

## [Impact of introduction of smart card technology on delivery of health care -- Amicus Advisory](#)

[1]



**Country of Operation:** India

**Region:** Asia and the Pacific

**Sub Topics:** Data analysis and processing, Client interface, Renewals, Claims, Enrollment, Impact, Improving value, Health

### Organizational Overview

Amicus Advisory is a consulting firm operating in the field of health and accident insurance. It provides various services to add value to insurance schemes like structuring health schemes, developing functional plans, execution, monitoring and evaluation, and capacity development. Amicus' core team members have worked extensively with governments, international development organizations, insurers, implementers, service providers and beneficiaries with regards to many of the large insurance schemes in India.

### Activities Overview

The project seeks to introduce biometric smart cards to improve access to and use of health care in the Rajiv Gandhi Shilpi Swasthya Bima Yojana (RGSSBY) scheme being implemented by the Government of India and will be implemented with active support of the Ministry of Textiles.

The scheme provides a subsidized cashless health insurance product, with 80 per cent of the premium being paid by the Government of India. The product provides both outpatient and inpatient benefits. The table below provides more detailed information about the product.

The main product features are:

Category	Feature	
Eligibility	Handicraft artisans and their families	
Annual premium	US \$ 18	
Premium funding	Federal Government (80%) and Beneficiary (20%)	
Service tax	Borne by the Federal Government	
Family size	Maximum 4 members	
Benefits	Inpatient and outpatient care	
Policy limits	Umbrella limit per family per annum (on floater basis)	US \$ 300
	Outpatient limit per family per annum	US \$ 150
	Accidental death & disability (only the head of a family is covered)	US \$ 2,000
	Per hospitalization	US \$ 150
	Maternity expenses per child birth (only first two childbirths)	US \$ 50
	Dental and eye treatment per instance	US \$ 5
	Pre and post hospitalisation (per family, per annum)	US \$ 300
Pre-existing diseases	Covered	
Waiting period	Nil	
Alternative medicines	Covers treatment under Homeopathy, Ayurved, Unani and Siddha	

The project locations are:

		Bara Banki	Sultanpur	Raebareli	Uttar Pradesh	India
Population	Total (million)	3.26	3.79	3.40	199	1,210
	Rural (%)	90	84	70	78	69
	Urban (%)	10	16	30	22	31
	Male (%)	52	51	51	52	51
	Female (%)	48	49	49	48	49
Population density (per sq. km.)	Total	741	856	739	829	382
Literacy (%)	Total	62	69	67	68	73
	Male	70	80	78	77	81
	Female	52	58	56	51	65
Sex ratio (females per 1,000 males)		910	983	943	912	943
Average per capita income (USD)		Not available			546	1,219
Per capita health expenditure		Not available			18	141
Population below the poverty line	Total	Not available			33	28
	Rural (%)				31	26
	Urban (%)				33	28

The insurance scheme currently uses plastic cards and manual processes, which have led to issues with identification of beneficiaries, denial of or delays in treatment, and absence of treatment records. The use of smart cards and the introduction of a related back-end system should mitigate these issues, and facilitate better access to health care.

The back-end system will enable real-time exchange of data and information between hospitals and insurers in addition to qualitative and quantitative checks, speedy processing of payments by insurers to hospitals and healthcare providers, and prevent leakage, especially in outpatient care that involves high frequency and low denomination insurance claims.

The project will track the efficiency gains (improved processing times, lower costs) resulting from the technology implementation and measure the increased value for clients. The lessons from the project can potentially be implemented across the country for this scheme and related schemes of the Ministry of Textiles like the Weavers Health Insurance Scheme (WHIS) for poor handloom weavers.

The efficiency targets are:

Indicator	Plastic card	Smartcard
Processing of enrolment forms	21 days	15 min
Handing over cards to artisan	21 to 30 days	15 to 30min
Availability of enrolment data	30 to 60 days	1 days
Authorisation of treatment	4 to 24 hours	Instant, online
Reimbursement of claims to artisan	Takes over 30 days	Fully cashless
Payment to hospital	No time limit	15 days
Enquiry into balances to the credit of an artisan	15 days	5 min
Availability of claims data	30 to 60 days	Instant
Replacement of lost/mutilated cards	30 days	15 min
Investigation into frauds	Possible after 21 days	Immediately

### Key challenges:

- Introducing a technology intervention in a manual scheme will require educating all stakeholders on the change in processes and building their capacity to use the technology properly.
- Use of the technology to handle high-volume, low-denomination claims, especially for outpatient care.
- Fraud in outpatient healthcare services, especially in rural areas, is an ongoing challenge, and will require continuous monitoring.

