Through the looking glass
Emerging trends

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Section 1
Industry landscape

The notion of the digital company has been around for years. Gains in operational efficiency can be credited to a more expansive use of IT to make the business run faster and more effectively.

However, few companies outside the pure web space have become truly digital in which information and the ability to act on it creates significant economic and competitive value. Leading companies are capitalising on digital ecosystems that are expanding due to the confluence of social networks, mobile computing, analytics, and cloud computing (SMAC). SMAC challenges enterprises to take advantage of the positive disruptions it portends, while they operate at the rapid pace of innovation and change that demands.

SMAC and other emerging technologies create the possibility for new ways to develop products, interact with customers, partner with others, compete and succeed.

More than strategy for any individual technology trend or for combining more than one of them, companies needs a systematic approach to engage with these technologies.

> Social, mobile, analytics, and cloud (SMAC) trends are the strongest signal yet that business ecosystems are becoming more digitised, where information content accounts for a rising proportion of the entire value of any product or service.

Companies that have the most success engaging with SMAC are rethinking their business and enterprise architectures and emphasising three fundamental changes.

- They acknowledge that SMAC trends are the strongest signal yet that business ecosystems are becoming more digitised, where information content accounts for a rising proportion of the entire value of any product or service.

- They understand that successfully tapping the new drivers of value requires a digital operating model, a model attuned to participating in or integrating with expanding digital ecosystems.

- Successful companies are adjusting their business and enterprise architectures to allow easy digital connections.

The confluence of SMAC trends is driving this shift in business value.

PwC anticipates that information associated with products and services will increasingly account for a rising share in the customer's experience of value delivered, as illustrated below.

Customer's experience of value delivered
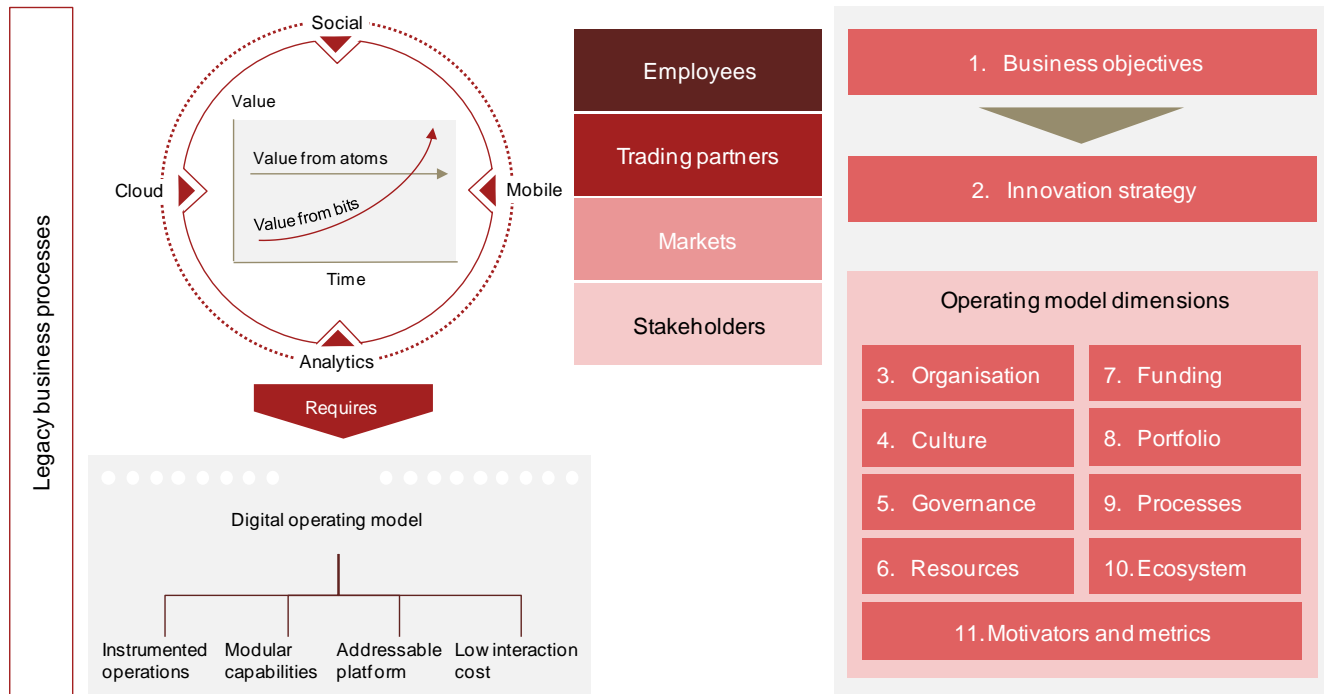
Scaling integrations requires a digital operating model

While each SMAC technology has its own unique impact, the technologies are complementary in support of work getting done.

- The **cloud** increasingly contains more of the information and applications that people use.
- **Mobile** devices give people access to the cloud, to other data sources, and to each other.
- **Analytics** help them make actionable sense of all that data.
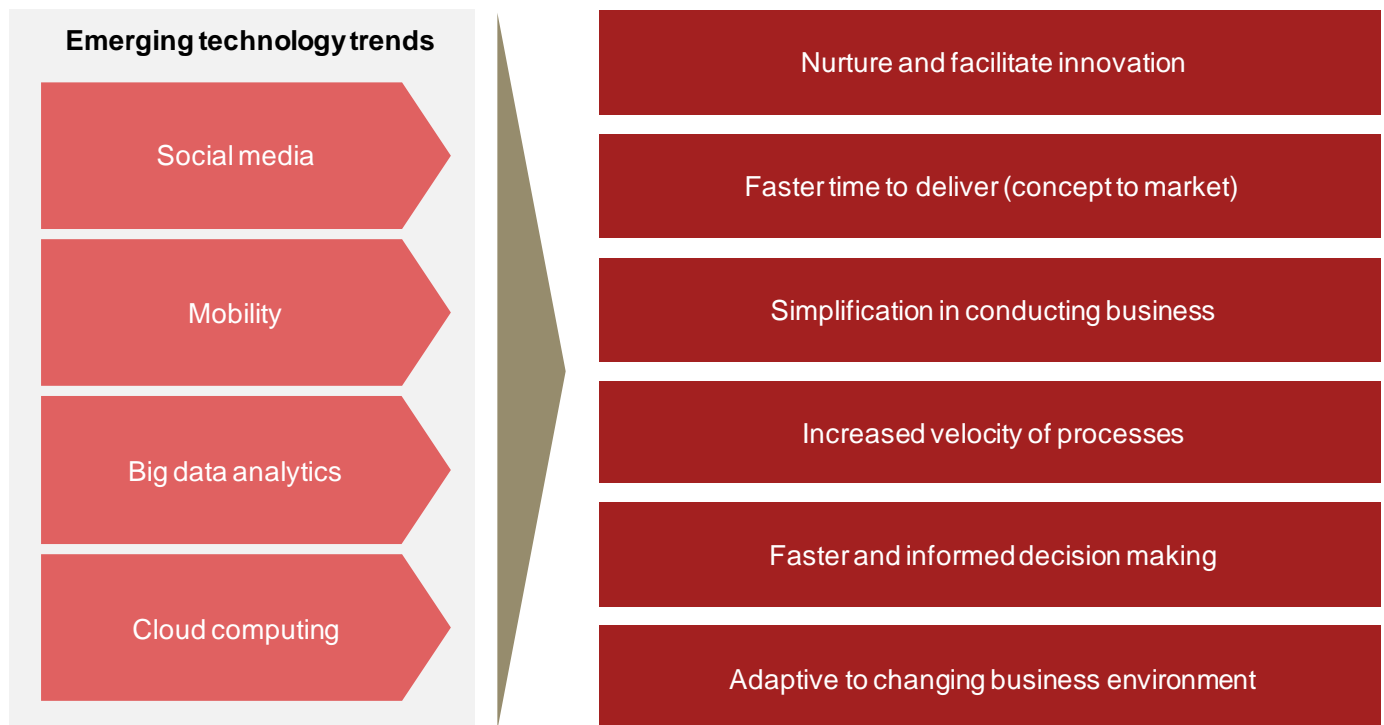- **Social media** helps people find colleagues with whom to collaborate and co-create.

The collective impact of SMAC on the enterprise operating model is so broad that it helps to think about the SMAC technologies as an integrated whole from a strategic viewpoint as illustrated below.

Strategic view point of SMAC

Trends	Relationship with work
Social	Who we work with
Mobile	How we get to work
Analytics	What we work on, the meaning of work
Cloud	Where we do the work

Emerging technology embarked on a journey to adopt high-quality innovative IT and business process improvement solutions

Emerging trends and business process improvement

Emerging technology trends

- Social media
- Mobility
- Big data analytics
- Cloud computing

- Nurture and facilitate innovation
- Faster time to deliver (concept to market)
- Simplification in conducting business
- Increased velocity of processes
- Faster and informed decision making
- Adaptive to changing business environment

Section 2
Cloud computing

What is cloud computing?

Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources such as networks, servers, storage, applications and services that can be rapidly provisioned and released with minimal management effort or service provider interaction.

Source: NIST

Cloud computing enables companies to procure their IT resources over the internet —
on a flexible basis, cost-efficiently, almost limitlessly and effectively with a subscription model
on consumption.

Companies no longer need to keep a certain amount of computer capacity or data storage space free, or constantly run applications.

This leads to a reduction of necessary capacity, investments and costs for companies, and, most importantly, allows them to structure their specialist departments in new ways.

Cloud computing forms a basis for completely new sales and use channels for IT services, but it is also preparing the ground for completely new processes and business models.

Four business values

Enabling IT transformation	Transforming internal business operations	Innovating for new products and services	Energising broader and diverse channels communities
57%	**50%**	**57%**	**77%**
of companies surveyed plan to invest more in public cloud	of US CEOs surveyed are innovating to save money	of US CEOs surveyed are launching new business models, products and services	of US CEO surveyed are changing their strategy because of customer demand
62%	of enterprises consider data security a high risk in cloud implementations (PwC's ITO and the cloud survey)		

Perspective on the cloud

Overview

Today, the strategy adopted by the CIO does not require buying hardware for maximum usage level or, for that matter, to buy licenses for the maximum number of users.

Maintaining a corporate data centre or an ERP is becoming less important, and is often seen as a non-core function. We need to transform ourselves in order to keep pace with this trend of increasing business orientation of the CIO.

The core purpose of business applications is to automate business processes using technology that is fast, efficient, user-friendly, accessible, secure, scalable and reliable.

From the perspective of the business, the ideal situation would be if this business process automation is provided as a service by a third party whose core competency lies in providing the business automation at a low cost by leveraging economies of scale.

At the same time, the third party provider would need to be able to support the precise requirements of the business, while remaining flexible enough to change as required by the business environment.

If this issue can be resolved, bringing about a change in the mind-set of business decision makers regarding cloud computing will not be difficult. It is in this business-technology process consulting and change management space that we see an opportunity.

Business and technology trends

Cloud is defined as '…. a style of computing where scalable and elastic IT-enabled capabilities are delivered as a service to external customers using internet technologies'.

