

Implementing Government Reforms: Science of Delivery Case Studies

By

BENITEZ, Gustavo Adolfo

CAPSTONE PROJECT

Submitted to

KDI School of Public Policy and Management

In Partial Fulfillment of the Requirements

For the Degree of

MASTER OF PUBLIC MANAGEMENT

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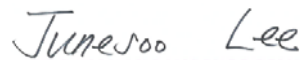
MASTER OF PUBLIC MANAGEMENT

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Approval as of August, 2018

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Implementing Government Reforms:
Science of Delivery Case Studies

CHAPTER 1

Implementing Government Reforms: Science of Delivery Case Studies

By

*Jaeun Shin, Taejong Kim, and Junesoo Lee
KDI School of Public Policy and Management*

Executive Summary

This report is a compilation of four case studies based on the science of delivery (SoD) perspective. More specifically, these case studies utilized the Global Delivery Initiative (GDI) framework to illustrate how the SoD perspective identified impediments to development in the implementation of programs and projects, as well as documenting innovations that helped overcome these obstacles in an integrated manner. The GDI framework allowed this using a detailed taxonomy of delivery challenges. The case studies presented in this volume cover a diverse range of regions and sectors: improvement of health care delivery in Ghana, reduction and management of disaster risk in the Philippines, boosting customer service in the railways of India, and enhancing public security in Ecuador. Regardless of the differences in regional as well as sectoral contexts, a large swath of development impediments is remarkably found in the realm of implementation, and such challenges in delivery identified in the studies could be resolved by strengthening what is called “collaborative accountability.” Problems in public policy arise due to failure of the market and citizenship. The case studies presented in the report suggest that the government or the public sector could successfully take on public policy challenges when it enlists the help of the people and corporations involved, so that they can better help themselves. The chapter concludes with a discussion of the possible implications of the SoD perspective for possible sharing of development knowledge, including through the Knowledge Sharing Program (KSP) of Korea Development Institute (KDI).

1. Introduction

1.1. Science of Delivery (SoD) Perspective and Global Delivery Initiative (GDI) Methodology

Over the years international cooperation was implemented to achieve development goals, a vast amount of technical knowledge on effective solutions to problems has been accumulated. Yet the effectiveness of each solution to a shared problem, such as providing clean water, is subject to country-specific contexts. To resolve this issue, the World Bank's Global Delivery Initiative (GDI) has created a knowledge sharing framework called "the science of delivery (SoD)."

The GDI is a global consortium geared to enhance the effectiveness of cooperation in international development from the SoD perspective. With more than 30 institutional members like the World Bank and KDI, the consortium has developed the taxonomy of delivery challenges, or "non-technical" barriers for the implementation of development projects and programs. The texts of more than 5,000 project completion reports were analyzed to identify the most common types of implementation problems in development projects; interactions with project task team leaders followed to seek their feedback. By repeating this process, the consortium came up with a list of 52 common delivery challenges classified into 15 groups (see Attachment for Delivery Challenge Taxonomy).

The SoD concept is to allow development practitioners to use a common set of specific markers to facilitate the discussion of related strategies. The SoD case studies provide detailed narratives on a development challenge, the initial intervention, delivery challenges, and strategies to ultimately achieve targeted indicators for a development goal. Their aim is to devise practical lessons for practitioners working on national or international development projects and programs.

"The Global Delivery Initiative is a collaborative effort to create a collective and cumulative evidence base of delivery knowhow to inform

development practice and improve implementation. The GDI and its partners support practitioners on the ground to adapt to dynamic contexts and solve stubborn delivery challenges.”¹

1.2. About This Report

This report is a compilation of four country case studies from the SoD perspective; the case studies presented in this report’s main body report take advantage of the SoD methodology developed by the GDI. The purpose of this report is to illustrate how the SoD perspective, and more specifically GDI methodology, can be utilized to document impediments to development and successful interventions to overcome them. For this goal, KDI School’s faculty researchers taught an experimental flipped-learning course in the summer term of 2017 called “Government Reform: Science of Delivery Case Writing Practicum.” Fourteen students enrolled in the six-week course and took a step-by-step process to develop field study proposals. Considering the quality of the submitted proposals as well as regional representation, the faculty researchers selected four of the proposals and worked with their student authors. The four case studies submitted in the main body of this report are the fruit of this collaboration.

The case studies cover a diverse range of regions and sectors: improvement of health care delivery in Ghana, reduction and management of disaster risk in the Philippines, boosting customer service in the railways of India, and enhancing public security in Ecuador. Summarizing the analyses, <Table 1> presents the SoD taxonomy together with an illustration of what delivery challenges were identified in the four case studies, in addition to which of the areas intervention was implemented in to overcome delivery challenges.

Regardless of the differences in regional as well as sectoral contexts, a large swath of development impediments was remarkably found in the

¹ Quoted from <http://www.globaldeliveryinitiative.org/about-us>.

realm of implementation, and the delivery challenges identified in the studies were resolved by strengthening what is called collaborative accountability. In short, public policy problems arise due to failure of the market and citizenship. The country case studies suggest that the government or public sector can take on and overcome public policy challenges when it enlists the help of the people and corporations involved, so that they can better help themselves.

Table 1-1 | Delivery Challenge Taxonomy & Its Application to Compiled Case Studies

Clusters & categories		Countries & cases				
		Ghana	Philippines	India	Ecuador	
		E-claims system for health services	Community-based disaster relief & mgmt.	Social media-based train passenger service	Criminal justice & crime-prevention	
Stakeholder						
Stakeholder	Coordination & engagement	Roles & responsibilities	I	C,I	C, I	C,I
		Stakeholder engagement	C, I	C,I	I	C,I
		Awareness & communication strategy	C	C,I		C,I
		Bureaucratic structure	C, I	C,I		C,I
		Inter & intra-gov't relations	I	C,I	C	C,I
	Commitment & leadership	Change in leadership & administration			I	C,I
		Opposition or lack of consensus				C,I
		Change in priorities or lack of commitment			C, I	
	Human resources & organizational capacity	Skilled personnel	C	C	C, I	C,I
		Skilled transfer				
Staff turnover						
Organizational capacity		C	C	C, I	C,I	
Context						
Legislation & regulations	Lack of regulation & legislation		C		C,I	
	Unsupportive legal & regulatory process					
Governance & politics	Voice & accountability		C,I	C	C,I	
	Corruption & patronage					
	Political interference					
	Electoral cycles					
	Rule of law				C	
Conflict &	Crime & violence				C	

instability	Civil unrest & armed conflict				
	Post-conflict situation				
Society & culture	Gender				
	Language				
	Culture, religion & ethnicity				
Environment & geography	Geographic access		C		
	Ecosystem		C		
Basic infrastructure	Information & communication technology	C	C	I	C,I
	Energy & electricity		C		
	Transportation		C		
Disasters & emergency response	Natural disasters		C		
	Man-made disasters				
	Epidemics				
Biz environment	Private sector regulation				
	Weak private sector	I			
	Informal & illegal markets				
Macroeconomic environment	Trade barriers				
	Financial instability				
	Market deterioration				
	Forex volatility				
Project					
Project design	Overly ambitious objectives				
	Time allocation or task sequencing			C	
	Stakeholder selection				
	Beneficiary targeting			C	
Project finance	Procurement				
	Financing mechanism				
	Budgeting			I	
	Financial management & reporting				
	Auditing				
Project data & monitoring	Indicators			C, I	
	Data availability & baselines			I	
	Reporting & supervision			I	

Note. C: Challenge; I: Intervention

The remainder of this opening chapter of the report will proceed as follows. Section II is the digest of each case study. Section III presents an integrated analysis of the findings according to the SoD perspective and the concept of collaborative accountability. Section IV concludes the report by

suggesting the adoption of the GDI framework for operation of the Knowledge Sharing Program (KSP) conducted by KDI's Center for International Development (CID) as well as the think tank's capacity-building programs.

2. Case Studies: Ghana, Philippines, India and Ecuador

This chapter summarizes SoD case studies on Ghana, the Philippines, India, and Ecuador. Each case explores specific sectoral challenges for development: claims processing reform in Ghana (health care), disaster management in the Philippines, railway service improvement in India, and reform of crime prevention administration in Ecuador.

2.1. Electronic Claims System of Ghana's NHIS – Jaeun Shin

The electronic claims (e-claims) system is a widely commended strategy to enhance the efficiency of payment management ensuring quality service delivery from provider to patient. Implementation of such a system, however, is plagued with obstacles such as lack of infrastructure, namely internet connectivity, power supply, and personal computer equipment at service sites, as well as limited technical capacity of medical personnel and management of institutions.

2.1.1. Implementation of E-claims System in Ghana

[Development Challenge]

Ghana is the first country in sub-Saharan Africa to introduce universal coverage of health insurance, launching its National Health Insurance Scheme (NHIS) in 2002. A leading problem in NHIS program operations was claims management. The paper-based claims system was ineffective, with processing centers disintegrated, few errors in claims detected, and mismanagement of claim processing resulting in payment delays. This resulted in a resource deficiency among providers that jeopardized service delivery to people in need. Recognizing that failure

of the claim management process undermined the NHIS's overall function, the Ghanaian government and the NHIS took initiatives to implement the integrated e-claims system in 2013.

[Intervention]

The first step toward a more efficient system of claims management was the setup of the centralized claims processing center (CPC) in Accra in 2010. This center was a pilot site in which a consolidated claims management system was installed. Three more CPCs were opened in Kumasi, Cape Coast, and Tamale as 155 centers were merged into four zonal centers by 2012.

The institutional reform to integrate governance of fragmented claim processing, however, merely resolved inefficiency in claims processing on a partial basis. At CPCs, claims submission, review, and payment were administered with paper documents. Each CPC received and stored an enormous volume of paper claims from all health facilities in its region of jurisdiction. Clinical staff found it infeasible to effectively review claims, making fraudulent billing, duplication and/or markdown in reimbursement, and delayed claim payment commonplace.

With multiple CPCs in operation, the standardization of the process also proved critical given the varying levels of knowledge of health care administration and medicine by IT and medical professionals, in addition to the adoption of various data formats to claims processing. In 2012, the NHIS initiated the digitization of data entry and assessment of claims, a process that required the standardization of data format, data entry platform, and medical terminology and coding. The NHIS also published health data dictionaries as core manuals for e-claims personnel.

[Delivery Challenges and Strategies]

Stakeholder engagement Though the institutional structure of the claims process was reformed into a centralized network of regional

centers tasked with standardized procedures, service providers saw no value from this new claims management system. They initially resisted adoption of the e-claims system given the costs of equipment installation and training for technical adaptation. In April 2013, a pilot program for unifying a direct e-claims platform was launched by inviting 47 health care facilities. Such facilities received support from the NHIS and the World Bank Health Insurance Project (HIP) in the form of technical and human resources and financing to ensure the required operational capacity for e-claims submission. Health facilities soon benefited from the e-claims system through faster reimbursement and accreditation as well as the committed support of the nation's top health agencies, the Ministry of Health and the NHIS. *Skilled personnel* The NHIS and HIP provide human resource assistance under a "holding hands" approach to health care facilities and staff. A team of IT professionals makes occasional visits to facilities across the country to provide technical support and training for the e-claims system as well as the latter's promotion.

Information and communications technology The NHIS took an innovative approach toward supporting health care facilities with inadequate infrastructure in that providers arranged a credit facility for IT companies providing IT equipment. Under this unique arrangement, providers participated in the e-claims system and secured funding for buying IT equipment through effective and fast reimbursement.

In the pilot program, the NHIS's support and mandates spurred service providers to adopt the e-claims system, and this eventually led to the national introduction of the e-claims system in November 2013.

The process of e-claims implementation was instituted by the NHIS, which closely collaborated with the Ministry of Health, Ghana Health Service (GHS), and HIP. Such public support empowered the NHIS leadership and secured the e-claims system's sustainability, as effective claims processing ultimately benefited all citizens with quality care and service delivery readiness by providers.

The case study of Ghana's e-claims system illustrates how a country can achieve health care reform by tackling multifaceted challenges: institutional fragmentation, mismanaged procedural logistics, lack of IT infrastructure and skilled personnel, and limited engagement by major stakeholders.

2.1.2. E-government in Developing Countries: Uruguay, Zambia, Brazil, and China

In many developing economies, the adoption of information and communication technology (ICT) is a crucial strategy to raise government efficiency and improve access to essential public services. Yet policy goals and target outcomes, as well as implementation processes and strategies, widely vary per a country's context.

Common delivery challenges associated with implementing e-government services are lack of physical (e.g., internet connectivity and IT equipment) and human resource capacity (e.g., ICT skills of service providers and users) and stakeholders' limited awareness of the benefits of online government services.

The World Bank's Global Delivery Initiative (GDI) conducted case studies on the delivery of e-government services in three developing countries: Uruguay, Zambia, and Brazil. The three offer informative comparisons to the case of Ghana.

In Uruguay, the first step toward improving digital connectivity was the formation of the National Committee for Information Society for planning and the Agency for Electronic Government and Information Society (AGESIC) for implementation (Sabatino, 2017). AGESIC trains elementary school teachers, provides free laptop PCs to school-age children, and free home internet plans for low-income households. These efforts helped improve infrastructure readiness and digital literacy of the general public.

AGESIC operates small offices in urban areas called citizen service points (PACs), where in-person training and free wireless internet

service are provided for citizens to access online government services. Simple user-friendly websites and alternative phone lines allow the most digitally disadvantaged population to procure government services online such as vehicle registration, fee payment, approval of new businesses, and filing e-complaints to police.

The case study of Uruguay shares key success factors with Ghana's e-claims system. First, a centralized institution directed, managed, and coordinated all processes and stakeholders. Infrastructure was provided free of charge or heavily subsidized. And regional service centers, free access to online government services, and in-person training were provided to users and core personnel.

In Zambia, e-government service was implemented to ensure efficient and secure transmission of DNA test results for early diagnosis of HIV-infected infants. The secure and timely transfer of DNA samples and test results was threatened due to distance, unreliable transportation, and fragmented logistics across facilities and health workers.

Project Mwana, the government initiative implemented by the Zambian Ministry of Health, offers an institutional platform to coordinate financial and technical support from the U.N. Children's Fund's (UNICEF) Innovation Team, the Clinton Health Access Initiative, and the Zambia Prevention, Care and Treatment Partnership.

The hardware for the e-transfer of test results is a mobile phone-based SMS system. Free apps are developed to handle the collection of information, coordination, and communication among mothers, regional health facilities, and delivery of the national health care service. Training and visits by health care workers are provided by the Zambian Ministry of Health to secure the digital literacy of frontline service providers, resulting in the expansion of Project Mwana (Gallucio, 2017).

Similar to the case of Ghana, Zambia's adoption of e-service focused on health care. The scope of ICT's adoption in service delivery was narrowly defined as the transfer of information between the central

agency and regional providers through a simple system of mobile short message service (SMS). This highly available mobile tool allowed mothers to stay better informed of recommended treatments and encouraged use of services. The case study of Zambia shows that a mobile phone-based platform is cost efficient and helpful in the improvement of service quality and access, and also assists endpoint users with limited ICT capacity. M-Pesa, for example, is a proven e-platform for personal banking, fee collection (such as utilities and pension contributions), and cash transfers for low-income households.

In Brazil, an electronic invoice program in Rio de Janeiro called *Nota Carioca* is another example of an e-government service targeting the invoicing and collection of service tax through ICT. The program had been used by other municipalities in Brazil, and Rio decided to use the model to streamline its tax management. To raise awareness among and attract the participation of the business community, *Nota Carioca* offered cash rewards as incentives to customers who submit invoices digitally (Fowler, 2015).

China offers another case study featuring an e-claims system in a developing economy (Liang et al, 2004). The country's health care system is hampered by inefficient resource allocation, unreliable service delivery, and managerial ineptness in dealing with rapidly rising health care costs, partly due to a decentralized administrative framework.

The Chinese Ministry of Health has initiated major reform through the China Golden Health Medical Network Project, which has set up a satellite-transmitted national health care communications network. The crux of this project is the Golden Health Card, a smart card with an embedded chip to save a patient's information. Hospitals began utilizing an electronic data interchange (EDI) system to communicate with other providers, medical resource suppliers, insurers, and banks. This system, however, is not free from fiscal and human resource limitations. Legal and physical infrastructure to set up the EDI system is available only in large cities or industrialized regions. The decentralized governance of the health care system undermines the functional capacity of the central government to

expand the EDI system, whereas in Ghana, the plan for institutional reform, standardization of the process, and collaboration with internal and external stakeholders facilitated the adoption of the e-claims system in the African country's centralized system of national health insurance.

2.1.3. E-claims System in Korea

Korea drafted its e-claims system in 1979, when legal, institutional, and strategic planning to that end were initiated (Korea EximBank, 2016; Kim, 2010; Kim, 2006; Yoo, Kim & Choi, 2000; Park, 1995; Lee, 1998; Song & Lee, 2003). In 1989, the health insurance was expanded to cover virtually all citizens, leading to drastic growth of claims. All submitted claims were paper based, delivered by postal mail, and manually processed. Claims sent by regular mail took about 10 days to reach the designated processing office.

In 1994, a primitive e-claims system based on diskettes was adopted after a pilot program was conducted. The diskette-based system of claims processing was developed by the efforts of Korea's Health Insurance Review and Assessment (HIRA) Service, and the country achieved another milestone with the standardization of data coding. Adoption of this system, however, depended on the voluntary participation of health facilities, leading to a fundamental limitation in achieving national efficiency in claims management.

In December 2016, the EDI system underwent trial service at 100 hospitals and clinics in Seoul. Developed by Korea Telecom (KT), the system had been adopted earlier by private companies such as POSCO from the mid-1990s. KT offered to form a partnership with the National Health Insurance Corporation (NHIC) for the development of EDI system applications, expecting large revenue from network usage fees in return.

In 2000, the claims management function was transferred and centralized into HIRA upon the latter's spinoff from the Korean health insurance agency. HIRA engineered the EDI system's expansion and service upgrade such as 24-hour operation of the central monitoring

system, revision of the claim format for ease of use, and improvement of the data warehouse (DW) for storage and processing of the vast volume of e-claims data. In 2009, another technical upgrade was achieved as Korea went from the EDI system to a web-based one; this resulted in a large reduction of the network fees paid to KT by health care facilities.

In 2005, Korea's e-claim processing rate exceeded 99 percent. The claims process was also sped up from 40 days using the paper-based method to just 15 under the EDI standard. The NHIS utilized more transparent processes, accurate reviews, and lower processing costs to fiscally enable a reduction of claims. The EDI system also improved protection of patient information by encoding all personal data.

The success of the Korean e-claims system, however, did not come without delivery problems. Two key obstacles were standardization of the e-format and getting providers to adopt the new claims system. Providers had to bear all costs of the EDI system's adoption, including payment of the EDI service fee to KT, and their access to the EDI database was regulated. The NHIS also struggled to provide the 15-day reimbursement for EDI-submitted claims due to the massive inflow of e-claims. Training IT staff to run the EDI system and new review standards were also prerequisites for the e-claims system. The recent adoption of the web-based e-claims system was thanks to persistent strategic efforts to resolve the aforementioned delivery challenges.

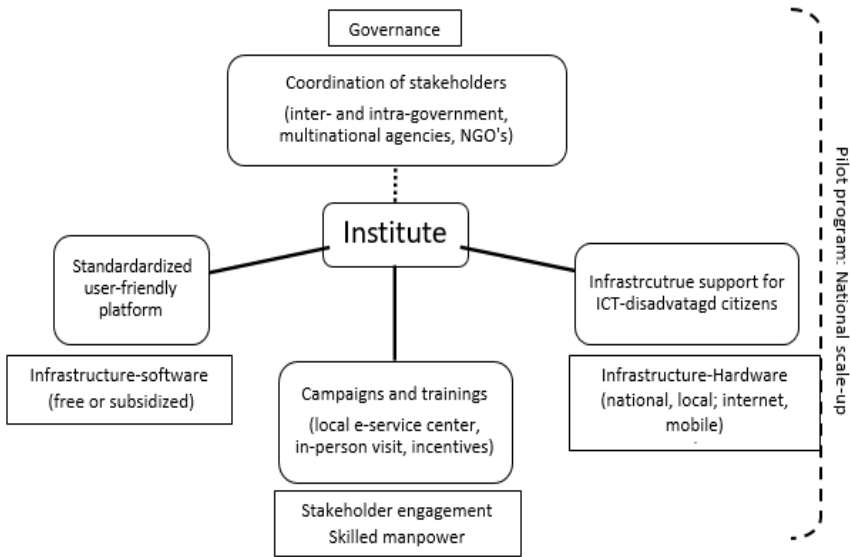
2.1.4. Lessons from Ghana's Science of Delivery Case Study

Many high-income countries such as the U.S., Singapore, and Canada have adopted the e-claims system but did so in the 1980s, when their GDPs and other socioeconomic indicators greatly surpassed those of developing countries like Ghana. Korea offers another precedent in which the e-claims system for health care was rather a sectoral extension of the preexisting and verified e-processing system in operation for government services and businesses.

Korea has numerous documents and reports that detail the implementation of e-government and/or e-claims. Most of the available documents, however, focus on a chronological description of processes, emphasize the legal, institutional, and political aspects, and describe the outcomes. Policy lessons are inclined to focus on the strengths of the Korean experience.

From the science of delivery (SoD) perspective, each country’s successes and failures are subject to context. Failure of the process should be examined through the window of delivery challenges. Thus Ghana’s experience in the e-claims system could provide practical lessons for countries at a similar development stage with parallel delivery challenges.

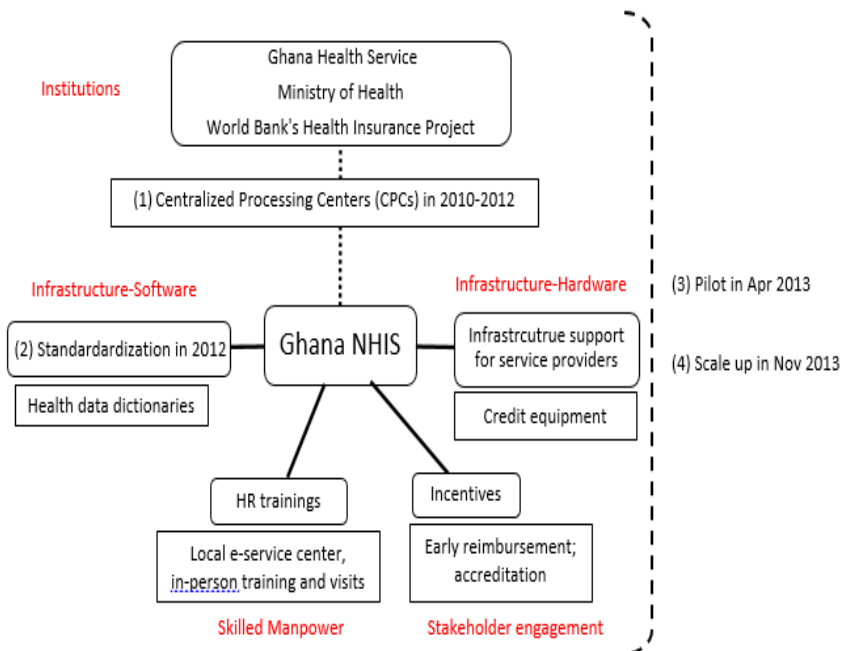
Figure 1-1 | Framework of E-Government System’s Implementation



[Figure 1-1] describes the framework of e-claims implementation drawn from the case study of Ghana, highlighting the major delivery challenges and strategies for each obstacle other countries could use as

reference. [Figure 1-2] specifically demonstrates the core element of the implementation of Ghana’s e-claims system. A central government agency assumed full responsibility for planning, funding, stakeholder engagement, support for hardware and software, and capacity building. Citizens and businesses under the influence of a newly adopted e-government system are often given incentives to participate. The expansion of a new system to the national level greatly benefits from a well-planned, monitored, and evaluated pilot program. The central government or agency in charge should procure financial and technical support from other public institutions and international organizations. Promotion of the e-government system to the intended beneficiaries, namely the general public, is essential for securing political feasibility to complete the implementation process and thus ensure success.

Figure 1-2 | Framework of Ghana’s Implementation of E-claim System



Offering universal health coverage can be a herculean task for many developing countries. Ghana's e-claims system shows that an effective claims process can provide a clue to get all stakeholders to take part in a national health insurance system: patients receive service, providers get paid, and the insurance provider enjoys strong public support and thus sound collection of premiums to secure the system's long-term financial feasibility. A top-down approach engineered by strong government commitment should be conjoined to community awareness and empowerment for policy sustainability and system diffusion. The success of the e-claims system and similar reforms will depend on whether the public and stakeholders fully comprehend its strategic importance.

Delivery challenges drawn from the Ghana case study are summarized below as a checklist for e-government service:

(Institutions)

- Whether institutional accountability is clearly defined and properly authorized to plan, lead, and manage the implementation process
- If financial and technical support is available from multinational agencies, international organizations, or other governmental and/or non-governmental initiatives

(Infrastructure and Skilled Personnel)

- Whether key stakeholders have adequate IT infrastructure
 - Power supply and internet connectivity: phone line, wireless, or mobile
 - Computers, mobile devices, or offline web portal
- If key stakeholders are properly trained to operate or use e-government system
 - Civil servants, business owners, or citizens
 - Regional service center, in-person visit, or partnership with private sector
- Whether e-government service is standardized, simple, and easy to use (software)

(Stakeholder engagement)

- Whether incentives are necessary to engage key stakeholders
 - Accreditation, prioritized process, approval, and payment
 - Cash rewards, fee waiver or discount, award of appreciation
- If benefit of e-government service is tangible enough to earn public support

2.2. Reduction and Management of Community-based Disaster Risks in the Philippines – Taejong Kim

In 2013, Typhoon Haiyan (called Yolanda in the Philippines) devastated much of the central Philippines, inflicting heavy casualties and property damage in its wake. The town of San Francisco in Cebu Province, however, miraculously survived the disaster without a single casualty thanks to close-knit coordination by the town government and communities. This enabled timely evacuation of residents in vulnerable areas to designated safety points. Such a positive outcome is never guaranteed even if disaster signals are shared in advance with residents in the areas to be affected, as fear of property loss could hinder evacuation efforts by public authorities without close coordination and mutual trust among community members.

