2011

HOW MOBILE WILL CHANGE THE WAY WE SPEND

CONNECTED UNIVERSE. UNLIMITED OPPORTUNITIES.

CHETAN SHARMA

A MOBILE FUTURE FORWARD BOOK PAPER

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About Mobile Future Forward

Mobile Future Forward is a mobile thought-leadership summit that attracts some of the most influential minds in the mobile industry who are very instrumental in shaping the industry, in innovation adoption, and in managing the growth of revenues and profits. The experts and visionaries from around the globe will gather in Seattle on Sept 12th 2011 to explore the mobile industry 2-5 years forward, envision what the user experiences and use cases look like, discuss and debate the challenges and opportunities in the journey to that vision. Please visit www.mobilefutureforward.com for more information

The Mobile Future Forward 2011 Book will contain 18 essays from thought-leaders around the globe and is going to be distributed exclusively to the Mobile Future Forward attendees on Sept 12th. The book is published by FutureText, UK.

The essays from the industry luminaries are:

1. How Mobile Will Change How We Spend – Chetan Sharma, President, Chetan Sharma Consulting
2. Smart Integration for Mobile – Steve Mollenkopf, Executive Vice President and Group President. Qualcomm Inc.
3. The Mobile Cloud Connected Enterprise – Abhi Ingle, VP, Advanced Mobility Solutions, AT&T
4. Mobile and Health Possibilities – Subba Rao, CEO, Razi Health
5. Buying a Mobile Device in 2014 – Frank Meehan, CEO, INQMobile
6. Surviving and Thriving in the Age of Mobile Internet – An MNO Game Plan – Manoj Leelanivas, SVP and GM, Juniper Networks
7. Mobile Future Forward Interview with Steve Elfman – President, Sprint Nextel
8. Is Mobile Local Advertising Finally Poised to Take Off? – William Hsu, SVP and CPO, AT&T Interactive
9. Implications of a Connected Society – Danny Bowman, President, Sprint Nextel
10. Big Data and Mobile – Braxton Woodham, Head of Engineering, AVOS
11. Broadband for All – Sanjiv Ahuja, CEO, LightSquared
12. Wireless Competition and Innovation – Stephen Bye, CTO, Sprint Nextel
13. The Future of the Personal Information Economy: Enabling Success Across the Mobile Ecosystem – Ken Denman, CEO, Openwave
14. T-Commerce – Carving Out and Extending E-Commerce – Ramneek Bhasin, SVP and GM, TheFind
15. The Case for Building a Mobile Broadcast Content Delivery Network – The Critical Piece to Fulfilling Mobile Data Demands of the Future – Erik Moreno, SVP, FOX Network
16. Connected Devices – Redefining the Channel – Biju Nair, Chief Strategy Officer, Synchronoss Technologies
17. How Mobile Can Turn Retailers Into Media Companies – Dale Nitschke, CEO, Ovative Group
18. The Future of (Mobile) Communications – Carlos Domingo, CEO, Telefonica R&D
19. Competition and the Evolution of Mobile Markets – Chetan Sharma, President, Chetan Sharma Consulting

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Executive Summary

In his 1943 paper titled "A Theory of Human Motivation", the famed philosopher Abraham Maslow theorized his observations of human needs and curiosities. His pyramid came to depict the human hierarchy of needs. If we map the physiological, safety, love, esteem, and self-actualization needs onto how much we spend as a community, it correlates rather well. As you would expect, human spending behavior is tightly tied to the basic needs. The amount of money we spend on these basic needs might vary by demographics or region but in aggregate, we tend to spend the most for the things that are the bottom of the pyramid – shelter, food, and water.

Over time, entrepreneurs have used technology to drive fundamental changes in consumer behavior for e.g. Microsoft with personal computers, Google with search, Apple with devices, Facebook with social connections. Of course, the web of interconnection, the various vertical industries that map against the human needs is very complex and as new technology cycles come into play, inventors get busy with enhancing performance sometimes by manifold to keep up with the insatiable demand and appetite to do more.

It is very clear that mobile will be at the center of human evolution for years to come. Mobile collapses *time* and *distance* and as such impacts every facet of our lives. While we have come to know the mobile phone as a communications device, their role in our daily lives has been expanding. From checking emails, paying for tickets, sending money transfers, taking pictures of your kids, watching soccer World Cup live, checking commodity pricing, to emergency response to mHealth (mobile Health), mobile devices have become an essential tool to help us navigate our day. As we alluded to earlier, it is not just the traditional phones that have cellular connection these days; we are slowly but surely moving into an era where a majority of electronic devices from small tags to giant billboards will have a communication channel that both machines and humans can interact with.

Mobile also plays a key role in how we go about the most basic transaction in a given day that keeps the economy humming – *spend*.

In this paper, we will take a look at how the connected universe of devices and sensors are going to impact the way we spend and how all this creates new opportunities to meet the basic human needs.

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Mobile devices: The remote control of our lives

To say that mobile devices have become a remote control of our lives is a cliché but it is very true. As figure 1 shows, it is not just traditional phones that have a cellular connection these days. We are slowly but surely moving into an era where a majority of electronic devices from small tags to giant billboards will have a communication channel that both machines and humans can interact with. The diverse functionalities of a camera, GPS, wallet, camcorder, gaming device, rolodex, glucometer, scanner, message service, presence and context-awareness can be used to build a multitude of applications and services customized to specific demographics and regions.

