

ICT innovations in South Asia: An assessment

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Agenda

- Innovation in services-centric vs. in manufacturing-centric economies
- Budget Telecom Network (BTN) business model as a cluster of service-process innovations
- New innovations emerging in mobile more-than-voice, now that the platform exists
 - Decentralized innovation and the increasing significance of understanding demand

Services sectors in South Asia: highest share of GDP

		Bangladesh (%)	India (%)	Pakistan (%)	Sri Lanka (%)
Share of GDP (2009)	Agriculture	19	17	21	14
	Industry	29	28	24	28
	Services	53	55	55	58
Share of labor (year)	Agriculture	48.1 (2005)	52 (2008)	43.6 (2007)	31.3 (2007)
	Industry	14.5 (2005)	N/a	21 (2007)	26.6 (2007)
	Services	37.4 (2005)	N/a	35.4 (2007)	38.7 (2007)

- Services, being a residual category, must be carefully interpreted (e.g., retail trade, a major component, does not signify great technological sophistication)

New thinking on services-led development

- Ghani, Ejaz (2010), *The service revolution in South Asia* (Oxford), shows that:
 - Growth in South Asia has been led by services
 - Labor productivity levels in services are higher than those in manufacturing
 - Productivity growth in Indian services sector = productivity growth in Chinese manufacturing
 - Services-led growth has reduced poverty

Measuring innovation in service-dominated economies

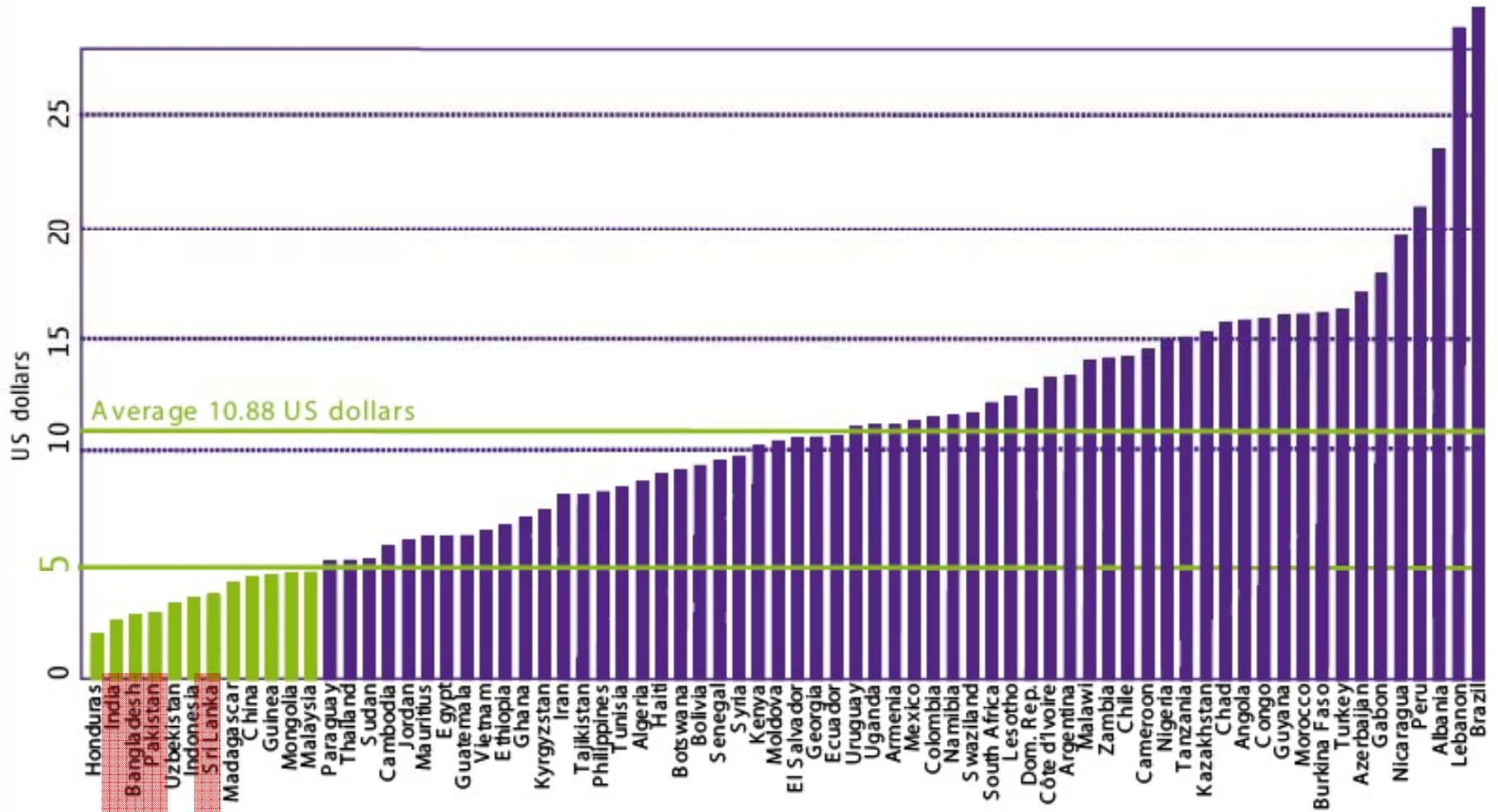
- Patent counts may be good indicators of innovation in manufacturing, but not in services
 - Innovation in services occurs in small, discrete steps
 - Major sources are customers, suppliers, consultants (Freel, 2003; Gallouj, 2002; Tether, 2002; etc.)
 - Innovations in services rarely patented, Amazon's controversial 1-click patent notwithstanding