Close coordination and building mutual trust at the community level are far from easy in any setting. This is especially true in the Philippines, where the administrative unit closest to a local community is quite large. Such a unit in the Philippines is the *barangay*; in San Francisco, a *barangay* encompasses about 5,000 residents. Similar conditions prevail in large swathes of the developing world.

The San Francisco government took on the challenge by investing in the *purok* system. One *purok* is a residential community with one *barangay* typically covering seven to ten *puroks*. From 2003, San Francisco organized *purok* leaderships and empowered them with smaller projects that delivered immediate and tangible outcomes for their residents. Unique for a region in the central Philippines, San Francisco was ready to implement directives from the

National Disaster Risk Reduction and Management Act featuring genuine coordination with residential communities.

This case study illustrates that engagement and empowerment of communities are essential for the delivery of services requiring close coordination with such communities, and that community organization is possible even if the capacity of a regional government is stretched.

2.3. Indian Railways' Civic Engagement Mechanism for Enhancing Customer Service and Responsiveness – Junesoo Lee

2.3.1. Social Media-based Customer Service in Indian Railways

[Developmental Challenge and Initial Intervention]

Indian Railways (IR) has shown how to achieve “collaborative accountability” between government and citizens. To deal with the diverse demands of its numerous passengers, IR sought to include the people in the management process. Using a social media channel (Twitter) as a form of communication allowed general passengers to report problems in service and thus contribute to the betterment of IR service. This insightful and proactive intervention, however, did not stop complications from arising. As the new service was unprecedented, many expected and unexpected problems arose in the process of implementation.

[Delivery Challenges and Adaptation]

Phase 1: Institutional implementation of proactive intervention

To begin with, IR had to deal with the enormous volume of tweets that greatly exceeded the company's internal response capacity. IR staff in charge of social media operations had neither the experience nor system to deal with the huge demand for external services. In the end, the company's support for its social media-based service was rapidly boosted and its organizational structure and process underwent institutionalization. Computer professionals joined the company's new

team-based operations and a new working process was designed and streamlined.

Phase 2: Expanded institutionalization of external services

Once IR completed its institutional efforts, new challenges arose. Not only did the number of passenger requests skyrocket, but the diversity of such requests was hard to trace and manage systematically. This prompted the company to expand its institutionalization of social media by adopting more seamless, decentralized, outsourced, and further standardized Twitter operations.

Phase 3: Smart institutionalization of internal coordination

The expansion of institutional features had one more internal problem to overcome: conflicting roles of IR staff. Both the diversity of passenger demands made via social media and the large number of IR staff in charge of social media operations resulted in an incredibly excessive load of assigning and closing tweets. The confusing, overlapping, and never-ending tasks overwhelmed IR staff. So the answer was a new tool for customer relations management (CRM) that helped categorize tweets by urgency and trace each tweet's start and end. This technological breakthrough not only raised the efficiency of work but also systematically evaluated service performance.

Summary of IR reform:

The IR case study vividly shows how public services can be planned and delivered through collaborative accountability between public organizations and the general public. The process of intervention and adaptive learning in this case study has four dimensions: IR's attempt to better serve passengers was processed (1) from a provider-driven perspective to a customer-driven one; (2) from top-down planning to that from bottom to top; (3) from external strategic challenges to internal operational ones; and (4) from a focus on implementation to one on evaluation.

2.3.2. Comparative Review and Implications for SoD

The policy domain of this case study is basically public transportation. Previous cases of public transportation in the Global Delivery Initiative mostly pertain to “hardware” of the design or construction of physical infrastructure for public transportation. The uniqueness of the IR case lies with two facts: (1) IR’s higher priority on the “software” of passenger services and (2) the resolution of the software problem through civic engagement.

This novel approach to public service offers new implications to the SoD framework. The core question for reconsideration is “who is responsible for public problems or services?” One possible answer might be government. Continued adoption of this kind of provider-oriented philosophy will result in government being overwhelmed by the ever-growing burden of public problems. When people say “government should solve public problems under a citizens-oriented approach,” government will face a double burden to be more responsive to the people. Considering the limited capacity of the government and public organizations, the global decline of trust in government could partly stem from the growing burden placed on government.

The IR case study implies that a collaboration-oriented approach needs more light. Responsibility for society needs to be shared by both government and citizens. The people might hold the original responsibility for resolving social problems because they are the ones causing most public problems. The reasons for growing public demand for government to resolve public problems are (1) failure of collective bargaining among citizens and (2) a mental tendency to pass responsibility to others (i.e., to government). The responsibility of citizens to take care of themselves needs to be returned to them. This can re-define the concept of government accountability. The IR case study shows how well citizens can help themselves. They identify and report railway problems themselves, and also prioritize passenger claims by categorizing their own. The people are taking care of themselves, while IR’s role is just to provide and operate a venue based on social

networking services (SNS) in which citizens participate, co-produce, and improve public services. In short, governments and public organizations might be accountable for helping fulfill civic accountability; this can be called “collaborative accountability.”

2.4. Enhancing Criminal Justice and Administration of Crime Prevention in Ecuador – Taejong Kim

Controlling violent crime is a major challenge in many parts of the developing world. Ecuador recently suffered from a worrisome hike in its violent crime rate, including that of homicide. Apart from the usual causes such as economic stagnation and weak government capacity for crime prevention, a conspicuous culprit was the transition of the country’s criminal justice system from the traditional accusatory model in Latin America, in which the judge doubles as a prosecutor, into a modern system with separate roles for the judge and the prosecutor. The hastily created prosecutors’ office in Ecuador, with little advanced training of new officials, added to the backlog of pending cases, hampering the criminal justice system and contributing to the worsening crime wave. Many countries in Latin America have undergone similar transitions, with many of them experiencing problems in the process of change.

Ecuador, however, dramatically ended its crime wave, with the homicide rate, for instance, falling below the pre-crisis level. Several innovative measures contributed to the country’s remarkable turnaround. A common theme in the measures was the improvement of citizen outcomes, in this case, fewer victims of violent crime. Ecuador judiciously expanded the use of technology in the form of geo-referencing of crime hotspots to better allocate crime prevention resources. Another element was the mobilization of the public in the emergency call service ECU911, as well as enhanced coordination among criminal justice and crime prevention agencies. Last but not least, streamlining procedures for handling pending criminal cases by prosecutors played a critical role in reducing the court backlog and thus raised the public perception of government efforts to fight crime.

3. Discussion: “Collaborative Accountability” in Diverse Contexts

The four cases analyzed in this paper share both similarities and differences. To begin with, the differences are quite evident because each case represents a specific country and a diverse policy domain. Furthermore, different combinations of development and delivery challenges are shown. When it comes to the shared trait among the cases, all of them imply that public policy problems are (and should be) resolved through collaborative accountability.


Who is responsible for public policy problems? Who is in charge of policy intervention? Who is accountable to whom? Answering these questions could require not only empirical analysis of the problem-solution logic model but also a fundamental rethinking of who is responsible for public policy problems. The major actors in society other than government are citizens and corporations who struggle with public problems and also provide solutions to them. Considering government’s core rationale of being expected to fill in the gaps of market and citizenship failure, the accountabilities of the three actors — government, citizens, and corporations — need to be revisited. In this vein, government’s accountability can be re-defined as the responsibility of the official entity in a country to help citizens and corporations fulfill their responsibilities.

There are many arguments over the difference between the concepts of accountability and responsibility. In most cases, accountability implies a legal and legitimate reciprocity between principal and agent, while responsibility refers to a more cultural and normative relationship between them. But clearly drawing a line between the two concepts is difficult, and they are often interchangeable. In short, accountability or responsibility assumes the existence of two parties in which one expects the other to do something good or refrain from doing something bad. In the context of collaborative accountability, not only government but also citizens and corporations are expected to benefit other actors in society and are held accountable for doing so.

Returning to the four cases in this paper, the government or public corporations of each country have been carrying out, up to a point, their responsibilities to citizens and corporations in doing what is expected of them. In Ghana, the government helped hospitals to better serve patients and also efficiently file claims by launching and innovating the E-claims system. In the Philippines, the government of a provincial town helped residents trust each another and thereby cooperate in the face of a natural disaster by empowering and fostering communities. In India, a public corporation (Indian Railways) helped citizens monitor, report, and eventually improve public railway services by employing a revolutionary social media-based communication system. In Ecuador, the government helped citizens better report, check, and prevent crimes by reforming the judicial system and operations.

Compared to societies plagued by constant adversity with no hope of resolution, actors in a sustainable society are more willing to jointly take on adversity as well as enjoy success in the community. They share both payoff and risks. In a nutshell, sustainable development is often a tangible result in a healthy society in which all actors embody shared responsibility or collaborative accountability.

Table 1-2 Collaborative Accountability in Four Cases

Country	How did governments help citizens or corporations fulfill their accountability	
	Civic or corporate accountability was helped by ...	 Gov't accountability
Ghana	To help hospitals better serve patients & file claims efficiently ...	Central gov't (Ghana Health Service & Ministry of Health) & World Bank ... <ul style="list-style-type: none"> • Centralized health data processing centers • Provided infrastructure in ... <ul style="list-style-type: none"> ○ Software: standardization of health data dictionaries ○ Hardware: infrastructure support for service providers • Reinforced HR training for e-service center • Incentivized clients with early reimbursement & accreditation.
Philippines	To help citizens trust each other & thereby coordinate in event of natural disaster ...	San Francisco gov't ... <ul style="list-style-type: none"> • Invested in building <i>purok</i> system, or basic community unit • Organized <i>purok</i> leaderships • Empowered <i>purok</i> with small projects to deliver public services • Fostered coordination among residents.
India	To help citizens monitor, report, & eventually improve public railway service ...	Indian Railways ... <ul style="list-style-type: none"> • Launched social media-based customer service • Kept strengthening HR hiring & operations • Decentralized & standardized Twitter operations • Categorized & assigned enormous number of tweets by urgency & other characteristics.
Ecuador	To help citizens better report, check & prevent crime ...	Ecuadorean gov't ... <ul style="list-style-type: none"> • Separated roles of judge & prosecutor • Adopted new technology to better locate crime hotspots • Improved emergency call service • Enhanced inter-agency coordination • Streamlined operating procedure for pending criminal cases

4. Conclusion: Science of Delivery, Collaborative Accountability, and Knowledge Sharing

If the premise of the SoD perspective is taken seriously enough that obstacles to implementation account for a significant portion of impediments to development, the perspective and GDI methodology point to directions of possible improvement in the way KDI conducts consulting programs, including the Knowledge Sharing Program (KSP). KSP policy dialogues mostly match sectoral experts from Korea with counterparts from partner countries. Korean sectoral experts might be highly knowledgeable on how specific programs and policies have been implemented in Korea, but environments can significantly differ abroad. In Korea, the public sector's capacity is relatively high and government authority over the private sector is strong, yet this is often not the case in KSP partner countries. Ignoring these contextual differences could lead to shallow engagements with development partners and lower the effectiveness of knowledge sharing projects.

Instead, the SoD perspective could play a supplementary role. One scenario is to augment the sectoral experts of a typical KSP team with "delivery experts," or research staff at the Center for International Development trained in GDI methodology and framework. The augmented team then might engage their partners at a deeper level, not just sharing the Korean experience but also jointly mapping the expected delivery challenges and exploring strategies to resolve them. The GDI taxonomy of delivery challenges can facilitate such exploration. In addition, the GDI database should help compile the most likely delivery challenges for a partner country and the selected sector for KSP engagement. Relevant GDI case studies and toolkits can then be retrieved to aid the potential for secondary intervention to overcome delivery challenges. A combination of the Korean sectoral experience and the SoD perspective could be developed as the key modality of KSP engagement. In addition, the concept of collaborative accountability could emerge as the overarching theme of strategies to deal with various delivery challenges.

The combination of the Korean sectoral experience and the SoD perspective can also serve as a useful organizing framework for upgrading KDI's capacity-building programs through the new pedagogy of blended learning. E-learning technologies promise a more cost-effective and wider delivery of knowledge. The efficiency of such technologies can be enhanced when combined with face-to-face interactions between learners and facilitators that often feature pedagogic models of project-based learning (PBL) in a blended learning modality. The delivery of the Korean sectoral experience could be done through e-learning modules, like massive open online courses (MOOCs). This delivery can then be followed up by PBL-style face-to-face interactions focused on exploration of the Korean contexts of implementation and the mapping of likely delivery challenges in the eventual adoption of the Korean experience in a partner country, as well as the review of candidate coping mechanisms. The face-to-face interaction phase of capacity building can take advantage of the GDI database and the initiative's assembled toolkit.

Annexes

Annex A. Taxonomy of Delivery Challenges

Delivery Challenge Taxonomy		
Cluster: Stakeholders		
Categories	Subcategories	Definition
Coordination & Engagement Delivery challenges stemming from difficulty in coordination and engagement among stakeholders due to issues of administrative/bureaucratic structure, unclear definition of roles, or inadequate engagement and communication strategies.	Roles & Responsibilities	Challenges that emerge when roles and responsibilities of different stakeholders are not clearly defined.
	Stakeholder Engagement	Challenges stemming from failure to adequately and actively engage beneficiaries or relevant stakeholders.
	Awareness & Communication Strategy	Challenges stemming from inability to raise awareness or unwillingness/inability to share relevant information with beneficiaries and/or the general public.
	Bureaucratic Structure	Administrative barriers or bureaucratic structures that impede and/or slow down coordination or engagements.
	Inter & Intra-governmental Relations	Challenges caused by the difficulty of coordinating among different levels and structures of government with differing priorities and/or mismatches of resources, responsibilities, and/or expectations.
Commitment & Leadership Delivery challenges stemming from a change in leadership, shifts in priorities, or the absence of shared commitment and consensus among stakeholders.	Change in Leadership & Administration	Challenges caused by leadership change in the government or relevant stakeholders
	Opposition or Lack of Consensus	Inability to find a solution that is acceptable to all major stakeholders, or opposition from stakeholder groups or individuals to a proposed intervention
	Change in Priorities or Lack of Commitment	Issues caused by sudden changes in organizational priorities or the degree of commitment to a particular intervention.
Human Resources & Organizational Capacity Delivery challenges faced because of constraints caused by lack of skilled human resources, difficulties in acquiring necessary skills, or limited organizational capacity.	Skilled Manpower	Challenges caused by lack of appropriately skilled project staff.
	Skill Transfer	Challenges caused by difficulty of imparting or acquiring new skills needed.
	Staff Turnover	Challenges caused by short tenure of staff on projects.
	Organizational Capacity	Challenges caused by inability of an organization to execute interventions due to its overall institutional arrangements.

Cluster: Context		
Categories	Subcategories	Definition
Legislation & Regulations Delivery challenges stemming from an unsupportive legal environment caused by lack of appropriate legal/regulatory framework, inordinate delays in promulgating laws, or complicated and time-consuming regulatory processes.	Lack of Regulation & Legislation	Challenges stemming from lack of or inadequate laws, regulations, or an appropriate legal framework.
	Unsupportive Legal & Regulatory Process	Challenges that result from excessive and complicated legal or regulatory processes.
Governance & Politics Delivery challenges faced because of elections, opaque governance environment characterized by poor accountability, weak rule-of-law, political manipulation of projects, or corruption.	Voice & Accountability	Challenges caused by the inability of citizens to actively express their opinions and/or insufficient mechanisms to ensure transparency and hold service providers accountable.
	Corruption & Patronage	Challenges stemming from the abuse of public power for private gain and/or favoritism toward patrons/clients/associates.
	Political Interference	Challenges caused by steering decisions or projects for political purposes.
	Electoral Cycles	Challenges caused by elections and electoral processes.
	Rule of Law	Challenges caused by stakeholders not abiding by the rules and/or issues with contract or regulation enforcement, including judiciary problems.
Conflict & Instability Delivery challenges faced because of disruptions stemming from a conflict/post-conflict situation, insecurity, or civil unrest.	Crime & Violence	Challenges stemming from criminal violence and insecurity.
	Civil Unrest & Armed Conflict	Challenges caused by protests, contentious mobilization, disputes, or active conflict within a country.
	Post-Conflict Situation	Challenges stemming from instability after armed conflict.
Social & Cultural Delivery challenges stemming from language barriers, social or cultural norms and practices, including gender and religion.	Gender	Challenges related to gender issues, discrimination, or disagreement over appropriate gender roles.
	Language	Difficulties caused by language barriers with partners or beneficiaries, or issues with linguistic discrimination.
	Culture, Religion & Ethnicity	Challenges caused by prevailing group practices or accepted social norms.

Environment & Geography	Geographic Access	Challenges stemming from problems accessing populations due to geographical barriers and remoteness.
Delivery challenges faced because of environmental characteristics, or difficulty accessing areas or populations.	Ecosystem	Challenges specific to the ecological makeup of an area.
Basic Infrastructure	Information & Communication Technology	Challenges stemming from deficiencies or mismatches in ICT.
Delivery challenges caused by constraints on power infrastructure, or insufficient communications or transportation systems.	Energy & Electricity	Challenges caused by constraints on implementation because of lack of energy and electricity supply.
	Transportation	Challenges stemming from under-developed transportation systems and logistical networks.
Disasters & Emergency Response	Natural Disasters	Challenges stemming from natural disasters.
Delivery challenges caused by natural/man-made disasters or other unexpected emergency situations.	Man-made Disasters	Challenges stemming from man-made disasters.
	Epidemics	Challenges stemming from disruptions caused by epidemics.
Business Environment	Private Sector Regulation	Challenges caused by the absence of regulations, or restrictive regulations, in the private sector.
Delivery challenges caused by a weak private sector, or weak sector regulations.	Weak Private Sector	Challenges stemming from the insufficient volume and/or lack of service delivery capacity of private sector entities, or the unestablished situation of the overall private sector.
	Informal & Illegal Markets	Challenges caused by distortions of high informality and shadow/parallel markets.
Macroeconomic Environment	Trade Barriers	Challenges caused by international or domestic restrictions on cross-border exchange of goods or services.
Delivery challenges caused by instability, volatility, or interruptions in trade, market conditions, or financial systems.	Financial Instability	Challenges stemming from disruptions in the financial system.
	Market Deterioration	Challenges stemming from the shrinking of market size, or the price anomalies/distortions caused by systematic market failures.
	Forex Volatility	Challenges caused by sudden currency devaluation/depreciation or restrictions relating to transfer of forex

Cluster: Project		
Categories	Subcategories	Definition
Project Design Delivery challenges stemming from flaws in project design, including overly complicated design, overambitious objectives, inappropriate time allocation, or issues in identifying and selecting/targeting stakeholders and beneficiaries.	Overambitious Objectives	Challenges caused by setting targets that are unrealistically ambitious, or making the project design overly complex.
	Time Allocation or Task Sequencing	Challenges related to insufficient/excessive duration of a component, or inappropriate timing and sequence of task
	Stakeholder Selection	Challenges caused by problems identifying/selecting appropriate stakeholders to engage.
	Beneficiary Targeting	Challenges with ensuring that the appropriate beneficiary group is targeted.
Project Finance Delivery challenges related to procurement, or fiduciary arrangements such as planning and budgeting, financing mechanisms, financial reporting, and auditing.	Procurement	Challenges caused by issues with procurement management systems, including poor contract management and delays.
	Financing Mechanism	Challenges related to the choice of financing mechanism or instrument.
	Budgeting	Challenges related to insufficient/inappropriate budget allocation, or caused by complex budget processes and management.
	Financial Management & Reporting	Challenges related to disbursement, financial control, and financial reporting.
	Auditing	Challenges caused by weak auditing processes, or excessive auditing procedures.
Project Data & Monitoring Delivery challenges caused by ineffective monitoring and evaluation because of poor data collection and management, lack of or inappropriate indicators, or inadequate project supervision.	Indicators	Challenges caused by lack of realistic indicators, or duplicating/overlapping indicators, or poorly designed indicators that are misaligned with project objectives.
	Data Availability & Baselines	Challenges that stem from a lack of current or accurate data, as well as inability to produce baselines.
	Reporting & Supervision	Challenges caused by obstacles in capturing relevant information and reporting it in a timely fashion.
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CHAPTER 2

How Ghana's National Health Insurance Scheme (NHIS) Used the Electronic Claims Management System to Streamline and Boost Efficiency in Claims Management

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Executive Summary

In 2010, Ghana's National Health Insurance Scheme (NHIS) started the centralization of claims management across the country's 145 districts through the establishment of a claims processing center (CPC) in Accra; this was a step toward simpler claims submission and processing. Prior to this period, the NHIS had used a complicated and labor-intensive claims management process based on paper documents. This process faced a host of logistical challenges and transportation risks and was not cost effective. Widespread abuse of this system included cheating, over-invoicing, fraud, and unnecessary prescriptions

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leading to financial losses for the NHIS. Such abuses of and errors in the system often caused delays in claims processing and payment. This often resulted in a stalemate between the NHIS and service providers and affected the effectiveness and efficiency of delivery of quality health care to subscribers.

To tackle these logistical challenges in paper-based claims management, boost efficiency in claims processing, and ensure the transparency of service providers, the NHIS began reform efforts to centralize its claims management system by setting up the CPC in Accra. Initially, this center handled claims at regional and teaching hospitals in the Greater Accra region until 2012, when the leadership expanded the CPC concept to all zones through the opening of CPCs in Kumasi, Cape Coast, and Tamale. While the CPC in Accra handled claims from the Greater Accra, Eastern and Volta regions of Ghana, the Tamale CPC vetted and processed claims from service providers in the Northern, Upper East, and Upper West regions. The Cape Coast CPC did the same for claims from all service providers in the Central and Western regions, and the Kumasi CPC in the Ashanti and Brong-Ahafo regions. These CPCs, however, could not overcome the problems of claims management at Ghana's NHIS, and what followed in their wake were challenges in the transcription of claims forms into digital format to enable data entry and analysis. Other problems occurred in standardization as service providers had different formats for the same data set. This led the NHIS to standardize health data by creating health data dictionaries to ease data entry, coding, and analysis. Though this initiative did inject efficiency in the claims management process to a degree, problems in the availability of IT equipment and keyboard skills of staff proved to stifle effective implementation. Moreover, trends identified in claims reports led the NHIS to ramp up clinical audits in 2012 to reduce leaks to contain costs. To boost the efficiency of claims review and management, however, the electronic claims management system (e-claims system) saw pilot operations in April 2013 and national adoption in November 2013.

Despite the delivery problems encountered in technical, human resource, and financial matters, the NHIS effectively managed these challenges through evidence-based strategies. This enabled the NHIS to effectively use the e-claims system as a cost containment measure; the system enforced prescription and dispensing levels and linked treatment and diagnosis procedures. It also removed errors in claims processing and payment and minimized abuses of the system by detecting fraud. The e-claims system also provided information to the NHIS on the quality of health care provided and facilitated early payment of medical claims. In addition, it allowed the NHIS to extract credible claims data for analysis and overall policy direction. This case study is thus about the challenges of the NHIS's claims management in Ghana, how the processes of the e-claims system from 2010-13 were developed, and how the system bolstered efficiency in claims review and reimbursement, leading to lower claims costs through the detection of errors, abuse, and fraud. These efforts were led by the NHIS with support from the Ministry of Health, Ghana Health Service (GHS), service providers, and the World Bank's Health Insurance Project (HIP). This study draws on the lessons learned and best practices adopted from both the successes and failures of the implementation process. By identifying and analyzing delivery of this case, this study aims to contribute to related literature among practitioners and offer strategies employable in by similar situations. In presenting how the service delivery of this case study transpired and details of its outcomes, the following questions will be explored:

- How were implementation capacity and the lead time for policy activities managed? How were human resource and logistical capacity managed?
- How was the importance of stakeholder coordination identified and discussed?
- How has the E-claims system impacted the quality of service delivered and sustainability of the NHIS?

1. Introduction

Ghana became the first country in sub-Saharan Africa to introduce universal coverage of health insurance for its citizens. Like many other lower- and middle-income developing countries, Ghana has undergone major changes over the years in health care financing since obtaining independence in 1957. A variety of financing models were adopted for health care, but the most crucial development in the sector was the introduction of the National Health Insurance Scheme (NHIS) through legislation (Act 650 of 2003, Amended Act 852 of 2012). The law aimed to replace “out-of-pocket fees” at the point of service delivery that prevailed over this period. The introduction of the NHIS was primarily to provide universal coverage, protection against financial risk, and wider access to quality health care to the Ghanaian people, especially the poor and vulnerable populations. By June 2009, health insurance coverage stood at 55 percent of the population from a combined 145 district mutual health insurance schemes (DMHS). The active subscriber base reached 10.5 million as of December 2014 and more than 29 million attendances were recorded at health care facilities thanks to the NHIS the same year. As one of the few attempts by a Sub-Saharan African country to implement universal health insurance, Ghana’s NHIS designed a provider payment system based on an itemized fee for service. In May 2008, however, diagnostic-related groupings and fees for services or medicine were introduced to replace itemized fee services following reform of the provider payment system. Through this new process, the NHIS devised a claims process that vetted all claims submitted by service providers “against provider eligibility, compliance with the Ghana diagnostic-related groups (G-DRGs), standard treatment guidelines and insurance drug list.” The claims were submitted by accredited public, private, and faith-based health care providers and facilities of the NHIS in the country’s ten administrative regions. Such providers included pharmacies, community diagnostic stations, health centers, and maternity homes. Others were clinics and district, regional, and teaching hospitals that served as national referral hospitals.

