

# Dimensions of the Digital Divide (three series article): First part

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## Introduction

This article is the first of a series that considers the term 'digital divide'. The three-part series will look at different aspects of the digital divide. We have structured this article series so that the broad themes (different dimensions) cover the following aspects:

- physical and material barriers;
- training and educational barriers; and
- participation divide issues and barriers.

We explore and discuss each of these different dimensions in the hope that readers may have their awareness and understanding of these digital divide topics strengthened.

We commence the series with a discussion of the background to the dimensions of the digital divide.

## Background to the dimensions of the Digital Divide

In its simplest terms the digital divide refers to a form of social stratification that is simultaneously enacted and furthered by an individual's ability to utilise digital media to render their own self-interest (Leaning, 2017a). That is, our access to and use of digital media in part determines our social opportunities but is simultaneously related and determined by forms of social inequality (Ragnedda and Mu, 2013). Kofi Annan, then Secretary General of the United Nations, contended that the digital divide threatens to:

*exacerbate already-wide gaps between rich and poor, within and among countries. The stakes are high indeed. Timely access to news and information*

*can promote trade, education, employment, health and wealth... Information and knowledge are also at the heart of efforts to strengthen tolerance, mutual understanding and respect for diversity (2003).*

Though the digital divide received considerable attention in the late 1990's and early 2000's in contemporary times, the issue seems to have drifted out of the public consciousness (van Dijk and van Deursen, 2014). The concern that there were advanced, capitalist countries with significant proportions of citizens who would not be able to avail themselves to the benefits of digital media no longer seems valid. However, there are still large differentials between differing regions of the world in terms of rates of access to digital media and also notable differences between communities in developed countries in terms of what forms of access people have and what they are able to do with this access. As understanding of the divide has progressed conceptualising the various reasons people are not able to avail themselves to the potency of computers and the internet which has become more sophisticated.

In this series of articles, we will consider three main ways in which this barrier is understood. In this article we will deliberate the physical (access to the equipment to connect) and material (ability to afford the expense of connection) digital divide and rates of access across and within a number of countries. In the second article we will look to the issues of training and education that impact upon people's ability to access computing technology. In the third article we will look at what people are actually doing online and will note that demographic differences between people are often also manifest in their forms of behaviour and ability to leverage digital communications to their advantage. Due to the difference in the manner of the intersection, such multiple barriers have with us, we term these different barriers as different dimensions of the digital divide.

### **First dimension of the Digital Divide - Access**

There are now high levels of access to the internet in most developed countries and indeed across other regions of the world. For example, in North America and the Caribbean the average access rate is 76.2%, in Europe it is 80.2%, in South America it is 65.3%, across Asia and the Middle East access is 47.0%, in Australia and Oceania it is 69.6%, while in Africa it is as low as 47.0% (Leaning, 2017b). There are, however, very significant disparities of access and many countries lag far behind the most connected regions: while Australia has nearly 85.0% of its population online, only 7.0% of Togo's population has the same access. It must be noted however, that for many, access to the internet comes not through a connected computer but through a mobile device with an internet subscription. Such practices further complicate the picture as in many parts of the world users may possess multiple subscriptions to take advantage of cheaper rates for certain actions; for example, in Macao the average for each user is to have three or more subscriptions while in the Maldives and Bahrain it is the norm to have two or more subscriptions. Despite these contradictions, for many in the developed world the problems of the digital divide seem a problem of the early 2000's and as dated as a concern with the Millennium bug. Indeed an optimistic 2011 IBM corporate video predicted "In our global society, the wealth of economies are decided by the level of

access to information. And in five years, the gap between information haves and have-nots will cease to exist due to the advent of mobile technology” (IBM-Research, 2011). Furthermore within countries there are further divides replicated and indeed other forms of social inequality.