It leverages the economies of scale by having multiple business units share a large hardware/application platform in a secure manner. The services can be provided by the cloud data centre over the internet or intranet (via tunneling such as VPN).

In opting for cloud computing/IT as a service, organisations typically look for the following benefits:

- Increased business flexibility
- Increased ability of IT to scale up or down to meet business needs
- Lower unit cost of IT due to economies of scale on the supplier-side
- IT is easier to run - the enterprise IT function need no longer worry about version upgrades, patches and resources or expertise to keep it updated.
- Disaster recovery and business continuity

Cloud computing services come in three major flavours:

- Infrastructure as a Service (IaaS) where service providers provide an infrastructure platform to clients for deploying application platforms, building solutions and using as an extension of their existing data centres
- Platform as a Service (PaaS) where services providers provide an application platform to clients who then build solutions on it
- Software/Solution as a Service (SaaS) where clients pay for an end-to-end IT solution provided by a service provider on a subscription mode

Clients (especially in India) are still primarily interested in IaaS (currently growing at 154% CAGR) and PaaS (currently growing at 54% CAGR).

However, as they gain maturity, they will demand more of solutions as a service (currently growing at 18% CAGR), where providers are responsible for providing end-to-end IT solutions.

Mobile cloud computing
Access to cloud applications and or services from cloud using mobile web

Mobile cloud computing...

"The availability of cloud computing services in a mobile ecosystem. This incorporates many elements, including consumer, enterprise, femtocells, transcoding, end-to-end security, home gateways, and mobile broadband-enabled services."

(A femtocell is a small cellular base station.)

Source: Open Gardens blog

Mobile cloud computing in India

For 2013, IDC predicts worldwide IT spending will exceed 2.1 trillion USD, up 5.7% from 2012.

The biggest category driving this growth will once again be smart mobile devices (smartphones, tablets, e-readers), which will grow by almost 20% in 2013 and generate nearly 57% of the industry's overall growth. Excluding mobile devices, the IT industry's growth is forecast to be just 2.9%.

Among the other major IT categories, worldwide software and services spending are forecast to grow 6 and 4%, respectively. The PC and server markets are also expected to return to modest positive growth in 2013, aided in part by more favourable year-over-year comparisons.

On a regional basis, IT spending in emerging markets will grow by 8.8% in 2013 to more than 730 billion USD. While this figure represents 34% of all IT spending worldwide, it represents more than 50% of all new growth in the IT marketplace.

The BRIC countries (Brazil, Russia, India, and China) will continue to dominate IT spending among the emerging markets, with China capturing more than a quarter of this spending. Equally important, developments in emerging markets will start to reshape key global markets because of their oversized share of industry growth.

Challenges and strategies

Limited energy

It's imperative that longer battery lifetime is the most desired feature for mobile cloud computing.

However, it's not possible to completely delegate the execution of all applications in the cloud. Applications design needs a revamp to achieve this.

Application architects need to think about partitioning application functionality that can be off-loaded on cloud v/s executed on the mobile device. Due to this constraint, mobile cloud is termed as SaaS cloud, meaning that computation and data handling are usually performed in the cloud.

Memory and processor

Mobile devices have restrictions on memory, storage and on compute. The resource constraint is one of the prime factor to adopt mobile cloud computing.

To overcome this short-fall, resources need to be added to cloud infrastructure and can be used anytime on on-demand providing a seamless user experience for advanced applications. With continuous improvements in mobile device performances, the disparity between the resource constraints of mobile and fixed devices will remain and must be accounted for in the types of application selected for mobile cloud computing.

Latency and bandwidth

Latency and bandwidth affect the mobile cloud. Wi-fi improves latency but may decrease bandwidth when many mobile devices are present.

Bandwidth for 3G cellular may further be limited by cell tower bandwidth in some areas.

Similarly, connectivity may be intermittent. As cellular providers build out their networks, the situation will improve, but dead spots won't completely disappear.

Web 4.0

Another term for the internet of things is Web 4.0 and sometimes, the Symbiotic Web.

One writer describes the phenomenon as the migration of online functionality to real-world objects, as in the example of being able to run a Google search of your home to find the TV remote control.

Challenges and strategies (continued)

Security

Policies regarding access control, authentication, account and user management, encryption, content assurance and general communications security should be developed and compliance measures should be enforced.

Data misuse from lost or stolen devices can be wiped of mobile devices remotely. This feature is provided by mobile manufacturers and wireless carriers.

Organisations that collect data or information must have policies and procedures in order to handle, store and dispose it securely and to maintain the privacy.

The risk of privacy exposure, identity theft and fraud can be reduced by implementing enhanced protection measures for sharing data in interconnected systems, implementing monitoring capabilities and protocols, and by educating users about proper social media safe-surfing.

Browsers

Most browsers are pre-installed and tied to device performance.

To overcome this short-fall, resources need to be added to cloud infrastructure and can be used anytime on on-demand providing a seamless user experience for advanced applications.

4G

One of the biggest enablers is the full roll-out of 4G technology that helps with issues of latency and bandwidth. For example, Samsung introduced the Yes Buzz 4G cloud phone in Malaysia. It has no SIM card and allows contacts to be saved and synchronised on the Internet.

Motorola introduced the Atrix, a 4G phone with a fingerprint reader for use in unlocking the phone. It also fits into an optional dock that connects to a keyboard and mouse, converting the phone into a laptop. Reports say this new phone is buggy, but Motorola claims that it shows how we'll be using mobile devices in 10 years.

HTML5 and CSS3

HTML5 is an important step for mobile web applications. HTML5 introduces the need for web application support.

HTML5 features improvements in forms specifications that benefit mobile applications. In addition, HTML5 often comes with a geo-location API.

One example of an HTML5 benefit is the ability to watch a video without a plug-in like Adobe® Flash® or Microsoft® Silverlight™. Another example is the ability to store and access data such as email messages and calendars, which help make web applications more useful.

CSS3 works with HTML5 to specify how elements of a page should be rendered.

New elements in the HTML5 specification require new guidance to display them—hence the need for the new version of the CSS standard.

Hypervisor

Another enabler for cross-platform applications is an embedded hypervisor, which allows a web application to run on any smartphone without being aware of the underlying architecture.

Cloudlets

A cloudlet is a small, simple device that resides nearby—maybe in an outlet like book store, coffee shop, etc. When needed, the device downloads user data from a centralised location, permitting local access by the user and thereby reducing latency. When finished, the user data can be returned to the centralised location, if necessary. This process occurs invisibly to the user, except that the user is pleased with faster response.

Cloudlets promise to help the latency issue in mobile cloud computers. Wi-fi hotspots and other local devices can be equipped with local processing and storage.

Cloud and mobile computing convergence

The cloud becomes the hub that connects not just the user and the consumer services, but the user, the corporate back-end systems and the consumer services.

In current mobile computing and wireless services, mobile users commonly use mobile devices with limited computing power and resources to receive regional wireless communication services and limited data services, plus some access to selected mobile applications.

Unlike mobile computing, mobile cloud computing leverages emergent cloud infrastructures and resources to deliver innovative mobile cloud infrastructures, platforms, and software-as-as-services as well as mobile enabled applications services to global mobile device users anytime and anywhere.

It allows mobile users to use low-end mobile devices to access diverse and scalable cloud computing resources (such as IaaS, PaaS, SaaS, and DaaS) and globally connected mobile enabled resources (such as devices, tags, barcodes, sensors and wireless networks) to receive unlimited mobile application services.

The current scenario and economics

Rapid growth is expected in the Indian mobile internet access market by the rising proliferation of mobile internet, driven by increasing smartphone penetration and relatively lower total costs (e.g. no investment in PCs or laptops required) of mobile internet access.

The Indian market is expected to grow at a fast clip, with mobile internet subscribers growing from about 51 million in 2011 to approximately 400 million in 2016, representing a CAGR of over 50%.

The convenience of personalised, anytime, anywhere internet access and lack of good fixed-line infrastructure, coupled with rising popularity of web-based applications such as email and social networks will need to propel the market forward, as per PwC's *India Entertainment and Media Outlook 2012*.

The opportunity space

Clearly, mobile cloud computing will bring new computing models and infrastructures to build and deliver mobile services on mobile devices, and change the way mobile enabled computing resources, applications and services are delivered to mobile users.

Meanwhile, it will impact the ways on how to deliver, store, retrieve, process and share mobile data and resource on mobile devices for business and private settings.

Debunking cloud security myths

It is a business imperative to comply with cloud governance, risk and compliance models before embarking on a cloud journey.

PwC's Cloud Assurance framework addresses the key concerns on the GRC aspects of cloud. It reflects a framework from the perspective of the customer's needs and expectations while having a focus on the cloud provider's unique service offerings.

Security myth	Scenario	Audit consideration
Shadow cloud practices will surface	Unauthorised use of public cloud services is a common problem.	The company establishes a companywide documented policy for appropriate use of cloud computing services.
Don't just sign on the dotted line	Contracts with cloud providers often lack key security requirements important to the organisation.	The enterprise has all cloud services undergo a formal risk assessment as a preliminary step to contract negotiation.
No one will care more about your data than you	Data to be stored in the cloud should adhere to the guidance provided for information protection including the risk of data being targeted by an advanced persistent threat.	An appropriate data classification scheme is carried out prior to deployment in a cloud environment.
Bad processes will not become good processes by just moving to the cloud	Client X moved to a SaaS CRM solution two years ago as the company was growing significantly and they realised it was difficult to manage its customer data.	Have we considered all our reporting requirements in the context of the company prior to moving to a CSP? What about the data architecture? Data governance and customer data dictionary?
It's like your phone bill. If you don't review your minutes, be prepared to pay the price.	Invoices provided by the cloud provider for revenue is in excess of what is truly consumed by the company.	Processes in place to monitor the data usage and any bursting charges incurred?
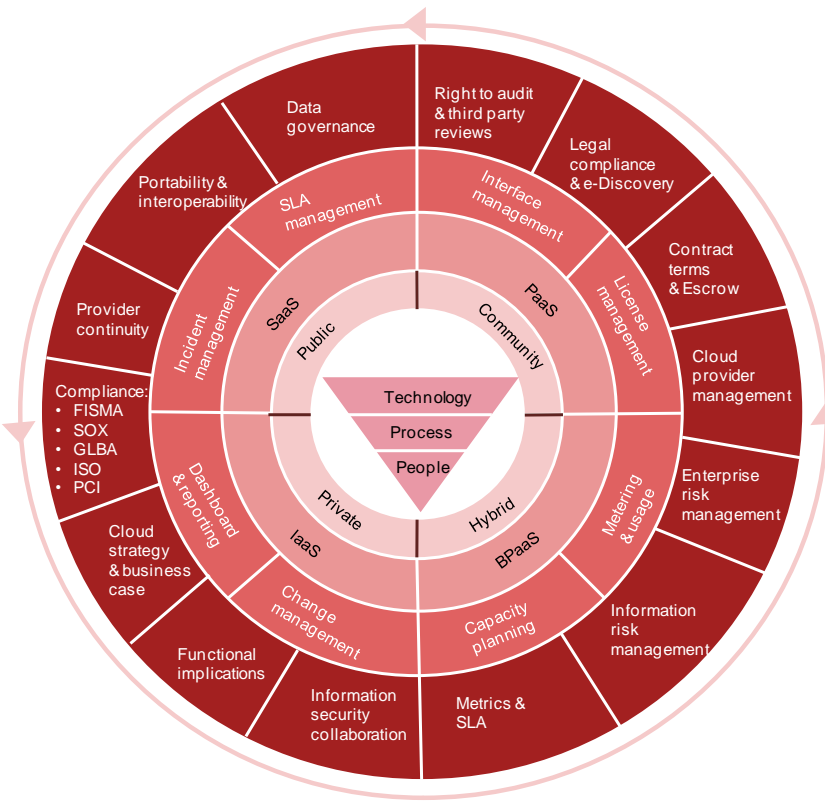
Typical risk areas:

- Governance over cloud adoption
- Cloud provider contract (terms/conditions)
- Identity and access management
- Cloud release and configuration management
- Data protection and rights to audit
- Portability and interoperability and data integrity
- Metering and bursting revenue
- Project risk and third party management - CSP

■ Cloud governance
■ Monitoring
■ Cloud architecture

Section 3
Social media

What is social media?