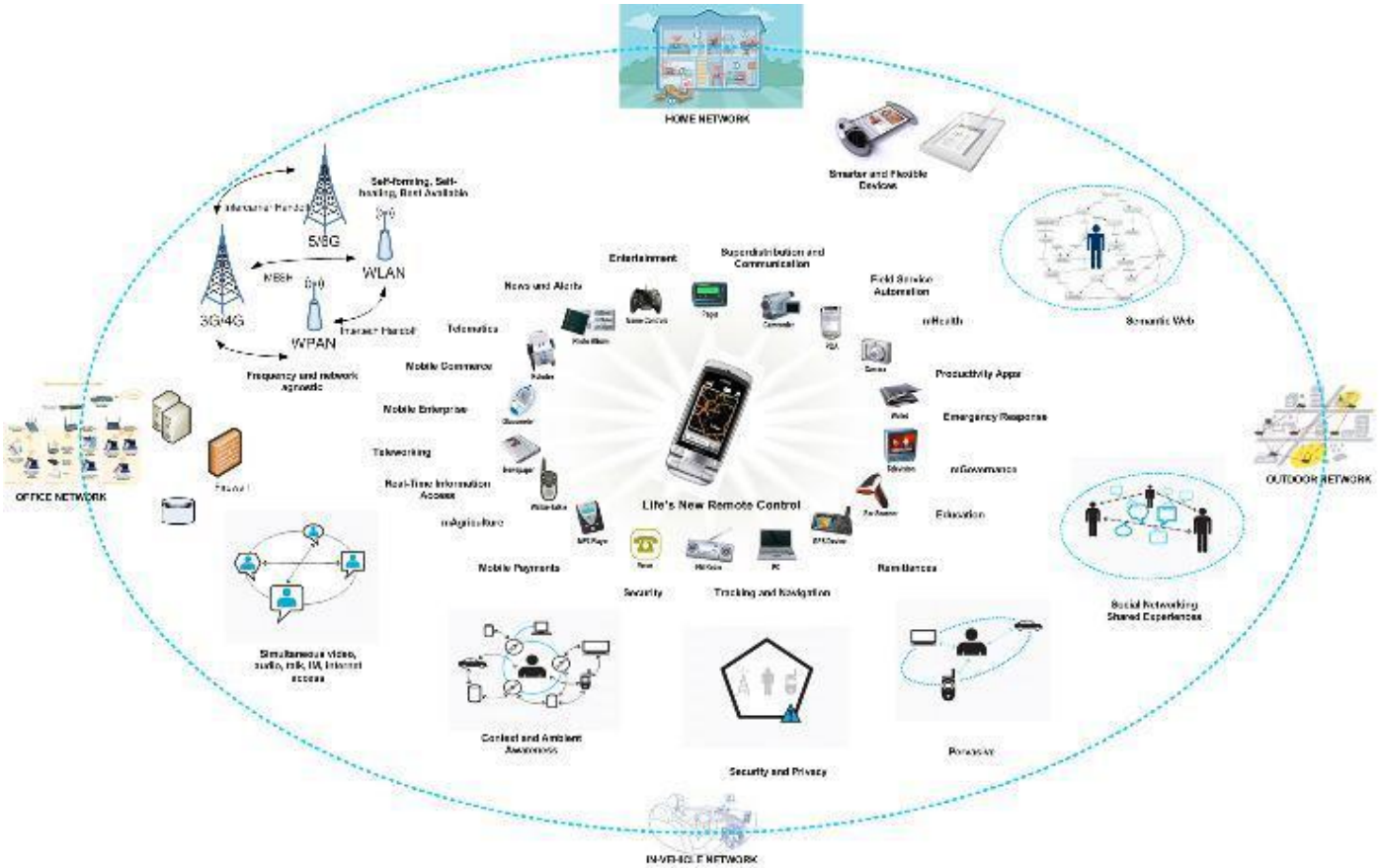

Figure 1. Mobile Device - the remote control of our lives[1]

When connectivity becomes pervasive, the usefulness of a networked appliance is directly proportional to the nodes it is connected to. The network appliance could be as small as a security sensor or window blind controller to garage door opener to giant TV screen to sensor on the roads.

[1] Source: Chapter 9 – What comes next?, Mobile Advertising – Supercharge your brand in the exploding wireless market, Sharma, Herzog, Melfi, John Wiley & Sons, 2008

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Already, in 2011, mobile devices with several GB in memory are available that can process data at 30-40 Mbps. By 2015, devices will take different shapes and forms - foldable, extendable, and flexible, thanks to the new display and projection technologies which are just starting to get out of labs. Chips will be everywhere -in sensors, processors, communication interfaces, and storage. Portable devices will connect to all of these interfaces to gather information, process it, and present it to the user. Also, we will become more accustomed to interacting with the devices with touch, stylus, gesture, and voice.