Evidence supports that the sustainability of a health insurance system largely depends on an effective and efficient claims management system that can detect errors, abuse, and fraud. The purchasing function of Ghana's NHIS, however, suffered from delays in service provider payments due to claims errors and delayed claims processing. According to the 2008 report on review of the health sector, health care facilities in Ghana were owed unpaid claims while the service providers reported delays of two to six months in settling their bills. Meanwhile, the Legislative Instrument (LI 1809) of Ghana stipulates a 60-day period for service providers to submit claims and for NHIS managers to reimburse claims within 28 days after submission. Though studies on the processing of health insurance claims are limited in developing countries, research done in Gujarat, India, by Ranson and Sinha et al, in which a direct fee for service was operated among the Self-Employed Women's Association, found claims rejection rates of 11 percent and 10–14 percent, respectively, with the former having a mean reimbursement rate of 76.5 percent. A 2002 survey conducted by the Health Insurance Association of America indicated that about 14 percent of reviewed claims from service providers were denied payment. In 2002 and 2006, similar methodologies adopted by the American Health Insurance Plan indicated a range of rejection rates for claims, with no record of rejected or denied claims in 2006. Instead, 14 percent of claims were “pending.” In Ghana, however, the rejection rate of claims submitted by service providers ranged from nine to 22 percent on a national scale as of 2008.

This process of claims management was characterized by widespread abuses including cheating, over-invoicing, fraud, and unnecessary prescriptions leading to financial losses for the NHIS, thereby threatening its sustainability. In 2009 alone, moral hazard resulted in NHIS losses ranging from five to ten percent of claims cost. NHIS initiatives like centralized claims processing, clinical audits and linking diagnoses to treatment have effectively lowered the incidence of fraud and abuse, but more needs to be done. The high and increasing cost of claims also placed the NHIS under severe financial pressure and prevented the authority from reimbursing claims for services rendered to subscribers by NHIS providers on time. This often resulted in stalemates

between NHIS providers and managers, and affected the delivery of quality, efficient, and effective health care services to NHIS subscribers.

In health insurance, most medical claims processes are outsourced to professional entities whose high skills in the field allow them to efficiently manage claims management faster. For example, Korea and Japan, which both have government-run health insurance, have independent institutions solely responsible for the review and reimbursement of health insurance claims.

Over the years, Ghana has undertaken several reforms to make the NHIS more efficient, attractive, and sustainable over the long term. To facilitate the process of claims payment and prevent fraud and abuse, the NHIS in 2012 started e-claims management to inject discipline in claims processing, management, and review as well as facilitate early payment of claims to service providers. This new system centralized claims reviews and the reimbursement process and allowed the detection and elimination of errors associated with claims payments to minimize abuse. It also checked for spurious claims and fraud and provided information on the quality of health care rendered. Considerable improvement was thus seen in the payment of claims submitted by service providers. Available statistics indicate that the overall adjustment rate of the electronic-based NHIS claims processing system was significantly higher than that of the paper-based manual system. The e-claims system eventually became efficient in claims review and reimbursement since it improved the early payment of medical claims, thereby incentivizing service providers to render continuous quality of service to subscribers. Through data mining, the system also provided an overview of the pattern of care, thus providing the required information for policy direction within the Ghanaian health sector.

1.1. Development Challenges

The development challenges associated with claims processing, management, and payment in Ghana's NHIS are delays in claims

processing due to the volume of paper claims, errors and fraud, duplication, and non-coherence of treatment and diagnosis.

After its inception, claims management within the NHIS was done manually, something that proved labor intensive and inefficient. All claims were vetted and evaluated on an individual basis and a staggering 1,200–4,800 staff weeks were need to review each month’s claims. Maintaining this schedule also required hundreds of employees.

Table 2-1 | Labor Simulation for Processing One Month of NHIS Claims

	<i>Minutes spent on each claim</i>	<i>No. of staff weeks needed to process each month's claims</i>	<i>No. of staff Weeks needed to process each month's claims</i>
Scenario 1: One staff member vets 100 claims per day	4.8	4,800	1,200
Scenario 2: One staff member vets 200 claims per day	2.4	2,400	600
Scenario 3: One staff member vets 400 claims per day	1.2	1,200	300

Source: Wang et al, 2017

This management of the paper claims interface resulted in delayed claims vetting, processing, and payment, often resulting in late claims reimbursement to service providers. In 2012 alone, the NHIS was managing a massive 25 million paper claims. In 2010, the health care entity was receiving and processing manual claims from 4,004 health care providers all over Ghana. The huge volume of paper claims (as shown in figures 1, 2 and 3) often resulted in delayed submission, processing, and payment of claims. Most submitted claims suffered from duplicate submission, lack of complete information, or other data needed to justify the claims, invalid codes, or coverage issues that included no coverage based on the date of service provided, non-covered and/or non-networked benefit or service, coordination of

benefits, or coverage determination. Abuse was thus common as it was extremely difficult to detect fraud and the transparency of claims status.

Figure 2-1 | Manual Management of Claims at Service Provider Level



Source: Perry Nelson (NHIS), Presentation on Technology for Universal Health Coverage (IT4UHC, 2013)

No documented evidence exists on the rejection rates of health insurance claims submitted by service providers in Ghana on a national scale. The Tamale Teaching Hospital, however, recorded a range of 10-25 percent of rejected claims in 2009. Moreover, challenges and questions arose related to claims administration and management. Specific technical problems at the provider level resulted in the rejection of unverifiable claims mainly due to poor filing systems. This resulted in missing folders of treated clients. In addition, the filling out of claims forms was often incomplete, especially lacking critical information like the claim number, procedure done, and ICD 10, G-DRGs. Other challenges appeared in the verification of compliance with standard treatment guidelines for billing staff who generally lacked a medical background. One such instance was the “transcription of a doctor’s diagnosis of enteritis as enteric fever on claims forms by certain billing officers without the requisite medical background.”²

² Author interview (2017)

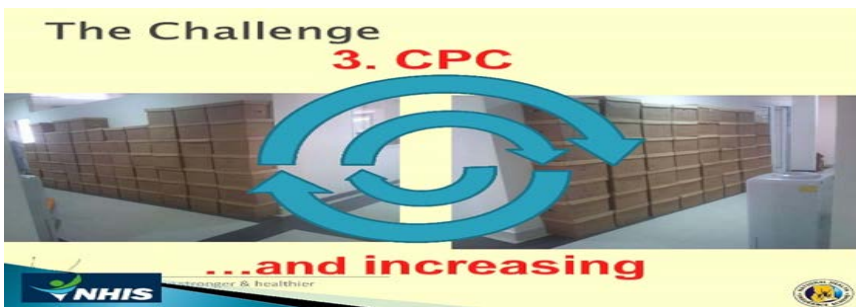
|Figure 2-2| Manual Management of Claims at NHIS Level
(NHIS District Offices)



Source: Perry Nelson (NHIS), Presentation on Technology for Universal Health Coverage (IT4UHC, 2013)

Moreover, the working environment was incredibly stressful due to the mountain of paperwork. Most claims management offices were overcrowded and poor or lack of information flow occurred between the NHIS and service providers, sometimes leading to conflicts.

|Figure 2-3| Manual Management of Claims at Claim Processing Center in Accra



Source: Perry Nelson (NHIS), Presentation on Technology for Universal Health Coverage (IT4UHC, 2013)

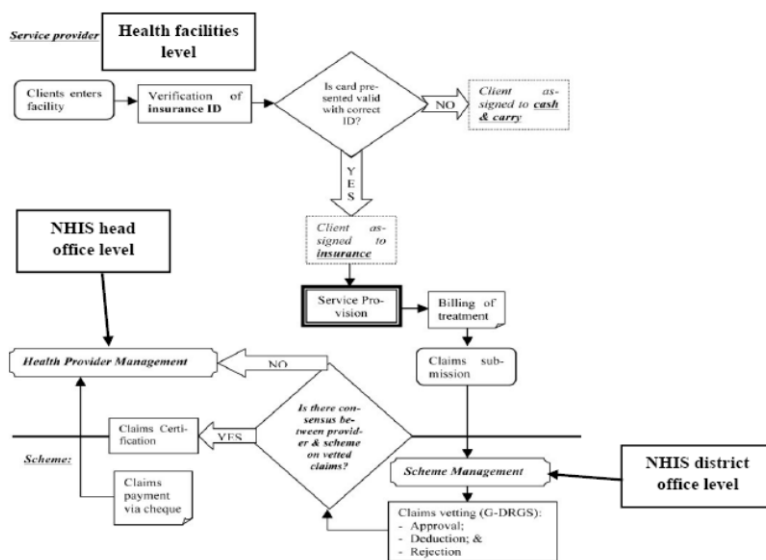
Claims adjustment, or the ratio of the cost of erroneous claims to that of total claims, was also a major challenge under the system of manual claims processing. Claim adjustment saw no or limited transparency. The lack of clinical staff across administrative districts nationwide to review the huge volume of paper claims made it incredibly difficult for NHIS providers (e.g., medical facilities, clinics,

hospitals, pharmacies, and laboratories) to justify claims adjustment. “At the service provider level, inadequate knowledge and competence of claims personnel often resulted in errors and abuse, such as poor or incomplete documentation of claims forms, duplication of claims, wrong applications for tariffs, and overbilling,”³ said the deputy claims manager at the NHIS. Compounding the situation was that both the service providers and the NHIS spent huge sums of money on generating, transporting, and storing claims generated by the paper-based claims system. Moreover, the laborious and lengthy process of paper claims management led to “corruption and collusion among and between service providers and staff of NHIS.”¹³ Between 2012 and 2014, “the NHIS had recouped 18 million Ghanaian cedis (US\$7.4 million) charged through fraudulent claims by service providers.”

In taking on these logistical challenges associated with manual claim processing such as delays in claims submission, processing, and payment, difficulty in detection of errors and abuse, and lack of transparency in claims management, the NHIS in 2010 adopted innovative strategies to raise efficiency and reduce the cost of claims management. Such intervention was mainly intended to help provide insight into the NHIS’s claims management system. The first step in this direction was the establishment and consolidation of claims processing by opening a claims processing center (CPC) in Accra for handling the massive volume of paper claims as a centralized location to improve efficiency.

³ Author interview (2017)

Figure 2-4 Flowchart on NHIS Claims Process (Manual)



Source: Adapted from Sodzi-Tetty et al (2012)

1.2. Delivery Challenges

The NHIS faced technical, human resource, and financial delivery challenges in e-claims implementation. The main technical challenges were the inefficient use of computer software for claims processing due to the inherent delays in executing commands and the limited ability to verify written diagnoses due to the lack of a medical background by claims officials. Most facilities relied on temporary workers, especially National Service Secretariat (NSS) personnel, to manage NHIS claims. Such staff lacked the medical background to properly vet and enter the right diagnoses and treatments. The lack of information technology (IT) equipment like computers, printers, and internet servers and infrastructure at health care provider sites also compounded the problem. Most accredited health care facilities either lacked the IT equipment needed to implement the e-claims system or their staff managing the

claims process were lacking in the IT skills necessary to effectively manage the new system of claims management.

Low internet connectivity across the country was a far bigger worry. According to the National Communication Authority, internet penetration in Ghana fell below 15 percent in 2012, making difficult the implementation of a national IT deployment system like that of e-claims. As Heeks (2003) noted, most government IT projects have a high failure rate around the world, and the NHIS needed a system that was both acceptable and effective even in areas with no web connectivity. “Confronted with this challenge, we resorted to design an offline claims generation with validation to cater to the needs of several facilities dotted around areas where internet access was a problem.”⁴ Several other facilities were located in areas that lacked power (electricity) assurance. Therefore, the NHIS had accepted a limited volume of paper claims from these facilities, which were also working on installing solar energy to utilize the e-claims system.

Second, human resource challenges in the delivery process were reflected in unmet needs in staff training and severe labor shortages complicated by the rapid annual turnover of NSS personnel. To resolve the training issue, the NHIS offered several courses at two levels. Through the authority’s technical and operational staff, technical training and guidance on policy were offered on things like what services could be rendered where, what services were available, and how to generate claims. “The challenge has always been high staff turnover at the service provider level. You offer thorough training to a staff member but through redundancy, he or she is gone, gone with no knowledge transfer at the facility to allow continuity or efficient generation of claims.”⁵ In this regard, the NHIS more often than not had to organize mop-up training and repeatedly emphasized to providers their sole responsibility for the claims they generate. Unfortunately,

⁴ Author interview (2017)

⁵ Author interview (2017)

many managers at such service providers failed to see the importance of investing in claims personnel to help them generate claims. But through continuous and consistent emphasis of the importance of generating the right claims, most managers eventually realized the need to improve their claims-generating capacity. “Because the claims actually come in as invoices. the invoices, when gotten wrong, cost us money. So a lot of us were actually investing in personnel to process our claims.”⁶ The NHIS also had courses, training sessions and packages that kept their staff abreast of the latest issues over the implementation process period and beyond.

The third challenge was financial, especially at the service provider level. Since the NHIS was in debt to most service providers because of the delays in claims submissions, processing, and payment, most providers lacked the financial muscle to finance e-claims installation at their facilities. Moreover, most had to hire temporary staff to manage their claims since they could not afford permanent employees.

2. Tracing the Implementation Process

To streamline and raise the efficiency of Ghana’s claims management, the NHIS in 2010 initiated several processes to smoothen claims generation, processing, and payment. Learning from the experience of each process, the organization modified and adopted new strategies to meet the requirements of the claims management process. This ultimately yielded the development and deployment of a national system of e-claims management to resolve logistical challenges in paper-based claims management, boost efficiency in claims processing, offer transparency to providers, and give the NHIS credible claims data for analysis.

⁶ Author interview (2017)

2.1. Setup of Claims Processing Center (Accra, 2010)

After its inception, the NHIS conducted paper-based claims processing and management at its district mutual insurance scheme (DMIS) offices. As part of a management efficiency drive designed to unify the system, the NHIS moved away from DMIS processing of claims because of the need for standardization of the process. And because claims processing requires high-level skills that sometimes require the intervention of medical personnel like doctors, the NHIS had an insufficient number of medical practitioners to station at the 145 districts. “To have over 145 DMIS offices process insurance claims with the same caliber of staff was virtually impossible, and we needed to maintain standardization in our policy enforcement. Hence the need to consolidate claims processing arose.”⁷ The opening of Ghana’s first claims processing center (CPC) in Accra in 2010 was to see how efficient it was to consolidate claims processing resources. This CPC started processing all claims from the Greater Accra region, regional and teaching hospitals, and the Volta area. The NHIS said, “The results yielded close to 15 percent of claims adjustment due to efficiency, and with that, the concept’s coverage was expanded to several parts of the country.”⁸

2.2 Expansion of CPCs in Other Zones (2012)

Based on the returns the central CPC in Accra was generating, the NHIS in 2012 opened more CPCs to cover the Northern region, the middle Brong-Ahafo belt, and the Western and Central areas. Other CPCs were opened in Tamale, Kumasi, and Cape Coast as shown in the map (as in Figure 5). The intent was to have the centers take over and manage claims processing. By jurisdiction, the CPC in Accra handled the Eastern, Volta, and Greater Accra regions, while the one in Cape Coast covered the Western and Central areas. The Tamale CPC was

⁷ Author interview (2017)

⁸ Author interview (2017)

assigned the Upper East, Upper West, and Northern regions, and the one in Kumasi covered Ashanti and Brong-Ahafo.

Figure 2-5 | Map of Ghana with 4 CPCs



The CPCs required uniform applications or software. To effectively manage them, the NHIS began the e-claims system with the digitization of claims. The paper-based claims submitted by DMIS offices were

converted and processed into a uniform application. After piloting this concept, the NHIS realized that this laborious undertaking required an enormous volume of transcribing because the organization lacked the object recognition (OCR) technology to transcribe scanned images, coupled with the problems of scribbling by medical personnel of medical diagnoses and prescriptions. The need was evident for a strategy for acquiring or getting direct e-claims from service providers. But getting direct claims from the providers required massive resources and training. As indicated earlier, the Ghanaian health sector lacked sufficient provisions for ICT skills. So the NHIS had several facilities that lack even one IT professional. Overcoming this major bottleneck would prove instrumental in the NHIS's success in acquiring direct claims from certain service providers.

The NHIS itself, however, took on the task of advocating for the health sector to woo IT professionals under the agenda of technological advancement. The World Bank recognized this vision, and buying into the concept of e-claims, supported this agenda with funding through the bank's Health Insurance Project to form the basis for e-claims processing. Achieving that, however, required standardization of a specific data set because several hospital information systems used their own data formats.

2.3. Standardization

(Health Data Dictionary and Medical Terminology, 2012)

With several service providers using their own hospital information systems with various data set formats, the NHIS in 2012 standardized health data to provide a uniform platform for data entry, analysis, and interpretation. "For a typical example like date of birth, a system can decide to maintain or capture a date of birth as date/month/year (DDMMYYYY); another system might decide to capture the same date of birth as month/day/year (MMDDYYYY)." ⁹ This illustrated the need for

⁹ Author interview (2017)

standardization and conformity to standardize data interpretation across the board for easy interchangeability of various data sets. So to achieve an efficient claims management project, the NHIS presented standardization and a health data dictionary as its major accomplishments. The dictionary indicated that “when we talk about this data set, this is what we are looking at and these are the valid elements you could utilize for the set and so forth.”¹⁰ Various forms of data. Data dictionaries in various forms were developed for integrated claims deployment including one for Ghana diagnostic-related groups (GDRGs). After implementing this, the NHIS set standards for the transition to e-claims called XML. These standards designated a required format for data submission regardless of solution or hospital information system used to submit an e-claim. So XML standards were applied to all hospitals and facilities with hospital information systems.

For facilities without hospital information systems, the NHIS created an online interface called the “work front end.” This allowed service providers to log on and capture their claims directly on the NHIS e-claims platforms. But because such facilities mostly lacked internet access, the NHIS developed an in-house application that offered an offline solution in claims processing to bridge the gap for facilities lacking in internet connectivity. “Internet connectivity challenges meant that work came to a standstill, and also that a service provider needed active connection to the NHIS interface before it could effectively capture information. Meanwhile, these facilities had insufficient resources to invest in a hospital information system. So the NHIS’s offline claims solution was a stop-gap approach.”¹¹

2.4. Stepping Up Clinical Audits (2012)

After the centralization of claims processing and the setup of standardized data, the NHIS saw considerable improvement in claims processing. As indicated in a case writer interview, “The institution of

¹⁰ Author interview (2017)

¹¹ Author interview (2017)

the clinical audit function for regular clinical audits within the NHIS empowered facilities to review claims submitted for payment, and this resulted in savings of GHC 22.3 million (US\$5 million) as of December 2012, or a cost reduction of 10.8 percent. In 2013, the cost savings reached GHC 1.9 million (US\$450,000), or a cost reduction of 3.2 percent.”¹² The NHIS, however, faced the challenge of unusual trends or patterns in the claims submitted given the differences in diagnoses; for instance, various treatments and clients were treated for the same illness at various facilities over the same period. This prompted the NHIS to adopt a standardized system for clinical auditing that ensured the proper staffing and resources at facilities to render the required services to subscribers. The NHIS then rolled out clinical auditing based on validating or processing claims. “We come to see a trend and it then triggers validation of what is indeed happening, and based on claims processing, we can pick out patterns that require us to validate.”¹³ This process is called quality control, and through this, the NHIS organized verification exercises, with clinical auditing itself sampling facilities based on what is happening and on the plan of the quality assurance directorate. “For verification exercises, however, they are triggered by the kind of claims we are getting. Be it that the claim size is a skeleton, certain practices need to be investigated. Among the claims, each verification exercise is triggered if submitted claims are detected to have certain patterns failing to meet the NHIS standards. The resulting assessment report is to be submitted to the Compliance Unit of the NHIS, which is designated to ensure that facilities comply with NHIS standards for claims submission.”¹⁴

2.5. E-claims Pilot Program (April 2013)

Despite seeing success in the consolidation of claims processing and clinical auditing to sanitize claims management, the NHIS was still

¹² Author interview (2017)

¹³ Author interview (2017)

¹⁴ Author interview (2017)

unable to process claims timely and effectively. To promote a claims management system to improve claims processing, validation, and payment as well as provide available data for the policy planning process for the health sector, a pilot program for e-claims processing was instituted in April 2013 at 47 health care facilities with support from the Health Insurance Project of the World Bank. A number of criteria were adopted in selecting the pilot facilities, the most critical being the need to have qualified human resources to manage the e-claims system as well as the IT works required to manage the system. The executive management of these facilities also needed to accept the e-claims system to qualify for the pilot program. This operation served as the introduction of direct e-claims submission to service providers and offered a robust uniform technology platform for claims management done effectively, efficiently, and economically. Under this process, the NHIS enhanced its business process management, developed the software for implementing a national claims register, and set up a claims verification unit.

These initial 47 facilities generated 880,000 claims within three months after the pilot program commenced. Meanwhile, the NHIS commissioned a team of IT trainers and data entry personnel to travel to and “hold hands”¹⁵ at facilities nationwide to prepare for national implementation.

2.6. National Launch of E-claims System (4Q of 2013)

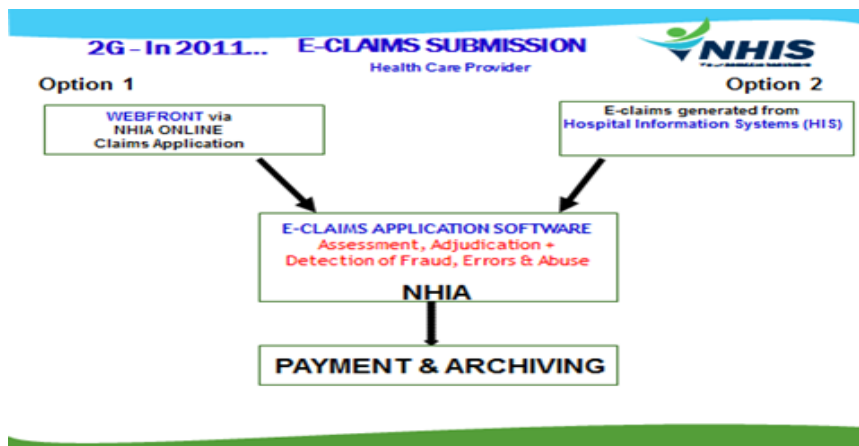
Based on the experience of the initial rollout over the pilot period, the NHIS finally instituted the e-claims system nationwide in the fourth quarter of 2013. Health care facilities with preexisting IT infrastructure saw easy setup, while those lacking such equipment received an arranged credit facility with an IT company, which granted IT equipment the facilities needed for e-claims implementation. The credit system was intended to have the facilities return the investment made in

¹⁵ Author interview (2017)

them. “The facility bridged the funding gap due to the delay in claims reimbursement that prevented most service providers from growing and investing in their operations. This allowed them to invest in technology and general operations of their facilities.”¹⁶

This new e-claims system streamlined the claims submission, vetting, and processing systems and provided the facilities with two options. A facility with a standardized hospital information system could generate and directly submit claims via the installed e-claims software. The other option was conducting claims generation and submission through a web front. This system ensured substantial cost reduction for both service providers and the NHIS as well as long-term sustainability for the organization.

Figure 2-6 | Flowchart on NHIS E-claims Process



Source: NHIS Ghana.

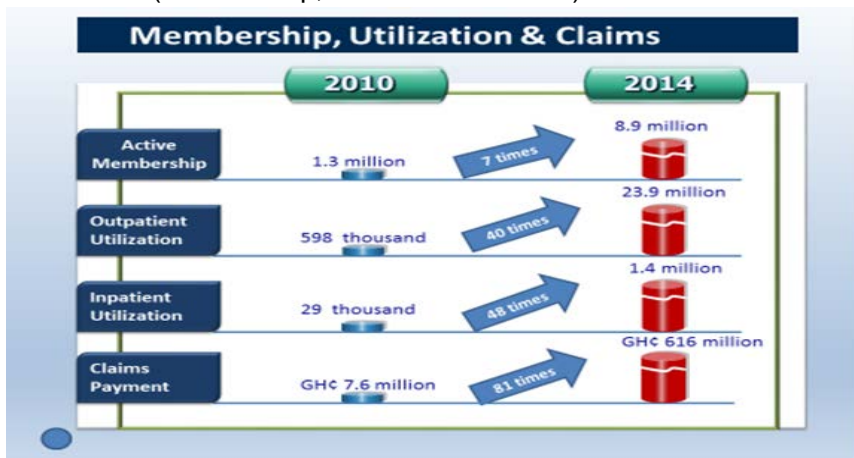
In addition to the considerable improvement made in claims processing, data in the health care sector are now readily available to allow analysis by the NHIS and the Ghana Health Service (GHS) and training of staff. “Electronic claims are advantageous in that they offer

¹⁶ Author interview (2017)

us the ability and offer this data for research as well, in contrast to paper-based claims that require data entry personnel to capture the data to allow us to make meaningful forecasting output.”¹⁷

The success of the e-claims system was thanks to the effective communication strategy adopted by the NHIS. Major stakeholders such as hospitals and the Ghana Health Service through the Ministry of Health as part of the NHIS architecture were active players in the process. To the NHIS Staff and Management team, “the NHIS is a tripartite entity, we exist because we need our subscribers, we exist because we need our providers, and the scheme is what it is because of these parties. They are direct stakeholders and we cannot introduce any solution without actively engaging them for buy-in.”

| Table 2-2 | Achievement of E-claims System
(Membership, Utilization & Claims)



Source: NHIS Ghana, Annual Report (2014)

¹⁷ Author interview (2017)

3. Lessons Learned

The implementation of the NHIS's e-claims system encountered technical, human resource, and financial challenges in delivery. The national adoption of the system in the last quarter of 2013 was a major success, exerting enormous impact on the quality of service delivery and sustainability. This was a story of the promotion of acceptability done through the partnership of the NHIS and stakeholders. The process was driven by continuous learning from implementation to informed decision making, and the strategies adopted combined inclusive and transparent processes that legitimized the decisions made in the implementation process. And to ensure simpler claims submission and processing, computerization and investment were adopted to improve and support the capacity of both NHIS managers and service providers. The lessons from the case study of Ghana's NHIS offer help for other countries with problematic claims management in health insurance.