LIRNEasia's research on innovation

- Begins with the user
 - Teleuse@BOP (representative-sample quantitative & qualitative research; 6 countries & 12 languages in 2008-09; 6 countries in 2011 also)
 - Findings included user innovations in
 - missed calls + multiple SIM use
 - airtime-based payments, etc.
- More relevant to present discussion: Budget Telecom Network (BTN) business model that made it possible to connect millions at unimaginably low prices/ARPU

Total cost of mobile ownership in 77 emerging economies, 2009

Monthly TCO by country



Innovations underlying the BTN business model

- Significantly higher utilization levels to accommodate higher traffic volumes
 - In many cases, network capacity was increased by enhancements to base station software. One Sri Lankan operator claimed to have doubled network capacity through such software solutions with no negative consequences to quality
 - Traditionally, capacity was added on basis of subscriber numbers. However, as lower income, pre-paid subscribers predominated, operators changed to adding capacity based on call attempts per second

Innovations to reduce transaction costs of dealing with long-tail customers

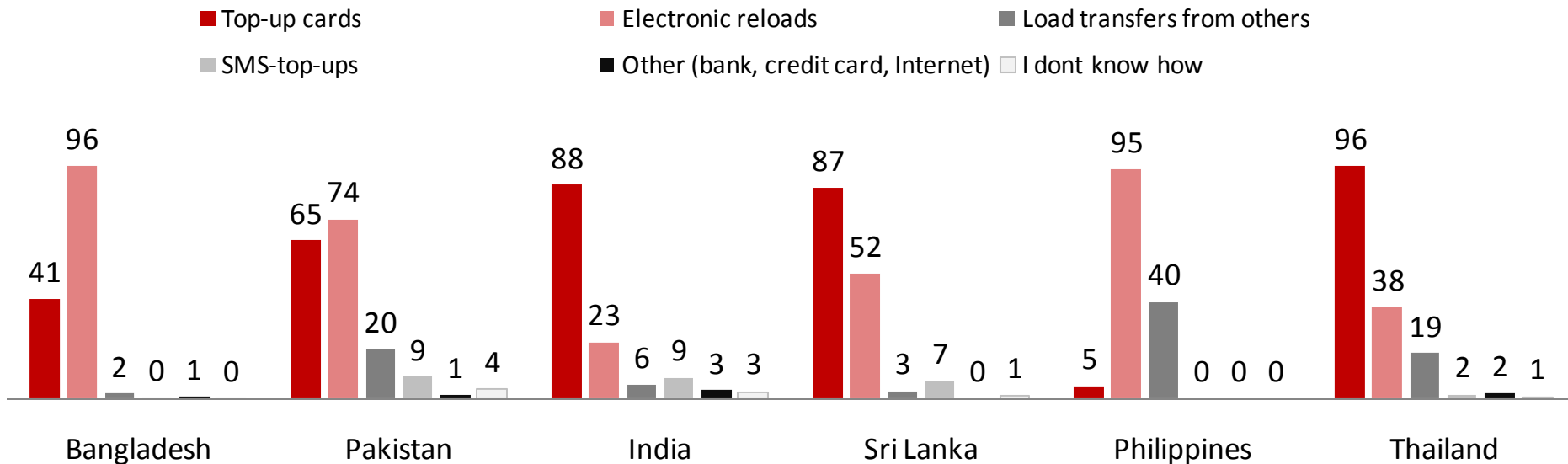
- Prepaid payment was key to dealing with large number of customers yielding ~USD2/month
 - Expensive production & distribution of bills and payment centers eliminated
 - In countries where addresses are imprecise and postal service unreliable, distribution of bills is highly problematic
 - Increasingly moving to e-reloads that enable very low transactions (USD 0.25)
- Customer acquisition costs squeezed
 - As low as USD 1, based on reduced and conditional commissions paid to agents