### Beneficiaries

The project beneficiaries include clients of the Rajiv Gandhi Shilpi Swasthya Bima Yojana (RGSSBY) scheme for handicraft artisans. The schemes cover over 0.8 million families.

The project targets nearly 20,000 families (approximately 80,000 lives) of poor handicraft artisans in three adjoining districts of Uttar Pradesh. Nearly 60 per cent of the beneficiaries have average household income of less than US\$ 40 per month. About 57 per cent of the beneficiaries have reported sickness in the family in 2010 and incur an average out-of-pocket expenditure of 10 per cent of their household income.

### Learning Agenda

- **Use of technology and processes:** How can smart cards be effectively used in outpatient and inpatient care for identification, minimizing fraud,

tracking expenses, and reducing claims?

- **Client value:** Can smart cards enabled delivery of healthcare increase client value through a reduction in waiting time, and create a medical record to support appropriate diagnosis and treatment?
- **Business case:** Can use of smart cards help reduce administration costs of a health insurance scheme?
- **Network development and enhancement:** Can data generated by smart card technology help identify gaps in health care coverage (e.g. distance covered by patients, disease patterns) and lead to new health care providers being added to the scheme?

## Latest Updates

### As of November 2011

Several events were held to raise awareness about the potential of smartcards and to inform all actors involved in the project about this new technology. On the 20th of June 2011, a presentation was to the Ministry of Textiles and representatives of insurers, informing them about the project activities and the likely benefits of introducing smartcards. Following this presentation, two workshops were held for government officials, insurers, third party administrators, hospitals, clinics and non-governmental organisations in order to familiarise them with the project as well as the roles and responsibilities of each stakeholder.

To ensure the adequate functioning of smartcards, an input collection process was carried out before the installation of the technology. As part of this process, insurers were consulted for encoding 95 in-patient and 937 out-patient procedures and for agreeing on fixed charges for these procedures. Surveys were also carried out to identify the training and implementation needs of healthcare providers. Subsequently, after the software development finalised, training sessions were held for healthcare providers, government officials and third party administrators on the 2nd of November. The user testing and installation of the required hardware and software at hospitals / nursing homes was completed in November 2011.

### As of August 2013

The project experienced several implementation delays due to various challenges. Due to absence of any past experience, the insurer was not confident as to how to carry out related activities in a smart-card environment. It also proved difficult to obtain and understand enrolment and claims data for previous years. Given these long time gaps, a survey was carried out again in August 2012, enquiring into the preparedness of healthcare providers in terms of the required manpower and previously installed hardware / software. Representatives from empanelled hospitals were also retrained with the objective of making sure that they could use the smartcard technology. Two rapid assessment surveys, involving the beneficiaries as also the healthcare providers, were conducted prior to implementation of the smartcard technology to understand the ground reality under the plastic card regime.

By September 2012, the enrolment data was prepared and digitized for the smartcard technology and the first enrolment phase started. The second enrolment phase started in January 2013 and was concluded in March 2013. A total of 2,768 households were enrolled under the project.

From the 1st of March onwards, a full time resource was posted at the project locations in order to ensure permanent technical assistance to the stakeholders owing to lack of their past experience in a technology-driven environment . All empanelled healthcare providers were also re-inspected on the 21st of March 2013 with the objective of addressing operational issues faced by them.

Between the 10th and 11th of June 2013, the first impact assessment survey was conducted. Both healthcare providers and beneficiaries participated in the survey, providing feedback on the efficiency and convenience created by the smartcard technology. The second impact assessment survey was carried out between the 30th of July and the 2nd of August with a view to obtaining a wider feedback. The surveys showed that the smartcard technology has helped to increase efficiency and convenience, as discussed in greater detail in the section on project lessons below.