Social media refers to the use of mobile and web-based technologies to turn one-way communication into an interactive dialogue.

How is social collaboration different from social media?

Social collaboration is the internal use of social networking tools to create value by working together on a common goal.

Social media has become a dominant force in consumer culture and is being exploited successfully by some of the world's leading businesses. The world's top brands are using social media as a meaningful way of deepening relationships with their customers.

Customers are connecting and having conversations about organisations through social media and brands risk being compromised if they fail to participate.

In order to respond effectively, organisations need to make changes to process, policy and culture. They need a social media strategy that is aligned to customers' requirements.

Communicate clear policies and procedures to your employees. Shift marketing, sales and service from broadcasting messages to having conversations. Manage and secure content to mitigate the risks of the two-way flow of information that social media enables.

Leveraging social media

The age of instant information is at once the most opportunity-filled and also perilous of times for consumer product companies and retailers. Never before have had organisations enjoyed such visibility into consumer desires, tastes, and opinions. Each day, more text messages are sent than the population of the planet; each minute, almost a day's worth of video is uploaded to YouTube; and, each month, more than two billion photos get posted on Facebook.

The data generated by social media represents a massive opportunity for consumer businesses—if they can figure out how to discern useful patterns in the noise and mine this sea of sentiment and ideas. Consumer opinion used to take weeks, if not months, to gather through formal channels; the information was outdated long before decisions were made. Today, companies can virtually put their finger on the pulse of their consumers in real time.

But this treasure trove of data also brings with it risks. A product recall or food safety alert today has the potential to multiply unfiltered across all of these different media. How to respond to, tap into, and manage what financial journalist James Surowiecki called the 'wisdom of crowds' has become one of the most important risk management issues in the retail and consumer packaged goods industries.

How big is social media?

It's bigger than you think.

The speed, breadth, depth and scope of social media penetration is astonishing.

It took 13 years for television to reach a worldwide audience of 50 million. It took Facebook three years; and just another four years to reach over half a billion users worldwide.

1,000,000,000+

The number of global users Facebook reports they have registered.

584 million active users on average each day

Social media advertising spend will increase 400% by the year 2014.

Forrester

The average Indian users spend nearly 25% of their time on social networking.

One out of every five minutes online is spent on social media related sites.

Nielsen

Popular social networking platforms

To understand the social media movement, it's necessary to understand the most popular platforms for user engagement and how they differ.

Facebook

Launched in 2004, by October 2012 it reached the 1 billion user mark – doubling the user base in a year. It I s the most widely used social network globally.


LinkedIn

Launched in 2003, LinkedIn is often considered the professional face of social networking. It has 150 million registered users and primarily provides 'address book' style functionality for business users.

Twitter

Launched in 2006, Twitter provided a similar 'microblogging' service to Facebook's status updates in allowing users to create 'tweets' of 140 characters or less.

These tweets are available to all users of Twitter and users can subscribe or 'follow' a particular user's Twitter feed.
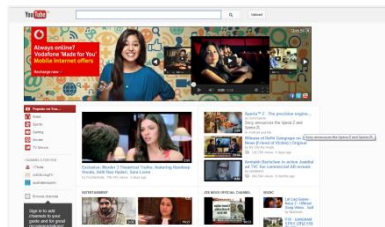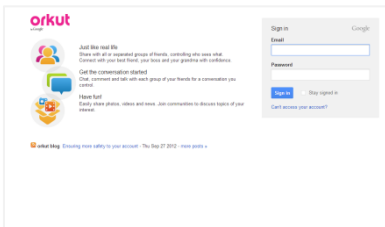
Orkut

Launched in 2004 by Google, Orkut initially had a fast take up in the US. Today, however, its primary user base is in Brazil and India, where 90% of its users reside.

YouTube

Founded in February 2005, YouTube allows people to search for, watch and share videos. It also provides a forum for people to comment and interact around its content.

51.com, renren.com, QQ, kaixin001.com

A number of Chinese social networking sites are popular within China, with incredible user statistics for a single country. 51.com has over 160 million users, with over 38.5 million logging in each month.

The lack of accessibility to Facebook, Twitter and YouTube has potentially driven this growth.

What are the leaders doing?

A word about social media and financial services

According to Datamonitor's Social media in financial services *study, about a third of consumers globally are using online resources for financial advice in the form of price comparisons, calculators, blogs and online reviews.*

This data was collected in a 2009 survey and excluded Japan, France and Spain at that time, but social media has continued to grow as a viable channel since then, bolstered by consumer preference for peer recommendations over traditional marketing propositions.

This means that the power of messaging about financial services has shifted to customers, who express their opinions about products and services in multiple ways.

*According to a Forrester report from September 2010 (*Social media marketing for financial services*), most financial services firms have at least partially explored social media, but haven't fully embraced it in the manner that American Express and USAA have.*

There are number of companies leading the way with social media initiatives that achieve positive results in customer engagement.

These businesses have either deliberately or organically invested in platforms aligned with their strategies and assets. Brands with a great deal of media content (such as Disney and BMW) tend to invest in YouTube more than those for whom community and functionality are paramount (such as Starbucks and Coca-Cola).

Facebook is, in almost every case, the platform that attracts the greatest investment, while Twitter is a close second (and in some industries, first; 65% of financial services firms use Twitter).

Regardless of the platform focus, putting user value before network value – that is, creating an experience that begins with user needs rather than business needs – is the key to a social media effort that is vibrant and active rather than barren and stale.

Anthony van der Hoek, Director of Strategy and Business Solutions at a Coca-Cola Company global team, puts it this way:

"It takes years, not weeks, to embed consumer conversations in an organisation. Companies need to address this now or it will be a huge challenge to catch up."

How consumer conversations will transform business, a PwC publication

Starbucks

Starbucks are actively engaging in social media and are talking with their customers through a number of different channels. With their 3,273,581 followers on Twitter, they are answering questions, retweeting what people are saying about the brand and engaging in real conversations. For their 18 million Facebook fans they upload content to their fan page but also engage with their customers by allowing management of the customer's Starbucks card (e.g. checking balance, reloading) and even allowing users to upload credit to other customers' cards.

Coca-Cola

As a traditional top 5 brand Coca-Cola would be expected to have a strong presence in social media, and with nearly 20 million fans it is one of the most popular in the world. The page was originally created by fans and then adopted by Coca-Cola and used to create the official site. Although on first look, it seems a normal fan page, Coca-Cola has engaged customers by allowing user-generated content on the site including photos and posts. Coca-Cola has also embedded social media within the organisation and last year launched their social media strategy.

This includes ensuring that 'certified online spokespeople' complete a certification programme prior to representing the company online and encourages every employee to engage in social media and report both positive and negative comments.

USAA

One of the pioneers of direct marketing, United Services Automobile Association (USAA), conducts most of its business over the internet or the telephone. It currently maintains a fan page on Facebook with over 122,000 fans. This page offers USAA products and services, an eligibility application, and useful tips. You can also access and manage a USAA account directly on Facebook through a built-in application with enhanced security.

Social media transformation

Traditional marketing channels broadcast in one direction and are usually only targeted in a general way.

Social media, when done well, creates dialogue with a very specific and large audience – one person at a time.

Social media also runs across all other channels – whether web, mobile, phone or physical stores. This is a highly connected community where the most unlikely contributors can be celebrities and other social influencers.

Customers don't have to come to you anymore. Your customers take their social media applications with them wherever they go, whether it's to your store, on the phone to your call centre, linked to your website or on their Xbox. In order to truly exploit the power of social media for your business, you need to understand how this new channel differs from the more traditional channels.

You have little control

Whether a company chooses to have a social media strategy or not, the reality is your customers are already engaging in social media and are talking about your company.

In an era when more and more customers are basing their purchasing decisions on peer interaction, the role of advertising, branding, marketing, PR and other traditional means of communications needs to be re-evaluated.

Go to your customers' social sites, listen to their discussions, respond and provide the customised, value-adding content that they want.

It's a conversation

Authenticity, transparency and honesty are mandatory characteristics of this two-way conversation and their absence can cause great harm.

Those in your organisation tasked with engaging with customers via social media (i.e. everyone) must be empowered to speak openly and genuinely (but make sure you remember to put in place the policies and procedures to manage the interaction as per the Information Security policy).

Listening, rather than broadcasting marketing messages, is the necessary first step.

It gives your customers a job

You don't need to be the one to do the research or create the innovation in order to benefit from it, as long as the ideas are freely given, of course.

And you'd be surprised at how willing people are to freely give their ideas when given a platform for sharing and incentive for doing so.

In the UK, Direct Line has received great engagement from customers, who have actively shared their ideas on Facebook for the development of Direct Line's new iPhone app.

1 It's where your customers are gathering

If you knew that members of your target customer segments spent time in a particular place, wouldn't it make sense to set up a store front there – or at least post an advert there?

Half of the million Facebook subscribers in the India check their page at least once a day.

2 Conversations about your business are happening – with or without you

What you might think of as a potential threat to your brand, may actually be an opportunity to build loyalty and advocacy among your customers and employees.

The staffs are encouraged to use Twitter to engage with customers and to treat every customer interaction as an opportunity to create loyalty – not necessarily to make a sale.

3 Your brand is being circumvented

According to Forrester, more than 33% of European online consumers evaluate and compare the things they want to buy based on what their peers are saying on social platforms – not based on the messages they receive from your business.

Offering mechanisms for your customers to connect with each other to facilitate evaluation, and then participating actively in those conversations, can put you back in the loop.

4 It's the world's largest focus group

If what you're selling is not meeting customer needs or expectations, there is no better way to become immediately aware of the shortcomings. It also expedites customer input into the product development cycle.

Build the platform, give your customers a reason to participate, and then listen to what they say.

5 It can be the most effective way to reach your customers

According to a report by Chadwick, Martin & Bailey, 67% of social media users are more likely to buy a brand they follow on Twitter, while 79% are more likely to recommend a brand they follow on Twitter.

Techlightenment reports that responses to 'micro-messaging' – that is, with the text carefully crafted to be specifically meaningful to the chosen target audience – yields a 5x to 10x increases in responses.

