of the rural population. With 29.8 million mobile connections and 90 per cent 3G network coverage,[2] mobile is a key enabler for enhanced healthcare delivery in Sri Lanka.

1.1. The healthcare landscape

While Sri Lanka's progress in addressing communicable diseases and maternal and child health is unparalleled in South Asia, its healthcare system faces four emerging challenges related to demographic, epidemiological and economic changes:

1 **Demographic shift towards an elderly population:** It is estimated that by 2041, a quarter of the Sri Lankan population will be aged 60 or over.[3] Elderly individuals rely substantially more on public sector services, with a greater need for long-term care and regular screening for illness and disability by doctors and specialists.

2 **Increased prevalence of noncommunicable diseases (NCDs):** NCDs (such as cancers, cardiovascular diseases, chronic respiratory diseases and diabetes) are estimated to account for 75 per cent of all deaths in Sri Lanka, claiming 103,500 lives every year.[4] NCD prevalence is linked to the growing ageing population and behaviours associated with increased prosperity, such as increased exposure to alcohol and tobacco, unhealthy diets and sedentary lifestyle. Effective management of NCDs therefore calls for better preventative care interventions and integrated care models to manage the high prevalence of NCD comorbidities.[5]

3 **Greater healthcare-seeking behaviour** due to increased prosperity, education and awareness levels.[6] Combined with government policy permitting self-referral for specialist care, this has led to primary care facilities being underused while tertiary and secondary care facilities have become overcrowded.[7]

4 **Increased demand for health services delivered by the private sector,** even among low-income earners. This is the result of actual and perceived

1. Worldometers (2018), Sri Lanka Population.
2. GSMA Intelligence, 2018.
3. Dilhar Samaraweera and Shiromi Maduwage (2016), "Meeting the current and future health-care needs of Sri Lanka's ageing population".
4. WHO (2018), "Future Cities: Urban Change and Healthy Ageing in Sri Lanka".
5. When two or more NCDs manifest in the same individual.
6. PWC (2014), "The Health Sector of Sri Lanka".
7. WHO (2014), "Paradox of healthcare in Sri Lanka".

gaps in the quality and availability of public health services, as well as greater purchasing power of the Sri Lankan population.[8]

Sri Lanka's public healthcare services are offered at no cost to patients as part of the country's universal health coverage (UHC). However, the private sector still accounts for 55 per cent of national health care expenditure, with 86 per cent of payments coming from out-of-pocket spending. Uptake of medical insurance remains low in Sri Lanka with only six per cent of the population covered, usually through employer-sponsored schemes.[9]

1.2. The mobile landscape

As of Q3 2018, Sri Lanka's five mobile operators were serving 29.8 million mobile connections, with subscription penetration at 135 per cent.[10] While Sri Lanka's mobile market has experienced strong year-on-year (YoY) growth at 7.5 per cent, future growth is predicted to stagnate due to strong local competition and a saturated mobile market.[11] This has sparked the growth in data-rich services and need for more competitive innovation and diversification of revenue streams.

Sixty-two per cent of mobile connections are broadband enabled and of the 15.2 million unique subscribers in Sri Lanka, 58.4 per cent are mobile internet users.[12] As of Q3 2018, smartphones account for 45 per cent of mobile connections, with a YoY growth of 16 per cent. The growing uptake of smartphones is due to the availability of low-cost smartphones and 3G and 4G network coverage of up to 90 per cent and 85 per cent of the country, respectively. High broadband adoption and smartphone penetration among Sri Lankans enhances the opportunity to use mobile apps to provide more sophisticated services, including digital healthcare, than those typically enabled by 2G channels.

1.3. Digital health opportunity

Sri Lanka's health system must modernise to meet emerging healthcare challenges. One approach is transitioning from a traditional hospital-centred healthcare delivery model, where health conditions are treated in isolation, towards decentralised, connected and integrated healthcare.[13] The need for innovation in the healthcare system, combined with an advanced and competitive mobile market, has sparked the development of several digital health solutions that leverage mobile technology.

Sri Lanka's self-referral policy and high demand for private healthcare services have created an opportunity for a solution that makes doctors and specialist care more accessible while eliminating the inconvenience of booking appointments in person. Although doctor channelling has been monopolised by eChannelling for over 15 years,[14] the service was restricted to call centre bookings, leaving room for a new market entrant to improve patient access and experience. Doc990 seized this opportunity, offering multiple channels for digital appointment booking and payment. It has since evolved to include services that are decentralising healthcare delivery in Sri Lanka, including the remote provision of healthcare services and personal healthcare information.

8. PWC (2014), "The Health Sector of Sri Lanka".
9. Ibid.
10. GSMA Intelligence, 2018.
11. Cision (2017), "Sri Lanka – Telecoms, Mobile and Broadband – Statistics and Analyses".
12. GSMA Intelligence, 2018.
13. Decentralised healthcare is moving care outside traditional provider settings and into the home and community. Connected healthcare involves the use of healthcare information technologies and processes to connect all parts of a healthcare system, enabling seamless information sharing and optimal disease management. Source: MaRS (2018), "Transforming Health: Toward decentralized and connected care".
14. eChannelling was launched in 2001 by Millennium IT.