3.1. Method of Efficiently Managing Health Insurance Claims

The NHIS had to manage claims submitted by subscribers, and the introduction of the e-claims system confirmed the sustainability of health care financing through efficient management using an e-claims system with the built-in potential to flag adjustments due to error, omission, and duplication. The system improved NHIS claims management and reduced the cost of hiring a large number of staff for claims vetting, processing, transportation, and storage that had previously plagued the NHIS's claims management process. This case study also highlighted the importance of stakeholders in creating such processes.

3.2. Inducing Stakeholders to Participate in Reform via Incentives

The NHIS adopted several approaches to offer incentives to stakeholders to participate in and adopt the e-claims system. Service providers who submitted claims through the new system were quickly reimbursed; credit facilities were also offered to service providers

lacking IT equipment to enable the providers to acquire them. This process helped and motivated the providers to revamp their claims management systems and finally adopt the e-claims system. The offer of both technical and policy training to staff of both the NHIS and service providers enhanced the knowledge and delivery capabilities of personnel to run the e-claims system. Moreover, the NHIS also made it a requirement for a health care facility seeking NHIS accreditation to implement the e-claims system, and this got more service providers to join.

3.3. Earning, Sustaining, and Managing Stakeholder Support

The NHIS, from the onset of implementing its reform, understood the importance of its stakeholders. As an industry pacesetter in Ghana, the organization realized that engagement with stakeholders, especially service providers including the Christian Health Association of Ghana (CHAG), NHIS subscribers, and the Ghana Health Service, was critical for getting the needed support to effectively manage the new system. Continuous engagement with service providers made the latter realize the importance of the e-claims system and the potential reduction of cost and stress incurred in the claims management process by eliminating red tape and paperwork.

3.4. Effective Implementation of Change

The pilot operation of the e-claims system among the 47 service providers in the Greater Accra region gave the NHIS the wisdom to implement the system nationwide. This experience allowed the NHIS to effectively learn from the process and adapt it to the system's national implementation. It also enabled the NHIS to put systems in place to ensure effective coordination and management. As Stephen Bewong aptly put it, "In any business, in any organization, in any operation, uh-- you grow! And you grow by learning from mistakes, your grow by learning from your experience. Unfortunately in Ghana, the NHIS has had to chart its own path because we have nowhere else to learn from. So indeed, we had to learn from our mistakes and continue to re-

engineer our business processes to enhance them. And that's what we've been doing. And so yes, we continue to grow and learn from our mistakes."¹⁸ No insurance entity in this world has all the answers to challenges in the industry. Even the U.S., one of the world's biggest and oldest insurance markets, still struggles with fraud because the latter continues to re-engineer itself and insurers have to always try to be a step ahead of the game, catching up on trends, detecting loopholes, and continuing to seal them.

The overall effectiveness of the e-claims process lies in the commitment of Ghana's leadership to restructuring the NHIS's claims management system. Since its inception in 2003, the NHIS has enjoyed goodwill commitment from both political and administrative leaders. This has spurred major reform to make the NHIS more efficient, attractive, and sustainable over the long term. The e-claims system comprises just a portion of several innovative reforms undertaken by the NHIS leadership.

4. Implications for the Science of Delivery

4.1. Adaptive Implementation

The NHIS, from the onset, has maintained its commitment to successful reform through adaptive learning and restructuring. The centralization of the claims processing center led the organization to discover the challenges of digitizing the submitted claims as well as the difficulties of having vast data sets for different facilities. Learning from this experience enabled the team to standardize data to achieve uniformity and across-the-board data usage. It also led to significant investment in the IT infrastructure required for standardizing hospital information systems and ramping up clinical auditing due to the trends of data collated from the claims. This approach proved significant and

¹⁸ Author interview (2017)

effective for the NHIS's process reengineering and adaptation to improve reform and the system's acceptability.

4.2. Use of different strategies for reform

In its quest for better and more efficient claims management, the NHIS adopted several responses to meet the demands of the claims process. No one solution was deemed ideal to resolve problems in claims management, and a series of implementation processes created an effective atmosphere for learning and re-adjustment.

4.3. Evidence-based strategies to achieve results

The NHIS sought to use the knowledge, skills, and experience of multiple stakeholders to steer the implementation of reforms. Several consultations were held with strategic stakeholders like the Christian Health Association of Ghana, Ghana Health Service, Dental and Medical Council, a pharmaceutical group, and other civic organizations including research and academic groups; this enabled the NHIS to harness knowledge and strategies to achieve results. It also learned from several implemented initiatives, like the capitation grant and biometric registration of subscribers, to publicize the implementation process.

Annexes

Annex A. Case Timeline

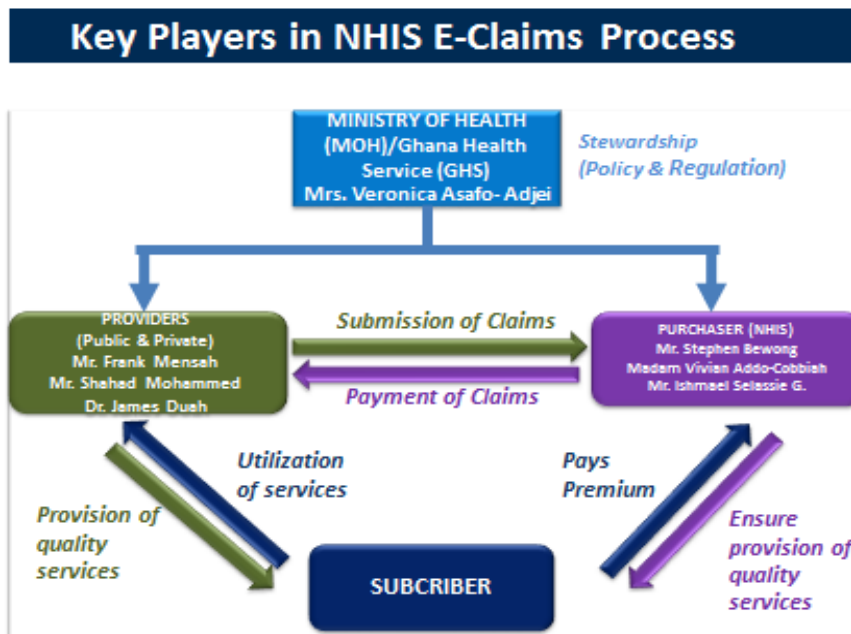
Date	Event	Justification for Inclusion/ Relevance	Notes
2010	Claims Processing Center (CPC) established in Accra	Aimed to centralize claims processing from across 145 district mutual health insurance schemes (DMHIS)	First step to inject efficiency in claims management
2012	Expansion of CPCs to Kumasi, Cape Coast & Tamale	Based on success of CPC in Accra, concept expanded to cover all regions of Ghana	Feedback loop & innovation to centralized claims management
2012	Standardization	Establishment of health data dictionary & medical terminology aimed to standardize information for easy coding, entry & analysis	Feedback loop & clear example of learning & adaptation based on implementation expenses (organizational change)
2012	Expansion of clinical audits	Served as measure to reduce cost	Action emanated from feedback from data analysis of claims process (adaptation)
April 2013	Pilot operation of e-claims system with 47 health care facilities	Implementation of direct E-claims submission from service providers	Inflection point
4Q of 2013	National adoption of E-claims system	Based on feedback from pilot operation, national adoption implemented	Adaptation & inflection point

Note: This table highlights key inflection points in the implementation of the NHIS's e-claim system to quickly summarize highlights of the main programs

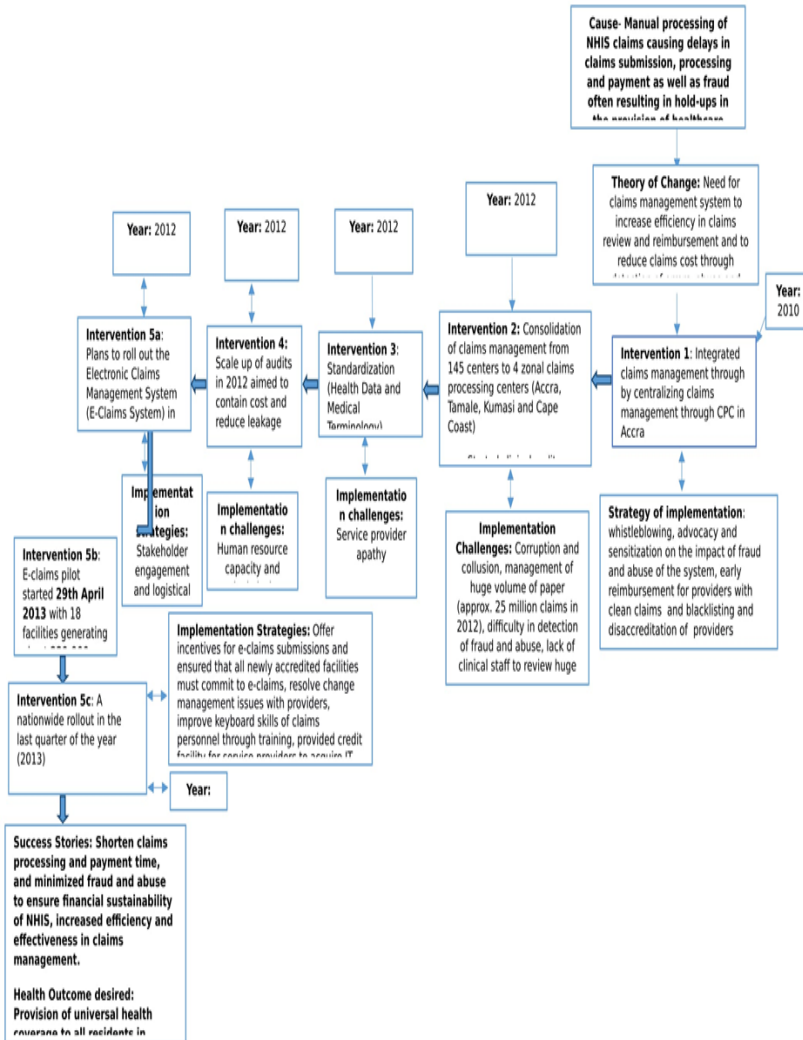
Annex B. Interviewees List

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Annex C. Stakeholder Map



Annex D. Process Map



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CHAPTER 3

Community-based Disaster Risk Reduction and Management in the Philippines: A Science of Delivery Case Study

By

Ranel Ram Cheng¹

KDI School of Public Policy and Management

Executive Summary

This case study in the science of delivery examines the origins, evolution, and achievements of the sub-village unit *purok* in disaster risk reduction and management (DRRM) in the Municipality of San Francisco in the Philippine province of Cebu. In November 2013, Typhoon Haiyan (known in the Philippines as Yolanda), one of the strongest tropical cyclones in recorded history to make landfall, swept through the central islands of the archipelago. Yet San Francisco amazingly suffered zero casualties and began recovery immediately despite being geographically isolated from its mother province. Not so

¹ The author would like to thank the government and residents of the Municipality of San Francisco, especially Vice Mayor Alfredo Arquillano, Jr., Leoli Ortadilla, Rosalinda Serion, and Monica Tan of the Municipal Disaster Risk Reduction Office, and the *purok* officers of Tulang Diyot. Thanks also goes to Roy Soledad of the Cebu Investment and Promotions Office and Rizajoy Hernandez of the Office of Civil Defense-Region VII for providing additional background information. Special thanks goes to Pia Ranada and Patty Pasion for providing the initial contact information necessary to move forward with this case study. The author is also grateful to Korea Development Institute (KDI) and the Global Delivery Initiative for their support. The opinions and conclusions expressed in this paper are the author's and his alone and do not necessarily reflect the positions of the KDI School or its affiliates. Any remaining errors are the author's and his alone.

fortunate were other local government units (LGUs), which were overwhelmed by the extent of damage inflicted by Haiyan.

Originally designated a solid waste management project in 2004, the *purok* system evolved into a service delivery mechanism to reach vulnerable communities, and eventually into a grassroots-level system for DRRM even before the concept was officially adopted through the 2010 passage of the National Disaster Risk Reduction and Management Act. San Francisco pioneered the LGU's implementation of DRRM, earning recognition both at home and abroad. This case study shows how the formative years (2004-10) in establishing the *purok* system provided the learning process for residents and municipal officials needed to overcome the challenge of coordination and engagement among the various levels of government and within communities for successful DRRM implementation by the time Haiyan hit in 2013.

1. Introduction

In November 2013, Typhoon Haiyan (known in the Philippines as Yolanda) became one of the strongest tropical cyclones in recorded history to make landfall. Of the country's 80 provinces, the 44 affected by the mega-storm covered 591 municipalities, 57 cities, and 12,139 barangays (villages), including Cebu Province and San Francisco. The typhoon's death toll reached 6,300, including 74 casualties and five missing in northern Cebu Province (National Disaster Risk Reduction and Management Council, 2013).

Despite being one of the towns directly hit by Haiyan, San Francisco amazingly recorded zero casualties. Through its unique *purok* system that organized communities at the sub-village level, this LGU carried out pre-emptive evacuations even in its farthest villages, ensuring that none of its 50,000-plus residents was left unaccounted for. Around 200 families in Tulang Diyot, located on a separate islet, were brought to the mainland days before Haiyan made its first landfall. After the storm hit, the town immediately began rehabilitation efforts with minimal supervision, as neighboring LGUs—overwhelmed by the extent of the storm—were left immobilized.

A number of studies and articles have documented the *purok* system's success, especially in the aftermath of Typhoon Haiyan (Fernandez, Uy, & Shaw, 2012; McElroy, 2013; Ranada, 2014; Bawagan et al., 2015; Matthies, 2017) but none have analyzed the system's implementation using the science of delivery approach. This case study focuses on the system's evolution and implementation with emphasis on how development and delivery challenges were overcome to conduct community-based DRRM.

1.1. Development Challenges: Vulnerability to Natural Disaster

Located at the edge of the Pacific Ocean, the Philippines in a given year is hit by around 20 tropical cyclones of varying intensity. As part of the Camotes Islands in northern Cebu, San Francisco is no stranger to

these storms. Since 1948, 51 tropical cyclones have come within 50 kilometers of the town's boundaries, 20 of which directly crossed the cluster of islands including Typhoons Bising in 1982, Ruping in 1990, and Yolanda in 2013—the three most destructive storms in recent memory (Bawagan et al., 2015). A permanent memorial was erected in at the San Francisco town plaza to mark the day Bising destroyed the town hall in 1982. Surrounded by open sea, the town's population mostly relies on natural resources to make a living, especially through farming and fishing. When a typhoon hits, residents are left at the mercy of the elements.

1.2. Key Delivery Challenges

Since its introduction in 2004, the *purok* system has undergone constant refinement to suit the specific needs of the town that have emerged over the years. The following section identifies key delivery challenges San Francisco faced in implementing the system. These challenges, though interrelated, grew more prominent at different stages in the evolution of the *purok* system.

1.2.1. Geographic Access

San Francisco is composed of the main island and an islet. The town is part of the Camotes Islands, which are geographically separated and accessible via a two-hour boat ride from Cebu Province. The town is classified as a third-class municipality comprising 15 barangays (villages). Its population grew from 41,327 in 2000 to 55,180 per the latest census in 2015. The major form of transportation to reach all 11 coastal and four upland barangays is motorbike or motor tricycle. Houses are usually far and wide across the rough and gently sloping terrain. The island has yet to achieve full electrification, with many areas receiving rations of power at certain hours only. To get to the islet community of Tulang Diyot, for example, a 10-minute boat ride is needed from Barangay Esperanza on the mainland. The islet also has no running water and its community receives electricity rations for four to six hours daily, thus communication through radio or mobile is

relatively difficult. Getting from one side of the islet to the other takes roughly 40 minutes to an hour via motorbike.

Table 3-1 | Socioeconomic Profile of San Francisco

Income classification	3 rd -class municipality
Annual income (2016)	PHP 116.86 million
Area	106.93 sq. km
Population (2015)	55,180
Population density	516.04 persons per sq. km
No. of households (2015)	12,278
Average household size (2015)	4.5
Primary industries	Small-scale commercial & subsistence fishing, corn, rice, coconuts, vegetables, & backyard livestock raising
Major sources of family income	Fishing, farming, self-employment in buy & sell businesses, employment in tourism & services

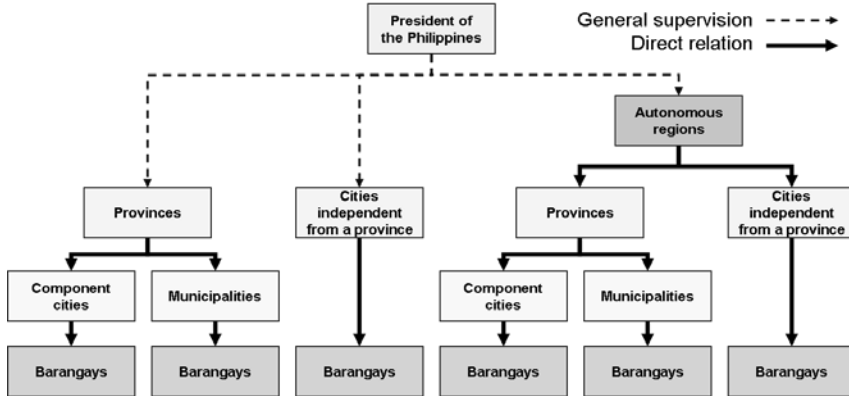
Sources: Philippine Statistics Authority; Bureau of Local Government Finance; Bawagan et al., 2015

1.2.2. Poor Coordination of and Engagement with Stakeholders

San Francisco is primarily an agricultural town whose residents are mostly fishermen, farmers, or self-employed small-time traders. In 2006, just two years after the implementation of the *purok* system, the poverty level there was 60.7 percent. Residents rely largely on subsistence fishing and farming for food. In 2012, when the last municipal-level poverty survey was conducted, the town’s poverty level significantly decreased to 49.3 percent. Like in many poor communities across the Philippines, a welfare mentality has prevailed among residents, with little incentive for them to organize especially since *purok* positions were purely voluntary with no pay. For residents, taking time off from their occupations to do *purok* activities was considered a waste of time and even a source of conflict due to the misperception that *purok* leaders received favors from the town government. Disagreement and resistance also occurred among elected barangay officials, especially those who belonged to the political camp opposing the mayor. In the Philippines,

the barangays is the smallest unit of government that exercises autonomy to a degree. Thus in the eyes of certain officials, the *purok* system was viewed as redundant.

Figure 3-1 | Local Government Structure in the Philippines



Source: Local Government Code of 1991; Image from Wikimedia Commons

1.2.3. Lack of Proper Framework for Disaster Risk Reduction and Management

In 1978, the National Disaster Coordinating Council (NDCC) was created as an inter-agency body to oversee government responses to calamities. Disaster coordinating councils (DCCs) were organized at the regional, provincial, and city/municipal levels. In reality, however, this top-down approach proved ineffective in preparing communities since planning, announcements, and relief operations were highly centralized. Moreover, DCCs were convened only in the event of an emergency and had no permanent offices. This was the prevailing approach at the time Typhoons Bising and Ruping hit San Francisco. Reaching the farthest communities was difficult as their residents had no access to news or weather bulletins. As one resident recalled, people would begin disaster preparation only when they would “see the waves rise and the wind become stronger” or after hearing “rumors” from the mainland about a potential storm approaching. Evacuation orders would prove futile as certain residents would stay behind to secure their properties. Another resident of Tulang Diyot recalled how her father and five fishermen died

when their fishing boats capsized as they tried to get back on land during Typhoon Ruping in 1990. In the 1990s, the NDCC made a major paradigm shift from emergency management focused on preparedness and response to a disaster risk management approach that emphasized mitigation before a calamity struck (NDRRMC, 2011); but implementation remained top-down. Meanwhile in San Francisco, no other storm of similar magnitude struck the town, thus Bising and Ruping were slowly forgotten and residents moved on with their lives. Without permanent staff in charge at the LGU level, disaster mitigation was not a priority and municipal officers instead focused more on poverty alleviation and similar programs.

Around this time, advocates lobbied for a new law to empower communities and introduce a bottom-up approach toward disaster risk management. But it was only after two decades and a series of major calamities that the National Disaster Risk Reduction and Management (NDRRM) Act was passed in 2010. This law mandated the creation of disaster risk reduction and management offices (DRRMOs) at the municipal and barangay levels, so that DRRM could begin even at the smallest level of governance. Though the passage of the new law was welcomed as a “solid” framework, doubts arose over the effectiveness of its implementation, especially the promptness of disaster response operations given the complexity of the new structure (Commission on Audit, 2014). For San Francisco, the sub-village level *purok* did not have the same legal standing as a barangay government. Thus reconfiguration was needed on how this system could meet the requirements of the NDRRM Act.

2. Contextual Conditions

The *purok* system in San Francisco was originally not intended for disaster response and preparedness. Even before the enactment of the Local Government Code of 1991, the *purok* in the Philippines had served as an indigenous form of a self-organizing community smaller than a village-level barangay, which is officially the country’s smallest administrative unit

of governance. *Puroks* were usually formed for ad hoc purposes such as holding fiestas. Selected *puroks* were where the Department of Education carried out the Alternative Learning System, which deployed teachers to reach out-of-school youths and unschooled adults who could not attend school in certain barangays.

In 2004, Alfredo Arquillano Jr. was reelected mayor of San Francisco for a second three-year term. At the time, he wanted to start a solid waste management program to clean up the town's streets and beaches to develop a viable tourist attraction for domestic and foreign tourists. He looked into tapping the *purok* system so that residents could take the initiative to clean up and improve their communities. Each *purok* is organized as a people's organization composed of 50-100 households. In comparison, a typical barangay in San Francisco comprises an average of around 800 households. Members elect officers and the heads of eight committees based on the committees formed in each barangay. In other words, the *purok* can be considered a miniature barangay. A key feature is that the system works on a voluntary basis, or *pintakasi* in the Cebuano language. This means that membership is not mandatory for residents and elected *purok* officers get no compensation for their roles. In addition, Mayor Arquillano was adamant that the *purok* system should incur little cost to the municipal government, meaning no handouts or financial subsidies provided in setting up the *puroks*.

Over the years, the purpose of the *purok* system has evolved from managing solid waste to fighting malnutrition and improving livelihood, and most notably preparing for and responding to disasters. For its efforts, San Francisco is considered a "Hall of Famer" as the cleanest and greenest municipality in Cebu Province, having received awards from the provincial and national governments. The United Nations Office for Disaster Reduction (UNISDR) has also designated the town as a model resilient city.

3. Tracing the Implementation Process: “Think Big, Start Small”

Over the years, the *purok* system in San Francisco has evolved and been utilized for a variety of purposes. This section traces the system’s origins and how it became the primary vehicle for community-based reduction and management of disaster risk that led to zero casualties during Typhoon Haiyan. At each stage of implementation, government officials and residents faced - and overcame - delivery challenges and refined the system toward building more resilient communities.

3.1. Establishment (2004-08)

After winning a second term in office as mayor, Alfredo Arquillano Jr. named solid waste management as a priority project. He wanted to mobilize town residents to clean their own surroundings to transform San Francisco into a “clean and green” municipality that would attract tourists. He lamented the lack of both initiative and collaboration among households. This was the context under which he wanted to organize households into *puroks* to carry out his project.

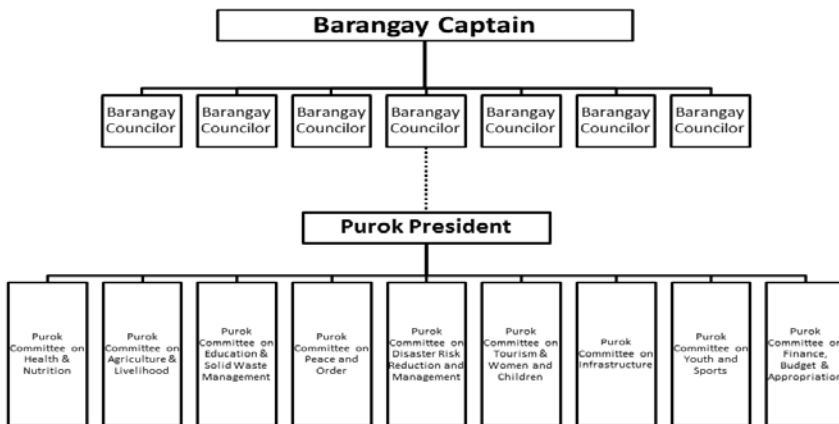
3.1.1. Setting Up the Structure: “Start Small”

Prior to entering politics, Arquillano managed his family’s fishing business for almost 15 years. Over that time, he wanted to introduce new technologies to make fishing more cost efficient. His proposal was met with resistance, however, from several of his employees unwilling to switch from the traditional style of fishing they had used for years. This did not discourage Arquillano, who then decided to introduce new equipment one piece at a time. He described the “wait-and-see attitude” of his men, who slowly but surely embraced his innovations. This lesson was what he used to introduce the *purok* system in San Francisco.

Initial talks were held first with one *purok*, Danao in Barangay West Poblacion, close to the town hall. A few weeks later, two more *puroks* were added, Bokok in Barangay Northern Poblacion and Can-Ising in Barangay Southern Poblacion. These three *puroks* served as pilot sites

for the new system the mayor wanted to install. Over the initial months of implementation, town officials explained to residents how the system would work. Each *purok* would elect a president, vice president, secretary, and the heads of eight committees patterned after the barangay (Health and Nutrition; Agriculture and Livelihood; Education and Solid Waste Management; Peace and Order; Tourism, Women, and Children; Infrastructure; Youth and Sports; and Finance, Budget, and Appropriations). Through these committees, *purok* residents could identify specific needs to mention at the proper town office. For example, the Committee on Health and Nutrition could coordinate with the Municipal Health Office possible medical outreach for residents. To show their seriousness, the town government delivered basic services such as roads, electricity, and water supply to these pilot *puroks* to build trust and improve relations with the community. One thing made clear, however, was that *puroks* would operate on a voluntary basis and that residents could not expect handouts from the town government. Each *purok* would have to work for its share. In the system's first year, a *purok* beautification contest awarded cash prizes to winning communities based on criteria such as best solid waste management, holding of regular monthly meetings, and maintenance of a vegetable garden.