Forms of division such as gender (DiMaggio, Hargittai, Neuman and Robinson, 2001; Cooper and Weaver 2003; Cooper 2006; Dixon, Correa, Straubhaar, Covarrubias, Graber, Spence and Rojas, 2014), educational level (van Dijk and Hacker, 2003), ethnicity and race (Hoffman, Novak and Schlosser, 2001; Jackson, Zhao, Kolenic III, Fitzgerald, Harold and Von Eye, 2008), language (Gurstein, 2003; Mallikarjun, 2004), social class and financial standing (Straubhaar, Spence, Tufekci and Lentz, 2012; Clayton and Macdonald, 2013), age (Cresci, Yarandi and Morrell, 2010), sub-national (Chen and Wellman, 2004) and intra-national regions (Vicente and López, 2011) have been considered as being important in determining an individual’s ability to access computers and internet technology. Such lack of access for members of these groups often results in inequality being further entrenched. Access to the internet is both restricted by various forms of social inequality but also exacerbates and contributes to such inequality as the possible benefits of digital media are denied.

Attempts to deal with these problems run into multiple difficulties. van Dijk’s study from 2005 determines that a user’s motivation may prove to be a barrier that exists prior to the necessity of access. Of those not online, a small percentage are in that position as they lack the motivation to be online – they are ‘want nots’ as opposed to ‘have nots’ and the reasons for not wishing to be online are complex. This may be because of a fear or anxiety, a lack of time, not seeing the value of access, fears over the effects of computing or simply a disinterest in computers. We need to be cautious about saying such beliefs are problems, however, and there may be many legitimate reasons for not wanting to be online. Once the barrier of motivation is surpassed, the key barrier facing users has been understood to be one of access.

A number of academics (Warschauer, 2002, 2004; van Dijk and van Deursen, 2014) have noted that the issue of access to computers and the internet forms is more complicated than the issue of having direct physical access. van Dijk (2005) notes access is comprised of two separate aspects: physical access – which consists of the direct contact with an internet enabled computer – and material access – the wealth to be able to afford the expenses of being online such as broadband subscriptions, costs of various services and ‘apps’ and subscriptions to services. If we consider the use of mobile devices in developing countries a number of services also require the user to have credit cards and other financial tools to avail themselves of access - barriers that prevent those of limited wealth from engaging. While many may have physical access through using a computer, through work or in cybercafés or other locations or even possessing one material access proves a more difficult barrier to overcome as it is linked to financial inequality. Warschauer (2004) notes the complexity of successful computer usage “access to ICT is embedded in a complex array of factors encompassing physical, digital, human, and social resources and relationships”.

During the late 1990's and much of the early 2000's the issue of the digital divide received attention at the highest of governmental, non-governmental, corporate and charitable levels (Klein, 2004) as well as extensive academic interest (Norris, 2001). For example, in 1999 President Clinton called for a 'national crusade' to ensure the presence of computers in all homes in the United States of America (Thierer, 2000). Solving the problem of the digital divide became a significant area of domestic and international development activity and consumed large amounts of funding. Many of the solutions proffered involved the greater deployment of technology allowing individuals who were not connected the opportunity to become connected.

In South Africa, municipalities are becoming involved in the deployment of information and communication (ICT) initiatives by developing 'public access computer networks' to improve service delivery (Guthrie and Dutton, 1992). The provision of ICT (including broadband services) is aimed at improving the quality of life in the households of local communities (Averweg and Singh, 2017). For example, during 2008, eThekweni Municipality launched its Metro@connect project. eThekweni Municipality had been granted an Electronic Communication Network Service license by the Independent Communications Authority of South Africa which allowed eThekweni Municipality to 'sell' network capacity to licensed Electronic Communications Services third party providers. Metro@connect is thus a Layer 2 network over an active multi-protocol label switching (MPLS) network whereby eThekweni Municipality 'sells' to third parties (Averweg and Singh, 2017). eThekweni Municipality has thereby "extended its telecommunication infrastructure to connect all its sites, thereby, improving data and voice communication between these sites ... Given the extended network which comprises a fibre backbone (sic) to be complemented by a wireless network, it is now possible to extend the opportunities for telecommunications to businesses, citizens and other public bodies. This is crucial for economic and social empowerment ... and bridging the digital divide" (eThekweni Municipality, 2010). The internet connectivity infrastructure in the eThekweni Municipal Area has therefore been installed. However, as we will explore in the next article, assuring the provision of computers and internet connectivity (while beneficial for some) still has not closed the digital divide and new forms of inequality related to the ability to use the technology soon became apparent.