2. Introduction to Doc990

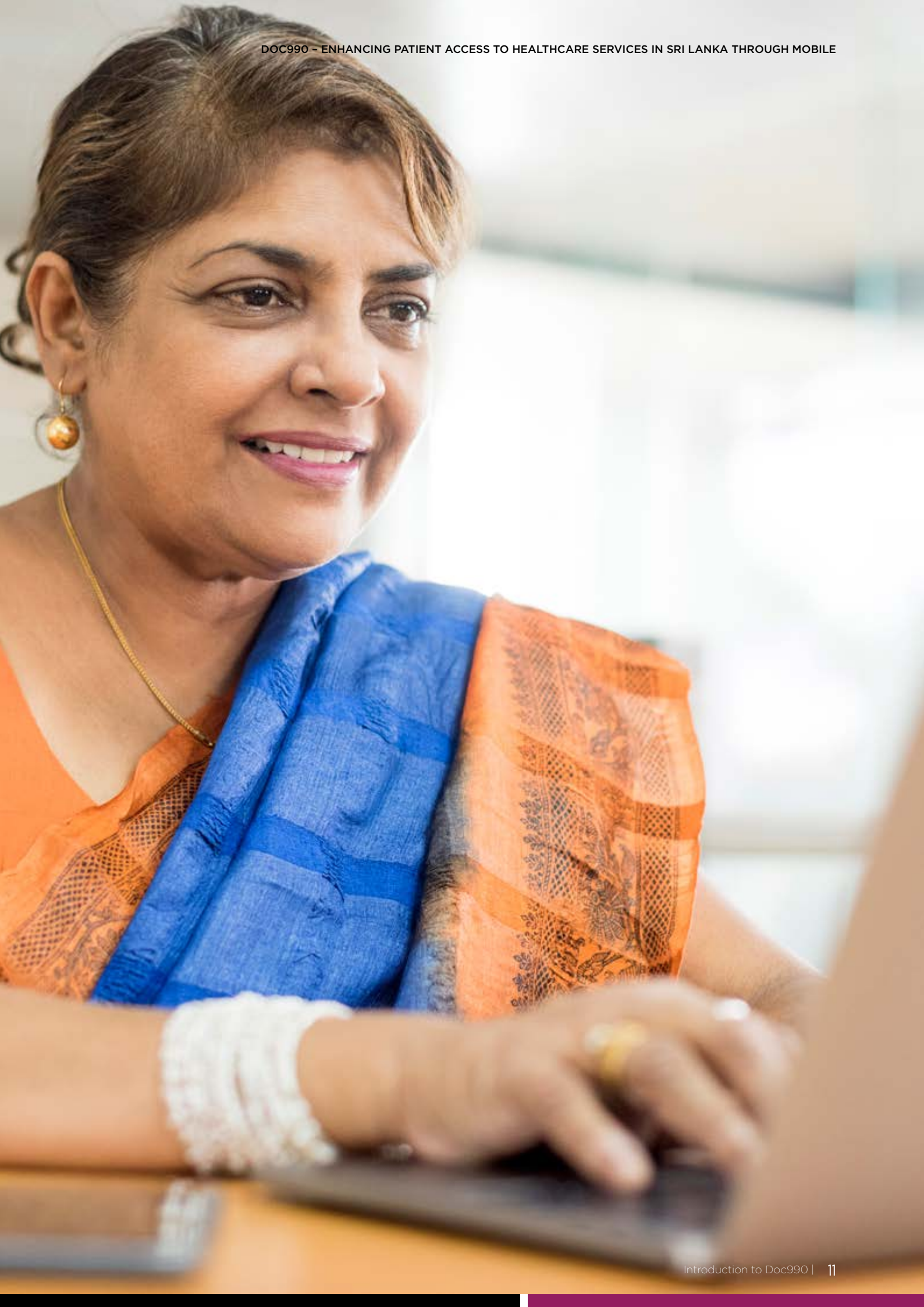
Launched in April 2016 Doc 990 is operated by Digital Health (DHPL), a joint venture partnership between four entities: Digital Holdings Lanka, a subsidiary of mobile operator Dialog Axiata), Asiri Hospital Holdings (Asiri), Nawaloka Hospitals and Durdans Hospitals in Sri Lanka.

The primary function of Doc990 is to enable digital booking and payment of appointments with doctors and health specialists. The initial value proposition of Doc990 was to offer patients and hospitals a cheaper and better quality alternative to the existing doctor channelling service. DHPL considered the appointment booking service, Channel Your Doctor, to be a suitable market entry point since patients in Sri Lanka were already familiar with and paying for this type of service. DHPL has since expanded the Doc990 offering to include several complementary services. The current suite of services offered by Doc990 includes:

- **Channel Your Doctor:** This core feature of Doc990 allows patients to book and pay for in person appointments with healthcare specialists via a digital platform (IVR, web or app, or indirectly through Doc990 agents), providing customers with a time and cost-saving alternative to in-person bookings.
- **Tele Doctor Service:** This feature enables remote consultation between a patient and a doctor over the phone in the comfort of the patient's own home. Virtual consultations with over 180 doctors can be booked in the same way as in-person consultations are booked through Channel Your Doctor.
- **Medicine to Your Doorstep:** Delivered in partnership with HealthNetBuy, providers of a digital marketplace for health and wellness products, Medicine to Your Doorstep enables users to order and pay for prescription drugs by uploading a copy of their prescription to the Doc990 app or web platform. Once purchased, the prescription is processed by the HealthNetBuy team and delivered to the user at a small convenience fee.[1]
- **Healthcare to Your Doorstep:** Through this feature, patients can request health services to be delivered to their home or location of choice. These health services include patient transport, home-based assessments,[16] doctor consultations and specialist care or treatment (nursing, physiotherapy, etc.).
- **My Health Records:** An online portal where patients can securely store and access all their health records from various hospitals and health services.
- **Lab Reports:** Staff at partner hospitals upload lab results to Doc990 and patients can access these conveniently and securely through Doc990 by entering their lab reference number and a passcode printed on their bill.

All these services are available on the web and app platforms or via Doc990 agents. The IVR channel only provides access to Channel Your Doctor. Payments for Doc990 services are available through a range of payment options, such as direct carrier billing,[17] eZ Cash,[18] credit card or cash, among others.

15. Delivery costs of between Rs150 and Rs250 (roughly $0.84–$1.40), depending on the location. Patients have the option of expedited delivery in under two hours through a priority service at a fee of Rs500 ($2.80).
16. Including, but not limited to, blood, urine, electrocardiogram (ECG) and blood pressure tests.
17. Adding the cost of services to their mobile bill; available for all channels.
18. Dialog's mobile money service.



2.1. Doc990 users

Doc990 has three primary user groups. Demand-side users include patients and hospital staff. Supply-side users are Doc990 agents who assist customers in channelling doctors through the service. Agents play a key role in driving uptake of the service in their communities. DHPL has designed and tested a strong incentive system for Doc990 agents, who are core to the growth of the service.

PATIENTS

Patients use Doc990 to channel doctors or use other service features. This user group also includes the employees of companies offering Doc990 corporate packages as part of an employee benefit scheme. The various features of Doc990 offer cost- and time-saving benefits to patients (see Table 1).

TABLE 1

Estimated cost- and time-savings realised by Doc990 patients[19]

PRODUCT FEATURE	COST SAVINGS	TIME SAVINGS
Channel Your Doctor	Rs300–Rs675 (roughly $1.68–$3.78) in transport costs	1–3 hours in travel time and time spent waiting
Tele Doctor Service	Rs300–Rs675 ($1.68–$3.78) in transport costs for travel to hospital and Rs2000 ($11.19) savings from reduced consultation fees	2–4 hours in travel time and time spent waiting
Lab Reports	Rs300–Rs675 ($1.68–$3.78) in transport costs for travel to hospital	1–3 hours in travel time and time spent waiting
Medicine to Your Doorstep	Rs300 ($1.68) in transport costs for travel to a pharmacy (potentially more if the medication is not in stock) and 5% discount on medication[20]	1–2 hours in travel time and time spent locating a pharmacy with the medication in stock and waiting for the prescription to be processed
Healthcare to Your Doorstep	Rs300–Rs675 ($1.68–$3.78) in transport costs for travel to a health facility for in-person assessments, consultations and specialist care or treatment	1–3 hours in travel time and time spent waiting

Doc990 offers the added convenience of consolidating a broad and growing selection of healthcare services in one place (only on the app or web platform). Similarly, My Health Records enables centralised patient access to and secure storage of their personal health records. These would previously have been stored as paper records, which can easily be misplaced by the patient or lost in disconnected health information systems across different health facilities that are inaccessible to the patient. Greater patient insight into personal health records allows them to track and better manage their health over time.