While the network and devices play a crucial role, the real intelligence will lie in the software that ties together multiple end-points. Sensors embedded in our infrastructure (roads, buildings, cars, homes, bridges, oceans, etc.) will alert us of impending troubles and the changing environment. Mobility will make health care services more accessible and will help farmers across the globe to plan and sell their crops, all with the touch of a finger. We will use mobile devices to control security panels in our houses, instantly communicate with experts on topics of interest, make payments and remittances, and check bank balances. The applications and services that will emerge over the course of the next 10 years will bring basic services like health care, enterprise services, and emergency response to the mass-market in a much more efficient manner.

This is impacting how we as consumers spend our money for various services and goods. We are becoming better shoppers, informed citizens, and productive workers. Information is helping us make better decisions about what, how, when, we purchase, what food we purchase, how advertising influences our behavior, and how social and implicit recommendations drive the personal commerce

Maslow and how we spend

Maslow's needs pyramid collapses into three basic categories – *physiological needs*, the basic needs like shelter and food; *safety* like personal and financial security of self and family, health and insurance; and *self* like friendship, esteem, family, belonging, and self-actualization.

Figure 2 dissects the US Bureau of Labor Statistics data for US consumer spend across different categories and it is pretty clear that the physiological needs of housing and food have the lion share of the our yearly spend. Of course, there is a difference between need and want and the amount one can spend vary by personal net worth, but the figure nicely summarizes how the consumer spend is distributed.

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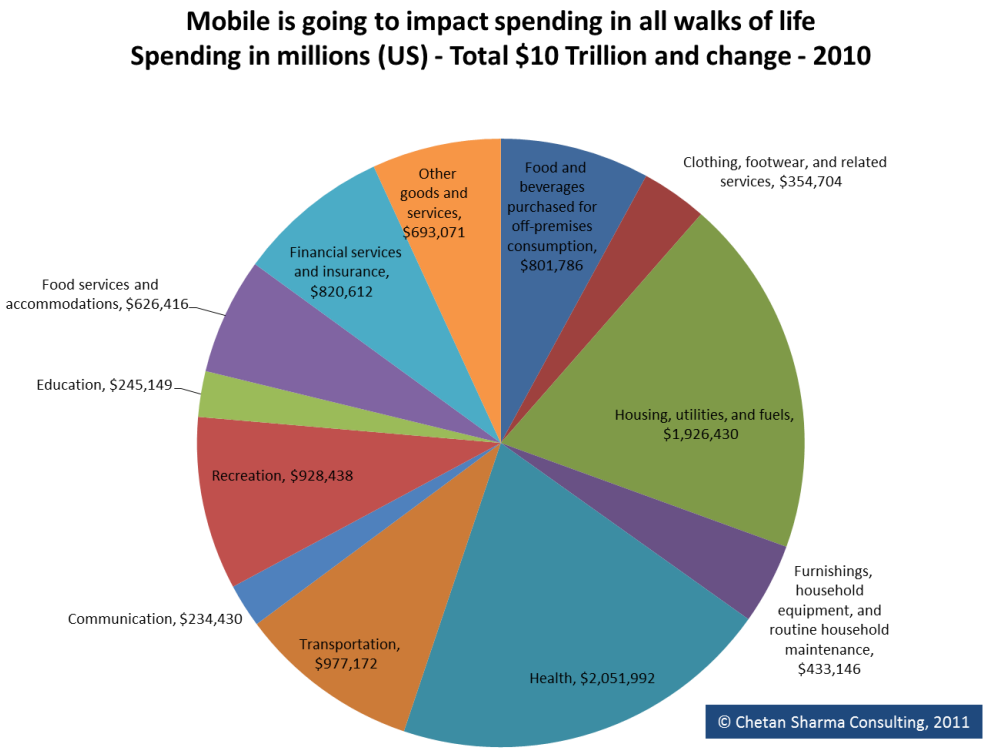

Figure 2. US Consumer Spend[2]

The average consumer has a budget that is split into a large number of monthly and yearly spending. The average US household roughly spends $50K a year on a range of necessary and desired expenditures. There are over 112 million households with an average of 2.6 persons per households.[3]

The largest expenditure is in health and housing with over 39% of the total yearly spend. Add transportation and the top three categories account for 50% of the yearly household spend. The other major areas of spend are in food, recreation, and insurance.

This distribution will obviously look different for different countries with the western nations resembling the US distribution while the developing nations having more of their spend concentrated in the basic human needs vs. recreation and entertainment though things are changing as we will explore later in the paper.

[2] Data Source: US Department of Commerce, Bureau of Economic Analysis. www.bea.gov
[3] Source: US Department of Commerce, Bureau of Economic Analysis. www.bea.gov

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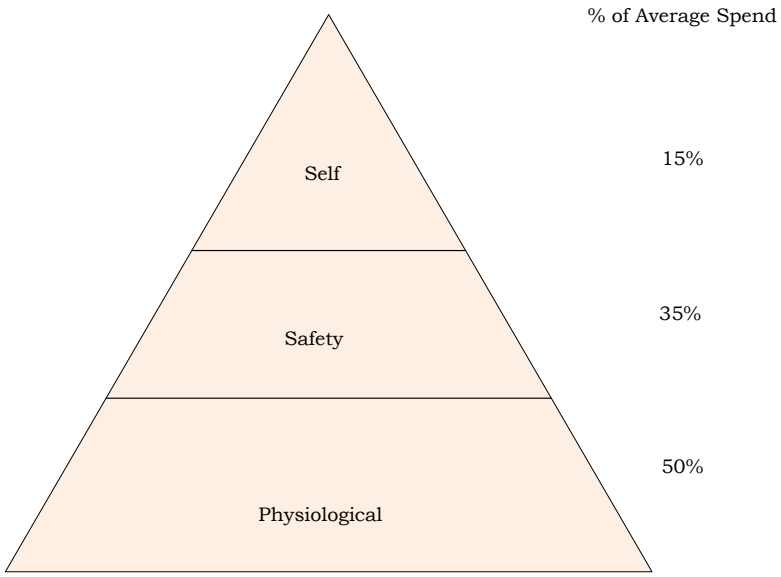