Owners spend little, but often (2008)

Micro-top-ups on prepaid; e-load predominates in BD,PK, PH

	Bangladesh	Pakistan	India	Sri Lanka	Philippines	Thailand
Last top-up (USD)	0.50	0.87	1.71	1.26	0.65	2.49
No. of days expected to last	4	7	13	12	2	11

Top-up method (% of BOP prepaid mobile owners)



Voice is the past; innovations now focused on mobile more-than-voice services, though it is still ~10-15% of revenues

Example: Innovative use of mobiles to deliver government services in India



1.6 million
Customers

6,100 Customer
Service Points

9,200 Villages

127 Districts

The equipment: Cash box, mobile with fingerprint reader, battery operated printer



Specifications of technology components

- The Point of Transaction (POT) terminal consists of 3 components: Reader (designed in India), Printer and RFID Smart Card, which communicate through NFC protocol
- POT terminal can handle transactions both in online and offline mode. The POT communicates with the back-end server through GSM/GPRS. Communication is secured through VPN.
- Standards: Bio-Metric - ISO 19794; Smart Card - ISO 14443.
- An ALW data center in Navi Mumbai serves as the back-end using banking software MIFOS and MLS for financial switch. Interface to banks has already been established.
- Fingerprint image (without compression) and the template are stored in the enrollment system.

Conditions for replication

- The mobile-enabled financial inclusion program can become the delivery mechanism for all government disbursements and bill/tax collection from BOP since delivering monetized benefits to different stakeholders outweigh the costs.
- Needs an orchestrator to align incentives and policies so that private partners can make a reasonable surplus from a project:
 - Partner charges a fee of Rs 5 from the citizen who saves Rs 20
 - Partner is paid a fraction (10%) of the savings that accrue through savings of payments to phantom pensioners
 - Commission determined as a fair estimate of costs of running an efficient system plus a surplus
- Requires coordination between Central Bank, Commercial Banks, Government Departments making payments to citizens, IT Departments in Government, Mobile Service Providers, Technology Providers (ALW), and NGOs (ZMF)

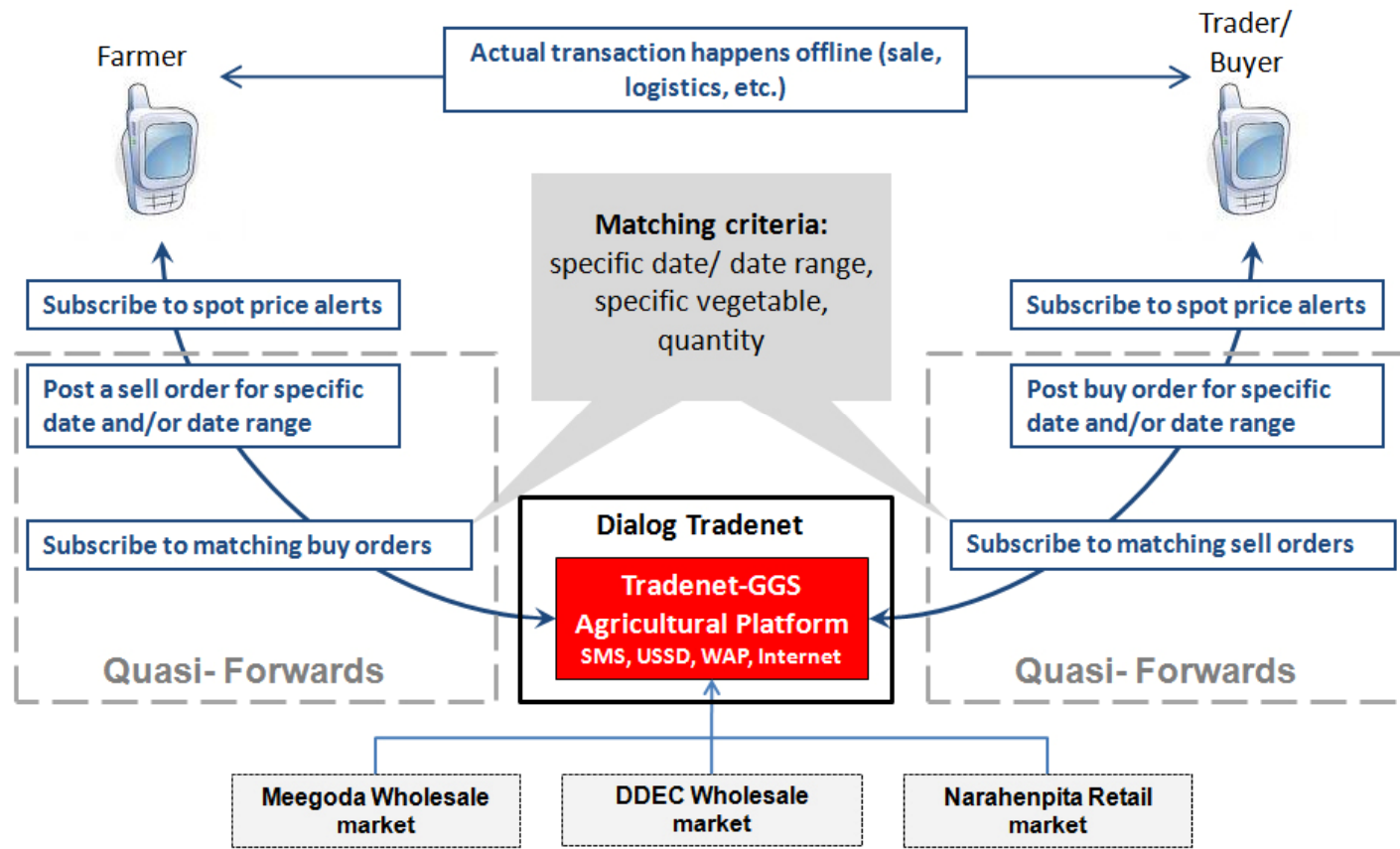
Example: Vegetable-fruit prices through Tradenet in Sri Lanka (tradenet.dialog.lk)