How you can get started

You need to have a strategy. As we have seen, social media offers tremendous opportunities for firms to engage with their customers and drive real business benefits, but that engagement has to be earned.

But where do you begin?

Create value for your customers

It's not realistic to think that your customers will participate in a community if it offers no obvious and immediate benefit to them.

Think about what assets you have that your customers might find useful, and allow access to this resource—it could be data, connectivity to others in the network, or an opportunity to share—without preconditions (registration, payment or subscription).

Facilitate sharing

Social media may be a low-cost way to communicate and engage with your customers, but it takes effort to make it work.

Start by listening

Any social media initiative should begin by listening to what your customers are already saying about you on social channels.

Make the case

Undertaking a social media initiative is essential for articulating a compelling case and demonstrating business benefit. Often the benefits are of the 'softer' kind: brand building, awareness and advocacy; but it's still possible to calculate ROI through qualitative and quantitative customer feedback and increasingly through end-to-end tracking of social media campaigns.

Keep it exciting

To attract customers, you need to find ways of making your social media channel interesting and exciting. For example, use videos and photographs effectively to deliver interesting facts about products and services, provide tips on use and show real customer highlight clips. Use competitions, games and blogs to get people interacting with your social site; consider providing additional, unique services to customers through social media channels.

Make it relevant

Having nothing relevant to say is a big turn off for consumers. To maintain customer interest and a steady supply of repeat visits, your social media channels must be updated frequently with the latest breaking news, content and features.

Keep it accurate

Customers want to know correct information about the company in which they are interested. Keep the information posted about your company products, activities and promotions accurate and up to date if you want people to visit. You will need to develop a social media policy, with a risk and control assessment, in order to manage the accuracy of the information posted on your social sites by your company and to respond to the information (hopefully) posted there by your customers.
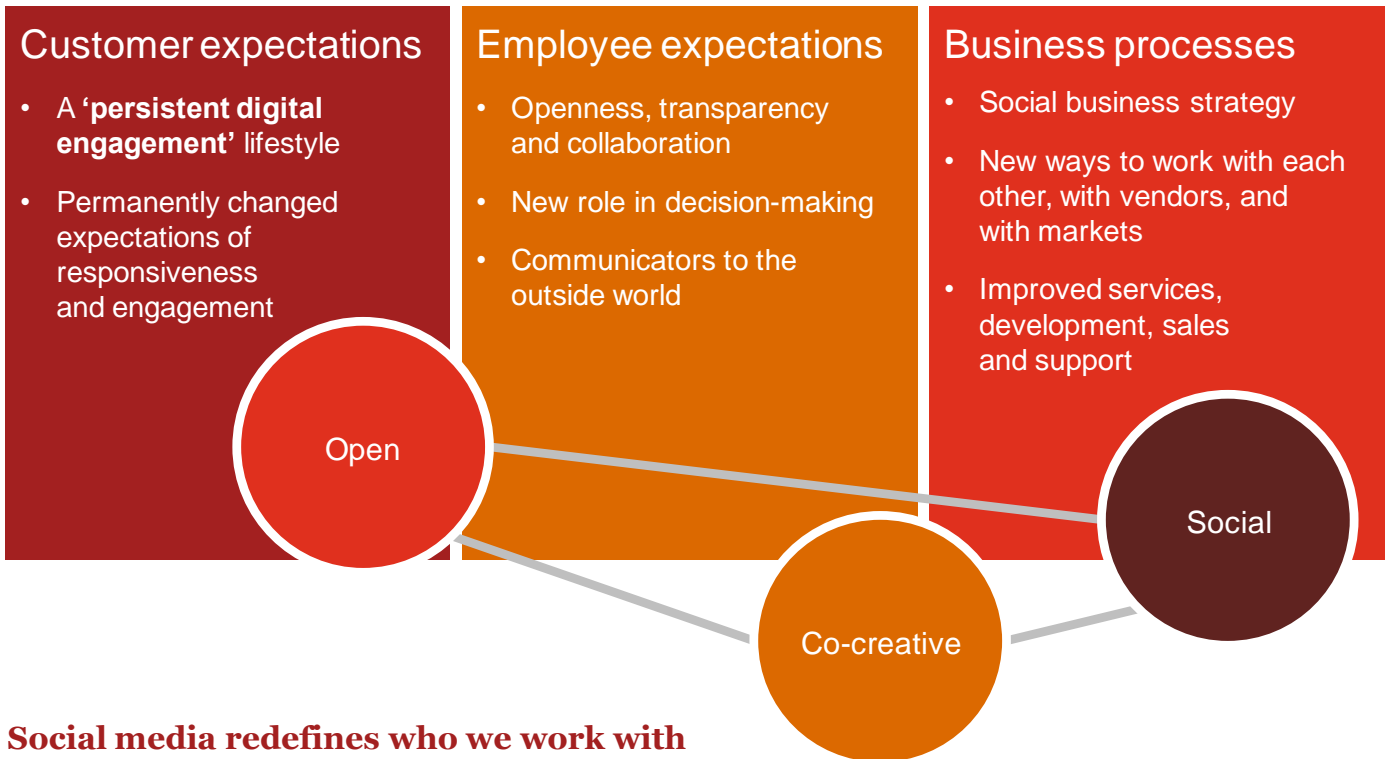
Keep listening!

If something negative occurs, you will be well-positioned to respond quickly and meaningfully. More importantly, you will now have real-time access to behaviour and dialogue that can greatly enhance your current understanding of your customers, as well as the ability to track the benefits to your business.

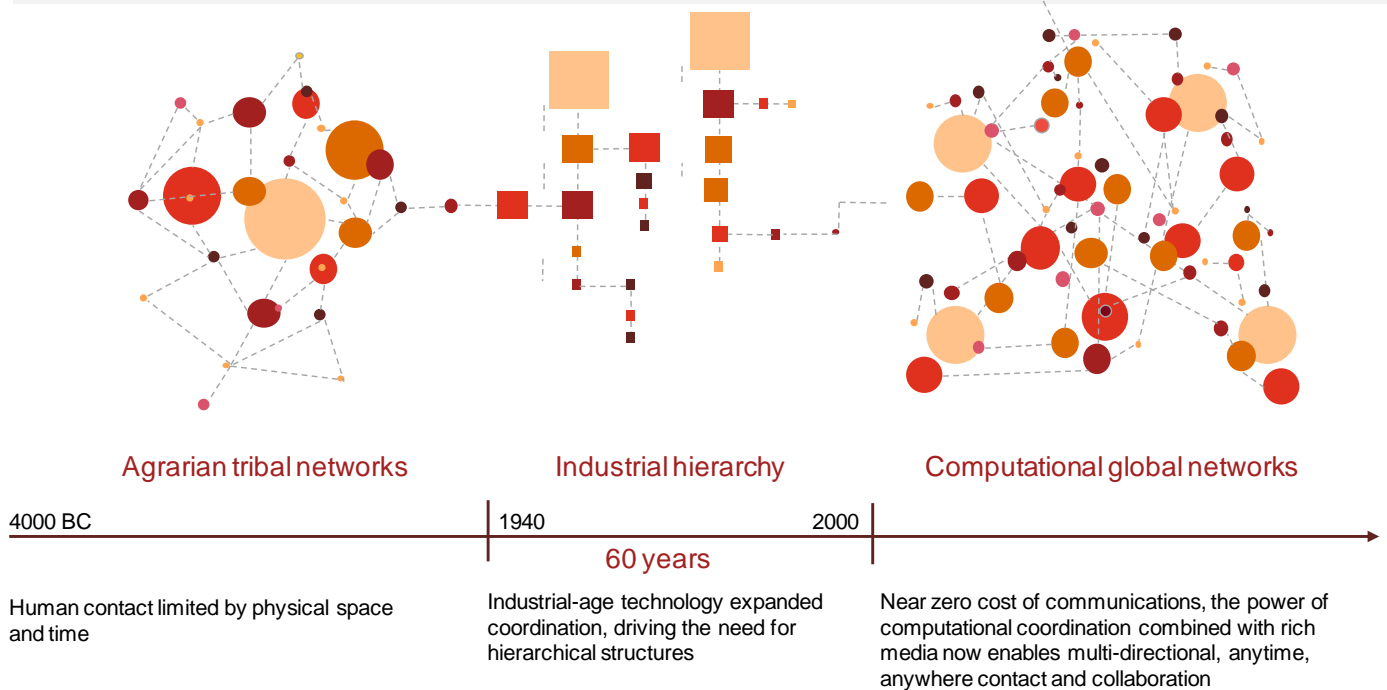Source: *Engage customers through social media*

Social media and co-creation

Customer expectations, employee expectations and business processes change the way we do business and engage with markets.

Customer expectations

- A **'persistent digital engagement'** lifestyle

- Permanently changed expectations of responsiveness and engagement

Employee expectations

- Openness, transparency and collaboration

- New role in decision-making

- Communicators to the outside world

Business processes

- Social business strategy

- New ways to work with each other, with vendors, and with markets

- Improved services, development, sales and support

Open

Social

Co-creative

Social media redefines who we work with

Hierarchical organisations are being replaced by networks.

Agrarian tribal networks

Industrial hierarchy

Computational global networks

4000 BC

1940

2000

60 years

Human contact limited by physical space and time

Industrial-age technology expanded coordination, driving the need for hierarchical structures

Near zero cost of communications, the power of computational coordination combined with rich media now enables multi-directional, anytime, anywhere contact and collaboration

Section 4
Analytics

Analytics

Big data is characterised by the never-ending accumulation of all kinds of data that have grown too large or too raw for cost-effective analysis.

A term that is quickly trending within the rapidly evolving digital economy, 'big data' represents an enormous opportunity for businesses looking to differentiate and be relevant in the current environment.

Driven by the proliferation of digital channels, particularly mobile, businesses increasingly have access to a smorgasbord of insights about their customers, through which they can present personalised and targeted offerings.

Big data comprises data sets that are generally beyond the capability of an organisation to capture, analyse and process.

Breaking down big data

Although data and analytics have always been crucial to the business process, as companies have begun to harness the power of digital channels and technologies, there is an increasing amount of information being collected and available through internal and external sources.

Big data that can be broadly classified into the following three categories:

Internal data

This consists of information that your business is collecting through its own systems and processes.

This data may not be digital and can consist of both quantitative and qualitative information.

Generally this data can yield the greatest insights about your existing customers and their interaction with your product and services.

Structured external data

If you do nothing else, listen!

Any social media initiative should begin by listening to what your customers are saying.

Though generally provided through third-party sources, this information is generally available for your use.

In its raw format, it may not fit readily with your existing systems.

However overlaying this data over existing internal information should yield richer and contextually significant insights about both existing and potential customers.

Unstructured external data

Much of this data is taken from sources that are not within your immediate control; however, they are factors that have an impact on your business and customers.

When used in combination with existing highly structured data, this information can assist to provide concise and targeted insights.

Everything that one has learnt while implementing any information management programme needs to be amplified multiple times while looking at big data.

Big data is not a hype; one needs to make a rational decision on the purpose of implementing it. It is not a solution for every problem nor applicable for every enterprise in every industry.