Figure 3-2 Structures of Barangay and *Purok* in San Francisco



Source: MDDRMO-San Francisco

3.1.2. Purok Coordinators as Liaison to Barangay Officials and Residents

Initially, Mayor Arquillano designated one of his staff members, Leoli “Yul” Ortadilla, as *purok* coordinator to serve as the liaison to the communities. Ortadilla’s main role was to organize households in close proximity into *puroks*, as well as providing feedback to the mayor on the problems and progress of the *puroks*. When it was time to add more communities to the initial three, Ortadilla recruited additional *purok* coordinators to help. To reach all 15 barangays in San Francisco, each barangay was classified into one of three districts according to location: Central, North, and South. Assisting Ortadilla were two *purok* coordinators who visited the five barangays in each district. Coordinators were officially on the town’s payroll as staff under the Office of the Mayor, and received a transportation allowance to perform their duties.

Before setting up a *purok*, the coordinator first had to talk to the elected barangay captain and *kagawad* (councilors) to explain the new system being set in place. According to the local government code, each barangay must elect seven *kagawad*. In this regard, each *kagawad* ideally takes charge of monitoring one *purok* and attends their meetings. Because the system was organized primarily according to geographic location, more *puroks* emerged to allow easier management. Through this method, the system expanded to cover all 15 barangays in San Francisco while gaining support from elected barangay officials. In 2007, the Municipal Council of San Francisco passed an ordinance granting legal status to the *purok* as a public organization that serves as a community service unit to support a barangay. Throughout the process, the coordinators closely monitored the progress of the *puroks* and reported directly to the mayor. The coordinators attended the monthly meeting of each *purok* under their watch, and went to weekly meetings at the town hall to give feedback on the system’s implementation or convey any difficulties encountered in the field and suggest solutions.

3.1.3. Initial Expansion and Achievements

To support the coordinators' operations, the San Francisco government provided initial funding for capital build-up (CBU) to *puroks*, which helped finance the building of the *purok* meeting hall. Residents raised additional funds on their own. The *puroks* were empowered to draft their own organizational rules like any other public organization. For example, they could collect regular monthly contributions from their members and impose fines for non-attendance at activities or violation of *purok* rules. The money collected was used to purchase office supplies needed for meetings and any administrative costs incurred (mostly office supplies). The CBU fund was also used as the initial seed money for microfinance, which *purok* members could access in case of emergency (Matthies, 2017). Beyond this, *puroks* received no monetary compensation or financial assistance. Instead, *purok* officers were given priority in selection for training and capacity-building programs organized by the town government. The *purok* system also introduced to San Francisco the community health management system and Food Always at Home (FAITH), a food livelihood program, in partnership with Plan International Philippines and other NGOs.

The first five years of the project were crucial in establishing communication, building trust, and maintaining a strong relationship between the town government and *purok* communities. Because of its voluntary nature, the system was plagued by inactivity among members and even officers, but through the help of coordinators, it persisted. Slowly but steadily, results began to show. The number of underweight and severely malnourished children significantly declined over this period since community health services were delivered through *puroks* from 2006. The town became a model LGU for community nutrition and was honored as the cleanest and greenest municipality in Cebu Province in 2008, among other achievements. Part of the cash prizes the town received from these awards was re-distributed as cash prizes for *purok* competitions. In its early years, the *purok* evolved into not only a reliable mode of service delivery encompassing solid waste

management, nutrition, and livelihood, but also a means to strengthen social cohesion at the grassroots level (Matthies, 2017).

3.2. Introducing Disaster Risk Management to San Francisco (2008-11)

Typhoons are an accepted part of life in the Philippines. The government and even civic responses to such storms have largely been reactive, focusing on relief distribution and rescue operations (NDRRMC, 2011; Bawagan et al., 2015). Residents and even town officials of San Francisco admitted that after Typhoons Bising and Ruping hit, the town lacked consciousness to prepare for the next disaster. Luckily, though San Francisco was still frequently hit by storms in the annual monsoon season, no typhoon of such intensity hit the islands. And had it not been for a series of major natural calamities in surrounding provinces, San Francisco might not have introduced reduction and management of disaster risk into its collective consciousness.

3.2.1. Planting Seeds of DRRM:

National-level Lobbying with Local-level Mainstreaming

In the 1980s, the non-governmental organization (NGO) Plan International Philippines began operations in the Camotes Islands, but its programs back then largely focused on simply linking donors to foster families living in the area. In the early 2000s, the NGO shifted from its developmental approach of doling out help to beneficiaries toward a community-based approach by closely working with residents and regional governments. Around this time, Roy Soledad, a former Plan International Philippines technical officer who would later head the NGO's Camotes Islands program unit, worked with the four municipalities of the island group in implementing the organization's community-based nutrition program. The towns had tapped their respective indigenous *puroks* but Soledad noted that in his engagement as a civic officer, San Francisco had the most organized and consistent system in place. Pilar had relatively smaller barangays and thus had no

immediate utility to engage communities through *puroks*. Meanwhile, Tudela was locked in a political battle when an election protest was filed against the incumbent mayor. Finally, enthusiasm from the Poro town government eventually died down despite minimal engagement. In the early 2000s, engagement with civil society in Camotes focused largely on health and nutrition, as well as livelihood projects.

In February 2006, a series of mudslides occurred in the town of Saint Bernard in the neighboring province of Southern Leyte. One village, Guinsaigon, was almost entirely covered by rocks and mud, causing more than 1,000 deaths. This deadly event served as a wake-up call on how ill-equipped residents, the government, and NGOs were in handling such a disaster. The Guinsaigon landslide became a rallying point for a paradigm shift from mere relief and rescue operations to a more proactive risk management. In 2008, more than 300 civic organizations, academics, and government agencies including the Office of Civil Defense (OCD), which had served as the secretariat for the National Disaster Coordinating Council (NDCC) at the time, formed the Disaster Risk Reduction Network Philippines (DRRNetPhils). This umbrella organization lobbied for the passage of a comprehensive National Disaster Risk Reduction and Management (NDRRM) Law (Bawagan et al., 2015). While DRRNetPhils engaged the Philippine Congress and national agencies to adopt the Hyogo Framework for Action (HFA) in the drafting of the NDRRM Law, the OCD, through the NDCC, had started the shift toward disaster risk reduction, albeit without the support structures and legal framework. Additionally, the efforts of civic groups on the ground started capacity building for communities. And Plan International Philippines decided to move beyond nutrition and livelihood to become a disaster relief agency as well.

3.2.2. San Francisco as “Resilient Town”: When Preparation Meets Opportunity

In the latter half of 2008, Roy Soledad returned to the Camotes Islands to introduce programs for disaster risk reduction and management of Plan International-Philippines to the area, including San

Francisco. Through the relationship they had built over the years, the town government led by Mayor Arquillano was receptive to Soledad's idea but insisted that such DRRM programs include a livelihood component. The partnership between the NGO and the town was forged later in the year and implementation began in 2009. Community-based DRRM was operationalized at the *purok* level. Because funding for this program was limited (as Plan International Philippines prepared to officially phase out its Camotes Islands unit by 2011), the project required immediate execution focusing on coastal resource management, education, hazard mapping, early warning, and capacity building. Also around this time, San Francisco via the NGO network had grown familiar with the Sasakawa Award for Disaster Reduction by the UNISDR, which incorporated "A Documentation of the 10-Point Checklist" (2011) as part of the nomination submission process. Mayor Arquillano said that because the checklist was straightforward and easily understandable, this served as a tool for monitoring the implementation of the programs. Despite limited funding, support from civic groups, together with the town's application for the award and the US\$25,000 cash prize, served as motivation for the town to proceed with its community-based DRRM program. In 2009, Plan International Philippines donated a digital and manual rain gauge to help San Francisco conduct basic weather forecasting on its own. Area schools also joined the effort, so that in addition to *purok*-based capacity building, students and teachers were also trained in disaster preparation.

About the same time, development at the national level had wide implications for towns like San Francisco. In September 2009, Typhoon Ondoy (international name Ketsana) left the Philippine capital region of Metro Manila flooded, killing more than 400 alone. A week after, another typhoon, Pepeng (international name Parma), hit northern Luzon. The devastation caused by these powerful storms highlighted the need for climate change adaptation in government policy, leading to the passage of Republic Act 9729 or the Climate Change Act. This law, in turn, led to the foundation of the Climate Change Commission under the Office of the President in October the same year. Yet the poor response of the national government while these major typhoons hit highlighted

the NDCC's inadequacy as a disaster response agency. The momentum from this renewed interest in climate change served as leeway for the NDRRM Law to get its best chance at passage after more than two decades of lagging in the legislative mill. In 2010, Congress finally passed Republic Act 10129 or the NDRRM Law, which created the National Disaster Risk Reduction and Management Council (NDRMMC) and mandated disaster risk reduction and management at the grassroots level of governance. Going beyond building the necessary structures, however, the new law provided required access to funds, mandating that at least five percent of a local government's budget be allocated to a "local disaster management fund," of which 70 percent went to disaster risk reduction and management. The remaining 30 percent went to the quick response fund (QRF) to be immediately used for relief and rehabilitation if disaster struck.

The law also mandated a permanent municipal disaster risk reduction and management office (MDRRMO) and the installation of DRRMCs from the barangay level. Because the *purok* in San Francisco operated as "little barangays," it was a de facto DRRM committee. To avoid adding another layer of bureaucracy, the committee was headed by the *purok* vice president, which meant that the committee became a quasi-umbrella committee *primus inter pares*. Yet keeping with the new law's mandates proved to be difficult. Rosalinda Serion, a former municipal social welfare officer who once headed relief operations under the Municipal Disaster Coordinating Council and was later tapped as the MDRRM officer, said an entire level of bureaucracy had to be created from scratch. San Francisco also began to draft a five-year plan for local disaster risk reduction and management to integrate not only disaster risk reduction and management and climate change adaptation but also solid waste management and community development programs. What made the transition less difficult was that a number of requirements the law laid out were in place through the disaster risk reduction and management project with Plan International Philippines. Just tweaking certain jargon or complying with reporting and disclosure was all that was needed. The MDRRMO also began to take on capacity-building programs for communities, as well as maintaining municipal and

barangay relations, in accordance with the legal mandate. The series of external developments, from utilizing civic groups to the passage of national legislation, provided the opportunities allowing San Francisco to transform its *purok* system as a DRRM structure based on a working community. For its efforts, the town won the 2011 Sasakawa Award for Disaster Reduction, along with the cash prize it used in financing its local disaster risk reduction and management plan.

3.3. Mobilizing *Puroks* for Effective Disaster Risk Reduction and Management (2011-13)

A major strength of San Francisco's disaster risk reduction and management was its policy of leaving nobody behind. The town's plan covered vulnerable groups such as children, the elderly and the disabled. San Francisco also had a clear vision: "Zero Casualties and No Injuries." In accordance with the new law, the anti-disaster plan incorporated three specific themes: disaster prevention, mitigation and preparedness, and response (Bawagan et al., 2015). The MDRRMO focused on education and training, especially for helping barangays set up their own DRRMCs. Among the key lessons were ensuring that families prepare "72-hour kits" containing important documents and basic provisions such as food, water, clothing, and cash for at least the first three days after an emergency. Evacuation plans were prepared and shelters were designated. The town also invested in installing Wi-Fi at the MDRRMO for easier monitoring.

At this point, Mayor Alfredo Arquillano, Jr. in 2010 had to leave office after serving his term limit, and was succeeded by his older brother Aly as mayor. Alfredo Arquillano, Jr. then won election as the town's vice mayor. *Purok* coordinators remained town employees but were later able to report directly to the town's municipal council, of which the vice mayor is presiding officer. Spurred by the town's international recognition, other LGUs in the Philippines visited San Francisco to learn more about its *purok* system. In 2013, Alfredo Arquillano, Jr. retired from government service while his older brother won a second term as mayor. Five months later, Typhoon Haiyan hit.

From November 2-4, a low pressure area began to develop in the Pacific; by November 5, the typhoon was forecast to hit the Philippines. The following day, it had officially entered the Philippine Area of Responsibility (PAR), designated as a super typhoon with the domestic name “Yolanda” (Santos, 2016). This was when the San Francisco MDRRMO began alerting barangay officials and issued preemptive evacuation orders, as well as prohibiting fishing in the town. Barangay and *purok* leaders were also mobilized to trim tree branches that could fall and become roadblocks (Bawagan et al., 2015; Santos, 2016). On the islet of Tulang Diyot, residents were transferred to the mainland. Fishermen began moving their boats to higher ground. Certain residents stayed at designated evacuation centers but others sought shelter with their relatives and neighbors on the mainland who had sturdier concrete houses. This “adopt-a-family approach” helped decongest evacuation shelters (Bawagan et al., 2015) while simultaneously highlighting the spirit of *pintakasi* (communal participation). By November 7, the day before the typhoon was expected to make its first landfall, all residents in Tulang Diyot had been accounted for. The municipal DRRMC had earlier convened to prepare relief and recovery efforts and was constantly updated by the national meteorological agency Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA). By November 8, Haiyan swept through the Visayan islands, leaving a trail of destruction in its wake. In the immediate aftermath, San Francisco incurred economic losses of PHP 117.08 million, including agricultural damage worth PHP 16.64 million. Overall, 1,022 homes, 17 school buildings, two rural health units, and four government buildings were damaged (Bawagan et al., 2015). True to the municipality’s plan, however, the town suffered *zero* casualties.

In nearby areas including northern Cebu, LGUs were made helpless and became victims. The Commission on Audit (2014), in its post-Yolanda assessment, said that three years into the passage of the NDRRM Law, many LGUs remained ill-equipped to respond to natural disasters, let alone one as destructive as Haiyan. The problems cited included inadequate skills and expertise of response personnel, a poor

system of emergency management and distribution, and lack of critical equipment and logistical infrastructure since many LGUs had yet to integrate DRRM into their development plans by the time Haiyan had hit (COA, 2014). Despite a few shortcomings including reported congestion at a few evacuation centers and three residents who allegedly sustained minor injuries (Bawagan et al., 2015), San Francisco translated all its plans and preparation into concrete actions.

4. Lessons Learned: “Start Small, Think Big”

4.1. “Start Small”: Proper Timing, Pilot Testing, and Consistency

The *purok* system in San Francisco did not see success overnight. It underwent several pilot runs starting with just three communities (located close to the town proper) in its first few months of implementation before expanding to all 15 barangays. And only after three years of operation did the town council accord the *purok* legal status as a partner people’s organization. Mayor Alfredo Arquillano, Jr. and *purok* coordinator Leoli Ortadilla emphasized that it took them years to establish a workable system. The first five years proved crucial in communicating, establishing trust, and building relationships with the communities. Consistency was also a key factor since once contact was made with residents, constant follow-ups were conducted. Likewise, the basic idea that *puroks* should be voluntary, self-sufficient, and non-reliant on government handouts was consistently emphasized at every stage of implementation. In timing, Mayor Arquillano set up the system after winning a second term in 2004. By the time he was up for re-election in 2007, the system had begun to take root. By that time, immediate results appeared from the community-based nutrition program. Today, the town has 128 active *puroks*.

4.2. Organizing according to Geography and Engagement with Barangays

The challenge of geographic access on an island municipality like San Francisco, where houses are widely spread apart, proved to be an

opportunity as well. The *purok* system was created to incorporate as many homes in close geographic proximity. Though the barangay by legal definition is the smallest administrative unit in the Philippines, its insufficient scope failed to reach all its members. Additionally, barangays also had autonomy to a degree from the municipal government, so a prudent decision was made to first approach the barangay chairmen and council members before expanding the *purok* system to their respective jurisdictions. Though *purok* coordinators answered directly to the mayor, barangay councilors were encouraged to oversee specific *puroks*. Moreover, the coordinators made it clear that the *puroks* were civic organizations patterned after the barangay and not a new bureaucratic layer to replace it. As an organization, a *purok* had a certain level of autonomy empowering its members and officers to draft rules and even levy fines on their own. Its organizational structure was such that communities, through the *purok*, could replicate barangay committees to complement and even augment personnel at the barangay level. Clear delineation of tasks and expectations was also made. *Purok* coordinators were municipal-level officials who ensured that the system would run smoothly. Barangay officials were free to engage with the *puroks*, and the *puroks* had to demonstrate their own effort and initiative. The combination of top-down introduction and bottom-up implementation was a key factor to secure the system's sustainability. Gradual expansion also provided necessary trial and error to sort out conflicts that arose in the early stages of implementation, as stakeholders from *puroks* up to the mayor himself learned by doing.

4.3. Learning by Doing:

Immediate Results Derived from Need-based Deliverables

The *purok* system has evolved from a solid waste management project to a mechanism for reducing and managing disaster risk. The system's evolution was based largely on the needs of the communities involved. The *purok* organization had the leeway to identify specific needs of residents, be it livelihood or basic infrastructure. In the system's early years, health and jobs were important for the people, and so these needs were negotiated with priorities the area government

might have had. Through the initial community-based health delivery system and the work-for-food program, a significant decrease was seen in malnutrition and poverty. This showed that the capacity-building intervention of the *purok* system—and not merely the receipt of relief or monetary aid—effectively made residents more receptive to programs that came later like disaster risk reduction and management. Domestic and international competitions such as the Clean and Green Award, Model LGU Award, and the UNISDR Resilience Award also enhanced the competitive spirit of public servants and communities. These awards provided set criteria that also served to measure output and outcomes. The cash prizes received by the town as a whole were used to fund awards for inter-*purok* competitions. San Francisco had a reputation to live up to, and this competitiveness spread to the *puroks*. When external regulations appeared like the NDRRM Law, the town was flexible enough to immediately make the transition toward the new law’s requirements and mandates. Though the anti-disaster risk system had been introduced earlier to San Francisco, the impetus of enforcing legal mandates meant that the town had to relearn and re-angle while simultaneously introducing new items to disaster risk reduction and management planning (such as the creation of the MDRRMO and the drafting of a local five-year plan). By the time Typhoon Haiyan had hit, the *purok* system had been in place for almost 10 years.

4.4. “Think Big”: Cooperation beyond San Francisco

San Francisco was generally more receptive to new ideas, welcoming partnerships and cooperation with civil society especially in capacity building and training. The relationship with Plan International Philippines, for example, was based on mutual understanding on empowering communities and not simply about receipt of aid. When disaster risk reduction and management was introduced to San Francisco in 2008, the town leadership insisted that a livelihood component be added to it. Alfredo Arquillano, Jr. admitted that prior to this interaction, he as mayor had focused little on disaster preparedness and risk management due to the more pressing need to ensure jobs for residents. The relationship built over the years through other projects allowed smooth cooperation, and to a

certain extent, negotiations with civic group partners so that one party did not fully dictate things on the other. Such a civil society network allowed opportunities to emerge for the municipality to learn from benchmarks abroad. When the town won the UNISDR Resilience Award, former mayor Arquillano became one of its “resilience champions” and shared the *purok*’s ideas with other LGUs in the Philippines. Even *purok* coordinators were given the chance to share their experiences with other LGU officers.

5. Implications for Science of Delivery

The case study of San Francisco in the Philippines shows that disaster risk reduction and management based on communities encompass other priorities such as health and jobs. Community-based programs must focus on the community itself through a combination of top-down capacity building by government and bottom-up implementation at the grassroots level. This means that residents should receive a certain level of autonomy to gradually develop the system on their own, while at the same time ensuring accountability from their local government, which likewise plays a crucial role in setting clear and measurable objectives and following through on the results. San Francisco is also a prime example of what can be achieved when preparation meets opportunity. The town government, through learning by doing over the years and forming relations with NGO partners, introduced preventive disaster measures even before their adoption at the national level through legislation. It had a slight head start in such measures, and this was crucial in setting up the system that eventually saved thousands of lives, whereas similarly situated local governments were ill-equipped to handle such a natural disaster.

As a concept, the *purok* can be found in other areas of the Philippines but San Francisco is one of the few documented cases in which this system has been effective for disaster risk reduction and management, with proven results and outcomes. That said, even the officers and coordinators involved have said LGUs, especially those in Cebu Province, have tried but failed to adopt the system due to lack of sustained effort. In the case of San Francisco, the relationship between the mayor and

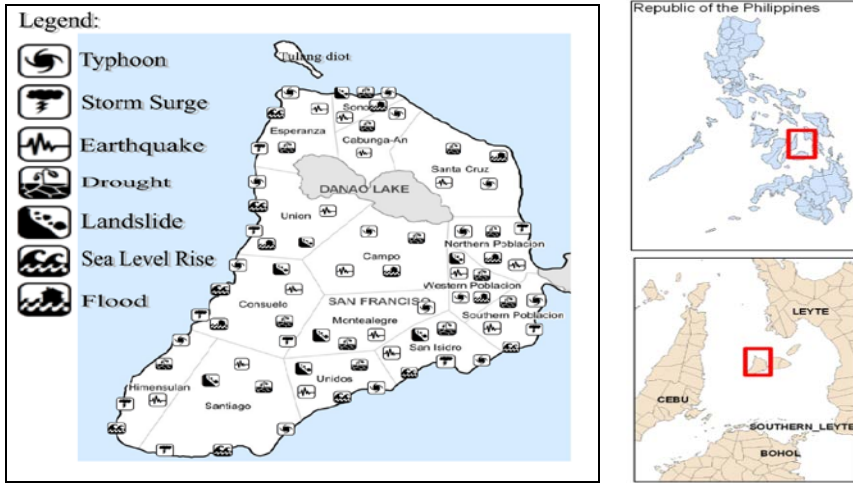
purok coordinators proved critical. Since the implementation of the *purok* system, only the Arquillano brothers (and their political allies) have been elected in San Francisco. What is uncertain, however, is if such coordinators would have the same level of enthusiasm in the event of a change in leadership. The *purok* system is considered a prime source of political support for the Arquillano camp. But because the *purok* has been institutionalized through ordinances and in planning conducted by departments under the town government, the system could also see sustainability regardless of political outcomes.

Officials also admit that data recording and knowledge management have only begun recently, with most documentation started as the town was preparing its nomination submissions for a host of awards. To their credit, the townsfolk took the initiative to improve their documentation on their own since more researchers and media representatives visited San Francisco to learn about the *purok*-based system of disaster risk reduction and management. In 2014, the town was also one of the country's first LGUs to adopt a local climate change adaptation plan (LCCAP) on securing long-term funding from the national Climate Change Commission to build resilience in towns. The MDRRMO also hired its own policy and research officer and photographer in charge of keeping documents and storing pertinent data. Like many LGUs in the Philippines, however, a lack of quantitative municipal- and barangay-level data remains, and this is hurting regional development planning.

Finally, the spread of the *purok* system or similar community-based governance to other parts of the country has proven difficult, despite a strong history of support for decentralization reform. San Francisco can credit the *purok* system for strengthening its social integration by emphasizing volunteerism and community cooperation, but such intervention was initiated, and to a certain extent sustained, from the top-down by the town government (Matthies, 2017). A number of leaders, even at the national level, could introduce similarly bold policy proposals, but few can allow grassroots initiatives to grow autonomously and make the process truly participatory. Thus San Francisco residents deserve credit for the success of their *purok* system.

