

Accenture Development Partnerships
Insights into the role of technology in
addressing development challenges

The role of big data and analytics in the developing world



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Chapter 3

The role of big data and analytics in the developing world

The power of big data and analytics enables better two-way communication and real-time decision-making, driving effective development outcomes.

Scientists studying patterns of malaria infection recently used mobile phone data in Kenya to pinpoint hotspots where disease transmission was taking place, so guiding government eradication efforts.¹ Direct Relief International, a medical help NGO active in 70 countries, is using software developed for the intelligence community to analyze weather data and pre-position supplies to help victims of storms and other natural disasters.² Procter & Gamble Company used data analysis to identify the consumer needs of men in areas with scarce water supplies and designed grooming products specifically for this segment.³ Within three months of launch, one shaving product became the best-selling product of its category in India.

Big data has arrived at the base of the pyramid—the largest but poorest social-economic group which currently comprises four billion people globally⁴—and new research from Accenture Development Partnerships and NetHope positions data analytics as one of the most important technology trends in emerging market countries affecting interaction between businesses, non-profits, government agencies and these end-users.

To assess technology's role in the developing world, Accenture Development Partnerships and NetHope surveyed four key stakeholder groups: non-governmental organizations (NGOs), foundations, private sector firms, and government officials. Working across 13 geographies, they engaged with nearly 300 business decision makers, 25 international non-governmental organizations, and 20 thought leaders.

NetHope and Accenture Development Partnerships' survey of NGOs found that over 90 percent believed that data analytics would be the most important tool to deliver better insight for helping their end beneficiaries. More than 70 percent believe they are already using this technology to help track their activities, and 59 percent are currently investing in the analysis of data.

The private sector also values the importance of understanding and analyzing data in developing countries to drive business outcomes. Asked what technology they were investing in to better engage with customers or potential customers in emerging markets, almost half of the business leaders surveyed said they were currently investing in data and the analysis of it. Data analytics scored very highly with African and Asia Pacific

business leaders—57 percent and 61 percent respectively say that this is an investment area for them. Globally, 41 percent of business leaders said they were significantly boosting spending on data analytics in the next five years to increase their understanding of consumers in emerging market countries.

In India, the private sector conglomerate ITC Ltd has set up 'e-Choupal' kiosks, giving farmers access to crop prices, weather and other information in local languages. More than four million Indian farmers routinely access these kiosks. ITC uses advanced analytics and mobile technologies to track data from individual farms and, after analysis, can offer the farmers supplies based on their needs, such as fertilizer and seeds.⁵

Edward Martin, Director Mobile Marketing, The Hershey Company and Chair of the Mobile Council for ana.net, says: "As time goes on, a few things will happen: we will be able to connect with individuals at a big data level, with access to everything; global marketers will be able to gain a deep understanding of behaviors and will be able to measure social change on a minute by minute basis ... and be able to intervene at exactly the right moment of time—this will be a powerful tool with which to impact change."

Data analytics involves a three-stage process: collection of data, dissemination or increasing the accessibility to collected data, and analysis of data. Each stage is being developed at a different pace in the developing world.

"Everyone wants data before making investment decisions," says Patrick Collins, chief information officer of the Hewlett Foundation. "The idea is to have data inform program-related decisions in that same way. This will help end beneficiaries and it will increase the transparency of where philanthropic dollars are spent which, I believe, will lead to more accountability."

Innovation in Action

One example of innovation in data collection was the introduction of barcodes to relief work in the developing world. An aid worker for Catholic Relief Services came up with the idea of using a barcode to track beneficiaries in developing countries and the services they receive.⁶ The barcode program was rolled out in the Central African Republic in 2011, when beneficiaries and vendors at seed fairs were given an identification card with a barcode. The card was scanned to register the person and used to keep track of what they received or sold. The information was transferred to a virtual form that was accessible online. Based on the enormous success of the barcode program, it is now being deployed to all of East Africa.

Analyzing data from the field can give aid groups a clear idea of what is effective and what isn't in their relief efforts years before anecdotal evidence makes the situation clear. For instance the Grameen Foundation helps subsistence farmers in developing countries by hiring local community knowledge workers (CKWs) to travel to rural areas and offer mobile phone-based information about crop prices, weather conditions and health issues. Grameen partnered with DataKind, a group of volunteer data experts, to check how effective the CKWs were in doing their jobs. Using information gathered on the CKWs' mobile phones, they determined what makes for a good CKW and whether certain interventions, such as providing bicycle transport, helped them reach more people. In the end, a costly program was halted because the data and analysis of that data proved it ineffective.⁷

Andy Williams, chief information officer of the charity Save The Children, cautions that the data gathering process has to focus on field usability. He recalls one project where using mobile technology to collect data took so long that workers went back to using paper and pencils. This again underlines the importance of applying the right technology for the market.

Another pressing data issue in the developing world is the open dissemination of data to citizens and other stakeholders. Many developing countries and international NGOs have accumulated a lot of useful data about their people, but have been reluctant to make it public.

Kenya became the first country in sub-Saharan Africa to launch an open data portal featuring information from the government census, as well as economic, health and education data. Users can now employ a MedAfrica application to track doctors and hospitals in their area and get medical information on their phones. Another application allows users to select a project in a particular parliamentary constituency and track its budget and spending.⁸

"Millions of Kenyans and interested persons around the world will now be able to access data that will facilitate informed decision-making in a wide variety of areas," said former Kenyan President Mwai Kibaki as the portal went online.⁹

A similar online data portal has recently been launched in Morocco, and in the Philippines a website called Check My School allows parents, educators and students to monitor school funding and report problems.¹⁰

The big promise of data collection and analysis is that it will provide new insights or highlight trends that can be used by governments, businesses and NGOs to better understand and serve end users.