"Channelling a doctor has never been easier. Getting the medicine delivered right to my doorstep for free saves so much more time."

– Nuwan Samarakkody, Doc990 user

19. Transport costs are calculated based on a 10 kilometre return journey at a total cost of approximately Rs675 ($3.78). This includes a base fare of Rs55 ($0.31), a charge of Rs50 ($0.28) per kilometre and a one-hour waiting charge of Rs120 ($0.67). Source: Numbeo, 2018. Exchange rates as of November 2018; time estimates include a conservative estimate of the average time it takes a patient to travel to and from the outer zones of Colombo to the city centre (approximately one hour each way, allowing for traffic), as well as an average hospital waiting time of 20 minutes, aligned with the Institute of Policy Studies Sri Lanka.
20. The benefit is greater for patients with repeat prescriptions who can automatically reorder their medication for delivery, therefore eliminating the need for repeat pharmacy visits.

> *"Doc990 is saving people time and money. Now they don't have to spend up to Rs800 ($4.55) and four hours travelling, two going and two coming back, just to book an appointment [at a hospital] in Colombo. They simply book it here, and only travel on the day of the appointment… I get almost all my customers through word of mouth."*
>
> – Doc990 agent, pharmacist, Kaleniya

HOSPITAL STAFF

For hospital staff, the digitisation of patient appointment booking removes the often frustrating and tedious task of making patient bookings. Hospital staff[21] interact with the back end of the Doc990 software, updating information on the availability of healthcare specialists and using the booking information received through the Channel Your Doctor feature. Information from Doc990 synchronises in real time with hospital appointment management systems, enhancing appointment schedule management. Hospital staff can access all relevant data on booked appointments and update appointment schedules at their convenience. They also benefit from the more detailed automated reporting enabled by Doc990.

DOC990 AGENTS

The third group of users is the vast and growing network of Doc990 agents who assist customers in channelling doctors. Doc990 agents include staff at Dialog Franchise Outlets and Dialog Arcades (over 137 stores), staff at partner pharmacies and hospitals, call centre staff at all leading mobile networks[22] and staff at several related franchise stores.[23] Of a total 380 Doc990 agents, approximately 50 per cent are actively booking appointments for patients.

It is typically very challenging to develop active agent networks as a distribution channel for digital services due to the lack of incentives for agents. However, DHPL has driven engagement by offering various benefits to Doc990 agents. For example, Doc990 generates a new



> *"I assist my customers to use Doc990. I do the booking and then pay on behalf of the customer who then gives me cash. I charge a small fee for this service. With the previous solution [before Doc990] I sometimes would have to wait till midnight to reserve certain doctors, but with Doc990 I can book immediately."*
>
> – Doc990 agent, shopkeeper, Kaleniya

> *"I recently joined Doc990 and I do an average of 15 to 20 bookings per month. I use my [mobile] device to book appointments for my customers. I've booked three already this week… The app is easier to use than the one that was available before [Doc990]."*
>
> – Doc990 agent, pharmacist, Kaleniya

21. Such as administrative staff or nurses, doctors or specialists.
22. Subscribers of all mobile networks can dial the 990 IVR short code to book an appointment through call centre agents.
23. These include optometrist outlets and information technology outlets like Softlogic, among others.

source for revenue for agents, who earn commission for each booking they make. In some cases, agents charge a small fee to make payments for appointments on behalf of the customer. The increased foot traffic in their stores from Doc990 users also gives agents the opportunity to increase sales of medicines or other products they stock.

Marketing and communication costs related to the use of Doc990 are fully borne by DHPL. This is intended to reduce any inconvenience for agents and increase their willingness and ability to promote the service. Many have expressed their preference for using Doc990 over the doctor channelling solution they have used in the past.

2.2. User-centred service design

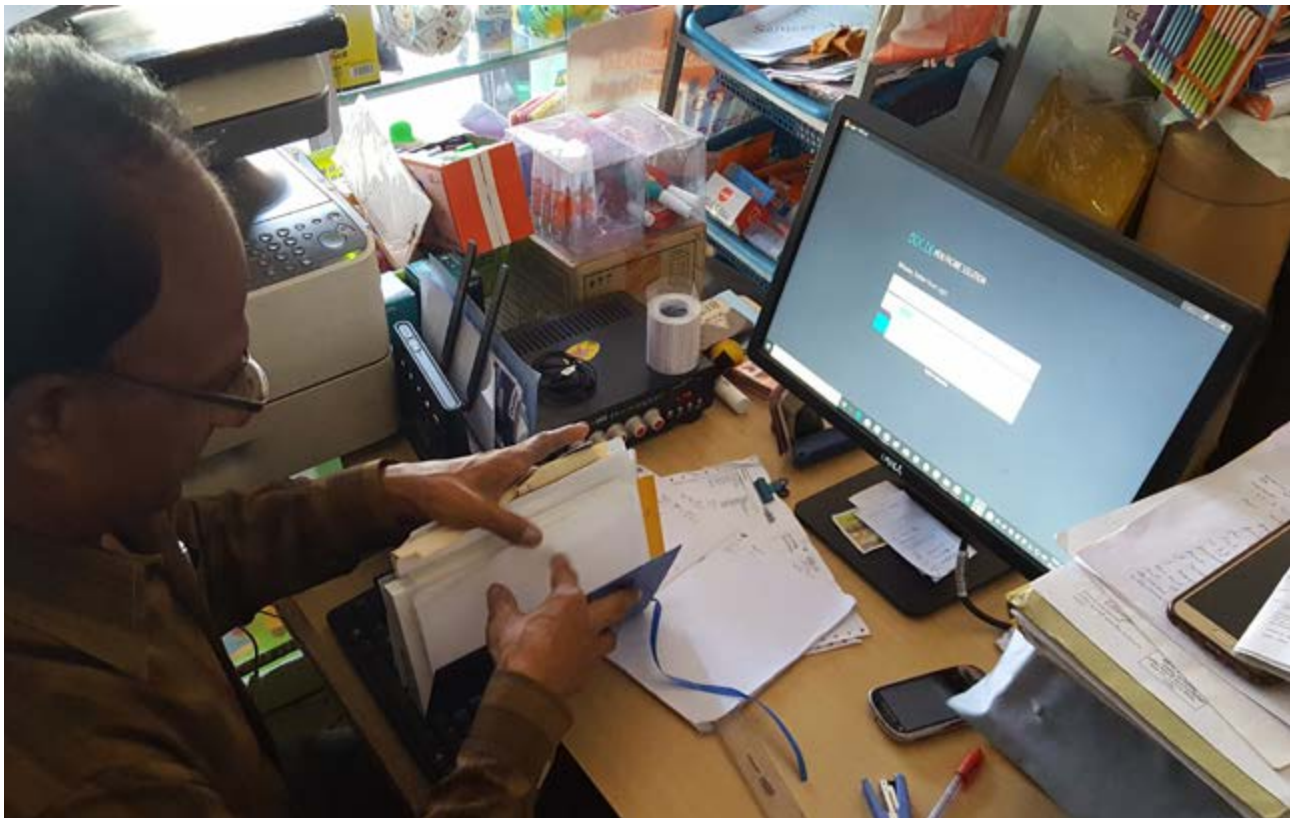
Successful adoption of Doc990 among each of the user groups is essential to the success of the service. For this reason, DHPL has put significant effort into designing user interfaces that meet their needs and match their digital and technical literacy.