Annexes

Annex A. Hazard Map of San Francisco



Source: MDRMO-San Francisco

Annex B. List of Barangays & Active *Puroks* in San Francisco (as of October 2017)

CENTRAL DISTRICT (39 <i>puroks</i>)		
CAMPO (11)	1. Acacia	7. Kinyawan
	2. Boho	8. Lower Lawis
	3. Buak	9. Mahayahay
	4. Canuchie	10. Proper
	5. Ibabao I	11. Upper Lawis
	6. Ibabao II	
MONTE ALEGRE (8)	1. Bongaw	5. Ob-Ob
	2. East	6. Talisay
	3. Kangganay	7. Tambis
	4. Kuampang	8. West
NORTHERN POBLACION (7)	1. Bokok	5. Matnog
	2. Calinao	6. Pamatasan

	3. Lungke 4. Mangga	7. Tugas
SOUTHERN POBLACION (6)	1. Buwawan 2. Cacao 3. Can-Ising	4. Magay 5. Puertobillo 6. St. Francis
WESTERN POBLACION (7)	1. Cabbage 2. Corva 3. Danao 4. Magcapatag I	5. Magcapatag II 6. Mangga 7. Upper Magcarongao
NORTHERN DISTRICT (39 puroks)		
CABUNGA-AN (7)	1. Batang 2. Binongbong I 3. Binongbong II 4. Proper I	5. Proper II 6. Timobo 7. Ubos
ESPERANZA (10)	1. Cogon 2. Egot 3. Ibabao 4. Looc 5. Lower Tulang	6. Po 7. Proper 8. Taliwambas 9. Tulang Diot 10. Upper Tulang
SANTA CRUZ (8)	1. Cambat-an I 2. Cambat-an II 3. Canlayog 4. Kanguit	5. Leong 6. Matnog 7. Panhay 8. Proper
SONOG (7)	1. Bastian 2. Casyo 3. Esyong 4. Mahayahay	5. Matab-ang 6. Pagnahi-an 7. Pantalan
UNION (7)	1. Cantuwak 2. Dayang 3. Lebo 4. Lower Bontod	5. Malbago 6. Nagub-an 7. Patabog
SOUTHERN DISTRICT (50 puroks)		
CONSUELO (15)	1. Bogo I 2. Bogo II 3. Boundary 4. Corva 5. Danawan 6. Kolo 7. Langob 8. Locbon	9. Mangkahilo I 10. Mangkahilo II 11. Pay-Pay 12. Proper 13. Tabay Lawom 14. Timba-on 15. Tulay
HIMENSULAN (10)	1. Bakhao 2. Ibabao 3. Kamanggahan 4. Lower Himangkungan 5. Lower Mangodlong	6. Palamas 7. Proper 8. Sagui 9. Sitio Lhuiller 10. Upper Mangodlong
SAN ISIDRO (9)	1. Acacia	6. Canlosong

	2. Awihao 3. Bagacay 4. Baring 5. Campakong	7. Dumalerio 8. Mahaba 9. San Martin
SANTIAGO (9)	1. Bangkal 2. Calas-agan 3. Dapdap 4. Himangkungan 5. Himangkungan II	6. Kauswagan 7. Pagnahi-an 8. Songkayao 9. Upper
UNIDOS (8)	1. Ma-abi-abihon 2. Mahagala-on 3. Malagaron 4. Malipayon	5. Makugihon 6. Masinabtanun 7. Matinabanganon

Source: LGU-San Francisco

Annex C. Timeline of Key Inflection Points

Period	Internal & External Events	Legislation/Policy	Justification for Inclusion
1980s-90s	<p>Major natural disasters hit the Philippines, including the eruption of Mount Pinatubo and lahar floods.</p> <p>In San Francisco, Typhoon Bising destroy the municipal town hall in 1982. Typhoon Ruping kills six fishermen trying to secure their boats in 1990.</p>	<p>The National Disaster Coordinating Council (NDCC) implements a “disaster management” paradigm on a top-down basis from the national to the local government level.</p>	<p>Disaster management emerges as the prevailing approach in the Philippines.</p> <p>Bising and Ruping are the strongest typhoons to have hit San Francisco at the time. A permanent marker commemorates the onslaught of Bising.</p>
2000s	<p>Plan International Philippines begins to implement community-based projects on the Camotes Islands.</p>		<p>The NGO has had a long-established presence on the islands.</p>
Establishing <i>Purok</i> System (2004-08)			
2004	<p>Alfredo Arquillano, Jr. is reelected for a second term as mayor. He wants to focus on developing San Francisco as an eco-tourism destination but complains of problems such as lack of proper management of solid waste.</p>	<p>The <i>purok</i> system is introduced to organize residents to clean their own backyards as a community.</p>	<p>Communities begin to be organized into the sub-level <i>purok</i> system.</p>

2005-07	Through coordinators, the <i>purok</i> system is expanded to cover all 15 barangays in San Francisco.	<p>Community health and work-for-food programs are introduced at the <i>purok</i>-level with the help of Plan International Philippines.</p> <p>In 2007, the municipal council passes an ordinance granting legal status to the <i>purok</i> as a recognized people’s organization to serve as community service units supporting the barangay.</p>	<p>Malnutrition begins to decline as <i>purok</i> enrollment rises.</p> <p>The <i>puroks</i> gain initial funding from the town government for their capital build-up (CBU), which they use to build their own meeting halls, hold meetings, and raise additional funds on their own. This is over the system’s crucial “learning-by-doing” period.</p>
	In the neighboring province of Southern Leyte, a landslide covers an entire village, killing at least 1,000 people.		Plan International Philippines, which also operates in Southern Leyte, adds disaster relief as a core competency.
Introducing Disaster Risk Management in San Francisco (2008-11)			
2008	The Disaster Risk Reduction Network Philippines (DRRNetPhils), an umbrella organization, is formed to lobby for the passage of a comprehensive National Disaster	The NDCC, through the Office of Civil Defense (OCD), begins shifting toward a “risk reduction” paradigm, including disaster preparedness and	Disaster risk reduction starts to gain prominence in the Philippines.

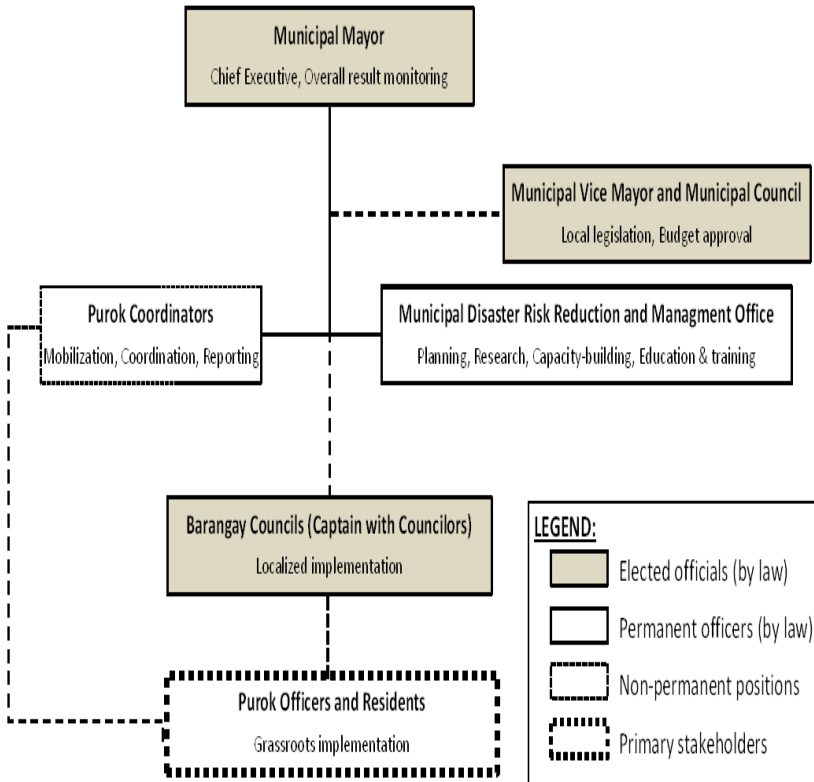
	Risk Reduction and Management (NDRRM) Law.	mitigation, but lacks the structure for proper implementation.	
	Plan International opens its Camotes Islands unit to promote disaster risk reduction in San Francisco and neighboring municipalities.		The LGU of San Francisco forms a partnership with Plan International Philippines to introduce community-based disaster risk reduction at the <i>purok</i> level, but with a livelihood component.
2009-2010	Two major typhoons, Ondoy and Pepeng, strike Luzon killing more than 1,000 people and immobilizing the Philippine capital region of Metro Manila, which is submerged in floodwaters.	The Philippine Climate Change Act is passed in 2009, followed by the National Disaster Risk Reduction and Management (NDRRM) Act in 2010, mandating bottom-up grassroots efforts toward disaster risk reduction and management.	The NDRRM Law mandates that 70 percent of a municipality's budget go to disaster risk reduction and preparation and the remaining 30 percent to quick response to a disaster, among other requirements.
2010-2011	San Francisco sends a nomination and eventually wins the Sasakawa Award for Disaster Reduction from the UNISDR.	San Francisco drafts a five-year plan for local disaster risk reduction and management.	With support from Plan International Philippines, San Francisco gets a head start in disaster risk reduction and management planning, using the UNISDR check-list, while at the
	San Francisco sets up a municipal		

	disaster risk reduction and management office (MDRRMO) under law.		<p>same time ensuring compliance with requirements set by the new law (especially in funding and auditing).</p> <p>San Francisco is honored as a “resilient city” and former mayor Alfredo Arquillano, Jr. (then vice mayor) is named “resilience champion.”</p>
Introducing Disaster Risk Management in San Francisco (2008-11)			
2011-13	<p>San Francisco begins implementation of five-year plan on local disaster risk reduction and management.</p> <p>MDRRMO helps set up barangay councils to prepare for disasters, while providing capacity building down to the <i>purok</i> level.</p>		<p>Education and awareness campaigns spread to schools, incorporating evacuation drills, training of personnel for weather forecasting, and investing in infrastructure such as Wi-Fi at the town hall.</p>
November 2013	Typhoon Haiyan strikes.		San Francisco suffers no casualties in the typhoon.

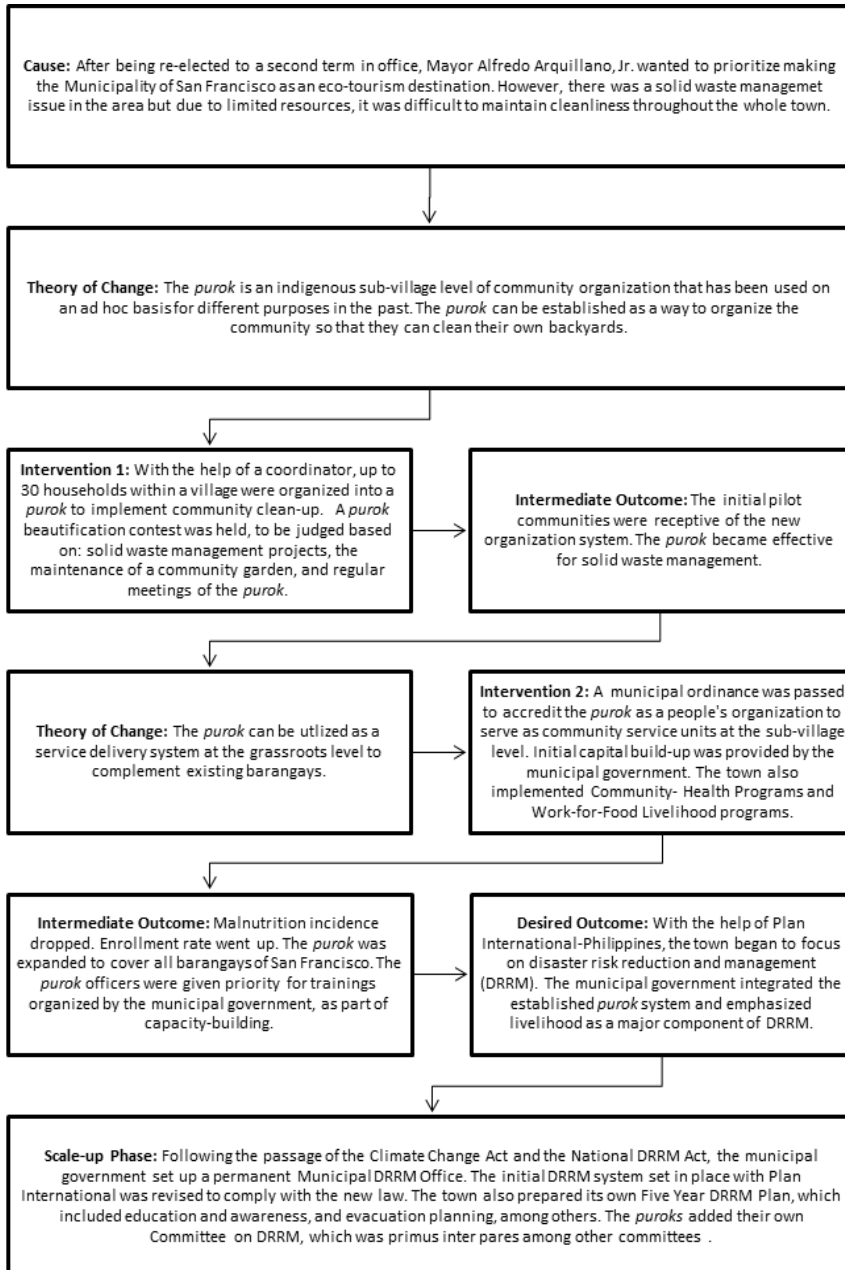
Annex D. List of Interviewees

Alfredo Arquillano, Jr.	Mayor (2001-10), Vice Mayor (2010-13, 2015-present), Municipality of San Francisco
Rosalinda C. Serion	Head of Municipal Disaster Risk Reduction and Management Office, Municipality of San Francisco
Monica P. Tan	Research and Planning Officer, MDRRMO, Municipality of San Francisco
Leoli A. Ortadilla	Overall <i>Purok</i> Coordinator, Municipality of San Francisco
Judith V. Montalban	<i>Purok</i> President, Tulang Diyot, Barangay Esperanza
Arelia E. Alao	<i>Purok</i> Vice President, Tulang Diyot, Barangay Esperanza
Jean B. Tapales	<i>Purok</i> Secretary, Tulang Diyot, Barangay Esperanza
Happy V. Luchavez	Adviser, Tulang Diyot, Barangay Esperanza
Grace A. Maurillo	Infrastructure Committee Chairwoman, Tulang Diyot, Barangay Esperanza
Janeth M. Bensig	Peace & Order Committee Chairwoman, Tulang Diyot, Barangay Esperanza
Genela G. Amancio	Resident, Tulang Diyot, Barangay Esperanza
Roy C. Soledad	Former Manager, Camotes Program Unit, Plan International Philippines (2008-11) Head, Cebu Investment and Promotions Office, Provincial Government of Cebu (present)
Rizajoy A. Hernandez	Training Officer, Office of Civil Defense, Region VII

Annex E. Stakeholder Map



Annex F. Process Map



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CHAPTER 4

Indian Railway's Civic Engagement Mechanism for Enhancing Customer Service and Responsiveness

By

Gopal Singh Bhati¹

KDI School of Public Policy and Management

Executive Summary

Indian Railway (IR), as one of the world's largest railways, deals with a massive number of passenger demands. To upgrade its customer service, IR adopted a social media-based civil engagement system through which passengers and IR staff can communicate in pursuit of better service. The new idea alone, however, made no difference in the process of implementation. Using social media as an unprecedented communication channel, IR gradually learned by doing. Undergoing a multi-stage implementation process, IR developed its revolutionary social media-based service by transforming a manual, haphazard, and mechanistic model into an automated, sophisticated, and organic one. Through painful trial and error, the new customer relations management (CRM) system turned out to effectively improve internal operations, external accountability, and most importantly, customer trust.

¹ Gopal Singh Bhati is a graduate student at the KDI School of Public Policy and Management. He is an Indian Railway (IR) Personnel Service official who has worked for IR over the past 11 years, mostly in delivery of transportation service. His areas of interest are organizational management and transformational leadership. He is studying the potential effects of digital disruption on public service delivery. The digital edge can help raise the level of effective monitoring and widen outreach. Bhati is firm believer in empowering citizens under a true democratic spirit for attaining the objective of good governance.

1. Background and Challenges

IR, owned and managed by the Ministry of Railways and often called India's lifeline, is one of the world's largest railway networks. It spans 115,000 km of track over a route 67,312 km long and comprising 7,112 stations.

With an estimated 1.4 million employees and revenue of nearly INR 2 trillion, IR is the world's eighth-largest organization. It serves 23 million users daily by operating thousands of services, and hauls more than 1.2 billion tons of freight every year. The problems confronting IR were huge because of the big gap between passenger expectations and the state-run corporation's responsiveness.

1.1. Development Challenges

IR has a wide diversity of passengers. To cater to a wide range of customer needs, IR offers various classes of passenger service and trains, making it extremely challenging to meet customer expectations. Passenger dissatisfaction frequently leads to complaints, but IR is known to enjoy high customer ratings even among constantly complaining passengers. The Indian railways minister realized that the challenge of achieving customer satisfaction required innovative solutions. He selected social media to help the company meet the varied expectations of passengers.

Traditionally, rail passengers have expressed their grievances through conventional means such as letters, email, and phone calls. In the recent past, the Centralized Public Grievance Redress and Monitoring Management System (CPGRAMS), the portal of the Indian government, and the Complaint Management System (COMS), the portal of Indian Railways, were introduced for handling complaints from rail passengers and users and the general public. IR uses social media platforms to provide immediate assistance to rail passengers based on tweets received on the ministry's Twitter handles. This method

has been found to be more effective and passengers receive assistance in real time.

1.2. Initial Intervention and Delivery Challenges

To resolve IR's dilemma, newly appointed Railway Minister Suresh Prabhu in November 2014 started a long journey to revamp the organization. He initiated a new approach to customer service using social media. Ved Prakash, the ministry's director for information and publicity, recalled his boss this way: "This system of social media came into existence unintentionally. We were already using two mechanisms in customer grievance in the form of an all-India toll-free number and a manual system of registration at each station. We never thought beyond this as our system was working stably. Sometime in 2015, a train passenger tweeted to the minister's personal Twitter handle about a railway irregularity. The minister took a different perspective on this, realizing that the present system had limitations. The gap between passenger expectations and service quality had to be filled. He came up with the idea of incorporating Twitter as tool for solving problems and reaching out to our customers. Twitter was user friendly and could respond instantly, thus it was visible and tangible. This is how Twitter Seva born in IR."

To improve the passenger experience, IR introduced social media platforms like the Twitter handle of the Ministry of Railways (@RailMinIndia), as well as those of all general and divisional IR managers to assist passengers in real time and handle their grievances 24-7. Passengers also shared their experiences and gave suggestions through this method.

To manage the issues being raised on social media by general and traveling passengers, IR uses an IT-enabled tool through social customer relationship management (social CRM). An average of 18,000 tweets are received. The immediate actionable tweets of passengers either on running trains or at stations are forwarded to the officials concerned; the tweets are normally read and answered within the shortest possible time.

Quick and prompt assistance to passengers through social media have rapidly popularized the ministry's Twitter handle (@RailMinIndia). The ministry achieved the milestone of one million followers on April 27, 2016, and doubled that mark on March 29, 2017.

Taking the first step toward opening the innovative social-media-based service did encounter bumps. Manually handling the massive number of tweets was incredibly difficult at first, and the Twitter-fueled solution alone did not help resolve operational details. Nobody at IR had any idea of how many tweets were being managed or how many needed responses or resolution. Let alone the real-time resolutions, generating insight and MIS reports was hardly possible.

The tweets were manually screened among the barrage that arrived to assist passengers. This process resulted in many tweets being ignored. Back then, IR also had no accountability from agents, no quality checks, and no collaboration among staff on cases. Staff used the primitive practice of using registers to take note of the few tweets they could respond to in one day. While working on these tweets, no studies could be generated such as the number of complaints, suggestions, or feedback, the types of issues, or which division or zone they pertained to. Going back and searching through or filtering these tweets were impossible; just flipping a register's pages was the only way to look at records. Staff had to manually update the nature of an issue and the IR department's zone and division to which the issue pertained to. They also had to identify an issue's urgency and type. Accountability was non-existent at the time. All these factors greatly hampered staff efficiency and only a handful of issues could be handled.

Figure 4-1 | Basic Workflow of Twitter Seva



Note: Timeline

- July. 4. 2014: Twitter handle @RailMinIndia created
- Dec. 3. 2015: Customer complaint management cell set up to monitor complaints on social media.
- June.15. 2016: Integration of social media for complaint management.
- Aug.1. 2016: Twitter handle of Minister of Railways integrated with complaint management
- April. 27. 2016: Twitter handle of Ministry of Railways (@RailMinIndia) reaches milestone of one million followers
- Dec. 11. 2016: Twitter handle of Ministry of Railways (@RailMinIndia) breaks follower mark of two million
- March. 29. 2017: Twitter handle of Ministry of Railways (@RailMinIndia) hits 2.5 million followers

Source: IR internal documents

2. Tracing the Implementation Process

2.1. Phase 1: Institutionalization of Proactive Intervention

Passengers did not demand that IR use social media to handle complaints; the railway minister started this initiative. Following the top-down form of proactive intervention, the rail authority's organizational structure and process underwent institutionalization to see the idea through.

To begin with, the minister made Director Praksh in charge of handling tweets. "It all started at my 10X10-foot chamber as an additional duty. I wasn't sure how I was going to do as it was blind game plan with no experience. I was asked to set up some basic infrastructure and we bought two iPads. I used to scan all the tweets in

bits and pieces along with doing my major duty of circulating information and broadcasting the railway's regular work to the media. Sometimes I couldn't see the tweets, sometimes the minister replied directly, and sometimes he sent me short messages on technically tricky complaints; to balance time, I'd personally look and reply."

This initial system was an incredibly raw exchange of information in which either IR replied to passenger grievances centrally or sent them to field units or zones for resolution. More manual and discretionary in nature, the system was just a reflection of how directors and the minister treated the issue. No prioritization and consistency also meant the lack of a systematic approach. The Twitter wall was getting input day and night but the responders worked on it by day only with no continuum. Sometimes they missed important issues and sometimes they spent too much time on minor ones.

Prakash said, "It was just a two-man show, we were both actor and producer-director. Due to destiny, whatever quantum we spent on Twitter mode, it generated multifold responses from users. It started with manageable double digits and touched three-digit tweets within the span of a few months. I'm not sure what this increase in number reflects, whether we were on the right track or the existing system was not as successful as we believed. But this additional path created a ray of hope as an effective mode of communication between us, which had been missing for ages. To handle this heightened activity, we needed a team and structure to the whole process."

In this situation, the Ministry of Railways started streamlining the process, and the Twitter cell was created in December 2015. They selected several computer operators from the railway system and started with five people and one counter. Put under the control of the IR executive director for public grievances, the counter operated in two shifts: 6 a.m. to 2 p.m. and 2 p.m. to 10 p.m. A separate Twitter handle (@RailMinIndia) different from the minister's personal handle was set up by Director Prakash . All 16 zone and 64 division heads of IR each got their own Twitter handles.

2.2. Phase 2: Expanded Institutionalization of External Services

The initial organizational reform focused on structure and process to operate customer service based on social media, and was just the first step toward enhancing customer responsiveness. Expansion of institutionalization provided constant support.

A Ms. Anchal, one of the initial staff members for customer service under the new system, said “In the initial days, we tried to capture all tweets that came in from 6 a.m. to 10 p.m. We were always confused over how to assign them priority as we had no railway managerial experience. To us, all tweets seemed important. Then we discussed this issue with the new executive director, Ravinesh Kumar, and narrowed our focus to actionable tasks needed in an emergency and for deficient passenger amenities. I remember in the initial days a medical emergency reported in a tweet. A passenger’s health deteriorated while he was en route to his destination.”

“We immediately got his location and sent this information to the nearest zonal center via Twitter and phone. We arranged a medical team to be at the next station and medication was provided. The passenger tweeted us back on our work, which made me feel proud and happy. We did something good. These series of problem-solving tasks consisted of cleaning the train to smoke detection underneath, arranging milk for an infant, getting a wheelchair to a paralyzed person, finding a missing kid, and protecting a woman from sexual assault.”

Still, the new system at this phase faced the following limitations:

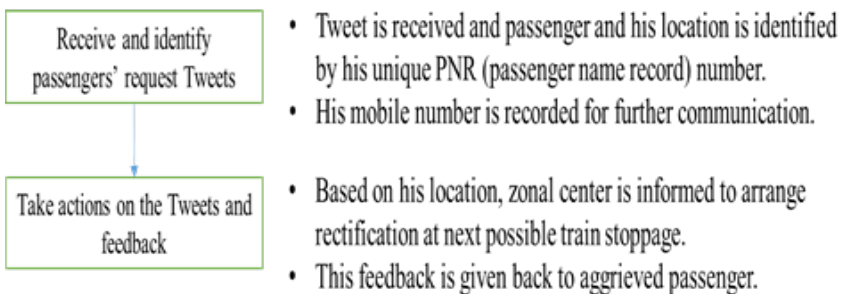
- (1) This model responded to few tweets. Though responders tried to capture tweets from the time window of 6 a.m. to 10 p.m., most long-distance trains ran at night. Thus many important requests went missing from this time window.
- (2) This system was mechanical in nature as scanning and processing all requests depended on staff efficiency along with Twitter

traffic at that instant. Important aspects were occasionally left out because of human negligence.

- (3) Twitter has a specific format in which all tweets add up on the wall, making it extremely cumbersome to manually identify the main tweets and follow-ups.
- (4) The massive traffic of tweets (thousands per day) made their handling by a single counter a herculean task.

A Mr. Rajesh, a member of the Twitter cell, said about the early version of the customer service system based on social media, “We were initially very happy with the Twitter cell being an organized unit but got confused over whether the increased number of tweets reflected people’s growing expectations or the failure of our working system regardless of our efforts. We faced huge media criticism on two fronts. First, the tweets that went unattended and unresolved earned us the tag of ‘information passers’ and a discretionary attitude. We received sarcastic comments like ‘When the minister wants us to, we’ll act, otherwise it’s the ‘chalta hai’ (status quo) approach. Second, our unskilled staff’s response to retweets seemed machine generated and lacked a human touch. Our response lacked courtesy, empathy, and sensitivity. We became like a regular answering machine.”

Figure 4-2 | Twitter Seva Procedure (Original Model)



In response to the problems mentioned above, Executive Director of Public Grievances Ravinesh Kumar took it as a new challenge and had

this system revamped by August 2016. The additional initiative IR adopted is as follows:

- (1) They made it a cell to work around the clock. This step solved the problem of missed tweets when staff were not on duty. That someone would be watching was assured.
- (2) The number of counters was raised to seven but this time, IR outsourced the work to tech-savvy specialists with more training in communication skills and effective response ability.
- (3) All zonal railways were ordered to set up their own Twitter cells and put their handles to effective use. Becoming a more self-sustaining system, such railways had to watch their pending tweets and resolve them accordingly.

2.3. Phase 3: Smart Institutionalization of Internal Cooperation

The expanded institutionalization of organizational hardware needed support from more sophisticated software. Executive Director Kumar said, “This new system created one peculiar problem as we were unable to detect whether more than one counter was working on same tweet issue. This overlap hampered our productivity. Still, we faced the problem of lost tweets due to manual tracking in times of higher traffic. There was no closing mechanism. This uncertainty was persistent. We couldn’t perform effective monitoring until now, we’d adopted the convention of treating as a close if a retweet from a zone was found. There was neither a timeframe to close a pending request nor a system to monitor it.”

