

Business models for sustainable development: Projects of global extension of medical technologies of Japan

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Abstract: Japan has been implementing projects of global extension of medical technologies under an official development assistance policy to improve public health and medicine by promoting Japanese medical technologies worldwide. The current work examines the impact and goals of implementing this new scheme. The scheme has involved dozens of projects that sent Japanese experts to partner countries and that invited their counterparts to Japan to showcase Japanese medical technologies. Approximately 50 projects have been implemented in 24 countries over 5 years, and 19,638 individuals have been trained. As a result, the introduced technology was adopted in national guidelines in 4 projects and the introduced equipment was procured in the partner country in 17 projects. In total, 912,334 individuals have benefitted from the introduction of these medical technologies. The concept of "creating shared value" (CSV) could help promote project success by both creating economic value and encouraging social progress. However, the sustainability of that business model remains in question in terms of the internationalization of CSV. Several successful projects improved medical care and led to new business opportunities.

Keywords: sustainable business, creating shared value, official development assistance

Introduction

The advent of the era of sustainable development goals (SDGs) has transformed the development paradigm. The role of the private sector in development is widely recognized (1), and the private sector has welcomed this trend. The SDGs define a common framework of action that helps the private sector identify future business opportunities, enhance the value of corporate sustainability, enhance stakeholder relations and keep pace with policy developments, stabilize societies and markets, and use a common language and shared purpose (2). Companies that do not promptly change their business model to align with the SDGs may not survive in this era. In Japan, the Ministry of Economy, Trade, and Industry published the "Guide for SDG Business Management" to lead discussions on how to do business in the era of SDGs (3).

To activate the stagnant Japanese economy, the Government of Japan implemented the "Japan Revitalization Strategy" in 2013 (4). Under this strategy, health and medical care were prioritized to improve the health and longevity of the citizenry. The strategy also included the worldwide promotion of Japan's medical care and technology because of the nation's comparative advantage in health and medical care (5). In light of these initiatives, various programs and projects were

formulated by related ministries (Table 1; (6)).

The Ministry of Health, Labour, and Welfare has been implementing its "projects of global extension of medical technologies" to improve public health and medicine in developing countries by sharing Japanese experiences in public agencies and medical facilities under the health insurance scheme and to promote excellent medical technologies, drugs, and devices. The National Center for Global Health and Medicine, one of the leading organizations in global health in Japan, has been implementing this project since 2015 (7). Therefore, the current work discusses the significance of implementing this new scheme of developmental assistance in collaboration with the private sector.

Projects of global extension of medical technologies

A major component of the projects is exchange programs where experts from Japan travel abroad and foreign experts travel to Japan to learn about health topics, health systems, and medical devices. Each year, proposals are submitted by various bodies such as universities, the private sector, and the National Center for Global Health and Medicine, and projects are selected. From 2015 to 2020, approximately 50 projects have been implemented in 24 countries. Table 2 presents a list of the projects of global extension of medical technologies in 2019.

Table 1. List of supporting organizations, projects of global extension of medical technologies, and services of Japan

Supporting Organizations	Projects [Year]	Services
Cabinet Office	<ul style="list-style-type: none"> ● Task Force for Global Reach of Japanese-style Medical Technology and Services [2013] 	Based on the Healthcare and Medical Strategy, the task force was established to coordinate multi-ministerial efforts to promote the global deployment of Japanese medical care.
Ministry of Economy, Trade, and Industry	<ul style="list-style-type: none"> ● Medical Excellence JAPAN [2009] ● Project to Establish a Strategic Base for the Promotion of Medical Technology [2015] 	<p>A general association was established to serve as the central organizational hub to facilitate overseas expansion of the health care and medical care sector based on one of Japan's growth strategies.</p> <p>A program that supports the establishment of a Japanese strategic base overseas to promote the global deployment of Japanese medical technologies and services.</p>
Ministry of Health, Labour, and Welfare	<ul style="list-style-type: none"> ● Support Project to Establish an Accreditation System for Medical Institutions Accepting International Patients [2011] ● Japan Medical Service Accreditation for International Patients [2012] ● Projects of Global Extension of Medical Technologies [2015] ● Project to Assist the Medical Industry to Acquire pre-qualification from the World Health Organization [2017] 	<p>The Japan Medical Education Foundation evaluates an institution's capacity to accept international patients in order to create a system so that international patients can safely and reliably receive world-class Japanese medical care.</p> <p>The accreditation system facilitates the acceptance of international patients to easily and safely receive medical care.</p> <p>The projects aim to cooperate with ministries of health in various developing countries in order to facilitate the global spread of medical technologies. The projects also aim to improve public health and medicine in developing countries by sharing the experiences of medical facilities, such as public health insurance, and to promote excellent medical technologies, drugs, and devices.</p> <p>To assist the Japanese medical industry in acquiring pre-qualification from the World Health Organization in order for developing countries to procure pharmaceuticals and medical devices, the project aims to promote the global spread of quality Japanese pharmaceuticals and medical devices.</p>
Ministry of Foreign Affairs	<ul style="list-style-type: none"> ● JICA- Public-Private Partnership Projects [2008] ● Ministry of Health, Labour, and Welfare/Ministry of Foreign Affairs, GHIT Fund [2012] 	<p>The projects support companies by considering the use of social enterprises for development, and they use information obtained and networks built overseas through official development assistance projects.</p> <p>The Japan-based GHIT Fund is an international public-private partnership fund for global health R&D that mobilizes Japanese industry, academia, and research institutes to create new drugs, vaccines, and diagnostics for malaria, tuberculosis, and neglected tropical diseases, in collaboration with global partners.</p>