HOSPITAL STAFF AND AGENT APP DESIGN

Hospital staff, Doc990 agents and call centre staff are typically users who are trained to use, and frequently use, the Channel Your Doctor feature. Research conducted with hospital staff and Doc990 agents revealed their need for simplified user interfaces and dashboards to enable speedy navigation through priority features and information. A unique user interface has been designed for each of these groups according to their needs. The Doc990 agent app has been stripped of any design that will distract from the fields that must be populated (see Figure 1). These fields also appear on a single page to reduce the amount of confirmation clicks agents have to make to proceed.

FIGURE 1

A rural pharmacist displays the agent dashboard he uses to assist patients in channelling doctors through Doc990



PATIENT APP AND WEB PLATFORM DESIGN

The design of the Doc990 app and web user interfaces is meant to help patients easily locate, understand and quickly navigate through different service features to complete their transaction. This is done through the use of simple language to describe service features and required action. For example, DHPL decided to name the prescription delivery feature "Medicine to Your Doorstep" instead of "Virtual Pharmacy" since this terminology clearly states the main value proposition and function offered.

Since the Channel Your Doctor feature is still the main feature patients associate with Doc990, this has been given priority placement on both the web and app, taking up most of the main menu screen space. DHPL has designed the Doc990 app and web platforms to optimise discoverability of new features or promotion offers (see Figure 2).[24]

Further research conducted with patients using Channel Your Doctor revealed their preference to search for doctors and specialists by name, since they are often well known in certain social networks in Sri Lanka and patients are usually referred to a specialist by family or friends. The ability to search by a doctor's name was therefore prioritised in the user interface design (see Figure 3). However, patients can also opt to search by hospital, specialisation or date, since research with patients also revealed these as preferred filters.

To create a feeling of ownership of Doc990, DHPL uses possessive pronouns in the titles of the various service features. For example, *My* Bookings, Channel *Your* Doctor, Medicine/Healthcare to *Your* Doorstep, *My* Health Records and Lab Reports at *Your* Fingertips. This is an important design feature since DHPL is trying to position Doc990 as any patient's first entry point for all their healthcare needs. As such, they regularly assess the patient healthcare journey to identify new features to add to Doc990 and increase the value of the service for patients.

FIGURE 2

Doc990 patient web interface showing promotional banners



FIGURE 3

Doc990 patient app interface showing prioritised placement of new features



24. This is done through prioritised placement of new features and rotating promotional banners that encourage customers to use features beyond the Doc990 service.

CONTINUOUS PRODUCT OPTIMISATION

DHPL has a dedicated business intelligence (BI) team that analyses and monitors user-generated data from the various Doc990 channels to identify opportunities to improve the patient experience. DHPL further explores or validates these opportunities by calling patients or hospital staff to understand the reasons behind unexpected behaviours. New designs are trialled with a subset of users and later integrated in Doc990. The BI team continues to monitor the user-generated data to ensure the new feature is adopted and functioning as intended.

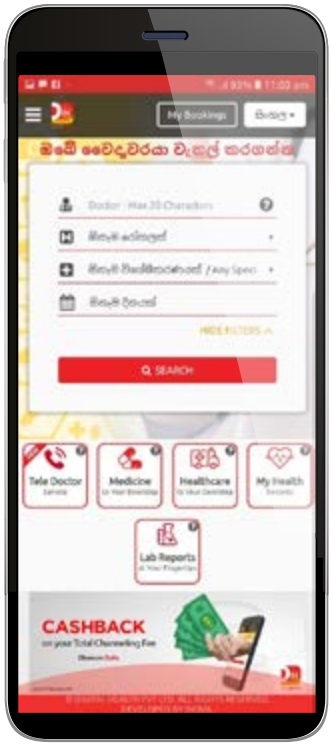
DHPL also monitors customer feedback across various platforms, such as the Doc990 IVR helpdesk, Facebook and app stores, to identify recurring issues or areas for improvement. One such issue is the provision of the web and app platforms in the two predominant local languages, in addition to English. In response to this feature request, DHPL has translated content on the Doc990 app and web platforms to enable convenient access for the Sinhala-speaking population (see Figure 4) and is working on translation to Tamil for release in Q1 2019.

Another feature DHPL developed in response to patient feedback is Ongoing Number. This feature allows patients to remotely check the status of their scheduled appointment and only go to the hospital when the specialist is ready to see them, thus eliminating unnecessary waiting time at hospitals. This continuous effort to optimise the patient experience has resulted in high user ratings for Doc990 on Google Play and Facebook.[25]

> *"[Doc990 is a] good app and the booking price is reasonable. The app is user friendly as well. [I] will recommend [Doc990] to more people."*
>
> – Don Pathirana, Doc990 user

FIGURE 4

Doc990 app with Sinhala translation



25. Doc990's Google Play and Facebook ratings are 4.1 out of 5 and 4 out of 5 star ratings, respectively.

2.3. User journeys

This section details the user journeys for patients and hospital staff. While hospital staff access the booking system via the proprietary Doc990 software on their computers, patients can access the Doc990 suite of services in several ways: IVR, web and mobile app, or via the Doc990 agent network or Pay&Go kiosks.

As of June 2018, 50 per cent of bookings on Doc990 have been made via the IVR channel (call centre), 43 per cent via the web and app platforms and seven per cent through agents and kiosks. The Doc990 app has had over 100,000 downloads and more than 150,000 sessions are processed on the web platform per month.

The patient journey with the Channel Your Doctor service has three main steps: 1) awareness, 2) patient onboarding and navigation and 3) digitisation of patient payments for appointment bookings. Steady month-over-month (MoM) growth in the percentage of appointment booking payments made through eZ Cash[26] indicates the growing potential of digital health services to drive the use of mobile money.