### **Some concluding remarks**

In this first part of our article series, we introduced the reader to the term 'digital divide'. We explored and discussed physical and material barriers access as the first dimension of the digital divide. In the second article in our series, we will discuss training and education barriers as the second dimension of the digital divide. Such issues impact upon people's ability to access computing technology.

### **Further reading**

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## **SERVICE DELIVERY MODEL**

**Based on the Workshop Facilitated by Natasha Pillay**

**Article Extracted from Chapter 1 of the Operations Management Framework**

### **Introduction**

The service delivery model is part of the processes to implement Operations Management within organisations. Service Delivery Models, also known as service delivery framework, have been around since 1990. It is a set of principles, standards, policies and constraints to be used to guide the designs, development, deployment, and operation of services to be delivered by a service provider with a view to offering a consistent service experience to a specific user community in a specific business context. Most industries have set service delivery frameworks whereby they operate. (wikipedia.org).

### **What is a service delivery model?**

A Service Delivery Model (SDM) is a document that describes how an institution will deliver on the services and products that were identified during the strategic planning process. An SDM should be prepared annually to assist and support management in determining the most suitable operating model to meet mandated and overall service delivery expectations. The SDM is valid for five years.

### **Why develop a service delivery model?**

An institution's strategic plan unpacks and describes what an institution will be embarking upon over a certain period, usually three or five years. Once these activities have been determined, it is time to consider how the services will be rendered. This is where the development of a specific SDM becomes necessary as it will analyse the possible modes of delivery and describe exactly how services will be delivered.

### **When to develop a service delivery model**

A SDM specifies how an institution is going to deliver on the determined strategy. In accordance with the guidelines issued by National Treasury, strategic plans are valid for a five-year period but should be updated and revised every year. To align the processes, it thus makes sense to update the SDM every year during the strategic planning session or directly thereafter.

### **What is included in a typical service delivery model?**

A SDM contains the following information as a minimum:

Mandate	Service Beneficiaries	Services	Service delivery	Approach	Preferred delivery
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			<b>method</b>		
Define and confirm the institution's mandate	Confirm the service beneficiaries (internally and externally)	Provide a list of services and where they are to be provided	Describe the current method of service delivery	List the advantages and disadvantages of current approaches to service delivery	Discuss the alternative and preferred service delivery mechanisms for each service

Figure 7: Contents of a typical service delivery model

### **International and local leading practices**

Research shows that most SDM's are kept simple ensuring that they are accessible to all officials and service beneficiaries across the full spectrum of institutions and society. The beneficiaries of the services and products, through inputs, direct how the service should be rendered and what the standards should be. This, however, is counter-balanced by what an institution can afford and which resources are available to render services. In general, the SDM attempts to force officials to consider existing limitations and risks with regard to the method of delivery of services and to take these into account when designing a more effective and efficient SDM. SDMs also attempt to identify and reduce duplication of services between different government agencies and within an institution.

Additionally, they are also used as a tool to identify areas for collaboration between institutions and between the different spheres of the Government.

In general, leading practices indicate that SDM's either include a performance management system or has a compulsory link to a performance management system. It should be noted that e-Government is not seen as an innovation by itself, but merely one of the essential drivers for innovation and service delivery in the Government.

Most SDM's researched, contain elements of total quality management or continuous improvement and as such also contain elements of the business process management methodology developed by the Department of Public Service and Administration (DPSA). It was also noted that SDM's are generally concise, but many of the principles – for example alternative service delivery methods – are described and regulated by pre-existing procedures or models.

### **PHASES OF A SERVICE DELIVERY MODEL CYCLE**

A methodology for the institutionalisation of a SDM has been developed and consists of four phases.