In total, 19,638 individuals have been trained to use Japanese medical technologies from 2015 to 2019: 1,013 were trained in Japan, and 18,625 were trained abroad (Figure 1).

As a major outcome of the project, four Japanese medical technologies have been adopted in other countries' national plans or guidelines to improve health there. For instance, technical guidelines were developed and adopted in collaboration with Japanese experts and their counterparts in respective countries: guidelines for preventing medical accidents at hospital and guidelines for incident reports were developed in Vietnam, national guidelines for blood transfusions were adopted in Myanmar, and standard operational procedures for preparing reagents for ABO blood typing were adopted by the National Blood Center in Mongolia.

In addition to those outcomes, medical devices or consumables introduced by this project were procured in 17 instances. For instance, a project in Vietnam

introduced dysphagia diets and a thickener for the care of patients after cerebral infarction, and dysphagia diets are now included as part of medical care in Vietnam. Another example is a project in Myanmar where the health risks to blood donors such as the vasovagal reflex were not fully recognized. During a tour of Japan, the Japanese Red Cross Society expressed their strong commitment to interventions to protect the health of blood donors. As a result, blood collection beds that can elevate the legs of donors, made by Terumo, were procured by Myanmar's Ministry of Health to improve donor safety. Terumo also supported the advancement of medical care in Myanmar, by offering stem cell transplantation technology for hematology treatments and leukocyte removal filters to hospitals in order to reduce the risk of adverse events related to blood transfusion.

As an indicator of its impact, 912,334 individuals are expected to benefit from the medical technologies introduced by this project according to calculations.