PATIENT AWARENESS, ONBOARDING AND NAVIGATION

Patients learn about the Channel Your Doctor service through point of sale materials (POSM) at hospitals and other distribution outlets, Doc990 agents, above-the-line (ATL) campaigns (such as TV, radio, print advertisements and press releases), below-the-line (BTL) marketing campaigns (promotional SMS messages, social media marketing and activations at hospitals) or word of mouth. Doc990 agents have become an effective promotion channel among rural segments (see spotlight on page 20), while social media marketing has proven to be a communication channel that reaches a larger audience in the Western Province, with low customer acquisition cost.

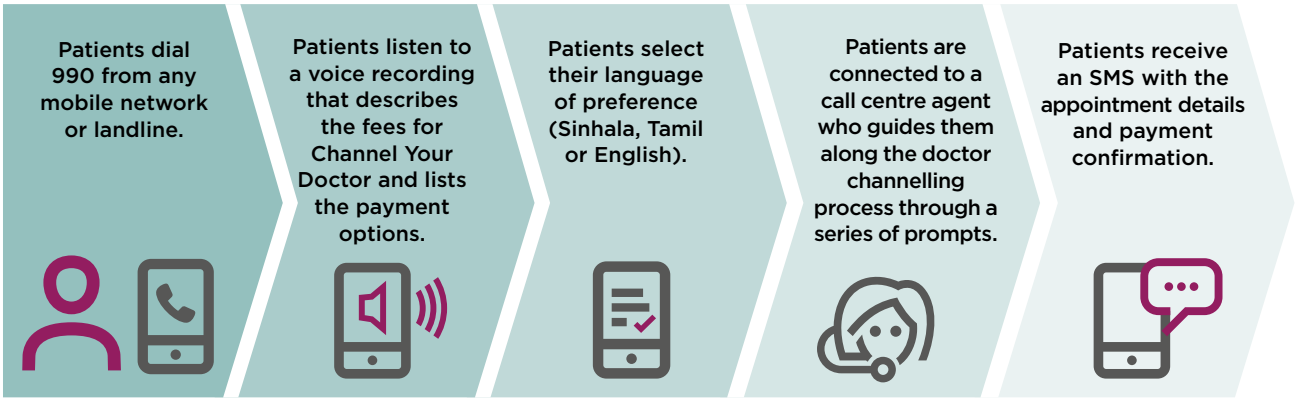
The steps for patient onboarding and navigation through the Channel Your Doctor service vary depending on the channel used:

IVR

To access the Channel Your Doctor feature, patients call the 990 IVR short code from any mobile network or landline, where automated voice prompts guide the user to a call centre agent who then assists them with the rest of the appointment booking (see Figure 5). Channel Your Doctor is the only Doc990 service feature that is available on the IVR channel.

FIGURE 5

Doc990 IVR platform user journey



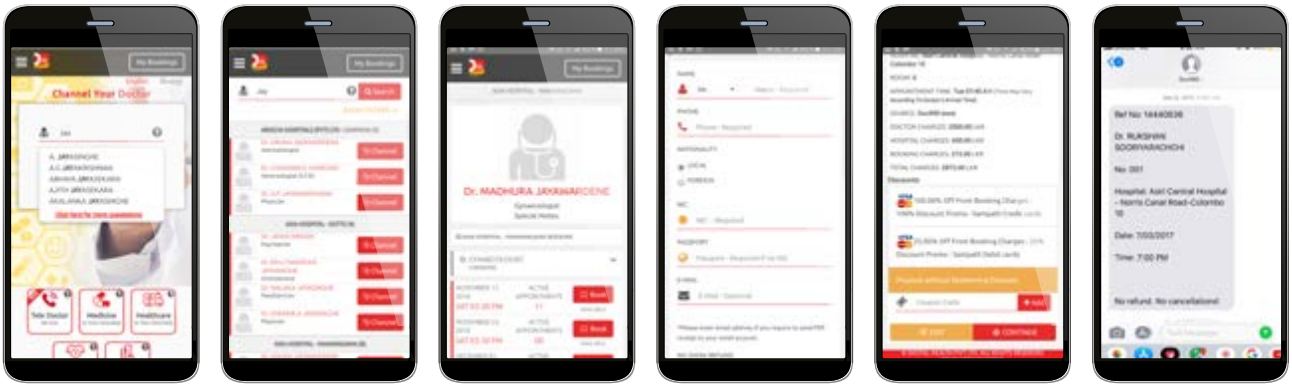
26. Dialog's mobile money service.

WEB AND MOBILE APP

These two platforms provide patients with access to the full Doc990 suite. Patients select the feature they wish to use and proceed along subsequent menus until they have completed their transaction. Figure 6 details the Doc990 mobile app patient journey for the Channel Your Doctor feature, which is the same as the user journey on the web platform.

FIGURE 6

Doc990 app user journey for Channel Your Doctor



Patients enter their doctor's name in the search field on the home page. Alternatively, patients can select 'Show Filters' to search by other criteria (e.g. by hospital or specialisation).	Patients review search results and identify desired doctor. Patients select the 'Channel' icon to proceed.	Patients review the doctor's availability and select the 'Book' icon to secure a desired appointment slot.	Patients provide their personal information, which includes their national insurance (NIC) number. At this stage they can opt for a 'No Show' refund and click 'Continue' to proceed.	Patients view an appointment summary and bill with related charges. Patients select and confirm their preferred method of payment.	The appointment details and bill are available on the app. Alternatively, patients receive an SMS or email (for international numbers) with the appointment details.

AGENT NETWORK OR KIOSKS

Alternatively, patients can access Doc990 through the growing network of over 600 agents (such as the one in Figure 7) and over 500 Pay&Go kiosks nationwide (see Figure 8). Agents make appointment bookings on behalf of patients using the Doc990 agent app on their mobile phone, tablet or laptop.

FIGURE 7

A Doc990 agent outlet



FIGURE 8

Pay&Go kiosk



PATIENT PAYMENT

To accommodate customer payment preferences, DHPL has provided a comprehensive set of payment options for the Channel Your Doctor and Tele Doctor features. These include direct carrier billing,[27] paying by Visa, Mastercard or Amex, Dialog's mobile money service eZ Cash, Genie,[28] Sampath Vishwa,[29] or cash payments at agents or Pay&Go kiosks. DHPL adopted a similar pricing structure to the existing doctor channelling service since this was already well understood by the target audience. Patients in Colombo are charged a booking fee of Rs275 ($1.54) while patients outside Colombo have a reduced booking fee of Rs99 ($0.55). Tele Doctor consultations are charged at a flat rate of Rs165 ($0.92) per call.