Figure 3. Mapping Maslow to US Consumer Spending

If we map (figure 3) overall consumer spend to the three basic Maslow categories, the bottom tier demands the most at 50% followed by Safety at 35% and on top most tier related to self commands the remainder. Most of the impact mobile has had thus far has been in the "self" category and mobile is starting to impact the bottom two tiers in a significant way. We will take a look at one of the biggest category of spend – healthcare and wellness in more detail.

Anatomy of a Spend Decision

Almost every day, we are consciously or unconsciously part of the spend cycle – whether being provoked unconsciously by an advertisement for a new car or making a decision as to where to go for lunch or figuring out cash or credit (or phone) or sharing about your experience and thus influencing the decision of others in the process. The anatomy of the spend decision and the factors that influence it are outlined in Philip Kotler's marketing classic "Marketing Management" as shown in figure 4. Each of the elements is a multi-billion dollar market opportunity.

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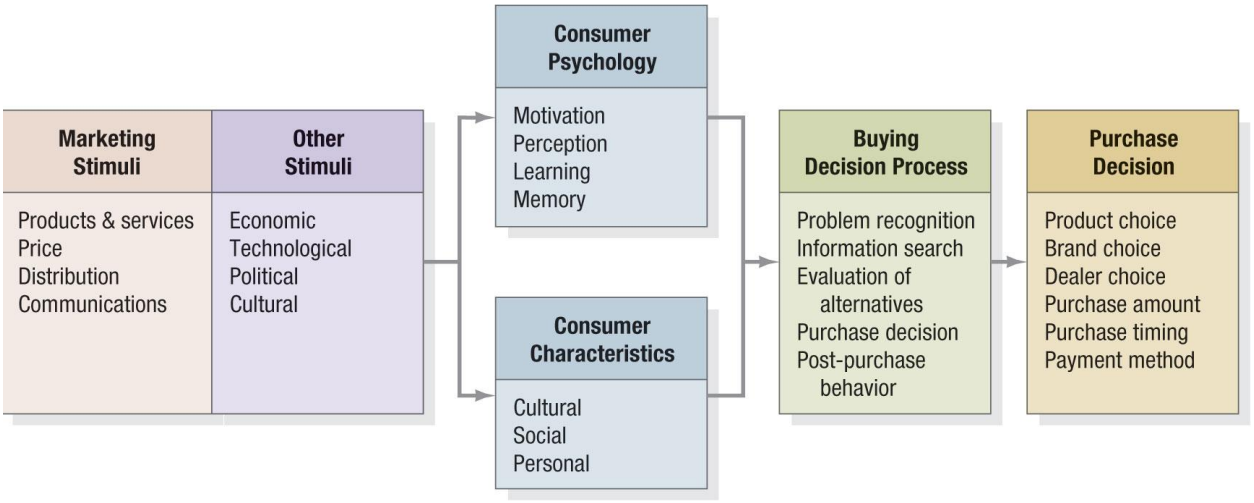

Figure 4. Model of Buyer Behavior[4]

While the basic mechanics of the decision process stays the same, mobile is taking out the friction at each step and it is even collapsing the intermediary steps. One might argue that mobile is in fact altering how we spend on a day to day basis.

Instead of spending time doing the research, we might as well ask our devices – what's best for me, get an answer, and transact. Brands, verticals, and the commerce world is adjusting to the changing times as well. Instead of relying too much on traditional advertising, savvy brands are moving to social media and mobile advertising. By taking out the steps between intent to transaction, mobile offers convenience, efficiency, and accountability that only gets better with time and use.

Mobile and Health

One of the most important areas that mobile technologies are having an impact on consumer spending in both developing and developed countries is health care. As we mentioned before, mobile technology does two things really well - compress time and distance, thus connecting, enabling, and empowering participants in the health care ecosystem to reduce costs and errors, while increasing productivity, access, and efficiency.