Caroline Buckee, a Harvard University epidemiologist, used records from 15 million mobile phones in Kenya to track the movements of people in an effort to find hotspots where malaria was being transmitted. Analyzing the mobile data, she was able to pinpoint settlements where there was an unexpectedly high volume of parasites and to direct government control efforts to those areas.¹¹

Catholic Relief Services used mobile devices to gather comprehensive information about all the schools in Haiti.¹² The information was compiled to build a detailed map that shows the status of each school in the country, including the number of students, information about textbooks, and whether the school is still functioning. "Now we can work at the systems level to see what the schools need," says Carolyn Woo, President and CEO of CRS.

Direct Relief International partnered with technology company Palantir during the run-up to Hurricane Sandy in the US to integrate information from supply chains, weather stations and social vulnerability studies to better pre-position supplies and medicine before the storm hit.¹³ With that experience, Palantir will be making a commitment in the upcoming Clinton Global Initiative¹⁴ meeting to help aid organizations worldwide utilize its technology developed for the intelligence community to help focus assistance where it is needed most before, during and after emergencies such as tsunamis and earthquakes.

"We actively and systematically use data to make real-time business decisions for our programs to achieve better outcomes," says David Edelstein, Director of the Grameen Foundation Technology Center. "For example, we use analytics about poverty levels to tailor solutions to specific needs and ensure we are reaching the poor. We also use data to make adjustments to efforts to bring about behavior changes. In sum, strategic use of data enables us to make better decisions to improve outcomes."

"Barcode adoption ... changes the game... you can marry the project data to demographic data, look at longitudinal impact. Because you have GPS data, you can find out what happened to the community a few years later." Carolyn Woo, President and CEO, Catholic Relief Services

Data and analytics are not new, and data velocity is becoming increasingly important to match the speed of an organization's actions to the speed of its business opportunities. Businesses, non-profits and governments in emerging markets are not only able to better understand their beneficiaries and consumers, but are now able to use information to make decisions and adjustments in real time.

And these actions are not trivial—they can save lives, determine what people can buy and where, and fundamentally change the way we measure impact and success. But as is the case with many other powerful sources of information, we also need to take care with how we collect, store and use the data that's collected.¹⁵ Big data is important but big data needs to also be good data.

Discussion and action points

- The ability to source, store and secure data, and then analyze and convert it to management information, is expected to be the transformational element of technology in the years ahead.
- Big data availability and access to useful management information allows organizations to better understand the dynamics of local field environments and, in turn, facilitates better decision-making.
- Informed decisions based on facts have measurable and meaningful impact on people's lives in the developing world.
- Big data is a game changer. But the data needs to be good; it needs to be clean, accurate and transparent. It also needs to be stored, analyzed and shared appropriately. Are there capabilities to do this? Is investment needed in this area before unlocking the true value of big data?

While big data is useful, so too is deploying the right method to communicate it. Edward Martin, director of marketing insights and corporate social responsibility for chocolate maker The Hershey Company says the use of social media has enabled the company to expand its

outreach to consumers. "Allowing people to effectively aggregate data from much larger communities than they were able to do before and then encourage them to opt in with a brand is a major development."

This chapter is the third in a series that will look at the different ways technology is being deployed in the developing world. It draws on the insights of our global survey of 293 private sector business leaders across Asia Pacific, Europe, North America, South America and Africa, 25 non-profit leaders, as well as in-depth interviews with thought leaders across the development sector. Future chapters will take a deeper look at the potential impact of technology on job creation, and new business and financing models aimed at achieving scale in developing markets.

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Research Methodology

Private sector survey

- 293 business decision makers were interviewed online across 13 markets between 4 February and 4 March 2013.
- Business decision-makers (BDMs) were identified as managers working in companies that have \$10 million or more in revenue and more than 100 employees; have significant influence or decision-making responsibilities for strategy or marketing in a developing and/or emerging market(s); and work in one of the following five sectors: financial services, resources and energy, consumer goods, agri-business or health.

Public sector survey

- 25 non-profit leaders from international NGOs were interviewed online during February and March 2013.

In-depth interviews

- In-depth interviews with conducted with thought leaders across the development sector between February and April 2013.

Region	Market	Number of interviews	
Asia Pacific	Australia	25	76
	China	25	
	India	26	
Europe	UK	21	81
	Italy	15	
	France	15	
	Germany	15	
	Russia	15	
North America	US	46	76
	Canada	30	
South America	Brazil	15	30
	Mexico	15	
Africa	South Africa	30	30
Total:		293	

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- 15 For more on data velocity in the Accenture Tech Vision, please see <http://click.accenture.com/article/acting-speed-data>.

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About Accenture Development Partnerships

Accenture Development Partnerships collaborates with organizations working in the international development sector to help deliver innovative solutions that change the way people work and live. Its award-winning business model enables Accenture's core capabilities—its best people and strategic business, technology and project management expertise—to be made available to clients in the international development sector on a not-for-profit basis.

About NetHope Inc

NetHope is a new-generation collaboration of over 40 international leading NGOs representing \$40 billion of disaster response, human development and conservation programs in more than 180 countries. The organization facilitates public-private collaboration among leading NGOs, technology corporations, private foundations and public sector organizations. Together, they leverage technology to better serve millions of end beneficiaries around the world. For more information, visit www.nethope.org

About Accenture

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