Table 2. The projects of global extension of medical technologies in 2019

No.	Country	Project	No. of trainees	
			in country	in Japan
1	Cambodia	Pathological Capacity and System Improvement for Cervical Cancer in Cambodia	6	406
2	Cambodia	Strengthening the Emergency Medical System in Provincial Cities of Cambodia	0	330
3	Cambodia	The Project for Quality Improvement of Clinical Testing for Microbiology, Hematology, and Clinical Chemistry in Kingdom of Cambodia	11	299
4	Cambodia	Cooperation for Development of Cambodian Rehabilitation Specialists in NCDs	4	123
5	Cambodia	Technical Training Program for School Health Check in Cambodia	0	62
6	China	Construction of International Linkage for Improvement of Liver Surgery in China	8	246
7	Ethiopia & Nigeria	The Project for Developing Basis of Expanding Japanese Medical Devices in Africa under the Projects for Global Growth of Medical Technologies, Systems and Services by Ministry of Health, Labour and Welfare	4	4
8	Indonesia	Development of Human Resources for "Infection Prevention and Control (IPC)" and "Antimicrobial Stewardship Program (ASP)" Based on Indonesian Situation to Tackle Antimicrobial Resistance (AMR)	6	128
9	Indonesia	The Medical Program for International Promotion of Japan's Healthcare Technologies and Services for Rheumatic Disease in Indonesia	5	350
10	Indonesia	Building a Management System for Dialysis Equipment in Indonesia	6	123
11	Laos	Technical Support for Department of Radiology and Clinical Laboratory in Laos	4	267
12	Mongolia	Project to Strengthen Capacity of Emergency Medical Care Using POCUS in Mongolia	6	172
13	Mongolia	International Collaboration on Human Resource Development in Pediatric Acute Medicine in Mongolia	7	165
14	Mongolia	Training of Blood Morphology Testing for Clinicians and Laboratory Technologists in Mongolia	10	20
15	Mongolia	Development of Human Resources in Clinical Sleep Medicine in Mongolia	3	198
16	Myanmar	The Project for Safer Blood Transfusion and Stem Cell Transplantation in Myanmar	7	267
17	Myanmar	Effective Management of Hyperbilirubinemia in Myanmar	0	36
18	Myanmar	A Human Resources Development Project for Filling the Gaps of Medical Standards in Myanmar	15	138
19	Myanmar	Project to Develop Surgical Oncologists for Gastrointestinal Cancer in Myanmar	3	55
20	Myanmar	Project for Enhancement of Diagnostic Skills for Prenatal Ultrasound among Myanmar Obstetricians	2	29
21	Myanmar	Project for Development of Human Resource of Emergency and Disaster Medicine/DHED	4	70
22	Myanmar	Training of Orthopedics Specialists in Myanmar	4	11
23	Philippines	Project to Reinforce Medical Treatment, Care, and the Promotion of Mental Health among Children and Adolescents	5	40
24	Philippines	Philippines National Dissemination Project of Dialysis Fluid Purification & Control	2	83
25	Philippines	Capacity Building on the Quality of Medical Imaging and Its Diagnosis in Philippines	8	28
26	Thailand	Implementation of Endoscopic Surgical Skill Qualification System into Thailand	13	12
27	Thailand	Establishment of Thai Biomedical Engineer's Job System through Collaboration with Japanese Clinical Engineers-To Assist Japanese Product Installation to a Newly Planned Medical-hub Hospital in Bangkok	14	181
28	Viet Nam	Project for a Surgical Team Approach to Health and Medicine Based on Bac Mai Hospital	17	745
29	Viet Nam	Strengthening Management Capabilities of Medical Staff for Quality and Safe Healthcare to Accelerate Hospital-wide Cooperation in Vietnamese Hospitals	7	286
30	Viet Nam	Development of Bronchoscopy Techniques and Spreading related Devices in Viet Nam	20	455
31	Viet Nam	Perioperative Management, Including Technical Cooperation in Surgery for 4 Major Hospitals in Vietnamese Big Cities, with a View to Hospital Cooperation	6	215
32	Viet Nam	Introduction of Perioperative Care by Using Noninvasive Techniques in Viet Nam	6	1336
33	Viet Nam	Development of Medical Human Resources for Gynecology, Echography, Pathology, Radiology, Endoscopy, and General Diagnostic Practice in Viet Nam	11	47
34	Viet Nam	Project for Promoting Health Screening Program in Northern Viet Nam	6	141
35	Viet Nam	A Spread of Fitting technology for Hearing Aids & Promotion of Diagnosis Equipment in Viet Nam	13	150
36	Viet Nam	Promotion of Proper Use of Medicines with Medication Guiding Tools through Clinical Pharmacists Intervention in Viet Nam	2	79
37	Viet Nam & Indonesia	Support for Strengthening Medical Treatment Ability of Childhood Cancer in Developing Countries	6	208
38	Zambia	Project for Strengthening Operations of Image Diagnostic Using Computed Tomography Device and Intervention Using Angiography Device at University of Teaching Hospital in the Republic of Zambia	3	4
			Total	254
				7,509

Discussion

The projects of global extension of medical technologies

have two objectives: promotion of Japanese medical technology and improvement of public health and medicine abroad. Thus, appropriately balancing,

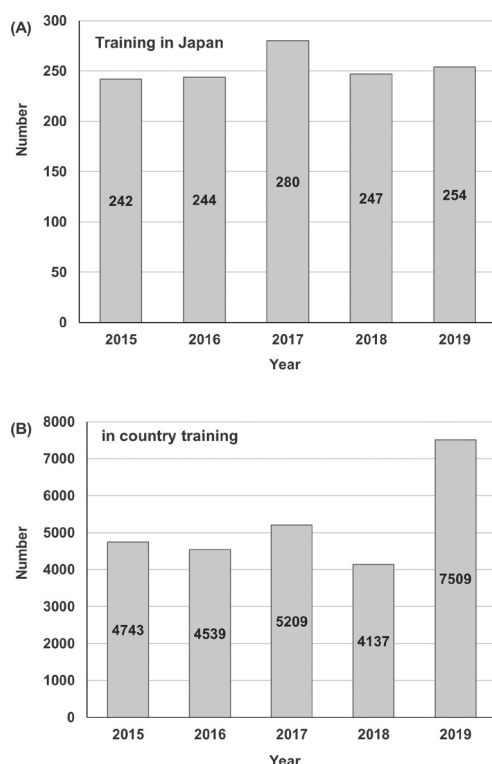


Figure 1. The Number of participants in training in Japan (A) and in-country training (B).

coordinating, and combining these two objectives is a challenge, and an effective solution is essential to the project's success.