[4] Marketing Management, Philip Kotler, Kevin Lane Keller, 12th Edition, 2006

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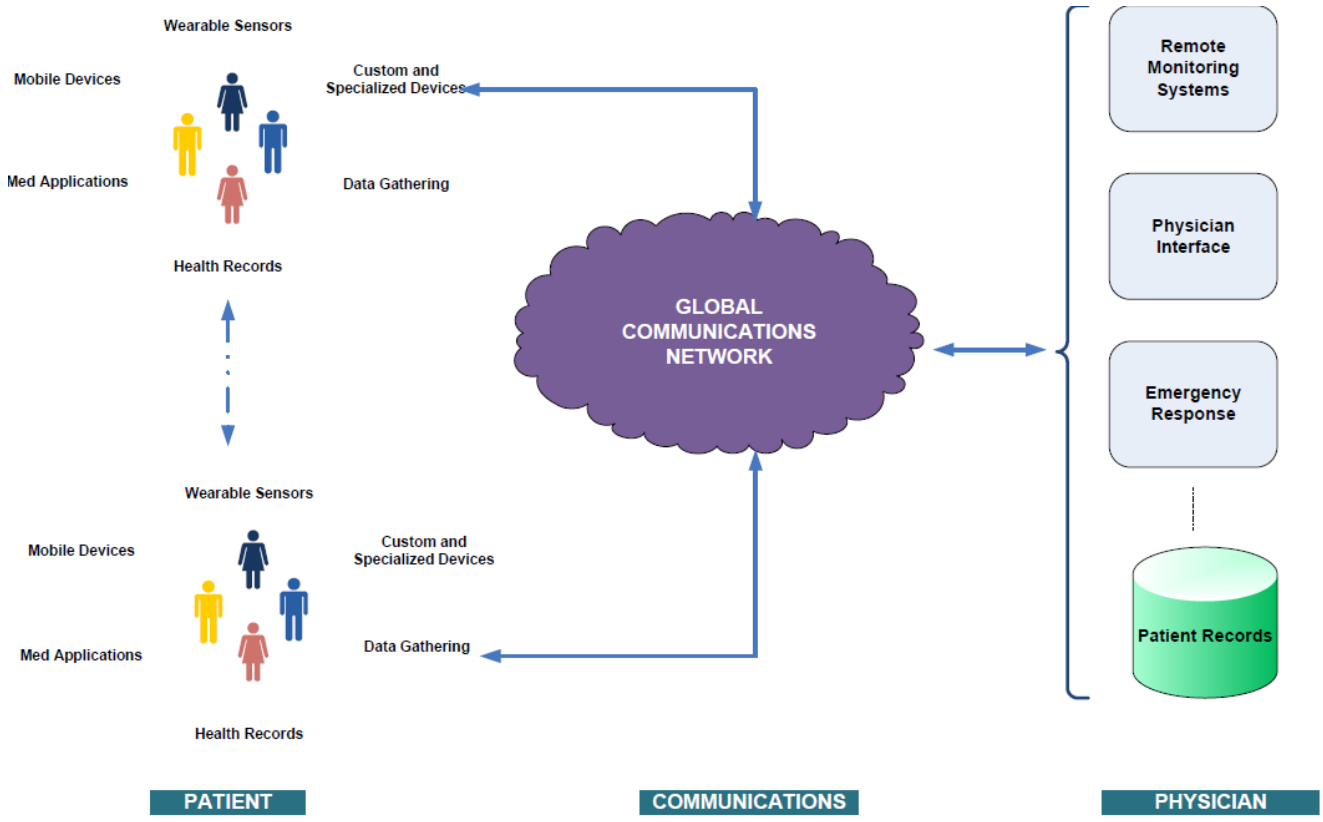

Figure 5. Mobile health services framework

Mobility will impact the following key health care areas (Figure 5):

- **Remote Monitoring Systems** – Given the cost of access and administration, there will be significant investment in sensor technology near (or on) the patient. In addition, we can expect important innovation in the communication infrastructure connecting sensors and patients (especially the elderly, chronically ill, and the impaired) to physicians and their staff. For example, the German firm Biotronic has developed a phone that communicates with a pacemaker using close-range radio frequency and then transmits data over a cellular network to the physician in real-time. Remote care delivery will alter the cost structure of health care and revolutionize how expertise and drugs are delivered in rural parts of the world.

- **Alerting** – The solutions that will scale the most are going to be the ones that are both simple and ubiquitous. The simple alerting capability can help reduce costs and increase efficiency in every country. Messaging and alerting technologies can reduce the number of missed appointments, proactively monitor, follow up, and remind patients to adhere to medication regimes, and alert end-users in case of an epidemic or emergency.

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- **Clinical and administrative data collection and record maintenance** – All of us can relate to the countless forms and paperwork we have to complete each time we interact with the health care system. By automating data collection, monitoring patients and digitizing medical records for further processing, significant cost savings will be attained. Enormous computing power and Gbps (Gigabits/second) network connections would mean data can be collected, analyzed, and understood in real-time from almost anywhere on the planet.

- **Globalization of health care delivery** – In an interconnected world, health care delivery will be much more decentralized and distributed. Your local clinic might be responsible for monitoring your vital signs, but the analysis and prognosis might come from a physician thousands of miles away, you might be lying down on a bed in Kuala Lumpur but the surgeon doing the surgery might be in Stockholm on video conference with experts from Cambridge and Chennai. Real-time translation capability would mean language will not be an issue in the future.

- **Wellness and information awareness** – Due to instantaneous access to information and a mobile device's capability to monitor, record, and share our vital signs at the touch of a button, the awareness to stay fit and healthy will lead to a health-conscious society and the focus on preventative regimens will increase. The ability to socially network with friends, family, and patients with similar experiences will help create a better environment for sharing information.

- **Better Living** – Sensors in devices will sense the environment around us to better prepare us for better living – warning against allergens, air quality, harmful gases, accidents, etc.