In addition to the booking fee, customers pay the relevant hospital administrative fee and doctor fee, as well as the standard call charges applied by their mobile network provider.[30] For the IVR channel, active post-paid or contract subscribers are automatically allowed to proceed with a booking while pre-paid subscribers are required to have a minimum of Rs300–Rs350 ($1.68–$1.96) on their account.[31] Customers can also opt to use a 'no show' refund insurance charged at Rs250 ($1.40).[32]

> *"[Doc990 is a] really excellent app to handle booking. I don't need to worry about my wallet for using cards [for payment]. [The] fee [was] simply added to my bill with my SMS code verification."*
>
> – Thangarajah Thavaruban, Doc990 user

27. Adding the cost of the consultation and the booking fee to their mobile bill; available for all channels.
28. Genie is a mobile app that allows customers to link their preferred payment methods (Visa, MasterCard, etc.) in one app.
29. An electronic banking solution.
30. Only for bookings made by dialling the 990 IVR short code. Call charges are typically between Rs5 and Rs8 per minute plus taxes.
31. This ensures sufficient balance to cover both the appointment and booking fee, as well as the call charges.
32. The 'no show' refund provides security for customers when booking doctors or specialists who have a strict 'no refund on cancellation' policy.

HIGH-LEVEL USER JOURNEY FOR HOSPITAL STAFF

Hospital staff access the booking system via the proprietary Doc990 software on their computers (see Figure 10). Doc990 software enables several functions for hospital staff, ranging from managing doctor profiles and schedules and appointment sessions to booking appointments on behalf of patients. Additional functions enabled by Doc990 are detailed in Figure 9.

FIGURE 9

High-level functions enabled for hospital staff by Doc990[33]

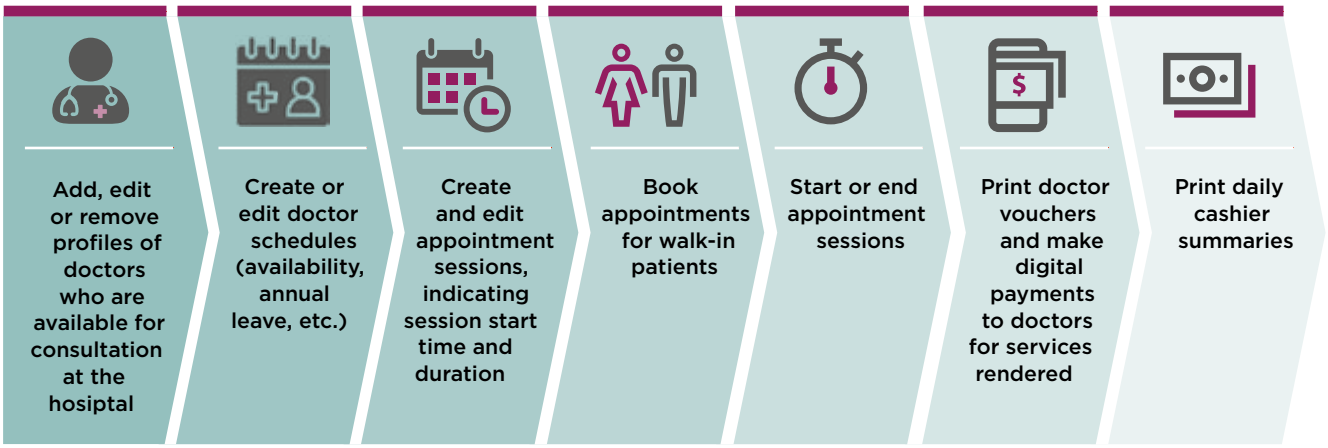


FIGURE 10

Hospital staff using the Doc990 platform



33. Doctor vouchers include information such as the number of patients consulted, the doctor's fee and total remuneration amount for each session. Based on this information, the finance team releases payments to doctors. Cashier summaries include a record of all the financial transactions that took place during a cashier's (hospital staff member) shift such as cash received, refunds paid and payments to doctors for services rendered etc.

Appointment session Icon made by SimpleIcon from www.flaticon.com





Spotlight

Eliminating barriers to healthcare for underserved populations

Affordability and accessibility of Doc990 are likely to be the main barriers to lower income and rural patients using the service.

MAKING DOC990 MORE AFFORDABLE

DHPL is lowering access and usage barriers in various ways. First, certain Doc990 features can be browsed for free. In this way, Doc990 serves as a registry of available facility- and home-based healthcare services and specialists. This is particularly valuable for raising awareness and increasing demand for healthcare services among the country's most vulnerable patients, including those with disabilities, those living in remote locations and the elderly.

Features like Channel Your Doctor, Healthcare to Your Doorstep and Medication to Your Doorstep give patients visibility into the cost of services and medications before booking an appointment or ordering a prescription. For prepaid customers, Doc990 enables patients to pay only the booking fee upfront to secure a conditional reservation. This allows customers to secure an appointment with a health specialist, know the total cost of the appointment, and save for and settle the remainder of the cost when they go to the appointment at the hospital.

DHPL has negotiated reduced rates with all its partners to ensure that Doc990 patients can receive quality services and medication at the best possible price. It is also continuously investigating new payment options. Expanding the network of agents who can accept cash payments is one of DHPL's successful strategies for reaching the rural segment.

IMPROVING ACCESSIBILITY

Careful service design has ensured that underserved populations benefit from Doc990. These segments include low literate and rural patients, patients who may have visual or auditory impairments and patients who do not own or have access to a mobile phone.

The IVR channel enables access for illiterate populations, patients with visual impairments and those who do not have a mobile phone since patients can also call the 990 IVR short code from a landline. DHPL ensures that the promotion of the 990 IVR shortcode is prioritised in all marketing material in rural areas (for example, posters outside Doc990 agent outlets). The IVR channel already allows users to select their language of preference when booking their appointment, but the translation of content in the app and web platforms into Sinhala, and soon to Tamil, is a major improvement, especially for rural residents with lower English literacy levels.

Doc990 agents serve as strategic access points and promoters of the Doc990 service in rural areas. Typically, they are pharmacists or shopkeepers who are trusted members of the communities they serve. However, even a high-quality agent network requires marketing support to enable further growth.



> *"My regular clients know I'm an agent, but I also tell those who don't know [about Doc990]."*
>
> – Doc990 agent, pharmacist, Kaleniya

> *"I have a [Doc990 promotional] banner outside my shop in English, but it would be good if it was in Sinhala. Also sending SMS promotions would be a good idea."*
>
> – Doc 990 agent, shopkeeper, Kaleniya





3. Business model

The sustainability of Doc990 is embedded in the value it creates for two customer groups — the patients and hospitals who use Doc990 — as well as its four shareholders: Digital Holdings Lanka (a subsidiary of mobile operator Dialog Axiata), and Asiri, Nawaloka and Durdans Hospital groups.

DHPL generates revenue through three primary sources: patients paying to use certain features of Doc990 (B2C), the companies subscribing to Doc990 corporate packages on behalf of their employees[34] (B2B2C) and hospitals licensing the Doc990 booking system software (B2B). As of November 2018, DHPL's YoY revenue growth was approximately 80 per cent, with B2C payments comprising the bulk of revenue generated.