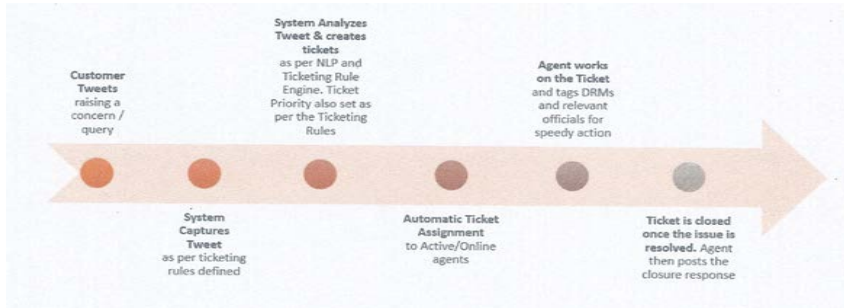
To resolve these new challenges, a new tool for social customer relationship management (social CRM) was developed. The tool had the following unique advantages to overcome earlier drawbacks:

- (1) Ensured effective capture of relevant tweets and posts based on a set of keywords (a query) fed into the system, created them into individual tickets and helped officials collaborate on the tools to get the best results from the exerted efforts

- (2) Utilized the unique property of Twitter’s 140-word limit in identifying request type, helping prioritization. After capturing the tweets or posts based on keywords in the query, the system’s robust natural language processing (NPL) engine first looked at a tweet’s sentiments and marked it as “positive,” “negative,” or “neutral.” Then the official opened the ticket and read the tweet. Depending on if a ticketed tweet required any action from railways, the agents and staff also marked it an “actionable” or “non-actionable” ticket. The system prioritized a post as “normal,” “high,” or “urgent” based on the keywords fed to the system and also through system learning. A list of words in software was created like “help,” “urgent,” and “emergency” for top priority, speeding up their working speed in dealing with thousands of tweets per day without missing anyone. All cases were classified into three priority groups: top, medium, and low. This software scanned all tweets and assigned priority depending on each category of the word list.
- (3) This system worked via round-robin scheduling. Each counter was assigned individual tweets along with a recording counter ID for each tweet, resolving the overlap problem. All tweets thus had a traceable format.
- (4) This tool helped them create a token number for each assigned tweet. Each number also had a timer system to help track pending requests.
- (5) This CRM tool helped create a summary sheet of various flexible modules for use in monitoring and tracking each request status. One feature was to record the information in customized form. This allowed problematic areas to be identified by the respective departmental authorities, which enabled them to improvise to improve the delivery of services.

- (6) This monitoring via statistical parameters among railway zones created sensitivity and a performance indicator.

Figure 4-3 | Twitter Seva Procedure (updated model) Flow Chart



Source: IR internal documents

3. Impact and Prospects

3.1. Internal Management

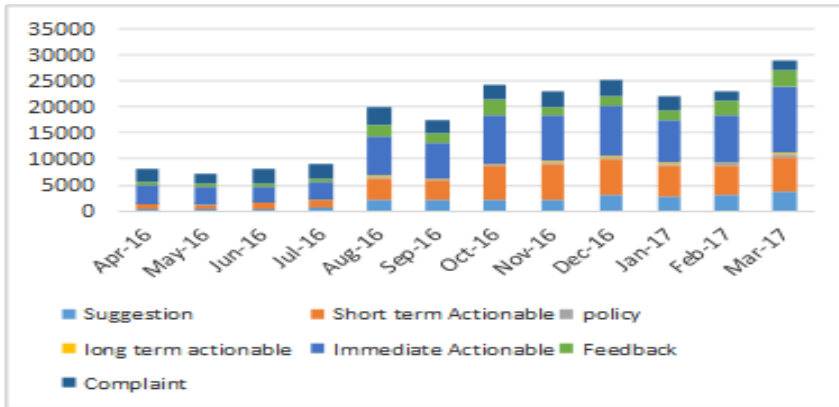
Thanks to social CRM, the Ministry of Railways can generate useful insights through reports on management information systems. These reports, geographical and functional, further help find key areas that need attention and system improvement. The sharing of such reports with department and location heads on a weekly, bi-weekly, and monthly basis boosts effective monitoring of customer tweets.

Table 4-1 | Comparison of Major Features of Twitter Seva System: Past vs. Present

	Past	Present
Management Information System (MIS)	Manually operated	Fully automated
Work flow	Undefined	Automatically assigned
Case tracking	No tracking	Auto filtering
Cases missed	Frequent	Almost none
Response time	Very long	200% improvement

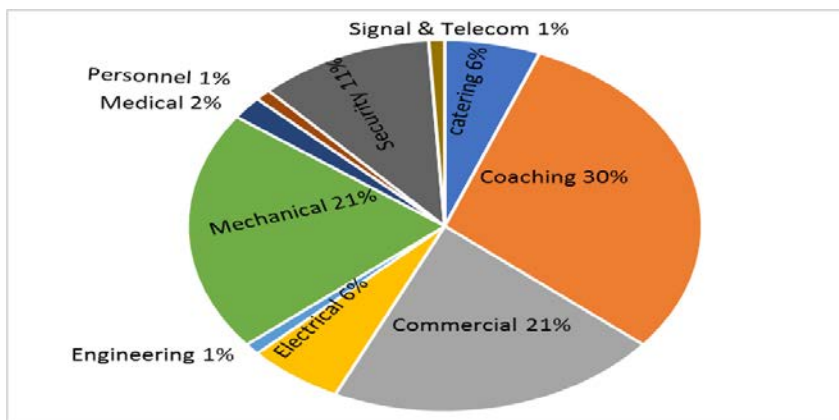
Source: IR internal documents

Figure 4-4 | Actionable Ticket Types (April 1, 2016 – March 31, 2017)



Source: IR internal documents

Figure 4-5 | Breakdown of Tickets by Department (April 1, 2016 – March 31, 2017)



Source: IR internal documents

This exercise helped IR analyze flaws and areas to focus on providing better service, and served as a barometer to check performance in reference to the desired outcome. Statistics for 2016-17 showed that railways needed to focus more on coaching, mechanical, and commercial issues that ultimately affected passengers. This mechanism put citizens at the forefront of auditing and reviewing the Ministry of Railways’ performance.

3.2. External Accountability

All activities involved in receiving complaints, forwarding them to the authority concerned and relevant senior officials, taking action, and getting feedback from passengers are within the public domain. The tweets forwarded to the rail authority and the latter's actions taken automatically get recorded in the system and can be retrieved for reference to ensure full accountability. This system has consistently shown examples of social auditing, where complaints on any delay or inaction on the part of any authority results in corrective gesture or action by the authority in charge. The general public has also shared tweets and posts via social media on alleged corruption by uploading videos and photos. These immediately grab the attention of authorities and the proper actions are taken. Thus this system has been proven to deter staff from committing corruption.

3.3. Civil Engagement and Trust

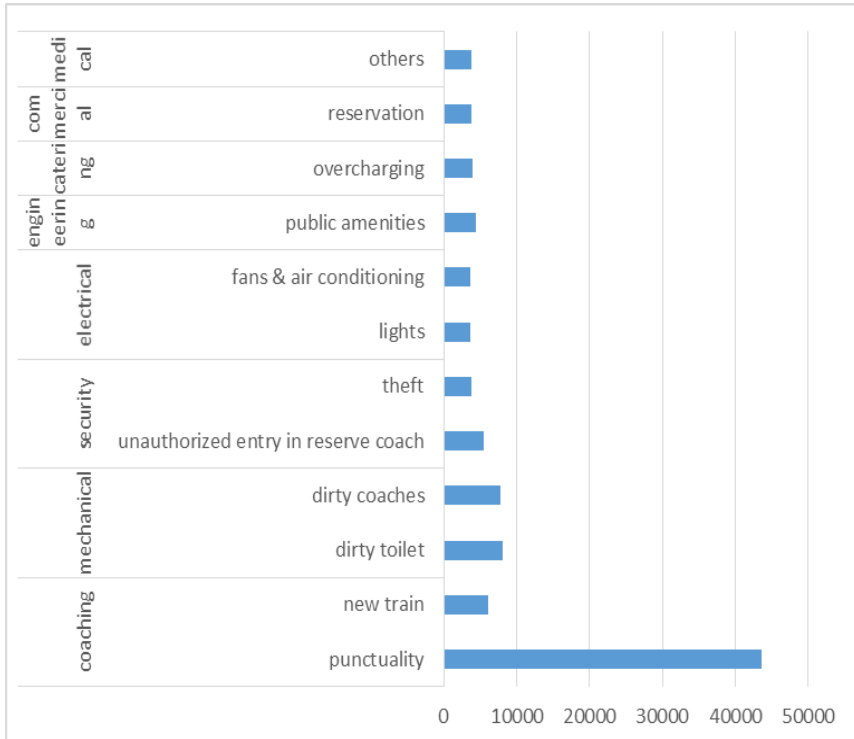
This effective system created the concept among citizens of the “power of tweets.” In the hands of the people, this tool has made them collaborative partners in effective service delivery. Citizens have utilized tweets for proactively getting the government's attention on a topic, discussing and analyzing government initiatives, and finally empowering the people to achieve the ultimate objective of good governance in a democracy. Such power has been applauded by both the media and general public for doing a public service. The following are a few examples:

- Crisis management: Acting on a passenger's tweet, people trapped in a train after an accident were rescued.
- Civic participation: Passenger amenities were relocated per a citizen's suggestion; IR had earlier failed to effectively utilize tweets to improve service.
- Good governance: Promptly acting and resolving complaints and ensuring accountability from public officials
- Transparency: Citizens can seek information and question the Ministry of Railways over its actions. Everything is transparent

to everyone.

- Real-time resolution: Ensures public’s trust in the government to give the feeling “We are heard”

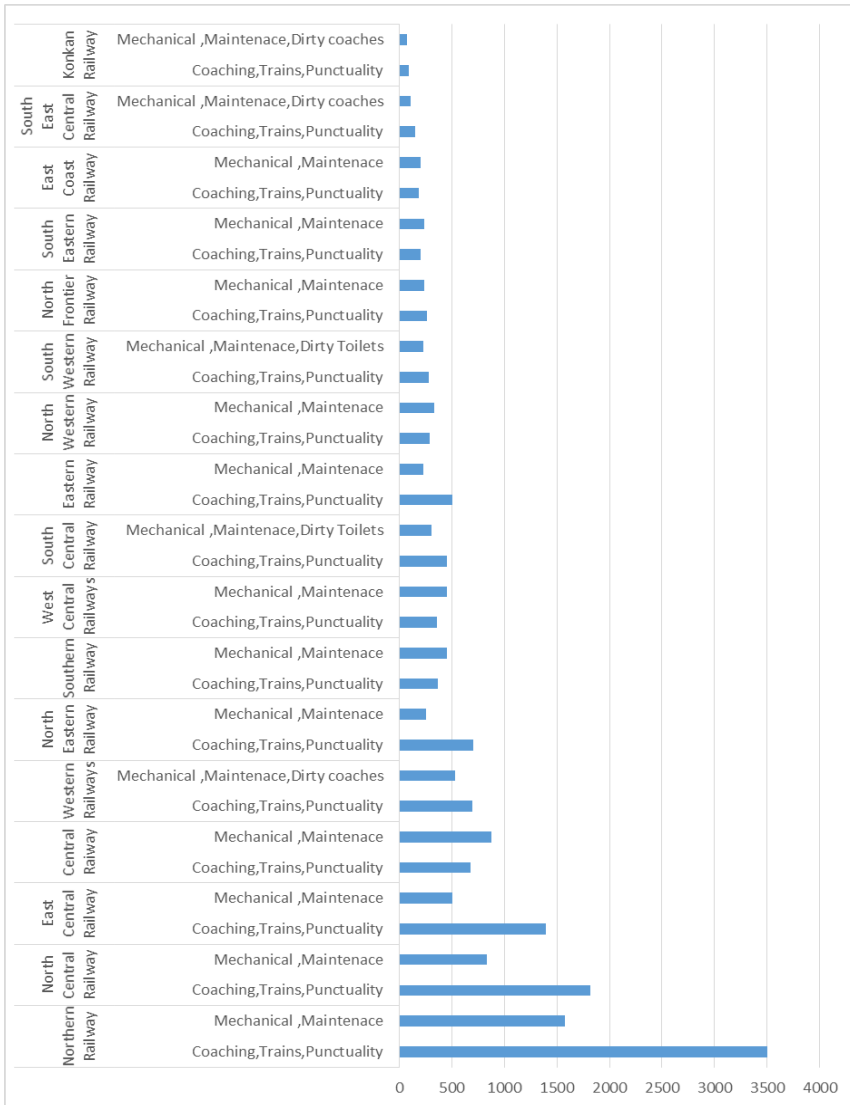
Figure 4-6 | Top Issues and Complaints (April 1, 2016 – March 31, 2017)



Source: IR internal documents

As seen in [Figure 6], lack of punctuality and poor hygiene of bathrooms were major sources of passenger dissatisfaction. This evidence-based management featured passenger monitoring and constructive contributions, creating a sense of accountability among railway management. In return, IR’s responsiveness raised the public’s trust in the government.

Figure 4-7 | Top Issues by Zone (April 1, 2016 – March 31, 2017)

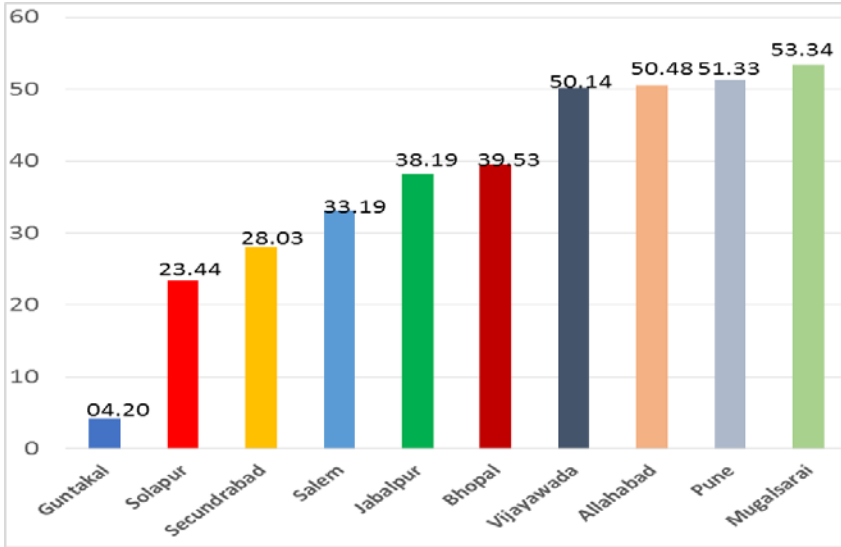


Source: IR internal documents

Figure 4-8 | Top 10 Initial Response Time of Divisions in Minutes

(April 1, 2016 – March 31, 2017)

Source: IR internal documents



The response times of all IR divisions are monitored regularly amid heightened scrutiny on social media. This report is considered a key performance indicator for a division’s responsiveness. Competition among divisions has helped enhance customer service by IR despite its status as a government-run corporation.

3.4. Roadmap for the Future

With a multichannel source for customer engagement, a system cannot work efficiently without an integrated common platform that arranges and monitors communication with customers. The integrated dashboard for Twitter, Facebook, Instagram (RailMinIndia), and YouTube (Ministry of Railways-India) will be developed and added to IR’s complaint management system.

The next step is to bring all other channels of IR’s complaint handling into the integrated dashboard under the same platform, like the Complaint Management System (COMS), Centralized Public Grievance

Redress and Monitoring Management System (CPGRAMS), and helplines. For the benefit of the general public in India, all channels for lodging complaints and suggestions will be consolidated into a single mobile application.

4. Lessons and Implications for the Science of Delivery

The IR case study shows how the policymaking process for public transportation can be analyzed and interpreted from the perspective of the science-of-delivery framework. The process consists of multiple stages in which IR had to deal with diverse challenges at every phase as shown below. (See Annex D for the details.)

[Policy Goal: Voice and Accountability]

As a public service provider, IR had as its initial reform objective enhancement of accountability. The massive volume of passenger demands had to be handled in a more comprehensive and systematic manner. For that purpose, IR had to listen to customers more carefully.

(1) Policy Leverage at Phase 1: Engagement of Stakeholders using ICT

The objective of raising responsiveness to passengers was self-evident for a public corporation. When it came to the method of achieving such a goal, however, various courses of action were available. IR's choice was to engage passengers more closely in the management process by using information and communications technology (ICT). The company decided on a new medium—social media—to allow passengers to access IR's decision-making process more conveniently and thereby improve customer service.

(2) Policy Leverage at Phase 2:

Leadership, Human Resource, Organizational Capacity

Such a revolutionary approach of engaging the people in service sector reform would not have been possible without strong initiative from the IR leadership. The new railways minister took the lead in launching the social media-based system of customer service. And his top-down approach eased the allocation of human resources and provided the organizational capacity needed for the new service.

(3) Policy Leverage at Phase 3: Roles, Responsiveness and Priority

Even after the institutionalization of the social media-based system of customer service, more steps had to be taken. The new staff, technology, and operating procedures required fine-tuning to ensure higher efficiency. The redundant and overlapping system was also accompanied by many missing gaps in service IR was supposed to fill. So the staff and their tasks were reorganized, streamlined, integrated, and prioritized. The drive toward implementing sophisticated innovation is never ending because the environment surrounding IR is constantly changing.

Annexes

Annex A. Interviewees List

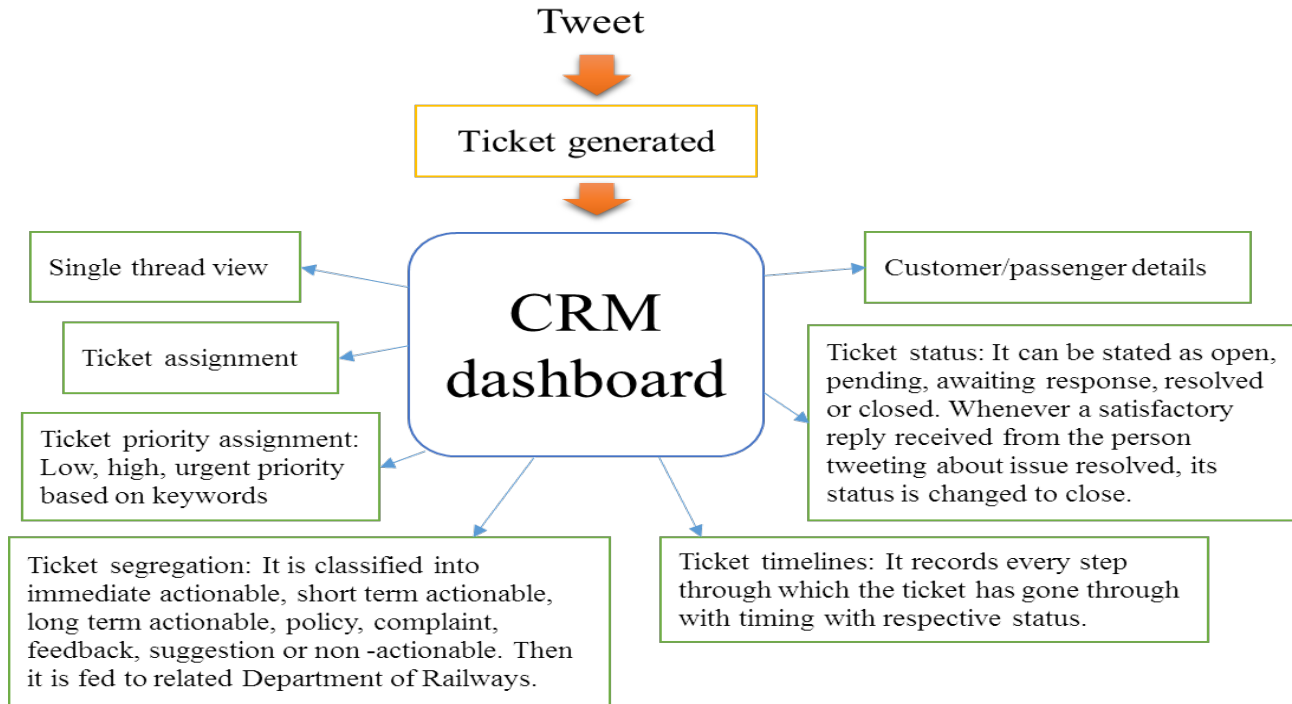
1. Ravinesh Kumar, Executive Director (Public Grievances),
Railway Board, New Delhi
2. Ved Praksh, Director (I&B), Railway Board, New Delhi
3. R. Badrinarayan
(Divisional Railway Manager, Howrah Division, Eastern Railway)
4. Team members of social media cell at Railway Board, New Delhi

Annex B. List of Sample Keywords in WORD-CLOUD for Prioritizing & Categorizing Tweets

Categories	Keywords
Urgent	Theft, missing, medical, rape, accident, security, poison, collapsed, unconscious, wheelchair, danger, dead, death, fire, harass, urgent, serious, trouble, terrorist, robbery, serious, drunk, police, first aid, emergency, snatch, fainted, derailment, injured, doctor, bleeding, hurt, suffer, misbehave, pain, fever
Security: urgent	Beaten, beggar, rob, lost, theft, stone pelting, hawker, anti-social, illegal, stabbing, knife, pistol, murder, <i>dacoit</i> *, robbery, gun, passenger missing, luggage lost, extortion, kidnapping, trafficking, afraid, suspect, insecure, tease, drugged, railway police
Medical: urgent	Medical, heart, stomach, headache, pain, blood, vomit, fever, oxygen, asthma, attack, patient, medicine, injury, cancer
High priority	Arthritis, bedroll, birth, cigarette, cockroach, corruption, worried, seat, cooling, milk, dirty, air conditioning, clean, fan, disturbance, bedsheet, extra charge, no water, no pantry, hot, rat, <i>gandagi</i> *
Low priority	Punctual, vendor, platform, announcement, attention, staff, littering, station, lighting, attention, ticket examiner, no train, quality, reservation, <i>shatabdi</i> *

Note: Various Hindi words are added either in Hindi or Roman script.

Annex C. Detailed Mechanism of New System



Annex D. Process Map (based on taxonomy of delivery challenge)

		Initial challenge & intervention		Phase 1		Phase 2		Phase 3	
		Development challenge	Initial intervention	Delivery challenge	Learning & adapted intervention	Delivery challenge	Learning & adapted intervention	Delivery challenge	Learning & adapted intervention
Delivery challenge taxonomy		Gap b/w users demands & services	Proactive civil engagement to improve services	<ul style="list-style-type: none"> External: volume of tweets Internal: unskilled staff, unsystematic approach 	Institutionalization (HR, governance & system)	<ul style="list-style-type: none"> External: diverse demands Internal: costs of prioritization 	Expanded institutionalization of external services (more seamless, decentralized, outsourced, & standardized Twitter operation)	Internal: role conflicts	Smart institutionalization of internal coordination (CRM using pre-designated request categories, specified responsibility)
Stakeholder coordination & engagement									
Roles & responsibilities				Confusing division of labor			Seamless 24-hour system, more decentralized & standardized Twitter cells operation	Overlapping, confusing roles	"Counter tweet" match for enhancing accountability
Stakeholder engagement			Engaging users to improve service						User requests based on pre-designated categories
Inter & intra-governmental				Confusing, competing		Confusing, competing			

	relations			priorities		priorities			
	Commitment & leadership								
	Change in leadership & administration		New minister revamps organization		New governance (Executive Director of Public Grievance)				
	Change in priorities or lack of commitment			Confusing, competing priorities		Confusing, competing priorities			Simplify & systemize user request categories
	HR & organizational capacity								
	Skilled personnel			Unprepared & inexperienced staff	Hiring of professional computer operator	Unprofessional staff	Outsourcing to ICT-savvy personnel		
	Organizational capacity			Not systematic, but manual & discretionary approach	Systematic approach (team-based, streamlined process)		Outsourcing to ICT-savvy personnel		
	context								
	Governance & politics								
	People's' voice & accountability	Huge expectations of users		Too many tweets from users		Too diverse demands from users			
	Basic infrastructure								

	ICT		Proactive intervention using ICT						New CRM
Project									
Project design									
	Overambitious objectives								
	Time allocation or task sequencing			Confusing priorities					
	Stakeholder selection								
	Beneficiary targeting					Excessively diverse demands from users, confusing priorities			
Project finance									
	Budgeting				More support to Twitter Seva		More support to Twitter Seva		
	Auditing								
Project data & monitoring									
	Indicators		Visible & tangible indicators thanks to ICT	Confusing interpretation of indicators					Standardizing user request categories
	Data availability & baselines								Standardizing user request categories
	Reporting & supervision								Counter tweet match for enhancing accountability

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CHAPTER 5

Development of Integrated Security for Public Safety in Ecuador

By

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Executive Summary

Like quite a few countries in Latin America and the Caribbean, Ecuador has in the past suffered from a high crime rate, especially that of homicides. Thanks to a series of government reforms such as a de-concentration policy, use of high-tech communication, and setup of national coordinating centers for emergency situations that enabled integrated security, the Ecuadorean government greatly improved public safety. The homicide rate was reduced to five per 100,000 inhabitants in 2016, and Ecuador began to attract major attention as a model for successful implementation of integrated security in developing countries plagued by violence and crime.

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1. Introduction

Democracy returned to Ecuador in 1979 after a long period of dictatorship. The country, however, suffered from political instability from 1997 to 2007 because of the successive removal of presidents. Over this ten-year period, none of the nation's eight presidents completed his four-year term. The weak government also made it impossible to have an adequate organization or a proper system to control and coordinate government institutions responsible for public safety.

In addition, the economic crisis of 1998 led to the collapse of Ecuadorean financial institutions such as Filanbanco, Préstamos, Previsora, and Progreso. This not only weakened the government but also led to suffering among the Ecuadorean people. Though the economy began to slowly recover after 2000, the homicide rate surged from 6.4 per 100,000 inhabitants in 1980 to 10.4 in 1990 and 14.5 in 2000. The rate peaked at 18.9 in 2008, which made Ecuadoreans distrust their government.

Despite the government's best efforts, the crime rate rose due to inefficient cooperation among agencies under each ministry and lack of decentralization, de-concentration, and preventive measures. The poor intra- and inter-institutional cooperation also led to the misallocation of logistical and human resources. Moreover, many government strategies and actions were made without geo-referenced data on crimes and the analysis of crime hot spots, or areas with especially high crime rates), so citizens failed to get timely responses in the face of dangerous situations.

After recognizing the grave crisis in public safety, the government under the strong leadership of then President Rafael Correa got to work on improving public security, including reducing the murder rate. The term "integral security"² was mentioned in Ecuador's new constitution

² The term "integral (integrated) security" was introduced in the Ecuadorean constitution (Clause 8 of Article 3) in 2008 for the first time and states: "Guaranteeing

for the first time in 2008, and the government started to integrate the duties of each government institution³ related to public safety into one framework. This allowed actions to be coordinated and focused on crime prevention, as well as monitoring at the national and local levels. To realize this objective, the role of police in public safety had to be distributed to other government institutions.