#### **PHASE 1**

#### **PHASE 2**

#### **PHASE 3**

#### **PHASE 4**

**Institutional setup**

**Development**

**Implementation**

**Review**

Develop an institutional service delivery model policy  Obtain institutional buy-in  Appoint a champion to drive the service delivery model development	Prepare information	Enable	On an Annual basis
	Confirm mandates	Encourage	Is it still effective?
	Define services	Empower	Is it still efficient?
	Determine the method of service delivery	Enforce	
	Decide on appropriate service delivery models		
	Identify risks and assumptions		

## GENERAL GUIDANCE FOR DEVELOPING A SERVICE DELIVERY MODEL

These guidelines were developed from leading best practices.

- The service beneficiaries determine how the service should be rendered and what the standards should be
- The SDM attempts to force the officials to consider existing limitations and risks
- A SDM attempts to identify and reduce duplication of services by different governmental institutions
- A SDM can be used as a tool to identify possible areas for collaboration between institutions
- E-government is not seen as an innovation by itself, but merely one of the essential drivers for innovation and service delivery in the Government
- Most SDM's contain some element of total quality management/ continuous improvement
- Standards set by the Government are used to get minimum standards in place, after the culture of quality service has been settled, the users set standards
- SDM's generally attempt to be concise, but many of the principles/aspects (for example, alternate service delivery methods) are described and regulated by pre-existing procedures/models

Sourced from The DPSA: Operations Management Framework: Chapter 1:

## WHAT IS DISRUPTION?

I am sure all of you have come across the term disruption, yet once you start scanning the article you soon realise it is not the same kind of disruption you were taught at school and what we have seen here in our country with headlines "EFF disrupts Parliament yet

again". Therefore I decided to do some research and I found that there are many people using the term "disruption" and it is widespread within business and the Information Technology fields.

I came across an article written by the "Team Tony" on Disruption being the fashionable term in business today. ("Tony Robbins, well known American author, entrepreneur, philanthropist and life coach. Robbins is known for his infomercials, seminars, and self-help books including Unlimited Power and Awaken the Giant Within". Information Wikipedia).

Team Tony indicates that the term "Disruption" is overused in the business world.

### **However where did the term originate from?**

Clayton Christensen, a Harvard Business School professor, defined "disruption" in the book he wrote "The Innovator's Dilemma in 1997", whereby he used the term "disruption". In the book Christensen introduced the idea of "disruptive innovation." He wanted to illustrate that successful companies were meeting and anticipating customers' needs without them indicating their future needs. This theory was built around small companies and with few resources they were able to break through established market areas normally reserved for bigger companies and therefore upsetting the established systems (disrupting systems). When the term became fashionable, Christensen became concerned with the change the term had taken, he then published an update in 2015 on what the term really should contain.

Christensen says "that a disruption displaces an existing market, industry, or technology and produces something new and more efficient and worthwhile. It is at once destructive and creative."

According to Andy Rachleff, President and CEO of Wealthfront, Google can be classified as disruptive. The company started out with advertising as their main business and offered prospective clients the opportunity to write their own advertising words and to publish it on Google for as little as \$ 1. The technology that Google uses to support its data centres are of utmost importance in ensuring Google has the "scale, speed and efficiency to serve its rapidly growing number of users" (Weber, 2008). Google also uses two advertising services to gain significant revenue: AdWords (places relevant ads alongside Google's search results), and AdSense ("revenue-sharing deals... [that place] Google's context-driven adverts on third-party websites" (Weber, 2008). "Google generated about \$21 billion in revenue last year. The vast majority of that revenue, well over 95%, comes from advertising via its search engine and its AdSense program, which places ads on millions of websites".

Andy Rachleff states that business models, not products, are disruptive. He further states that the business model, not the technology, that usually determines whether it is economic to pursue the disruptor.