To deliver high-quality complementary services and expand the value proposition for its patients, DHPL has collaborated with leading healthcare service providers to deliver several Doc990 services. These shared-value partnerships ensure that Doc990 patients benefit from well-managed healthcare services without the need for DHPL to invest in the infrastructure and face the challenges of implementing these service features on its own. In this way, DHPL lets its partners do what they do well, while focusing its energy and resources on the core Doc990 service features.

3.1. Value proposition

As the service continues to expand through the addition of more hospitals, health specialists and customers, Doc990 strengthens the value proposition for both patients and hospitals. Doc990 aims to become the go-to marketplace for customers seeking healthcare services, and hospitals will want to have access to this growing patient base.

Through Doc990, patients currently have access to over 2,500 specialists from 93 different hospitals (see Figure 11). As of June 2018, the total user count was 158,000 with a YoY growth of 100 per cent (2016), 92 per cent (2017) and 29 per cent (2018). Patients also have access to a growing range of health services offered through Doc990.

FIGURE 11

Cumulative yearly count of hospitals, doctors and patients in the Doc990 network

YEAR	HOSPITALS	DOCTORS	PATIENTS
2016	16	914	63,791
2017	77	1,508	122,480
2018	93	2,500	158,000

34. Packages are charged to the company at a fixed rate per employee. Through this benefit, employees have access to free unlimited appointment bookings on Doc990, discounted rates on healthcare services offered by partner hospitals, reduced rates for Healthcare to Your Doorstep and free prescription delivery through the Medicine to Your Doorstep feature.

For hospitals, the digitisation of booking systems offers significant scope to improve outpatient services and patient satisfaction. Maximising the number of monthly appointment bookings made through Channel Your Doctor is the key performance indicator (KPI) of Doc990 for hospitals. Improved financial reconciliation through Doc990 payment options also reduces the potential for inaccurate financial reporting or fraud. Finally, hospitals benefit from the detailed reporting enabled through Doc990 management dashboards and automated reporting systems.

3.2. Revenue streams

B2C REVENUES

To grow B2C revenues, DHPL will need to grow its Doc990 patient customer base, increase patient payments within paid-for features (i.e. grow the number of active paying patients) or add new features with paying points or revenue share agreements with the partners providing the service. As of June 2018, Doc990 had a user base of over 158,000 patients and access to 40 per cent of the addressable private healthcare market.

The bulk of B2C revenue is generated through booking fee payments with the Channel Your Doctor and Tele Doctor features. While Doc990 is driving a consistent amount of monthly appointment bookings, it will be challenging for DHPL to drive growth in repeat bookings since these are made as and when required by the patient. Patients with continual healthcare needs,[35] requiring repeat interactions with the healthcare system, are more likely to be repeat users of the various features of Doc990 and are therefore a strategic segment for DHPL to target.

B2B2C AND B2B REVENUES

DHPL's current strategy to grow B2B2C revenues is to expand the network of Doc990 corporate clients, such as finance, information technology (IT) and fast-moving consumer goods (FMCG) companies, by including more benefits in corporate packages. Similarly, DHPL hopes to grow B2B revenues through more hospitals licensing the booking system software. With strong competition in the market, quality of service and overall value proposition are essential for differentiation. DHPL is improving the quality of its B2B offering by providing better support to hospital staff. The licensing fee, which includes installation, staff training and technical support to hospitals, is a novel approach since DHPL's competitor had been providing its appointment booking software to hospitals for free, but without any technical support.

35. For example, patients with NCDs or long-term illnesses.

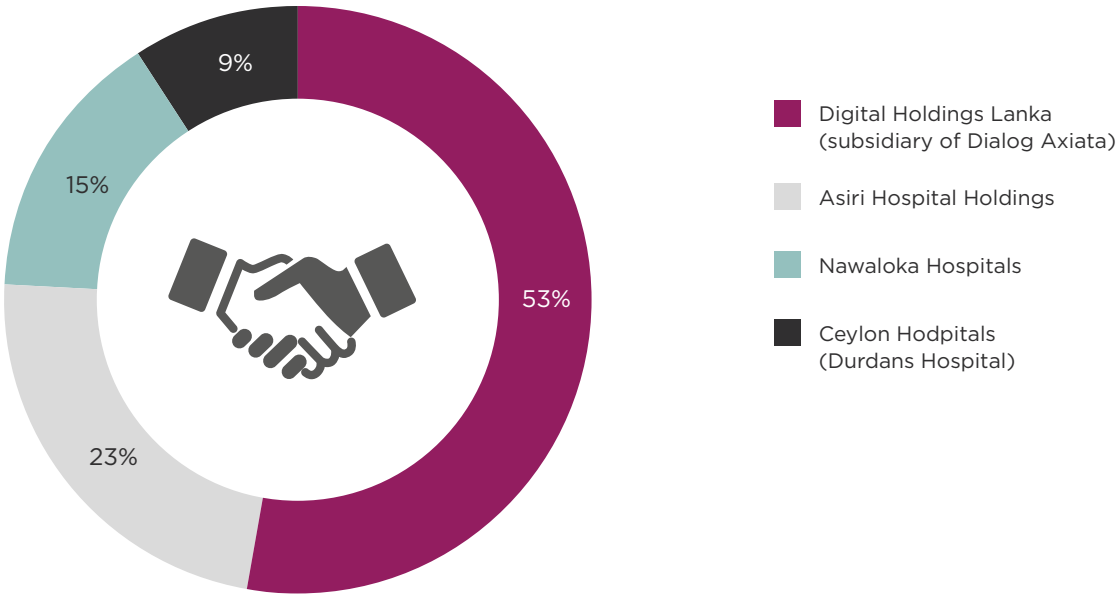


3.3. Key stakeholders

The DHPL joint venture is the first cross-sector partnership of its kind in Sri Lanka's healthcare industry (see Figure 12). Cross-sector partnerships open access to skills and resources not typically owned by any one organisation, but are required for delivering digital health solutions at scale. The success of Doc990 under this partnership demonstrates this.

FIGURE 12

Digital Health joint venture partnership share ownership distribution



DIALOG AXIATA

While DHPL operates independently of the mobile operator, it leverages several assets of Dialog Axiata. These include its technical infrastructure, legal and marketing functions, distribution channels (such as a network of over 22,000 eZcash agents) and Dialog-branded arcades and franchises.

Dialog Axiata backed Doc990 with their Powered by Dialog branding after two years of successful implementation. It initially saw Doc990 as a high-risk investment. However, as the service rapidly gained market share, association with Sri Lanka's largest mobile operator strengthened Doc990's brand equity while positioning Dialog as a leading digital healthcare provider. Doc990 has opened a new revenue stream for Dialog Axiata through the revenue share agreement between all shareholders of DHPL. Set up as a separate business entity, DHPL can innovate and explore other revenue-generating opportunities within digital health on behalf of Dialog.