Stifling this process, however, was strong opposition from police groups; a state of emergency was even declared. The government then began to implement a series of actions by raising the number of police officers in each community, providing cutting-edge equipment to law enforcement, creating criminal investigation offices, performing data analysis, and finally completing the integral security mechanism through which the actions of all institutions were coordinated. This allowed the government to offer security services to the public.

Thanks to the de-concentration of public institutions,⁴ the government could better understand the people's needs and rapidly provide better security services. Moreover, the Ecuadorean public also helped raise public security by forming civilian-led committees.

An outstanding project under the new security model was Integrated Security Service SIS-ECU-911 (*Servicio Integrado de Seguriado*

its inhabitants the right to a culture of peace, to integral security and to live in a democratic society free of corruption.”

³ Government institutions for public safety under the integrated security system include all related agencies such as the National Police under the Ministry of the Interior, the Prosecutor's Office, courts, and the Public Defender's Office under the Judiciary Council, the Ministry of Justice, Human Rights and Religious Affairs, the armed forces, firefighters, and Red Cross. Integrated security covers all security issues in Ecuador and its main goal is to protect the public from all types of threats. This paper, however, mainly focuses on how Ecuador reduced crime rates (especially that of homicide), a more urgent task in Latin America and the Caribbean.

⁴ Decentralization and de-concentration comprise one part of national security planning. Decentralization implies the transfer of competencies and resources from the central government to local governments or institutions, while de-concentration distributes services from institutions and installs more offices to get the government closer to citizens.

Ecuador 911)” in 2011. This enabled relevant institutions to cooperate in providing a rapid response not only to crime, but also other emergencies such as natural disasters and accidents. Thus the logistical and human resources of each institution could see optimal use through the latest technologies and coordinating mechanisms.

SIS-ECU-911 has national coverage and citizens can use the service 24-7 by just dialing 9-1-1 or pushing the emergency button on a bus or taxi or at banks, hotels, and other public or private spaces. Moreover, surveillance cameras installed at public spaces across the country allow SIS-ECU-911 center staff to keep a constant eye on critical areas (SIS-ECU-911, 2015).

For example, when a crime in a district is detected by a security camera, relevant figures such as police officers or rescue personnel are rapidly dispatched under the coordination of the SIS-ECU-911 center. Accordingly, Ecuador’s homicide rate began to decline from 2008 and fell to five per 100,000 inhabitants in 2016. Considering the severity of crime rates in developing economies in Latin America, the success of integrated security in Ecuador holds major implications.

1.1. Development Challenges: High Crime Rate Threatens Public Welfare

A leading indicator that gauges a country’s level of violence and insecurity is the homicide rate (CHIODA, 2017). In Ecuador between 1980 and 2008, this figure nearly tripled from 6.4 homicides per 100,000 inhabitants to 18.9 in 2008. Over 60 percent of homicides were committed through the use of firearms, and the presence of organized crime such as drug trafficking was on the rise with the proliferation of criminal organizations (SEMPLADES,⁵ 2013).

⁵ SEMPLADES stands for the Ecuadoran Secretariat for Planning and Development in English.

Daniel Pontón (2009) said, “In summary, since the return to democracy in 1979, there have been three facts that we could highlight in matters of public security: a) sustained growth in the indicators of violence, crime, and citizen security; b) transformation in the government’s priority or agenda on security, ranging from the anti-subversive struggle of the 1980s to the control of drug trafficking and related activities from the early 2000s; and c) a recurrent crisis and institutional illegitimacy (police, prison, and justice) lacking the public’s confidence.”

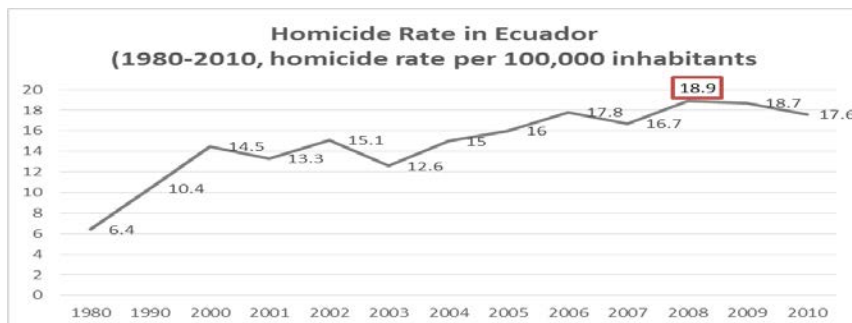
The rise in violence and public insecurity mainly resulted from the central government’s lack of active participation in political decision making and failure to act toward improving public security. In addition, government institutions related to public safety practiced no cooperation and the country lacked technologies and the ability to conduct geo-referenced data analysis. For these reasons, Ecuadoreans could not receive a timely response in a criminal situation and public confidence in public institutions was abysmal. The government also did not also encourage the people to take part in public security improvement.

Ecuador thus faced several problems in three areas of public security.

- Weak management in government and relevant institutions
 - Management not aiming to achieve results (result-oriented actions)
 - Public policy devised separately without data-based decision making Policy and actions geared toward responses to crime, not prevention
- Weakness of technical tools
 - Databases with bad indicators and problems in data reconciliation
 - No interconnectivity in each institution’s systems or databases
 - No data analysis or geo-reference of crime hot spots in system
- Little or no cooperation among institutions and lack of civic participation

- Limited de-concentration of National Police and other institutions
- Weak inter-institutional work
- Weak link between institutions and citizens

Figure 5-1 | Homicide Rate in Ecuador (1980-2010)



Source: The author made this graph based on data from the National Institute of Statistics and Census (1980-2000) and National Police of Ecuador (2001-10)

1.1.1. Establishment of New Constitution in 2008

Until 2008, Ecuador had no legal norms to support the integration of public security services, and this was a leading reason behind weak cooperation among public safety agencies. Thus the adoption of new regulations based on the new constitution, decrees, national and institutional plans, and other criteria was needed. In 2007, after the successive overthrow of presidents, Rafael Correa took over as chief executive and began to implement reform in various sectors.

Bolstering public safety management was a major area for reforms, so a new constitution was promulgated in 2008 that included the term “integral security” for the first time in Ecuadorian history. Based on this new concept, both traditional and non-traditional public institutions began to cooperate among themselves by meeting and sharing information and data for one mission: provide better public safety. Through joint work on security matters, the government also began to focus on preventive measures, which were more effective in raising public safety. The presidential cabinet, councils, commissions, and committees were created based on the subsequent

enactment of laws and decrees. For example, the newly established Public Safety Council, comprised the following members:

- President and Vice President
- President of the National Assembly
- President of the National Court of Justice
- Coordinating Minister of Security
- Minister of National Defense
- Minister of Justice, Human Rights, and Cults
- Minister of Foreign Affairs
- Chief of the Joint Command of the Armed Forces
- General Commander of the National Police⁶

Within this council, the government took several measures including a 2009 ban on carrying firearms and strengthening punishment. These actions played an important role in reducing crime in Ecuador, leading to a decline in the homicide rate (UNODC,⁷ 2014).

The government also devised national plans such as the National Plan for Good Living (2009-13), the Project to Transform Justice (2009-13), and the Law and Plan on Citizen Security (2009). It decided to gradually raise the number of law enforcement officers (national police) more than 40 percent and build more police stations in each neighborhood across the country.

1.1.2. Reformulation of Strategic Plan for Modernization and Integral Transformation of National Police (2010-14)

The National Secretariat for Planning and Development (SENPLADES), a new public institution for national planning, issued the National Plan for Good Living (2009-13). Each public institution has since been required to prepare an action plan per SENPLADES

⁶ The Public Safety Council was created per Article 2 of the Public Safety Law.

⁷ UNDOC stands for the United Nations Office on Drugs and Crime.

guidelines for outlining the nation's objectives. Thus the Reforming and Strengthening Justice Plan (2009-13) was launched to improve the Prosecutor's Office, Courts, and the Penitentiary System. In addition, the National Police of Ecuador had to restructure its previous plan (2004-14) and revised its strategic blueprint for modernization and comprehensive transformation (2010-14) (National Police, 2010). Over this period, the president issued several decrees to reorganize public agencies, especially the National Police, and declared a public safety emergency. Yet a series of government actions caused many conflicts among institutions.

1.2. Delivery Challenges:

Inter & Intra- Government Relations, ICT

Despite the government's campaign to reduce crime, the crime rate merely saw a marginal decline and inter-institutional cooperation on integrated security failed to work properly because of the lack of instruments or tools for the administration to achieve results (result-oriented administration) or the technology (platform) to analyze data and share information. Certain institutions also refused to share their work with others or cooperate with citizens. Worse, many government decisions made through presidential decrees and legislative changes were unilaterally notified to public servants, which caused many such officials to misinterpret the government's actions.

After the enactment of the Public Service Organic Law in 2010, conflict erupted after police officers misunderstood that their salaries would be cut. Tension finally came to a boil with a rebellion of police officers was met by Ecuador's armed forces on September 30, 2010. Fortunately, the revolt was suppressed in a day by the armed forces and a group of police officers who opposed the protest (Carroll, 2010), but this incident showed that Ecuador had a long way to go to achieve integrated security. Both police officers and soldiers had misunderstood the law; it did not lower their salaries. For this reason, the homicide rate saw a slight change over this period.

2. Contextual Conditions

As a country is growingly getting interconnected through globalization, threats to its people have emerged both at home and abroad, which not only affect public welfare but also the nation's economic development and environment. For this reason, the government needs to focus on providing integrated security to ensure public safety.

Integrated security can be achieved through cooperation of all relevant stakeholders including the central and local governments, public and private institutions, civil society organizations (CSOs), and the people.

3. Tracing the Implementation Process

3.1. Launch of “Results-oriented” Government

Executive Decree No. 555 issued in November 2010 enabled the Government by Results Project⁸ by requiring all public institutions to focus on result-oriented activities. A major component of this project was the so-called Comprehensive Scorecard, which allowed the control, execution, and fulfillment of objectives and the central government to conduct planning and management at the national level.

The National Police, as a single entity under the Ministry of the Interior, developed and used the David system, which allowed management and monitoring of each unit's activities and development of preventive strategies based on analysis of data shareable in real time.

⁸ Government by Results is the name of both a policy and a platform.

National Police executive Fausto Martínez Terán⁹ said, “From 2010, the National Police began to use diverse techniques through this new system, which overcame the difficulty of lack of consolidated information from each unit, and the Comprehensive Scorecard was reported manually every month. Under the new system, however, information could be delivered in real time, which enabled us to develop strategies in less time.”

3.2. De-centralization: Social Security Services (2012-15)

To ensure better service equally across the country, the National Plan of the Decentralization and De-concentration of the State was implemented to raise government access to citizens. The plan was based on three administrative units - zones, districts, and circuits.¹⁰ This planning tool allowed all institutions to align their decentralization and de-concentration strategies with the geographical distribution of the central government (SEMPLADES, 2009).

Following these new guidelines, police units in several circuits were built for the benefit of residents. Similarly, the Prosecutor’s General Office and SIS-ECU-911 also implemented de-concentration projects so that more people could access their services. The Prosecutor’s General Office installed more offices in districts and SIS-ECU-911 put its centers across zones for 100-percent coverage. Other public institutions followed suit.

The SIS-ECU-911 project aimed at providing integrated security services at the national level, but this required the institution to undergo decentralization. As of 2017, SIS-ECU-911 had 15 centers (seven zonal,

⁹ Interview with Fausto Martínez Terán, Head of Operations Planning at National Police of Santo Domingo

¹⁰ According to the National Plan for the Decentralization and De-concentration of the State, each zone comprises districts. A district that coincides with a canton is a basic unit for planning and public service provision. A circuit is the smallest unit that corresponds to a parish.

eight local, and one operations in Galapagos) across the country, benefiting nearly 16 million inhabitants in Ecuador's 24 provinces (SIS-ECU-911, 2015).

3.3. Technological Development

(Geoportal, 2010; SIS-ECU-911, 2011; David, 2014)

Through advanced systems like Geoportal, SIS-ECU-911, and David, the government could detect areas with the highest crime rates and use hotspot analysis based on geo-referenced data.

As a preventive measure, potential criminals could face arrest by the General State Prosecutor's Office via Geoportal, the integrated system of SIS-ECU-911 with a video surveillance system in each hotspot. The National Police could do the same through its David system. All these systems enhanced the organizational capacity of these government bodies and enabled the use of coordinated preventive strategies as the databases of the organizations were interconnected to share information

3.4. Cooperation with Community

National Police executive Carlos Raza¹¹ said, "Through the successful decentralization policy of the government, police became distributed in each region of the country, and came to realize what problems people faced. The information collected from residents was sent to police information departments for geo-referenced analysis of crimes. Moreover, through cooperation with community leaders, police gained better access to residents."¹² For the same reason, the SIS-ECU-911 reflected the opinions of an area's residents on improving public safety when installing surveillance cameras.

¹¹ Interview with Juan Carlos Raza, Head of Operations Planning, National Police in Santo Domingo

¹² Interview with Fausto Lincango, Director of SIS-ECU-911 in Quito

3.5. SIS-ECU-911 (2011)

Executive Decree No. 988 was issued on December 29, 2011, to launch integrated security service.

3.5.1. Project Financing Capacity Building of Public Safety Staff

The SIS-ECU-911 project required a huge investment because of the need for several centers with state-of-the-art technologies and modern facilities in key regions. This was to allow public servants from a variety of institutions to work together in the interest of providing better security services to the public. In late 2010, the government secured funding from the Development Bank of China, and the China National Electronics Import and Export Corporation (CEIEC) built the SIS-ECU-911 centers.

In addition, a delegation of representatives from Ecuador's armed forces, National Police, National Secretariat for Risk Management, Ministry of Public Health and other government bodies visited China during the Beijing Summer Olympics in 2008 to observe how China implemented its citizen security system. They learned the importance of integrated security and technical details of the system.

The delegation also visited other world cities such as Madrid, Rio de Janeiro, and London and several U.S. states to learn how other countries run integrated security or emergency centers. These experiences enabled them to know about the processes for creating Ecuador's integrated system and jointly coordinate relevant institutions.

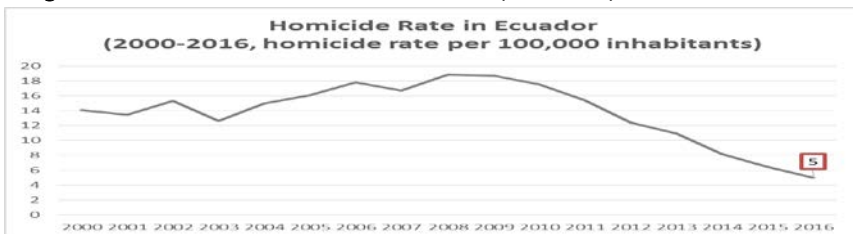
3.5.2. 7 Services Provided by ECU-911 Centers

- *Public Security* Crimes such as robbery and assault directly related to the National Police and the Ministry of Justice, Human Rights, and Cults

- *Health Management* Health issues and relevant institutions handled by Ministry of Public Health, Ecuadorian Institute of Social Security (IESS), fire departments, Ecuadorian Red Cross and others
- *Transit and Mobility* Metropolitan Transit Agency in charge of transportation in most populated cities such as Quito; National Police handles same service in areas with no decentralized traffic control
- *Claims Management* Fire departments in charge of this work such as fire and rescue services
- *Risk Management* National Secretariat for Risk Management in charge of handling natural disasters like earthquakes and landslides through de-centralized autonomous governments
- *Military Service* Border control at national level carried out by armed forces, whose actions are coordinated with SIS-ECU-911 centers and receive helicopters if necessary
- *Municipal Services* Four municipal companies - metropolitan police and metropolitan companies of electricity, public water, and cleanliness - cooperate with ECU-911 centers (SIS-ECU-911, 2015)

By providing these seven services to the public, the SIS-ECU-911, as the main center for coordinating government activities to raise public safety, has helped lower the crime rate in Ecuador.

|Figure 5-2 | Homicide Rate in Ecuador (2001-16)



Source: The author made this graph based on data from the National Police of Ecuador (2001-12) and the Prosecutor's General Office (2013-16).

4. Lessons Learned

4.1. Strong Government and Presidential Interest in Public Security

A stronger central government is needed to enact relevant laws and implement measures to improving public security. Creating the legal grounds for this is the first step toward launching reform because without a legal basis, getting all relevant institutions to work together is difficult. While enacting new laws or decrees, the government, like in this case, might face several difficulties such as strong opposition. Yet such obstacles can be overcome through meetings and negotiations. And the president, as the country's most powerful official, must show strong interest in public safety in serving as a powerful force driving reform.

4.2. Setup of Coordinating Institutions for Negotiations

Ecuador set up several coordinating organizations including councils, commissions, and committees to allow relevant public institutions to jointly discuss a diversity of issues, including public safety. This is because when reform is carried out at the national level, one organization should coordinate the entire procedure. And because many government entities are involved in public security, they need a place to discuss and share information.

4.3. Government by Results

Public institutions should set objectives over the short, medium, and long term and implement, monitor, and evaluate them in cooperation with each other based on central government guidelines. Through an inter-connected platform, all public agencies can share information without delay.

4.4. Building Staff Capacity via Training

To properly implement the ECU911 Integrated Security Service, continuous training of staff in new technologies is needed, as well as

cooperation with other public security institutions. Staff from the ECU911 centers received training from British police.

4.5. Technological Development

To secure the innovative technologies required for planning, implementing, monitoring, and evaluating actions, a new platform can be created through the assistance of bilateral and multilateral agencies. In Ecuador, the SIS-ECU-911 project received financial and technical aid from the Development Bank of China and Chinese corporations; the setup of the other platforms like the David system was financed by Inter-American Development Bank (IDB).

5. Implications for Science of Delivery

Crime remains a serious problem in many Latin American and Caribbean countries. A highly effective means to reduce crime is to enact a law banning the carrying of firearms as Ecuador did in 2009, but this is tough to do because of potential for strong opposition from interest groups like in the U.S. And in Latin America, where violent drug cartels are prevalent, governments might face even more difficulties.

From this perspective, Ecuador's development of integrated public security has many implications for other developing countries plagued with high levels of violence and crime. To properly implement an integrated security system, the government must take strong and decisive action based on the president's strong leadership because the interests of public organizations are considerably entwined.

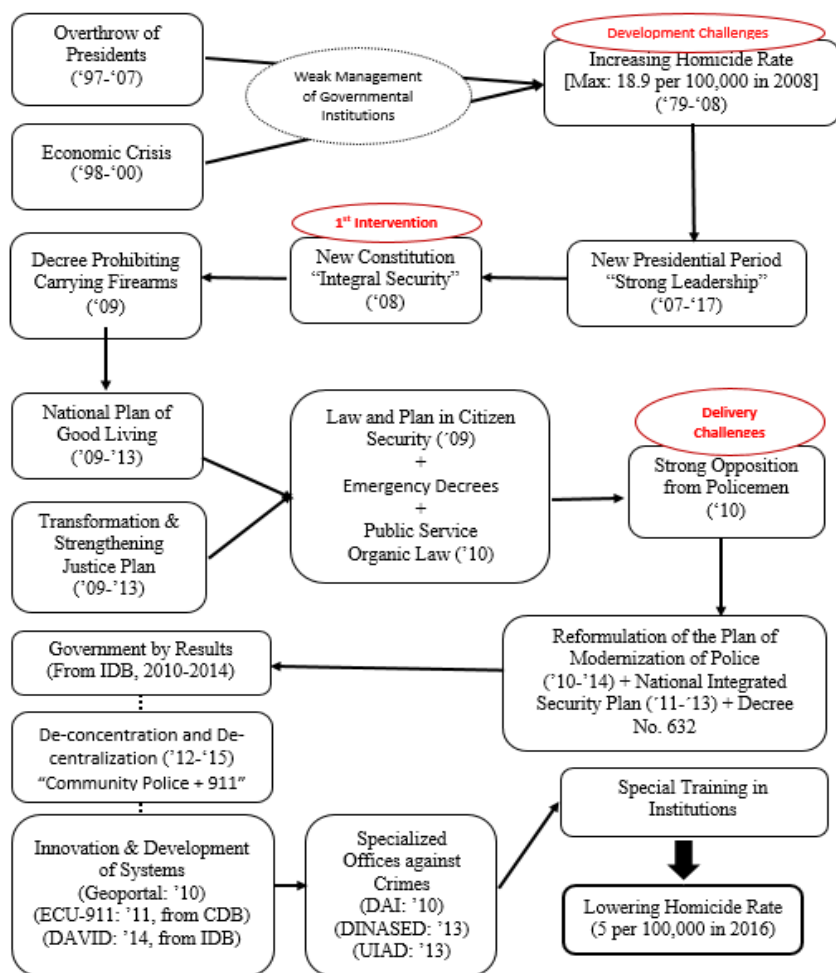
As previously mentioned, building the legal basis for integral security is the first step toward enabling the participation of relevant institutions and technologies. A national platform is also required to

exchange information on integrated security, as well as heighten participation by the people to better understand the needs of the public.

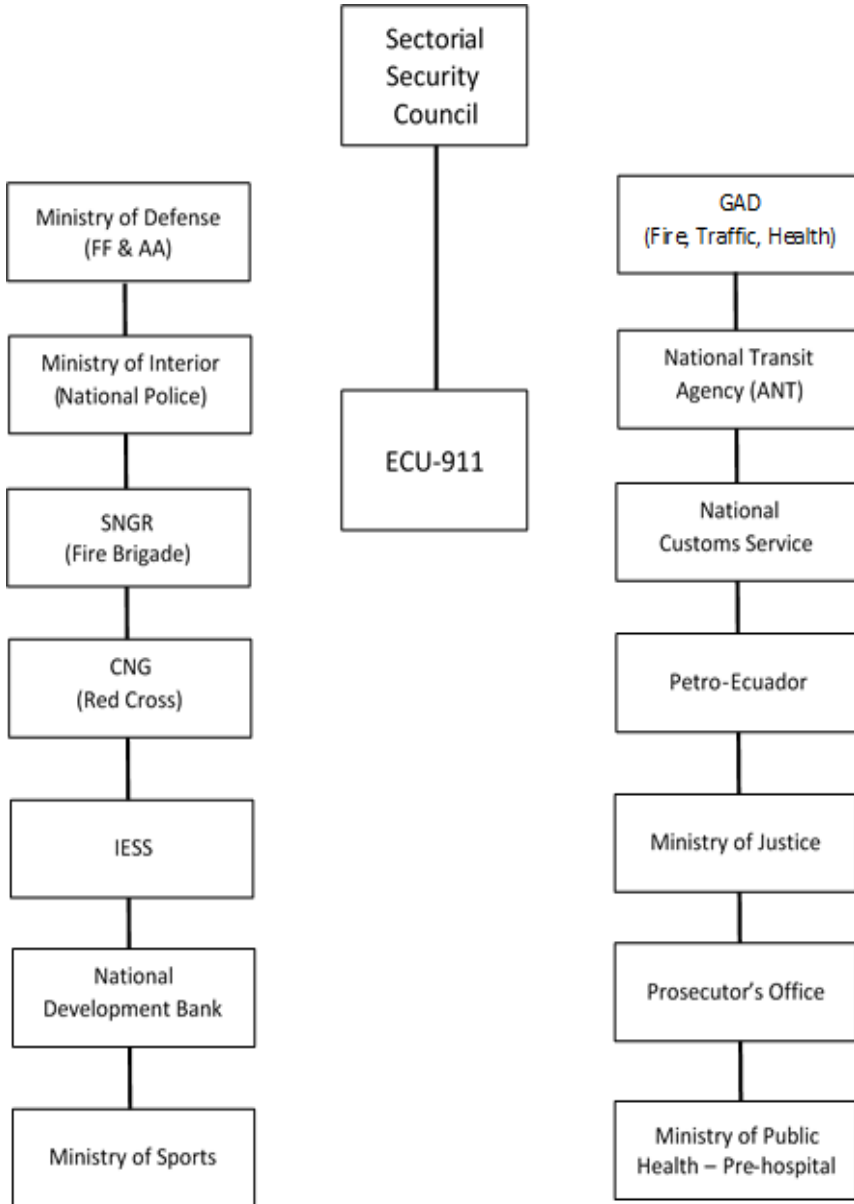
In addition, a council or committee is needed in which stakeholders share ideas and strategies based on the clear guidelines of those organizations. Finally, the formation of an inter-governmental agency in charge of integrated security activities is crucial at the implementation level. This would allow relevant organizations to cooperate for providing better public security, especially through preventive measures.

Annexes

Annex A. Process Map



Annex B. Stakeholder Map



Annex C. List of Interviewees

Organization	Position	Name
Prosecutor- General's Office	Planning management director	Fernando Heredia
	Prosecutor	Fabián Salazar
	Criminal policy expert	Alex Tupisa
	Ex-adviser of Prosecutor-General's Office	Ivan Del Pozo
	Ex-financial administrative director	José Guerra
	Ex-director of criminal policy	Santiago Rene Aguello Mejia
National Police in Santo Domingo	Head of operations planning department	Fausto Martinez Teran
	National Police chief in Santo Domingo	Juan Carlos Raza
	Head of information analysis department	Michael Balarezo
	Head of Dinased	Christian Paul Peralta
Ministry of Justice, Human Rights, & Cults	Minister (Social – Rehabilitation)	Gustavo Penafiel
	Ex-adviser	Ramiro Nunez Villacres
Prosecutor's School	Ex-director	Teodoro Barros Austudillo
ECU 911 in Quito	Director	Fausto Lincango
Council for Gender Equality	President	Consuelito Bowen
Others	Civilians (holding lawyer credentials)	Sofia Granda,
		Dayana Castro,
		Nadia Nunez,
		Maria Castillo

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e.ingenta.com%2fcontent%2fimprint%2funp.](http://www.ingenta.com/content/book/1241a80-en&mimeType=application/pdf&containerItemId=%2fcontent%2fserial%2f47f56b96-en&accessItemIds=&option6=imprint&value6=http%3a%2f%2foecd.metastore.ingenta.com/content/imprint/funp)