- **Preventing drug-counterfeiting and theft** – Drug counterfeiting and theft are particularly severe problems in developing countries. By putting remotely monitored sensors on every shipment, one can ensure that drugs reach their intended destination without tampering. Also, sensors will help maintain the environmental variables for certain drugs like just-in-time vaccines to within operational limits.

- **Early detection** – There is plenty of research to show that if a disease is detected and treated earlier, the cost of treatment and morbidity rates are greatly reduced. If the impact of therapy can be monitored in real-time and adjusted as needed, physicians can follow diseases and develop more evidence- and performance-based treatments.

- **Sensors in the body** – The way we spend on healthcare is likely to go a complete overhaul with embedded sensors or sensor pills that can be swallowed that provide accurate data on diseases and problems that might be forming in the body that need attention so as consumers we can take proactive steps as well our

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physicians can ably guide us thus eliminating enormous health care costs from the system. Elderly and infant care will go a dramatic change as a result.

- **Gamification of healthcare** – Companies like Nike, Adidas, and Philips have been at the forefront of engaging consumers to live better by providing more data about their training, their health and even compare it with the social circle. It is having an impact on consumer behavior. With the increasing aging population and the incidence of chronic diseases, the cost of healthcare will continue to escalate even if there are some reforms as such new products are coming to the market that make dealing with health less intimidating and more fun.

In addition to the above verticals, mobile technology will benefit many other industries, including education, agriculture, travel, consumer products, materials and construction.

Mobile's impact on commerce

In the book "Mobile Advertising: Supercharge your brand in the exploding wireless market,"[5] authors postulated that mobile is the most important advertising medium because it helps close the loop from an impression and first sight to transaction and spend. As data from the comScore/Millennial Media Retail study shows (figures 6 and 7), mobile has become a key tool through the lifecycle of the purchase cycle with over 52% consumers using it to research products across different categories such as electronics, clothing, food, entertainment, travel, books, car rentals, etc. As such if a business is not able to interact with its customers on mobile devices, it is missing out on not only the mindshare but also on the revenue. Brands and businesses who have invested in learning the shifts in consumer behavior and in deploying appropriate technologies to engage consumers where they want us to meet them, are better positioned to turn consumers into their marketers and their evangelists.

[5] Mobile Advertising – Supercharge your brand in the exploding wireless market, Sharma, Herzog, Melfi, John Wiley & Sons, 2008

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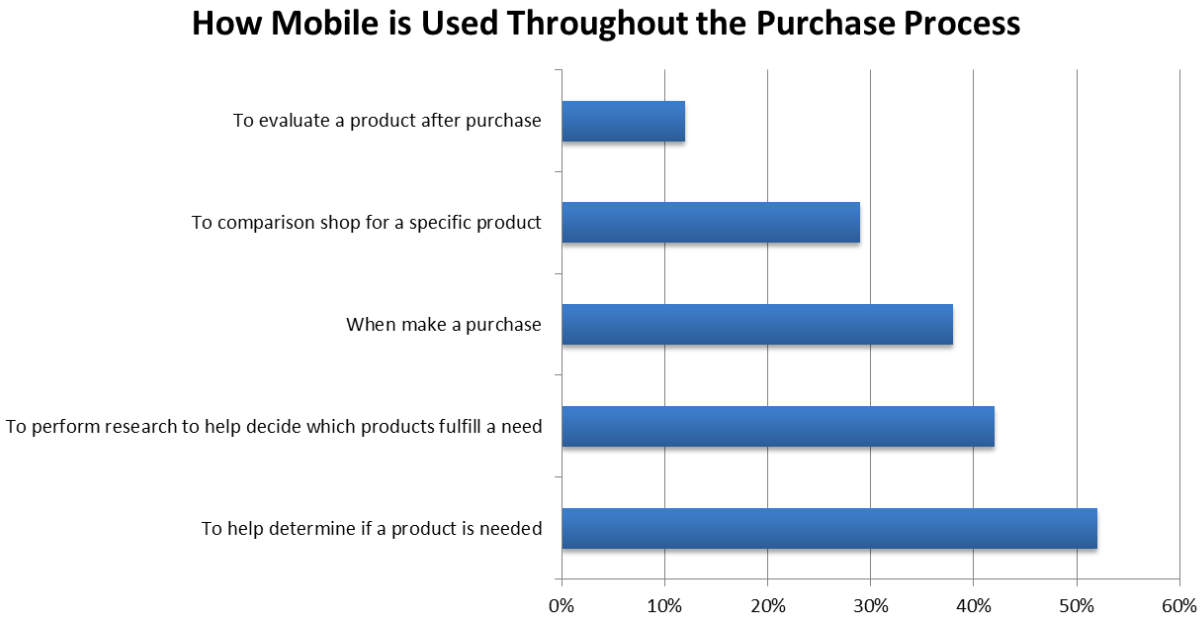

Figure 6. Impact of Mobile on Purchasing Behavior[6]