The four V's of big data

Volume	Data growth is the biggest data centre hardware infrastructure challenge for large enterprises (terabytes to petabytes).
Velocity	How fast is the data coming in?
Variety	All types of data are now being collected (structured, semi-structured and unstructured).
Value	The valuable pieces of data need to be separated from among data that does not matter.
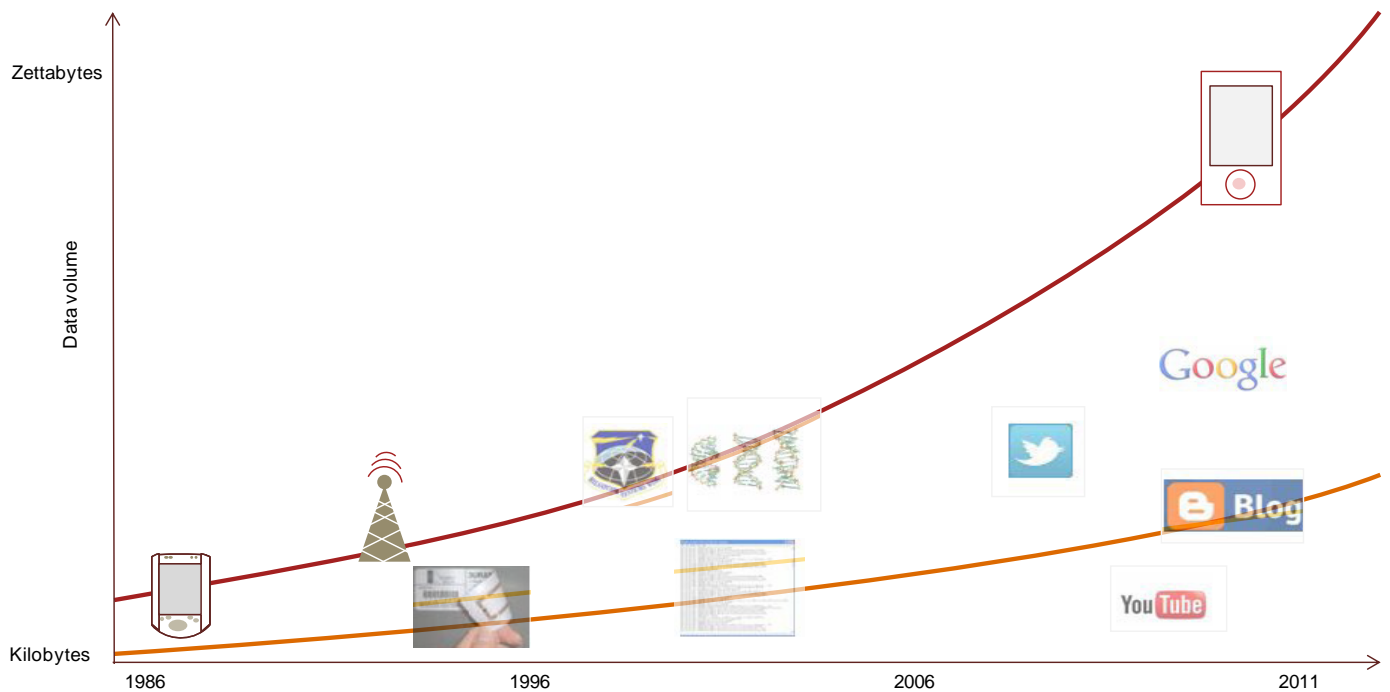
Note:
Source: Cohen Report on Data Management, Cohen Webinaron Big Data Challenges
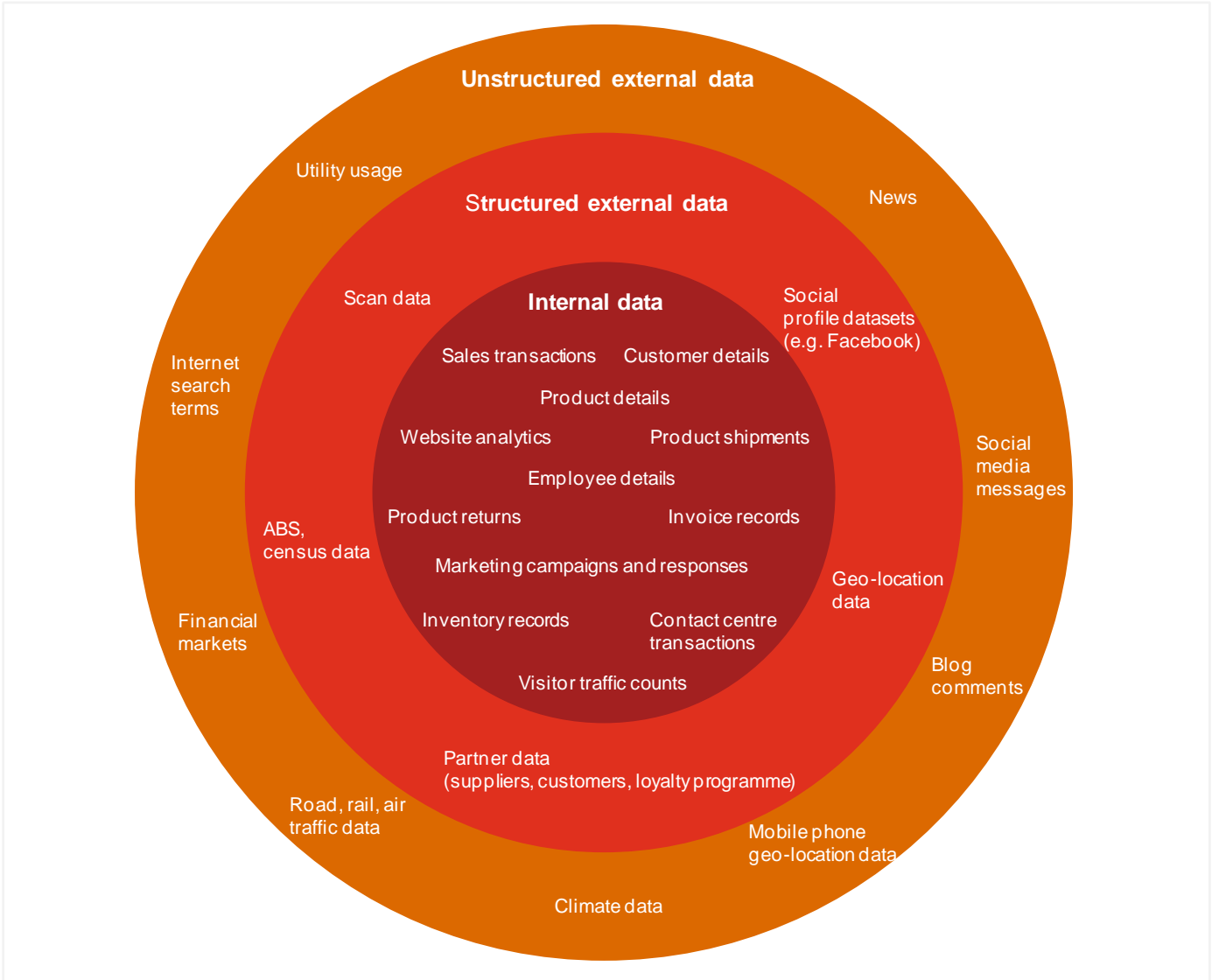
Big data is defined as comprising of data sets that are generally beyond the capability of an organisation to capture, analyse and process. It is a core theme in the evolution of the enterprise data warehousing (EDW) and advanced analytics markets. It will become a key value creator for businesses, letting them tap into the world of information which before this was out of reach

These new data management and storage technologies can also provide economies of scale in more traditional data analysis. The big data analysis supplements, not replaces, the BI systems, data warehouses, and database systems essential to financial reporting, sales management, production management and compliance systems.

1. Big data is a core theme in the evolution of the enterprise data warehousing (EDW) and advanced analytics markets.

2. Big data is structured and unstructured data.

3. Big data comes from a variety of sources.

4. Big data are datasets that are too large, too raw or too unstructured for cost-effective analysis.

Tapping into the power of big data

For organisations seeking to move to a consumer-adaptive retailing model of operation big data is crucial...

Unstructured external data

Utility usage

News

Structured external data

Scan data

Internal data

Social profile datasets (e.g. Facebook)

Internet search terms

Sales transactions   Customer details

Product details

Website analytics   Product shipments

Employee details

Social media messages

Product returns   Invoice records

ABS, census data

Marketing campaigns and responses

Financial markets

Inventory records   Contact centre transactions

Geo-location data

Visitor traffic counts

Blog comments

Partner data (suppliers, customers, loyalty programme)

Road, rail, air traffic data

Mobile phone geo-location data

Climate data

> *"The speed of business these days and the amount of data that we are now swimming in mean that we need to have new ways and new techniques of getting at the data, finding out what's in there, and figuring out how we deal with it."*
>
> Bud Albers of Disney

The human analysis previously described is an old hat for many business analysts, whether they work in manufacturing, fashion, finance or real estate. What's changing is scale. As noted, many types of information that never existed or were not accessible are now available.

Businesses have the potential to discover more through larger samples and more granular details, without relying on people to recall behaviours and motivations accurately.

This potential can be realised only if you pull together and analyse all that data. Businesses that augment their human experts with big data technologies could have significant competitive advantages by heading off problems sooner, identifying opportunities earlier, and performing mass customisation at a larger scale.

Fortunately, the emerging big data tools should let businessmen apply individual judgments to vaster pools of information, enabling low-cost, ad-hoc analysis never before feasible. Further, as patterns are discovered, the detection of some can be automated, letting the human analysts concentrate on the art of analysis and interpretation that algorithms cannot accomplish.

Even better, emerging big data technologies promise to extend the reach of analysis beyond the cadre of researchers and business analysts.

Several start-ups offer new tools that use familiar data-analysis tools—similar to those for SQL databases and Excel spreadsheets - to explore big data sources, thus broadening the ability to explore to a wider set of knowledge workers.

Finally, big data approaches can be used to power analytics-based services that improve the business itself, such as in-context recommendations to customers, more accurate predictions of service delivery, and more accurate failure predictions **such as for the manufacturing, energy, medical, and chemical industries**.

Analysing data that wasn't designed for BI big data also lets you work with 'gray data', or data from multiple sources that is not formatted or vetted for your specific needs, and that varies significantly in its level of detail and accuracy—and thus cannot be examined by BI systems.

These techniques comb huge data sets of information collected for specific purposes (such as monitoring individual financial records), looking for patterns that might identify good prospects for loans and flag problem borrowers. Increasingly, they comb external data not collected by a credit reporting agency—for example, trends in a neighbourhood's housing values or in local merchants' sales patterns—to provide insights into where sales opportunities could be found or where higher concentrations of problem customers are located.

The same approaches can help identify shifts in consumer tastes, such as for apparel and furniture. And, by analysing gray data related to costs of resources and changes in transportation schedules, these approaches can help anticipate stresses on suppliers and help identify where additional suppliers might be found.

All of these activities require human intelligence, experience, and insight to make sense of the data, figure out the questions to ask, decide what information should be correlated, and generally conduct the analysis.

Though generally provided through third-party sources, this information is generally available for your use. However, overlaying this data over existing internal information should yield richer and contextually existing and potential customers.

Much of this data is taken from sources that are not within your immediate control. When used in combination with existing highly structured data, this information can assist to provide concise and targeted insights.