### As of June 2017

Amicus continues to play a role in developing health insurance solutions. Now called Finsall Networks Private Limited, it provides services for developing, operationalizing and evaluating insurance programs. Based on the belief that the key differentiator in the service levels are human resources, services are offered towards building capacities and accessing skills for efficient delivery of insurance. On the business side, services in the areas of landscaping the Accident & Health insurance market, inventorying attributes of customer segments, competition, operations and business planning.

To assist in reducing the barriers of higher premiums, Finsall is working closely with financial institutions for financing of insurance premiums and lending to low income households. Various state governments and the insurance regulator have also been reached out for the same. A recent article written by the director of Finsall can be found [here](#) [2].

## Lessons

### On implementation of technology

**Keep all partners and implementers involved:** The smooth functioning of smartcards implies that all actors involved in the project have sufficient information and resources to use them. In this context, it proved beneficial to hold several events to inform them about the project as well as to conduct several workshops and surveys to collect their input. The input collection, in turn, made it possible to also receive information about the apprehensions and training needs for delivering adequate training.

**Demonstrations and ?hand holding? lead to better acceptance and adoption:**Had the users been reluctant to accept and adopt smartcards, the success of the entire project would be put at risk. To promote better acceptance and adoption, a pre-implementation workshop was held in November 2011, which allowed users to understand and experience the smartcard technology. Again, in August 2012, live demonstrations were



given and the healthcare providers were trained. It is believed that these events helped to improve the acceptance and adoption of smartcards.

**Providers need repetitive and relevant training:**In the second impact assessment survey, 50 per cent of hospitals reported instances of interruptions in the identification process. All these interruptions occurred because desktops were formatted or software files were deleted. This experience highlights that providers need to receive repetitive and relevant training for avoiding such interruptions.

## On use of technology and processes

**Smartcard technology is successful in identifying clients:**The use of smartcards has facilitated a multi-level verification processes, since demographic details, a photograph and fingerprints of the client are saved on the smartcard. The details stored on the smartcards are verified with those of the patient who seeks treatment. In general, this verification process has worked well, making it possible to identify eligible clients. However, two issues have complicated the verification process in some cases: Firstly, the process of taking the fingerprints of clients needed sometimes to be repeated until they could be successfully read and tallied. This problem occurred due to erosion of skin and fading away of impressions due to manual labour. Secondly, some hospitals formatted their desktops or deleted software files, as a result, the information on the smartcards could not be read. Yet, providing regular technical assistance in the initial stage and training the hospital/clinic staff on re-installing the software has helped avoid these interruptions.



**Smartcards minimise fraud:**Prior to the introduction of smartcards, health service providers relied only on the name appearing on the plastic card because the card did not display any photograph. They also refrained from asking for a secondary proof of identity, such as driving license or any other government-provided identification. As a result, non-eligible persons could obtain treatment. Given that a photograph and the fingerprints are now stored on the smartcard, frauds attributable to impersonation and assumption of a false identity could be eliminated. Aside from fraud by clients, smartcards have also helped to reduce fraud by health care providers. This has become possible because 95 outpatient treatments and 937 inpatient procedures have been pre-packaged and coded. Hence, smartcards have made it difficult for health care providers to over-bill, although the risk remains that providers may directly ask the client for extra money.

**Smartcards make it easier to comply with policy limits:**Before the introduction of smartcards, clients frequently overshot their insurance coverage limits as aggregation of utilization at multiple locations took place manually at a central location. In contrast, using smartcards has eliminated this problem. Given that the client's treatment is recorded on the smartcard as well as on the server, health care service providers always receive up to date information about the balance of sum insured to a client's credit when they verify the client's identity.

## On client value

**Smartcards accelerate the enrolment process:**The enrolment process includes the filling up of enrolment forms by the client, data entry by the microinsurance provider and the delivery of insurance cards to the client. Prior to the introduction of smartcards, it took up to 2 months to complete this process, whereas it ideally takes between 15 and 25 minutes in the smartcard regime. Nevertheless, this ideal scenario has not always been feasible because: a) eligible persons did not show up at enrolment camps, b) clients were reluctant to pay their contribution and c) some clients did not agree to be photographed or finger-printed due to religious reasons. To overcome these challenges, clients were visited at their home but it still slowed down the enrolment process, as printers and generators could not be taken to door-to-door visits.