PRIVATE HOSPITAL GROUPS

Asiri Hospital Holdings, which in 2016 had 30 per cent of the private healthcare market share, was the first hospital group to integrate Doc990 as the primary appointment booking system. Since its launch in 2016, the DHPL joint venture has expanded to include equity investments from Nawaloka Hospitals and Durdans Hospitals. With this investment from the top three private hospital groups in Sri Lanka, Doc990 has access to 40 per cent of the private healthcare market, and therefore 40 per cent of the doctor channelling market share.

To secure the additional investment from the private hospital groups, DHPL had to demonstrate (and will need to continue to demonstrate) the value that Doc990 brings to hospitals. As a condition for continued use of Doc990, Asiri set an ambitious target for Doc990 to deliver the same number of average monthly bookings as the former system within its first quarter of implementation. To achieve this target, DHPL initially leveraged the trusted Asiri brand to promote Doc990 among existing Asiri patients — a strategy that proved to be effective.



3.4. Partnerships

HEALTHCARE TO YOUR DOORSTEP

Emergency Calls and Certis Lanka are two organisations delivering high-quality emergency medical care, including patient transport and home-based healthcare consultations (see Figure 13), assessments and care provision (nursing, physiotherapy etc.). In addition to providing these services in the Healthcare to Your Doorstep feature, these organisations also support clients in channelling doctors and specialists through Doc990. As part of their supplier agreements, both Emergency Calls and Certis Lanka provide their services to Doc990 customers at a discounted rate as low as 50 per cent of the standard fee. Both partners benefit from lead generation coming through the Doc990 platforms.

FIGURE 13

Certis Lanka staff conduct a home-based patient health assessment as part of the Healthcare to Your Doorstep feature

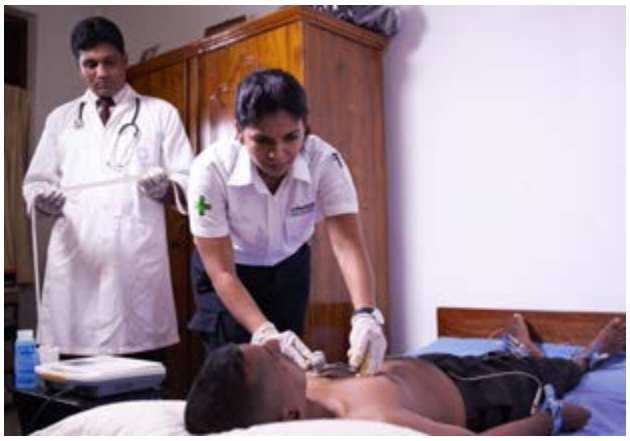


FIGURE 14

Screenshot of the Medicine to Your Doorstep feature on the Doc990 web platform



MEDICINE TO YOUR DOORSTEP

HealthNetBuy manages the virtual pharmacy as part of the Medicine to Your Doorstep feature (see Figure 14), enabling convenient and fast prescription filling for Doc990 customers. As part of its partnership agreement with DHPL, HealthNetBuy has waived the delivery fee for Doc990 customers within Colombo and its immediate suburbs. As a relatively young company, HealthNetBuy benefits from the credibility and exposure that comes from partnering with an established digital service like Doc990 and its shareholders, Dialog Axiata and the leading private hospital groups.

LAB REPORTS

There are currently two hospital partners that provide services through Doc990's Lab Reports feature: Asiri Laboratories and Durdans Hospital. Delivering lab results to patients directly through Doc990 simplifies the process for both the hospital and the patient. It reduces the work burden on hospital staff since they no longer need to notify patients when the lab results are available or arrange for collection. Hospitals also benefit from improved patient satisfaction due to the time and cost savings.

BROADER ECOSYSTEM PARTNERSHIPS

To remain competitive in the digital health market, in September 2016, Sri Lanka's second largest mobile operator, Mobitel, acquired a majority share of eChannelling PLC, providers of the eChannelling service.[36] Despite being competitors in the market, there are several underlying agreements between the managing organisations of the two services. These agreements are fundamental to the continued success of each service and overall growth of the digital health industry in Sri Lanka. The two solutions are competing on quality of service rather than exclusivity agreements with partners.

For example, Doc990 customers can book appointments at hospitals where Doc990 is not the primary booking system. Both the managing organisations, as well as their hospital partners, understood the value of giving customers access to all private hospitals and associated doctors and health specialists across Sri Lanka, rather than just to hospitals using a particular booking system. Integration of the two booking systems was formalised in January 2017 to implement the shared vision of interoperability. An agreement was also made to allow subscribers of any mobile network to access Doc990 by dialling 990 and subscribers of any mobile network to access eChannelling by dialling 225.[37]

36. Sri Lanka Telecom (2016), "Sri Lanka Telecom Mobitel purchase majority stake of eChannelling PLC".
37. Or by dialling 1225 from a Sri Lanka Telecom line, Mobitel.

4. Future roadmap

To grow B2C revenue through patient payments on Doc990, DHPL is focusing its efforts on increasing customer activity and retention. In addition to continuously optimising existing services, DHPL is exploring strategic partnerships to grow the patient offering with added features. DHPL has several new patient-facing Doc990 features that will be launched by the end of 2018.

The first is a wellness feature on the Doc 990 app and web platforms, delivered in partnership with Digital Health Solutions, a subsidiary of Hemas Holdings. Through gamification, this service will encourage healthier habits and better health behaviours among users. It will also provide Doc990 users with reliable and credible on-demand content. This feature will be released in English, with planned translation into Sinhala and Tamil.

DHPL is partnering with InsureMe, also partly owned by Dialog Axiata, to provide health insurance as an alternative to out-of-pocket healthcare payments for doctor channelling, prescription purchasing and lab test fees on Doc990. Both Doc990 and InsureMe will benefit from cross-promotion of their services among their respective customer networks. On the back end, seamless connection with doctors through Doc990 enables InsureMe to receive faster confirmation of services delivered to patients. This will simplify the receipting and claims process for patients and reduce lead times for reimbursement.

Growth in the use of InsureMe as a payment mechanism among Doc990 patients presents an added benefit for pharmacy partners, who would gain visibility into insurance coverage policies and patient credit limits, thus reducing the risk of declined reimbursements. InsureMe intends to prioritise growing its network of pharmacies across Sri Lanka and expand its corporate insurance network. Since both are beneficial networks for DHPL, its partnership with InsureMe holds potential beyond the existing supplier agreement.

To grow B2B revenue, DHPL is looking at new ways of monetising the appointment booking system for different industries, such as salons. There is also potential to replicate Doc990 in other markets, which DHPL is currently exploring. For example, DHPL is considering expansion of Doc990 to the neighboring Maldives as Maldivians frequently make use of Sri Lanka's healthcare services.





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