Of these categories, internal data is likely to be the source that yields the greatest results, with the least amount of effort and cost to the objectives, contextual knowledge and an understanding of what insights you want to reveal – any or all of this information is seemingly meaningless.

Building a bridge to rest of your data

Like pioneers exploring a new territory, a few enterprises are making discoveries by exploring big data. The terrain is complex and far less structured than the data CIOs are accustomed to. And it is growing by exabytes each year. But it is also getting easier and less expensive to explore and analyse, in part because software tools built to take advantage of cloud computing infrastructures are now available.

Our advice to CIOs:

You don't need to rush, but do begin to acquire the necessary mindset, skill set and tool kit.

These are still early days. The prime directive for any CIO is to deliver value to the business through technology. One way to do that is to integrate new technologies in moderation, with a focus on the long-term opportunities they may yield. Leading CIOs pride themselves on waiting until a technology has proven value before they adopt it.

However, CIOs who ignore the big data trends described in the first two articles risk being marginalised in the C-suite. As they did with earlier technologies, including traditional business intelligence, business unit executives are ready to seize the big data opportunity and make it their own.

With this in mind, PwC encourages CIOs to take these steps:

1. Start to add the discipline and skill set for big data to your organisations; the people for this may or may not come from existing staff.

2. Set up sandboxes (which you can rent or buy) to experiment with big data technologies.

3. Understand the open-source nature of the tools and how to manage risk.

Enterprises have the opportunity to analyse more kinds of data more cheaply than ever before. It is also important to remember that big data tools did not originate with vendors that were simply trying to create new markets.

Big data lessons from web companies

Today's CIO literature is full of lessons you can learn from companies such as Google. Some of the comparisons are superficial because most companies do not have a web company's data complexities and will never attain the original singleness of purpose that drove Google, for example, to develop big data innovations. But there is no niche where the development of big data tools, techniques, mind-set, and usage is greater than in companies such as Google, Yahoo, Facebook, Twitter and LinkedIn.

And there is plenty that CIOs can learn from these companies. Every major service these companies create is built on the idea of extracting more and more value from more and more data.

Enterprises have the opportunity to analyse more kinds of data more cheaply than ever before.

It is also important to remember that big data tools did not originate with vendors that were simply trying to create new markets.

Service	Data that web companies capture
Self-serve advertising	Ad-clicking and -picking behaviour
Analytics	Aggregated website usage tracking
Social networking	Sundry online
Browser	Limited browser behaviours
E-mail	Words used in e-mails
Search engine	Searches and clicking information
RSS feeds	Detailed reading habits
Extra browser functionality	All browser behaviour
View videos	All site behaviour
Free directory assistance	Database of spoken words

There are so many different ways now to optimise pieces of business processes, to reach out to new customers, to debunk old myths, and to establish realities that haven't been previously visible.

Of course, the first steps are essential—putting the right technologies in place can set organisations in motion toward a culture of inquiry.

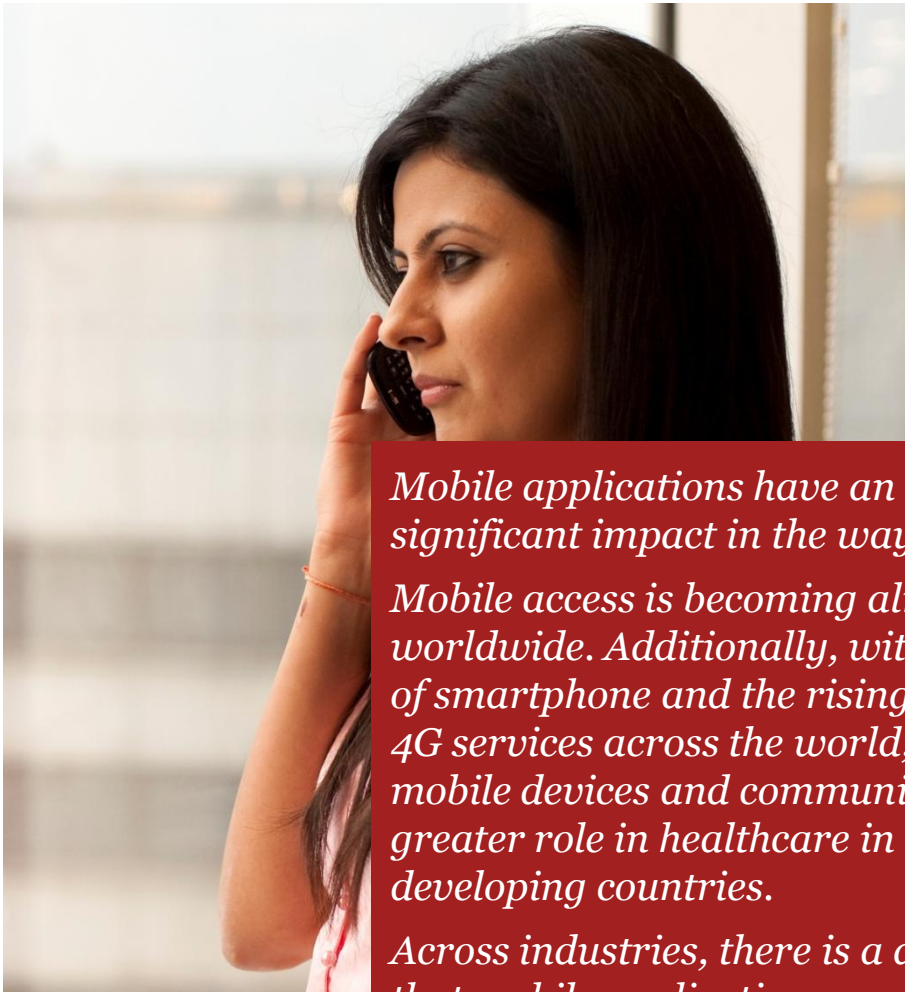**The new analytics certainly doesn't lack for ambition, vision, or technological innovation.**

Section 5
Mobility

Mobility
Mobile applications are the building blocks of the digital economy

Mobile applications have an increasing and significant impact in the way business is carried.

Mobile access is becoming almost ubiquitous worldwide. Additionally, with increasing penetration of smartphone and the rising uptake of 3G and 4G services across the world, going forward, mobile devices and communication will play a far greater role in healthcare in both developed and developing countries.

Across industries, there is a drift to reap the benefits that mobile applications can bring such as improved efficiencies and productivity.
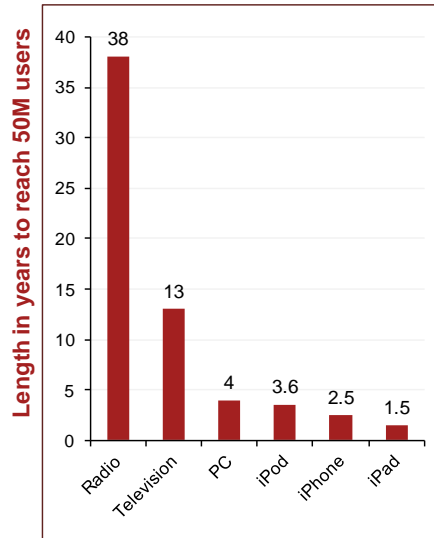
These trends enable customers to access application anywhere anytime with better response time.

PwC believes every CIO needs a transformative enterprise mobility strategy to manage the phenomenon, including how to choose and what to enable.
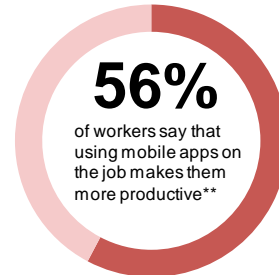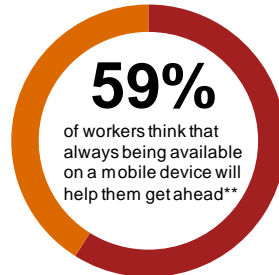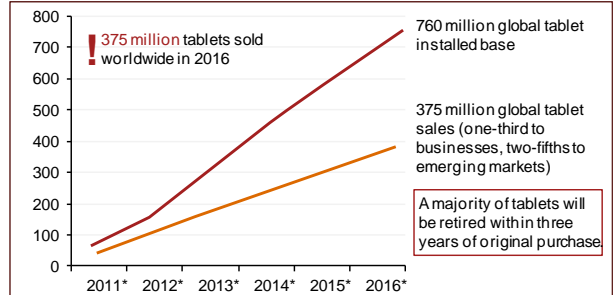
Mobile apps and devices are exploding in popularity

| Mobility is becoming ubiquitous... | ....Making technology central to how people live, work, play … | … And blurring lines between private and work technology use |

Mobile phone adoption significantly outpaced recent technologies

Length in years to reach 50M users

- Radio: 38
- Television: 13
- PC: 4
- iPod: 3.6
- iPhone: 2.5
- iPad: 1.5

Global tablet sales and installed base (millions)
Source: Forrester

! **375 million** tablets sold worldwide in 2016

800 700 600 500 400 300 200 100 0
2011* 2012* 2013* 2014* 2015* 2016*

760 million global tablet installed base

375 million global tablet sales (one-third to businesses, two-fifths to emerging markets)

A majority of tablets will be retired within three years of original purchase

59% of workers think that always being available on a mobile device will help them get ahead**

56% of workers say that using mobile apps on the job makes them more productive**

760 million tablets in use globally by 2016*

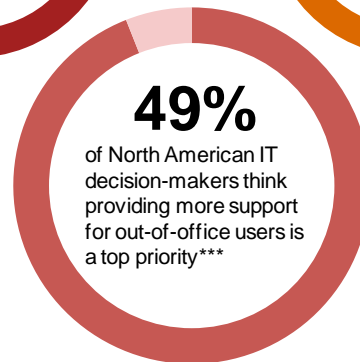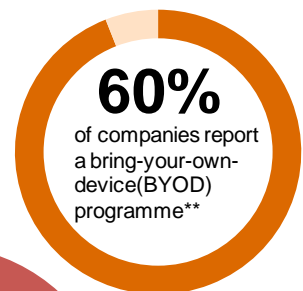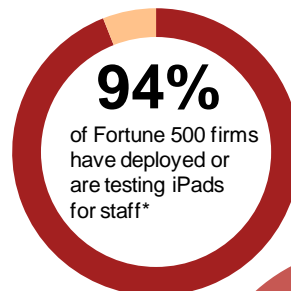**One third of these tablets will be purchased by businesses***

**Sybase, 2011

*Forrester, 2012

...demanding that IT deliver mobile-enabled functions and support for anytime, anywhere, any device access to information

1. IT is no longer the first stop for technology advice

2. Clipboards and books are dying – every thing is going digital

3. Work is no longer confined to the office

4. Knowledge workers increasingly expect mobile-friendly content and services

5. Mobile workers who demand anywhere, anytime access flock to cloud or cloud-connected apps.

Mobile support has rapidly changed from an 'optional' to an 'essential' investment

94% of Fortune 500 firms have deployed or are testing iPads for staff*

60% of companies report a bring-your-own-device(BYOD) programme**

49% of North American IT decision-makers think providing more support for out-of-office users is a top priority***

*Apple's 2012 second quarter earning report
**Aberdeen, 2012
***Gartner, 2011

Mobile applications challenges and concerns

Despite the potential benefits, mobile applications need to address the challenges during adaption.

