Large Scale Health Care Study in Bangladesh, and the Potential for Big Data Use

One of the sub-themes of the Kuitsuregawa FIRST Project currently underway is the Portable Clinic Project, being carried out in Bangladesh by Kyushu University Hospital associate professors Naoki Nakashima and Ashir Ahmed. Let’s look at the potential for BOP (Base of the Pyramid) business and social contribution system construction using big data by examining the example of this demonstration experiment.

Providing Medical Services to the Poor and Collecting Big Data

Sadakane: Please tell me the objectives and background of this large-scale health care study in Bangladesh.

Nakashima: Bangladesh lacks a robust medical infrastructure, so this project aims to use health checkups which utilize telemedicine, implementing measures based on individual checkup results (risks) in order to improve the standard of health. It is a social business creation experiment, and at the same time has as its goal the collection of massive amounts of real-world data in order to create a cyber-physical system. Portable clinic studies have been carried out in Japan in the past, but due to the complexities of the legal system, as well as social customs, they have only been able to gather data for around 100 people each year. We needed to acquire a large amount of data, so we decided to work with the Grameen Group(*2) in Bangladesh, and perform health checkups for 10,000 patients. There are very few doctors in Bangladesh, with most villages having none, but there are pharmacies across the nation. 98% of the country has cell phone coverage, so the necessary infrastructure elements were all in place.

Sadakane: What led to the collaboration with the Grameen Group?

Nakashima: Associate Professor Ashir Ahmed, at our university, is also a project director for the group, so we’ve had an exchange agreement between our university and Grameen Communications(*3) since 2007, and we have been engaged in joint research into social business, its creation, and its popularization. This project is one facet of that.

Sadakane: Please discuss specifically how you’re carrying out the demonstration experiment.

Nakashima: First, we’re having local people come in for health checkups, and local nurses, called “Grameen Medical Ladies”(*4) measure their heights, weights, etc., and, using a sensor set they carry in an attached case, they also measure their temperatures, blood pressure, blood sugar levels, blood oxygen levels, and the like. Patients with moderate or severe health issues undergo remote diagnosis by a doctor, using Skype(*5).

Between July and December of last year, we completed checkups for 5,500 people.

Sadakane: What is novel about this project?

Nakashima: We divided the patients into four risk groups, and found that 14% were healthy, 66% had mild health problems, 17% had moderate health problems, and 3% had severe health problems. We performed remote diagnosis and prescribed medicine for those with moderate and severe health problems, as well as offering lifestyle advice, and urged them to receive a second checkup in two months. The second checkup was only performed for those who had been diagnosed with moderate or severe health problems during the first checkup. Approximately half of them actually underwent the checkup, and many of them showed an improvement at the end of those two months.

Sadakane: So it showed potential for a new medical service in developing countries. Last, could you please tell us about the issues the project is currently facing, and your hopes for its future?

Nakashima: We are behind schedule in reaching our goal of 10,000 checkups, and this is because the health checkups don’t align well with peoples’ needs. People who want diagnoses for headaches, injuries, and the like have interpreted the project as only identifying chronic conditions, and not offering diagnoses for headaches, injuries, etc., and therefore deciding not to have the health checkup. In order to resolve this mismatch problem, we plan to develop a CDSS(*5) system for nurses, which efficiently connects local nurses with remotely situated doctors, and to carry out a survey to lay the groundwork for meeting patients’ needs. To do so, we need to collect even more data. In the future, we’d like to establish some sort of basic clinics. There are a lot of people with obesity-induced high blood pressure in Bangladesh. This is a trend that spans developing countries. We think it would be eminently feasible to customize the system to the conditions in individual countries, and expand it into a business.

After establishing a business model in developing countries, it would also be possible to implement the system in developed countries as well. In areas struck by the Great East Japan Earthquake there have been problems with nutrition and access to medical treatment. I think this system could be used to maintain peoples’ health in emergency situations such as this as well.

(Edited by Interviewer Yuko Sakurai)

*1: Social business

Activities which apply business methods in order to resolve social problems. Social enterprises.

*2: Grameen Group

Corporate group, including non-profit entities, created by Muhammad Yunus, winner of the 2006 Nobel Peace Prize. The Group is led by Grameen Bank, Grameen Phone Ltd., and many others.

*3: Grameen Communications

IT-related operations. The company works to improve the livelihoods of the poor in Bangladesh. It was considered one of the most innovative and successful companies in the world.

*4: Grameen Medical Ladies

Local nurses, called “Grameen Medical Ladies”(*4) in Bangladesh, and perform health checkups as “Grameen Medical Ladies”. In this process, they also measure their heights, weights, etc., and, using a sensor set they carry in an attached case, they also measure their temperatures, blood pressure, blood sugar levels, blood oxygen levels, and the like. Patients with moderate or severe health issues undergo remote diagnosis by a doctor, using Skype(*5).

*5: CDSS (Critical Decision Support System)

A system that helps doctors make diagnoses by examining the example of a previous case, and provides them with advice on what diagnosis to give. It is a system that helps doctors make diagnoses by examining the example of a previous case, and provides them with advice on what diagnosis to give.

Sadakane: What is novel about this project?

Nakashima: One thing that makes it novel is that it uses global standards. Other novel points of the project from a social system perspective are that it is being carried out under the various constraints placed by legislation, transmission bandwidth, and the like, and that medical advice is given not only to those presenting symptoms, but those without presentation as well.

Sadakane: What results has the project produced?

Nakashima: We are behind schedule in reaching our goal of 10,000 checkups, and this is because the health checkups don’t align well with peoples’ needs. People who want diagnoses for headaches, injuries, and the like have interpreted the project as only identifying chronic conditions, and not offering diagnoses for headaches, injuries, etc., and therefore deciding not to have the health checkup. In order to resolve this mismatch problem, we plan to develop a CDSS(*5) system for nurses, which efficiently connects local nurses with remotely situated doctors, and to carry out a survey to lay the groundwork for meeting patients’ needs. To do so, we need to collect even more data. In the future, we’d like to establish some sort of basic clinics. There are a lot of people with obesity-induced high blood pressure in Bangladesh. This is a trend that spans developing countries. We think it would be eminently feasible to customize the system to the conditions in individual countries, and expand it into a business.

After establishing a business model in developing countries, it would also be possible to implement the system in developed countries as well. In areas struck by the Great East Japan Earthquake there have been problems with nutrition and access to medical treatment. I think this system could be used to maintain peoples’ health in emergency situations such as this as well.

(Edited by Interviewer Yuko Sakurai)