Tradenet:

Partnership between a not-for-profit company called Govi Gnana Seva (GGS) and Sri Lanka's largest mobile operator (Dialog Axiata PLC)

Launched Dec 2009

GGS: main source of wholesale agricultural price information in the country





Assessment of Tradenet's impact on farmers with 0.5-2 acres over one-year period

Changes	Intervention Group (55)	Control Group (30)
Financial capital	An average PREMIUM OF 6.4% on average daily market prices	An average LOSS OF 2.3% on average daily market prices
Social capital	Increase in interactions with traders, other farmer groups, relatives and neighbors; increased trust in market negotiations with traders	No increase in interactions
Human capital	Increased knowledge of price trends (their crops + new crops)	No changes noted
Vulnerabilities	Reduced vulnerability to price volatilities	Not assessed
Livelihood strategies and outcomes	<ul style="list-style-type: none"> • Chose harvesting and selling times based on price alerts; • Hoping to leverage their strategic advantage over farmers with lesser price information to grow higher value crops in the short term. • Still not convinced about using Tradenet for trading 	Not assessed

Challenges of delivering mobile more-than-voice to Bottom of the Pyramid customers will pull innovation

- 3G/4G networks likely to be the basis for broadband in emerging Asia, not FTTx
 - Challenges of ensuring adequate quality of service experience
 - Interface design
- Extant app-store models rest on credit cards for payments; credit-card penetration negligible at BOP
 - M-payments; airtime → money methods have to be used
 - Likely to result in operator-centric app store models in developing Asia against the more theoretically attractive operating-system-centric models in developed economies
- Software development comes to the fore
 - Centralized (e.g., Tradenet) → decentralized (e.g., App Zone)



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Featured Applications

			
School Sports Rating ★★★★★	Greetings Other Rating ★★★★★	VOG SMS mHealth Rating ★★★★★	Technology News News Rating ★★★★★

Latest Applications



Mobile more-than-voice will induce innovation

- Will succeed only through decentralized innovation
 - App store model is key: reduces transaction costs for small user-developers
 - M applications Lab initiative of infoDev, funded by Finland
- Necessarily involves applications in manufacturing and agricultural sectors
 - LIRNEasia's current research is on information and knowledge gaps in export-oriented agriculture value chains
 - Reflecting need for greater understanding of demand, especially at the BOP

In sum

- Services-centric innovation requires an approach and indicators different from conventional manufacturing-centric innovation
- The Budget Telecom Network (BTN) business model that emerged in South Asia
 - Contains within it significant service-process innovations
 - Provides a platform for mobile more-than-voice innovations, especially decentralized innovation through “app stores”
 - Has potential to enable innovation in agriculture & manufacturing value chains

For more information

- www.lirneasia.net
 - A blog, therefore use internal search function
- rohan@lirneasia.net