From encryption problems to physical security and wireless viruses, there are several obstacles affecting the proper and effective use of mobile applications.

Along with the increase in mobile application usage, there is an alarming increase in potential malicious users whose skills mature every day.

The following are examples of potential attacks and exploits to which mobile applications are vulnerable:

- Clear text capture of credentials and personal information caused by failure to encrypt data at rest and in motion
- Application-directed vulnerability exploits aimed at stored user information
- Man-in-the-middle and phishing attacks
- Session hijacking
- Transparent proxy use allowing encrypted network traffic sniffing for user credentials and for accessing sensitive information
- Use of social media and other unique threats
- Storage of mobile device identifiers

Source: *fs viewpoint, PwC*

Measures to be implemented to address the concerns

Protecting the customer's sensitive information, identity impersonation from exposure to unintended third parties or lost or stolen devices or malware

Preventing money laundering, investment fraud, surfing and terrorism financing from the use of compromised accounts; disguise of mobile transaction totals, origins, and destinations

Implementing measures to maintain compliance with multiple laws, including the Anti-Money Laundering Act, scrutiny by the SEC, FTC, FFIEC, monitoring emerging legislation that may impact mobile security, including the Dodd-Frank, combating terrorism finance, etc.

Adopting device virtualisation to create secure separation between underlying hardware and secure software that runs on top of it

Scanning capabilities of antivirus depend on the nature of the OS and the server

Encrypting device with OS protection options; developing secure application through OS encryption algorithms and protection levels; option to decrypt application data only after device is unlocked; encryption protects against jail-broken device threats

Applying code review with automated tools review for common vulnerabilities

Adopting strong out-of-band, multi-factor authentication

Source: *fs viewpoint, PwC*

Mobile wallet: The next leap towards market penetration

"Mobile operators are playing a vital role in defining and implementing a new generation of "smart" enabling services. The operators need to work closer with the content industry to create viable business models behind these services."

Gary Schwartz
Chair, North American Mobile Entertainment Forum

"We need to make apps more relevant to the user. They are an extension of the user's personal device that has a range of senses-a camera to see, a microphone to hear and GPS to be aware of the location. It is a very different experience than the desktop. As a result one third of mobile search queries will have some form of local intent."

Mike Schipper
Product Manager, Google UK

The industry's revenue will no longer grow because of fixed connectivity. An expanding array of mobile-broadband-based services accessed by an ever-rising number of smart devices will fuel the future. Nobody has all the assets or answers to sustain success alone. The key is collaboration.

After many years of hype and anticipation, mobile commerce is ready to take off. **The next step is to turn the smartphone into a mobile wallet for m-commerce transactions.**

To seize this opportunity, a growing number of mobile operators are now looking to pool their resources and user bases to offer a larger and more compelling consumer market for m-commerce services. They face strong competition from over-the-top giants, including Google, Apple, Facebook and a raft of other internet players, all seeking to make the most of their online strength in the mobile world.

With the dramatic increase in cell phone usage, Telco and Tech Giants are certainly seeing dividends paid off in terms of investment of time, money and manpower in the mobile space.

These players have already cornered the lion's share of revenues from the growth of mobile advertising and applications, and–unlike operators– are unencumbered by the constraints of geographic user bases.

On a consumer level, making payments on a mobile device is certainly not a time consuming endeavour. Often, mobile users find that it's easy, they can do it anywhere, and the point of sales is usually eliminated. In other words, they are already going to buy the product, the mobile platform just gives them a more convenient way of doing it.

In our view, mobile operators have a narrow window of opportunity to take the lead in encouraging businesses and consumers to cross the threshold and participate wholeheartedly in m-commerce. Failure to do this almost inevitably will allow the over-the-top providers to take the initiative, the customer relationships and revenues.

The size of the revenue opportunity is apparent in the pace of change in consumers' behaviour. As well as using smartphone for browsing the internet, people are now exploiting the potential of mobile to help them choose their purchases and capitalise on special offers.

This echoes the early evolution of electronic commerce, which first enabled computer users to 'surf' for products to evaluate before buying them in physical retail stores, and then progressed to buying directly online.

Today, many consumers have bank accounts linked to several mobile banking services, sources and destinations, causing significant effort in changing banks. In the near future, mobile wallet may allow consumers to disintermediate consumption of services to a larger audience, allowing for painless transactions.

New service models

- **Mobile payments:** This is a new, secure, standardised and convenient environment for online and mobile wallet services. As well as various payment cards (both debit and credit), the electronic or mobile wallet will be able to contain all other cards and functions that consumers carry in their physical wallets, including loyalty schemes, vouchers, discount offers and travel tickets.

The advantages here are not only of scale and consistency, but also that people can take their wallets with them to new operators, as they do today with their phone numbers when switching networks. A more important asset to operators is secure access to the SIM card, which makes sure payments, loyalty schemes, vouchers, etc. meet the kinds of strict security measures that banks, merchants and card issuers require today.

A customer can transfer money or pay for goods and services by sending an SMS, GPRS and WAP, IVR or other mobile communication technologies. Customers wishing to avail themselves of this service will have to register with banks which provide this service.

Consumers get to enjoy the benefit of a consistent user experience at the till plus additional fraud prevention and security measures that cannot compare to carrying the physical wallet.

Can Google, Apple and others replicate these services? **The answer is yes.**

There is an advantage in being both device and operator agnostic while also having deep insight into the customer's history as a mobile user. The Mobile Payment Forum of India (MPFI) is the umbrella organisation which is responsible for deploying mobile payments in India.

- **New mobile advertising marketplace:** This will give brands and advertising or media agencies the ability to target consumer focused campaigns direct to mobile. Of the many examples of mobile advertising ventures around the world, few have the scale and reach to specifically target the mass mobile customer base in any given country.

- **Back office data analytics environment and capability:** This will give brands and agencies anonymous insights into transactions and behaviours across the operators' aggregate customer base.

As a result, companies will be able to target specific behavioural and demographic segments in specific locations at specific times, and to make the most effective loyalty, voucher and redemption offers.

These activities will be carefully managed to stay within the relevant data protection and privacy laws. As always, operators must tread a fine line.

It will need to reflect the fact that any collaborative strategy should benefit three main groups of businesses- first, the operators using the service; second, the (overlapping) group of operators who are the shareholders in the service; and third, the customers, including advertisers and various types of card issuers–payment, transport, loyalty and so on.

A common assumption has been that operators would try to generate revenue from transactions by taking a slice of the transaction value. Because that approach results in the operators competing against the most important potential customers, a more collaborative model is needed.

Operators should generate their transaction revenues by giving card provision services to card issuers, effectively creating a mirror image in the mobile virtual environment of the commercial structure used in the physical world. In exchange for this 'mobilisation' of the physical cards, the venture is able to charge either for access or for leasing access to the venture's secure SIM and service infrastructure.

Benefits of mobile payments

- Fewer customer service representatives needed, saving money and resources

- Increased customer loyalty

- Attraction of younger demographic groups

- Increased satisfaction among baby boomers

Source: *Communications Review, PwC and Wiki*

Banking and mobile payments: Utilising NFC

The race to seize the opportunity

As the environment for mobile-handset based transactions continues to evolve, a wide array of players are targeting the massive opportunities m-commerce services offer, from advertising to mobile wallets.

Technologies such as NFC and mobile applications including Google Wallet and Passbook are changing the way consumers pay for goods and services, and many times, making shoppers reach for their smartphone to pay rather than their credit card.

However, not everything is smooth when it comes to mobile wallet. Considering that this technology is new, there are still a lot of kinks to work out. Further, the problem with familiarity still exists. Most people are used to traditional banking and may have a hard time adjusting to the new system. This may make them reluctant to use a mobile wallet.

Further, if users are worried about their wallet being stolen, the same problem exists with mobile wallet. If your mobile gets stolen, you are out of luck. This is primarily because each mobile wallet account is specific to a certain handset. You cannot immediately switch to another handset in case you lose the first one. Further, you need an internet connection to use the services.

Till date, the likes of Google and Apple have been winning the competition for revenues from mobile applications and mobile media. The launch of ISIS shows operators' determination to keep the same from happening in the potentially much bigger marketplace for m-commerce services.

Operator's worldwide gearing up for m-commerce

Leading **US mobile** networks such as **AT&T Mobility, T-Mobile USA and Verizon Wireless** announced their joint venture, ISIS, a national mobile commerce network that aims to fundamentally transform how people shop, pay and save. It aims to make its mobile commerce network available to merchants, banks, payment networks and mobile carriers, thereby 'fundamentally transform how people shop, pay and save'. The joint venture took a major step when it announced a partnership between ISIS, Visa, MasterCard, Discover and American Express.

The was followed by **UK mobile networks–Everything Everywhere** (a joint venture brand of Orange and T-Mobile), **Telefonica UK and Vodafone UK** announced a new mobile marketing and payments joint venture.

European providers are planning to create a single m-commerce ecosystem for UK advertisers, retailers and banks. They will also use near field communication (**NFC**) to provide consumers with a secure **mobile wallet payments**.

Vodafone, Telefonica O2 Germany and T-Mobile also revealed plans to launch an **NFC-sticker based mobile payment solution** in Germany. These commercial collaborative initiatives join a technical NFC collaboration that Orange, Telefonica, Movistar and Vodafone announced in Spain.

The momentum behind operator's m-commerce offerings is also building in other parts of the world. **Etisalat** announced plans to launch an NFC-based mobile payment system in the United Arab Emirates, in collaboration with MasterCard. And the M-PESA mobile money transfer service that **Safaricom** launched in Kenya in 2007 now has more than 14 million customers and about 28,000 agent outlets across Kenya.