**Smartcards accelerate the authorisation of claims:** Smartcards facilitate a real-time logging of claims on the server, so that they can quickly be authorised. Consequently, the authorisation of treatment could be reduced from nearly 12 hours to zero hours for pre-agreed and encoded treatments. This in turn shows that more patients can be treated in the cashless mode. Yet, smartcards cannot accelerate the authorisation of claims which are not pre-agreed and encoded.

**Smartcards reduce the waiting time before treatment:** Smartcards ease the authentication process and reduce the amount of paper work. These advantages have enabled health care providers to reduce the waiting period of the patient (between seeing a doctor and leaving the facility) from 25 minutes to 13 minutes ? a reduction of almost 52 per cent.

**Smartcards create a medical history:** The patient?s past ten transactions are recorded on the card and a wider history is stored on the server, which allows health care providers to quickly access the patient?s medical history. Consequently, the health care provider finds itself in a better position to diagnose and treat, while clients are no longer required to keep documents about previous treatments. In fact, 90 per cent of the surveyed doctors reported that the availability of the medical history has led to better diagnosis and treatment.

**Smartcards inform clients about their credit balances:** Given the caps of the benefit package, the insurance policy does not necessarily cover the entire costs of a treatment. Yet, clients do not always understand these caps and they do not always pay attention to them. In fact, 75 per cent of beneficiaries had insufficient credit balances for covering the complete treatment before smartcards were introduced. This, in turn, required them to mobilise additional funds and they, for example, often resorted to borrowing from local money lenders. Although smartcards do not eliminate this problem, they have at least raised the clients? awareness about their credit balances, since swiping the cards at terminals provides immediate information about credit balances. Consequently, fewer patients have had insufficient credit balances for covering their treatment.

## On business case

**Smartcards can reduce enrolment related costs:** The introduction of smartcards has fundamentally changed the enrolment process. Enrolment data does no longer need to be pre-printed on forms and sent to actors involved in the enrolment process, such as insurer?s offices and third party administrators. Instead, the enrolment data has been digitised under the smartcard regime, which has, as aforementioned, reduced the enrolment process to 15-25 minutes. This does not only signify an increased client value but it also reduces the supply cost. In fact, the recurring enrolment cost per card has been reduced from USD\$ 1.78 to USD\$ 1.64, assuming that the enrolment process is completed within 15-25 minutes. However, as above discussed, this ideal scenarios has so far rarely been feasible, which suggests that smartcards may have increased enrolment costs.

**Smart cards reduce claims related costs:** Smartcards have reduced the insurer?s costs related to medical treatment alone as well as costs related to claims administration. In terms of the former, the pre-agreed treatment charges of a large number of procedures has lowered pure claims costs from USD\$ 3 to USD\$ 1.9 ? a reduction of nearly 35 per cent. Similarly, the above discussed reduction of fraud has also contributed to a reduction of claims. In terms of administrative claims costs, the introduction of smartcards has helped to reduce these costs from 17 per cent to 10 per cent of the premium. This reduction is also attributable to omission of a fee for a third party administrator.

**Smartcards reduce a hospital?s operational expenses:** Smartcards accelerate the work of hospital staff and they render photocopying, courier charges and phone calls as well as visits to the offices of third party administrators obsolete. This has made it possible for hospitals to reduce their operation expenses between 8 and 15 per cent.

## On network development/enhancement

**Smartcards support the development and enhancement of the network:** Given that smartcards facilitate the digitisation of data, their use provides statistical input about disease profiles and about the distanced travelled by claimants. This in turn makes it possible to create and identify newer service points and the facilities within them. So far, the analysis of the claimants under the smartcard regime has shown that they travel on average 2.5 kilometres to reach the hospital / clinic. Given that the vast majority of healthcare facilities are located within 5 kilometres

from the client's locations, it becomes evident that most clients have a reasonably easy access to healthcare facilities. Aside from the accessibility of healthcare facilities, the statistical input which is facilitated through smartcards also helps to ensure that the required treatment can be provided by healthcare facilities.

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