### **What is The Difference between Disruption as opposed to Innovation?**

Caroline Howard from Forbes has a different view on disruption and says that people are confused about the difference between innovation and disruption explaining that "there are real distinctions between the two". According to her "Disruptors are innovators, but not all innovators are disruptors –". "Innovation and disruption are similar in that they are both makers and builders. Disruption takes a left turn by literally uprooting and changing

how we think, behave, do business, learn and go about our day-to-day". (Caroline Howard, FORBES STAFF)

FORBES compiled a list of the **Most Disruptive Names In Business**. They are from different industries, ranging from social media and computing to retail, tobacco and health care. The FORBES list contains 16 names of people who founded or runs 12 companies. These disruptors share a common purpose: they create businesses, products and services that are better -- less expensive and more creative, useful and has a huge impact on communities and scalable.

Here are few names from the FORBES list:

**Mark Shuttleworth:** Founder, Canonical, Founded: 2004; Website: ubuntu.com  
"Canonical's Ubuntu is an open-source Linux-based operating system that runs the same platform across multiple devices. Or, in plain English, its software can turn your tablet, laptop, smartphone or television into one connected system. Which places it in direct competition with Apple's iOS, Google's Android and Microsoft. "There are deeply entrenched competitors that won't be dislodged just by doing what they did and doing it faster or better just by 5 or 10%," he says. "If there's an opportunity, it's to shake things up and attack the problem entirely differently." Part of shaking things up means offering the basic platform for free and charging for enterprise and cloud services.

Mark Shuttleworth is a tough competitor. His idea of a relaxing vacation spot is Antarctica or the International Space Station, and he has been to both. Contributor: Karsten Strauss

**Gene Wade:** Founder of UniversityNow; Founded: 2010; Website: unow.com  
"College graduates owe \$900 billion on their tuition—a crippling burden for most. When Wade founded UniversityNow, his mission was more than just making college more accessible to working adults by offering online, self-paced degrees; he also aimed to do it all without forcing students to take out loans. As he puts it, "The only thing worse than not having a college degree is falling short of finishing and defaulting on student loans."  
Two key characteristics of UniversityNow that distinguish it from rivals: ridiculously low fees (as little as \$2,600, which includes tuition and books for as many courses students can complete in a year) and fully accredited degrees, from an associate's to an M.B.A., which online programs don't offer". Contributor: Caroline Howard

**Ben Milne:** Founder: Dwolla; Founded: 2009; Website: dwolla.com  
"He turned an annoyance into a new business that would make sending money a cheap and easy proposition. Dwolla, an online and mobile payment system, lets users pay for bar tabs or dog walkers (or speakers) via e-mail, text message or social networks like Twitter. Consumers love the service. Merchants pay just 25 cents in fees for amounts over \$10, instead of up to 1.9% of a transaction, plus a quarter, as Visa charges". Contributor: Abram Brown

**Jonathan Wolfson:** Founder, Solazyme; Founded: 2003; Website: solazyme.com  
"Cleaner, greener fuels are no longer a fantasy. Jonathan Wolfson's Solazyme is most probably the leader in turning algae to diesel on an industrial scale, even though it lost \$85 million on sales of \$44 million last year. It has fueled jets and Navy destroyers and is now being tested in cars. Solazyme has also discovered other novel uses for algae. "Not only can we make renewable oils, but all of these oils—from a palm kernel replacement

to a heart-healthy food oil—can be produced out of one single fermentation plant in a matter of days,” says Wolfson. Unilever is already involved and so is agri-giant Bunge”.  
Contributor: Christopher Helman

There you have it - Disruption is radical Innovation (my term). So I am hoping that this article inspires all of you to be radically innovative in your organisations.

### **Resources**

<https://www.tonyrobbins.com/events/business-mastery/las-vegas-08-15-2018/#apply>

Robbins Research International. Inc(US)

<https://sites.google.com/site/net205apples/google-business-model>

What “Disrupt” Really Means; Contributor Caroline Howard Feb 16, 2013

FORBES List of 16 Disruptors: Contributors: Karsten Strauss; Caroline Howard; Abram Brown; Christopher Helman.