It is also available in other countries, including **Tanzania**, **South Africa**, and a pilot is under way in **India**.
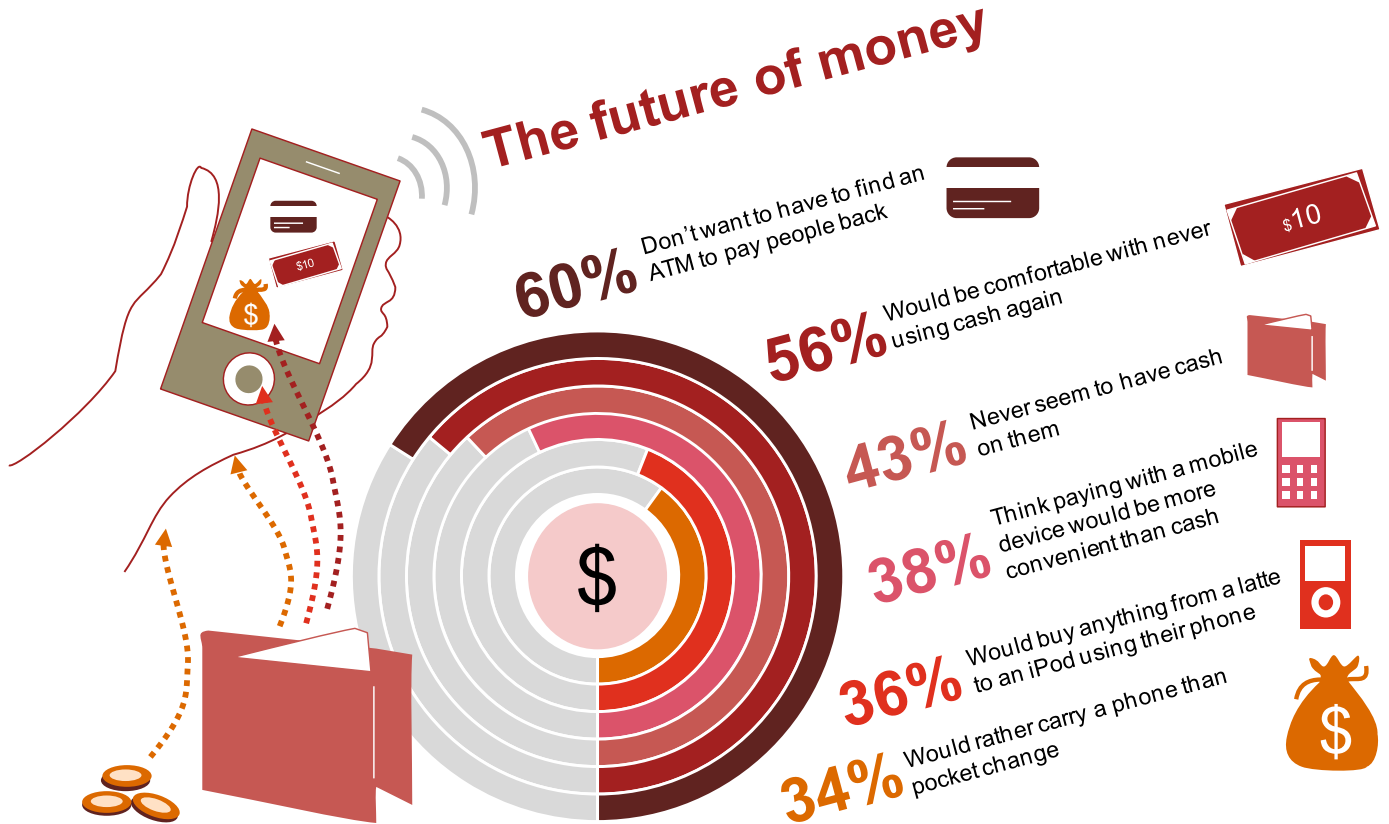
Many similar schemes are under way throughout **Africa** and **South-East Asia**, as operators try to reach the 'unbanked' mobile subscriber base.

Meanwhile, countries that lead in overall mobile internet usage–**Japan** and **South Korea**–have massively adopted mobile payments.

A concept whose time has come

All entrants are aware that m-commerce is about much more than simply payment tools. E.g., the ability to target advertising on mobile will be critical and companies such as **Google** understand the power of advertising and reach when combined with the personalised nature of mobile.

We estimate that smartphone penetration will reach 17% of the global mobile subscriber base by 2014, ranging from 55% in developed countries to 10% in developing countries.

The future of money

60% Don't want to have to find an ATM to pay people back

56% Would be comfortable with never using cash again

43% Never seem to have cash on them

38% Think paying with a mobile device would be more convenient than cash

36% Would buy anything from a latte to an iPod using their phone

34% Would rather carry a phone than pocket change

In targeting the m-commerce opportunity, all operators know the scale of the competition they are up against, especially following Google's announcement of its **NFC-based Google Wallet** smartphone application (May 2011).

Apple is widely expected to follow Google into mobile wallets within the next few months, joining several other players.

In the coming year, **PayPal** is set to roll out **PayPal Wallet** so that consumers can use their phones to pay from multiple PayPal accounts, store gift cards and receipts, and capitalise on special offers. This will not be restricted to NFC enabled phones.

The social media giant, Facebook **has already created the official subsidiary** Facebook Payments **to handle payments with the** Facebook credits **virtual currency system.**

India is the second largest telecommunication market and has more than **650 million mobile phone** customers. The mobile phone industry is growing at a rate of 100 million per year. It is expected to touch the **1 billion mark** by **2013**. The share of the urban subscribers is **66%** and the share of the rural subscribers is **34%**.

Thus, the opportunities to grab are wholesome in areas such as pre-paid mobile top-up, domestic peer-to-peer remittances, bill and merchant payments, governance, new business opportunities, and adoption of mobile payments.

The subscription growth rate on a monthly basis is 55% for urban segments and 45% for rural segments. Given this context, it is possible to consider the mobile phone as an economically viable instrument to enable inclusive access to mobile wallet smartphone services.

Projected growth in global sales of smart devices
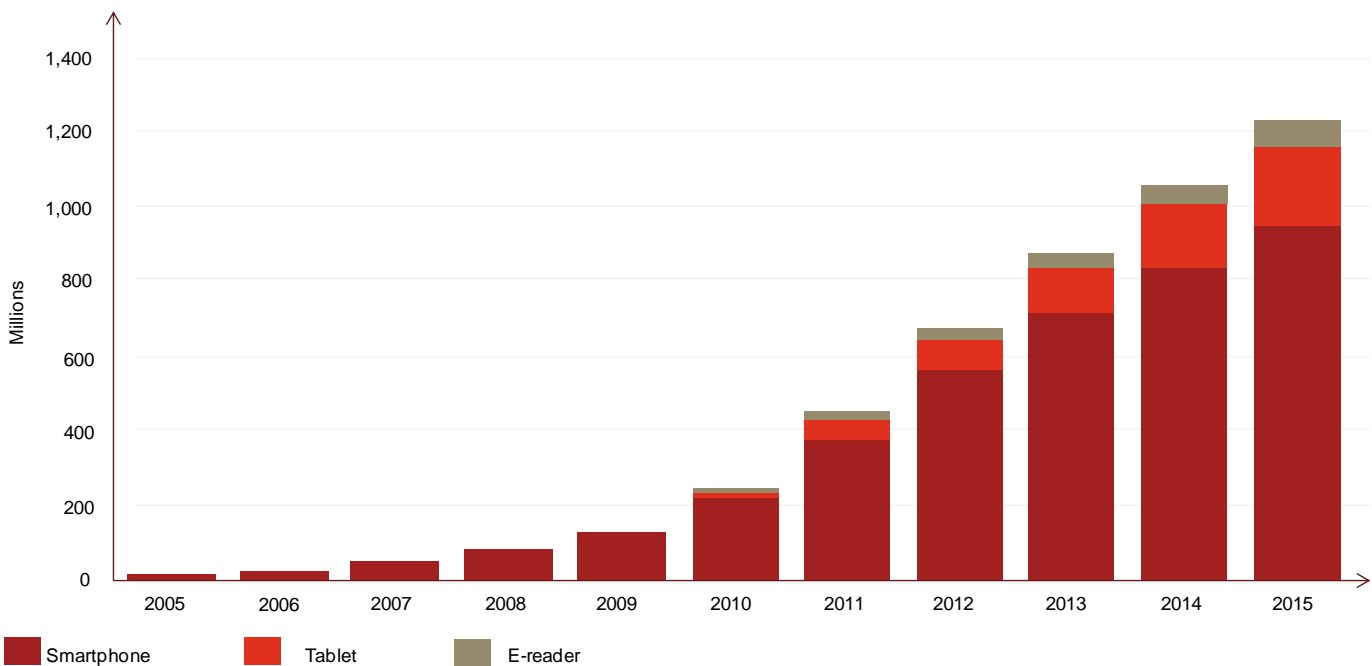
Source: *PwC Global Entertainment and Media Outlook: 2011-2015, PricewaterhouseCoopers LLP*

Research also shows that consistently, worldwide, smartphone penetration tends to be higher among people in the wealthier demographic groups and among the younger groups, who make up the future consumer base for mobile commerce.

Moving quickly to meet the challenges ahead

While operators have a huge potential to lead the m-commerce revolution through industry collaboration, they still need to overcome three significant barriers if they are to succeed.

The **first** biggest threat is the scale, speed and proven market muscle of the over-the-top service providers such as Google and Apple. They have already demonstrated those qualities in seizing the majority of revenues in the mobile applications and advertising markets, and are looking to emulate their success in all other aspects of m-commerce.

Secondly, there are commercial and competition issues with collaborations, although, arguably, they pale when compared to the effects of the dominant operating system and/or handset players such as Apple, Google and Microsoft-Nokia embedding their wallet and advertising services into the out-of-the-box device. More important, the operators need to develop a commercial model that works for them, given likely imbalances in market share.

Thirdly, operators face the challenge of making sure NFC-enabled terminals get into retail outlets quickly. In many cases, card issuers are largely making this happen, but are doing so potentially in competition with the operator-led ventures. Visa now offers cardholders the option of using a microSD memory card with existing smartphone and paying for goods with NFC by using its downloadable PayWave application. Other NFC-based mobile wallet offerings include MasterCard's PayPass and American Express's ExpressPay. A number of banks in developed markets are adopting such systems for their customers, and that's encouraging retailers to adopt NFC terminals.

Mobile payments include a suite of technologies that allow customers to initiate and complete payment transactions via their mobile devices (SMS, NFC, QR Codes, etc.).

As manufacturers begin equipping their devices with MP technology (such as NFC, etc.), service providers can choose to support these standards, or develop their own solution (such as ISIS, etc.).

More and more consumers are embracing coupons, transport, advertising and other services on their smart handsets. This opens a clear opportunity for mobile operators to take the lead in unifying today's fragmented mobile marketing and payments market, by collaborating to create a single new m-commerce ecosystem. If they can team up successfully to do this, then their potential to give consumers convenient, compelling experiences and to develop new revenues for themselves is enormous.

Success would mean new, collaborative ecosystems strengthening the growth of this embryonic market. Simultaneously, the ecosystems will offer genuine size and scale, allow consumers to get new and innovative services such as mobile wallets and let other consumer-facing businesses target relevant offers and deals to a large yet highly segmentable audience of mobile subscribers. And they would do it all by means of a single platform for sales, delivery and payment.

With commercial collaborative initiatives such as ISIS in the US and the three-way collaborations in the UK and Germany, plus technical ones such as the NFC-based collaboration announced in Spain, operators have embarked on the journey to achieve these goals.

Speed is the key for India...

Source: *Communications Review, PwC*

About PwC

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About Exhibitions India Group

The Exhibitions India Group is a trade promotion organization creating opportunities for investments, joint ventures and technology transfers through the platform of international exhibitions and conferences. The group is an interface between Government, business, academia, society and media etc.

Exhibitions India is the only trade fair and conference organizer in India with ISO 9001:2008 & ISO 14001:2004 Certification. The group is a member of UFI (The Global Association of Exhibitions Industry) and IAEE (The International Association of Events & Exhibitions).

The group's portfolio of event includes:

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- Grindtech India: India's dedicated event on new-age grinding technologies
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With headquarters in New Delhi; the group has branches in Ahmedabad, Bangalore, Chennai, Hyderabad and, Mumbai, and international offices in California (USA), Dubai (UAE) and Tokyo (Japan).

Established in 1987, with a clear objective of being the finest organizer of focused international trade shows in the country, the group plays an integral role in the convergence of ideas, culture, and technologies.

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