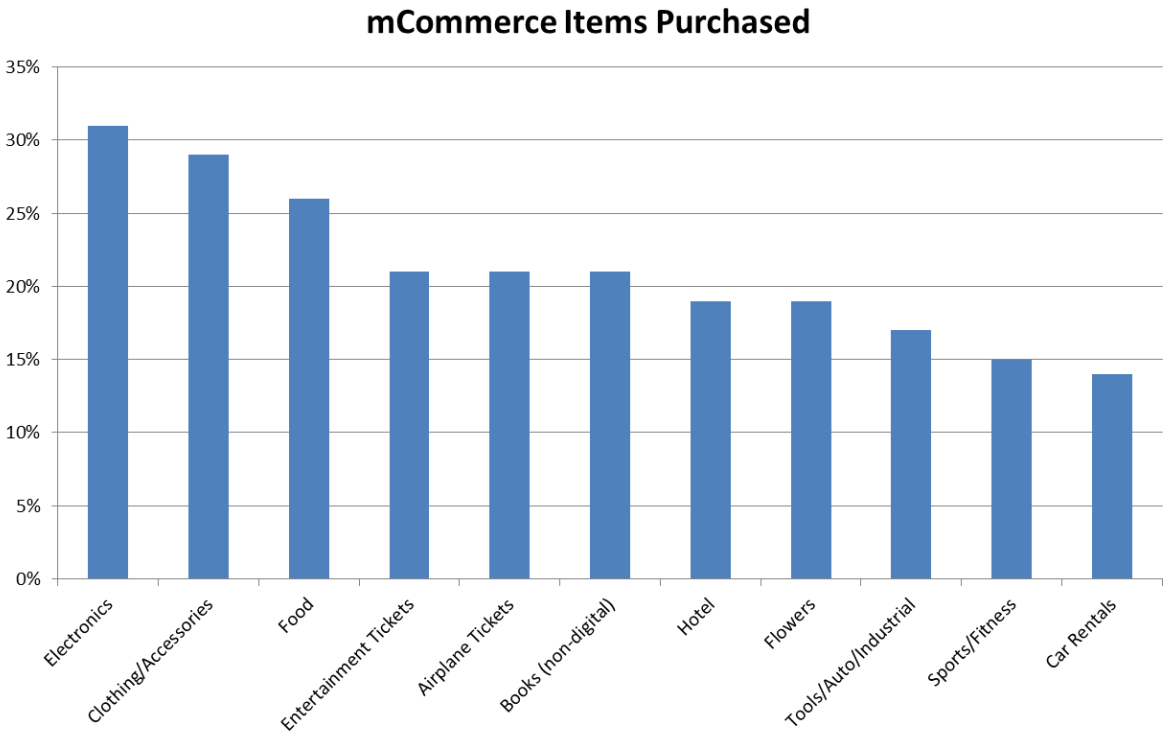

Figure 7. Mobile Commerce Items Purchased[7]

[6] Source: comScore/Millennial Media Mobile Retail Study, 2011
http://www.millennialmedia.com/research/mobile-intel/

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Understanding Consumers

Mobile is fundamentally reshaping how we as consumers spend from housing and healthcare to entertainment and travel, from food and drinks to communication and transportation. Mobile not only influences purchase behavior but also post purchase opinions. When the share button is literally a second away, consumers are willingly sharing more information than ever before. Mobile is thus helping close the nirvana gap for brands and advertisers who seek to connect advertising to actual transactions. The long-term battle is however for owning the context of the users. Having the best knowledge about the user to help drive the transaction is simply the *most valuable currency of commerce*.

As depicted in figure 8, understanding the consumer context is essential to driving the transactions (spend) from consumers. If your understanding of the user is poor whether they walk into your brick-and-mortar store or visits you online, the results will be apparent. Better insights about the user enables you to engage the consumer better that builds loyalty, instant gratification, and revenues over time.