The concept of "creating shared value" (CSV) (8) was proposed by Porter *et al.* and could help identify a solution to this challenge. Business practices that prioritize profits over humanity have been a major cause of social, environmental, and economic problems. Thus, today, the public widely regards companies as prospering at the expense of communities, their confidence in corporations is continuing to decrease, and government officials are responding to the public outcry with policies that protect the environment and human health but that decrease competitiveness and economic growth – at least in the short-term. Instead of focusing on optimizing short-term financial performance, businesses should focus on the biggest unmet needs in the market and opportunities that promote their long-term success. Porter *et al.* described CSV as a means to reconnect company success with social progress by redefining a company's purpose as creating "shared value" – generating economic value in a manner that also produces value for society by addressing its challenges.

Corporate social responsibility is a concept that is similar to and often compared to CSV. The biggest difference between corporate social responsibility and CSV is the consideration of social contribution in risk management or a business opportunity. In CSV, solving social problems is not an obligation but a business opportunity where the private sector proposes

solutions to social problems that the government cannot implement. The private sector emphasizes the corporate and economic aspects of CSV to promote its wide acceptance as part of mainstream management.

Hwy-Chang Moon *et al.* proposed the internationalization of CSV to strategically extend Porter's concept (9). They categorized corporations into four types: stupid, selfish, good, and smart. One of the strategies they proposed to change a corporation from a good one to a smart one was internationalization of CSV, and Porter argued that internationalization has more costs than benefits. They supposed that additional business opportunities and benefits for both the domestic and foreign markets could be provided by the internationalization of CSV and that the effects of CSV would be enhanced by collaborating with other organizations domestically and internationally. Therefore, an analysis of the current authors' experiences with the projects of global extension of medical technologies could provide additional insights into the internationalization of CSV.

In this era of SDGs, the expectation is that the health sector will lead the development of business models. Notably, health was preferentially addressed in the era of Millennium Development Goals (MDGs), but the paradigms for these models have changed substantially (10). Health is often considered a public good (11) and holds a critical position in building a business model in the era of SDGs. Japan's health care system is unique in terms of its medical care provided by the private sector but funded by the public sector. Thus, some of the projects have included the transfer of systems (*e.g.*, medical insurance) and may contribute to the establishment of new sustainable business models in health.

Another possibility is that the project could spur sustainable business among the health business sector. The foundations for corporate social responsibility and CSV in Japan began in ancient times, as represented by the phrase "Sanpo-yoshi (triple win)," which means "satisfaction of sellers and buyers and social contributions are crucial to good business" (12). Those were the words of the Omi shonin, merchants from Omi Province (present-day Shiga Prefecture) who were active in business in the Kamakura and Edo eras. The Terumo case is a good example and suggests that participation in projects could be a catalyst for companies to return to this principle of "good business." In addition, an analysis of the motivation of a participating company might provide insights into how to motivate the company to promote sustainable business in health care, a topic that will be discussed elsewhere.

In the spirit of the adage "no one left behind," ensuring inclusivity in business models is essential to sustainable development (13). Looking back at the business approaches thus far, the interests of individuals have not been compromised merely by including private

businesses in the development of the health sector. In order to ensure inclusiveness while conducting sustainable business in health care, the projects cited here should serve as inspiring examples, such as Vietnam's inclusion of dysphagia diets in its medical insurance.

Several studies have investigated how official development assistance (ODA) can trigger sustainable business practices (14,15). "Value" has become a keyword in an era when individuals involved in the development and the private sector are required to change their mindset (16). Several successes, such as dysphagia diets in Vietnam and blood transfusion in Myanmar, have been achieved among the projects implemented over the past 5 years. Further research should conduct a detailed analysis of successes to determine how they were implemented to answer the following questions: what are the "shared values" in sustainable business in the health sector, and what are the strengths of Japanese ODA and companies in this field.

Conclusion

Projects for the global spread of medical technologies have been implemented since 2015 based on Japan's ODA policy. Several successes at improving medical care abroad have resulted in business opportunities for Japanese medical manufacturers. CSV is a key concept of sustainable business practices, and companies are attempting to integrate this concept while receiving government support to achieve that goal. Therefore, the health sector should lead the discussion on CSV in the context of the legacy of the era of MDGs. Further study of these projects should be considered to find a Japanese way to contribute to sustainable business.

Acknowledgements

The authors wish thank colleagues from the secretariat of the projects of global extension of medical technologies in the Bureau of International Health Cooperation, the National Center for Global Health and Medicine who provided insight and expertise that greatly assisted this research.

Funding: None.

Conflict of Interest: The authors have no conflict of interest to disclose.

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Received August 13, 2020; Revised September 25, 2020; Accepted October 6, 2020.

Released online in J-STAGE as advance publication November 7, 2020.

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