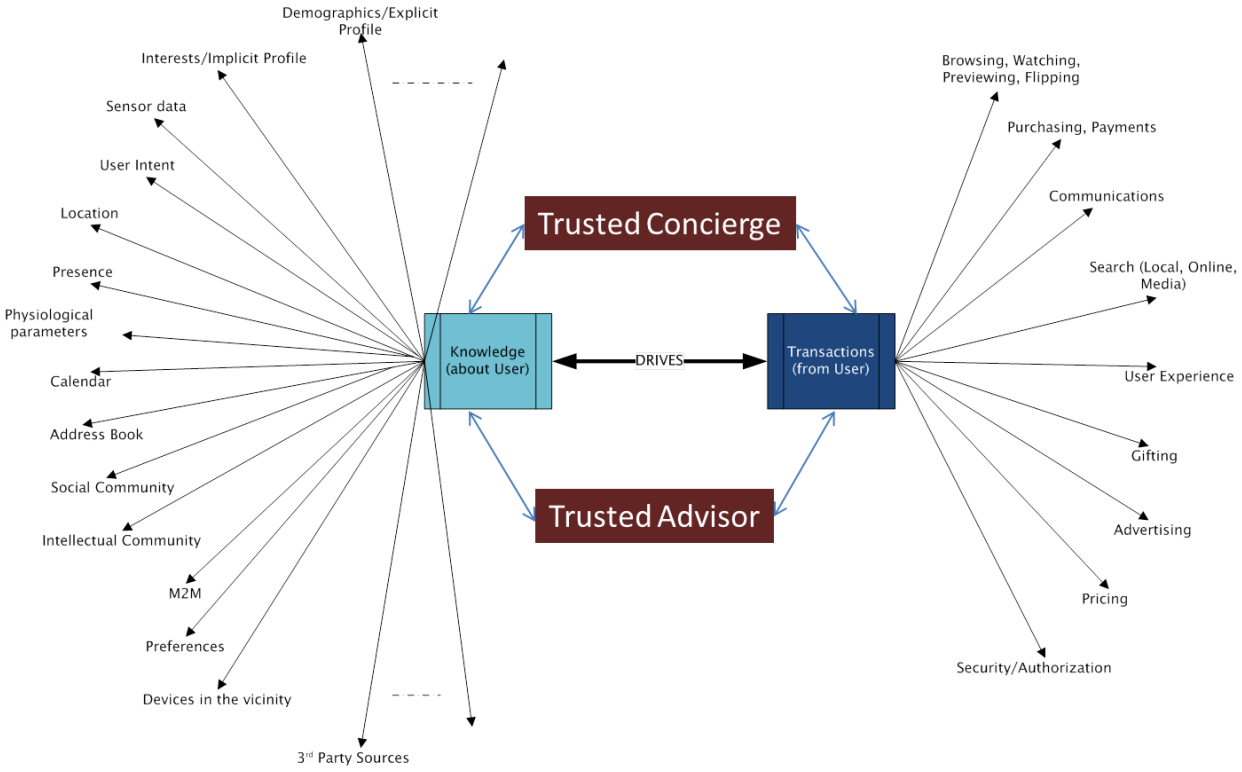

Figure 8. The role of Context in driving Spend and Transactions

[7] Source: comScore/Millennial Media Mobile Retail Study, 2011
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Many people don't realize that the battle for the consumer of 2015-2020 has already begun. The company that has the best understanding about the most consumers will have a pole position in the mobile ecosystem. Players like Google, Apple, Amazon, MasterCard, Microsoft, Facebook, Twitter, China Mobile, Disney, AT&T, Vodafone, Motorola, and others are amassing amount of information on individuals. Of course, data is a double edged sword - it can provide enormous benefits to consumers in terms of intelligence, experience, and engagement and also prove to be problematic when privacy and data breaches happen. In fact, that will one of the tightest ropes many including the regulators will have to walk this decade - figuring out what they call in Swedish - *lagom - just the right balance*.

The Rise of the Middle Class in the Developing World

The advances and pervasiveness of mobile is not only changing things in the developed world but also transforming the developing markets, often with much bigger impact.

The strong growth in the developing mobile market has been primarily due to the rise of a strong middle class. Like a decade earlier in the western markets, the phone has gone from a luxury item to a basic necessity and consumers are willing to spend over 4% of their income on information and communication needs.[8] This influx of income will make India the 5th largest consumer market in the world by 2025. Obviously, this has significant implications beyond mobile, for e.g. on commerce and advertising. As the share of wallet shifts from basic necessities (bottom of the Maslow pyramid) to the discretionary items (top of the pyramid), billion dollar opportunities will be created where mobile will play a central role in the economics, distribution, and success of services and products.

For brands and companies needing to connect with the increasingly digitally savvy customers, mobile is by far the most important channel. The Internet (desktop-centric) penetration will remain low for years to come by a significant factor (see figure 10) leaving mobile the dominant way for brands to connect, communicate, and transact with consumers in India. As such, the utility of mobile goes beyond access. It will be tightly integrated into the everyday culture and the very fabric of daily life.

[8] Source: World Bank, 2009

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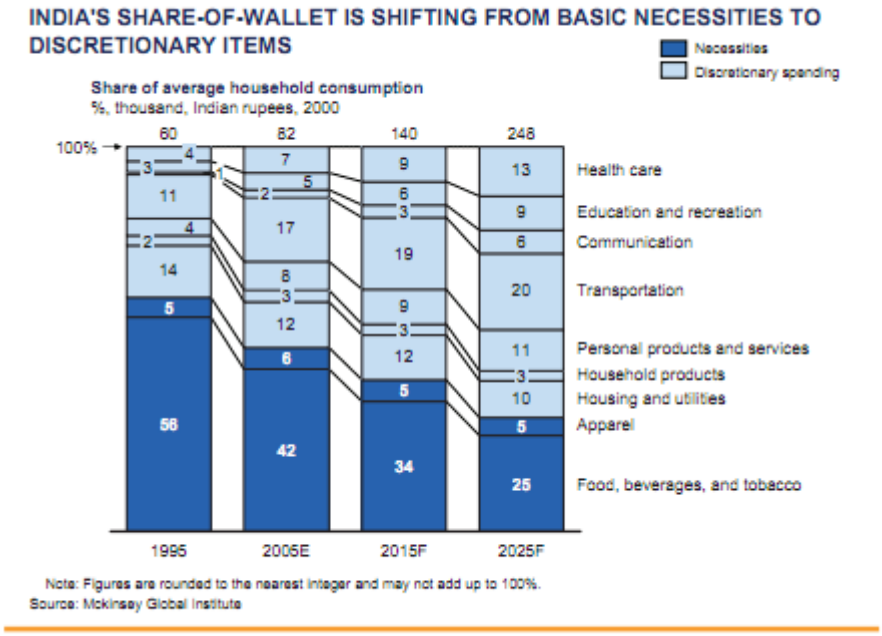

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Figure 9. Mobile has become a necessity[10]

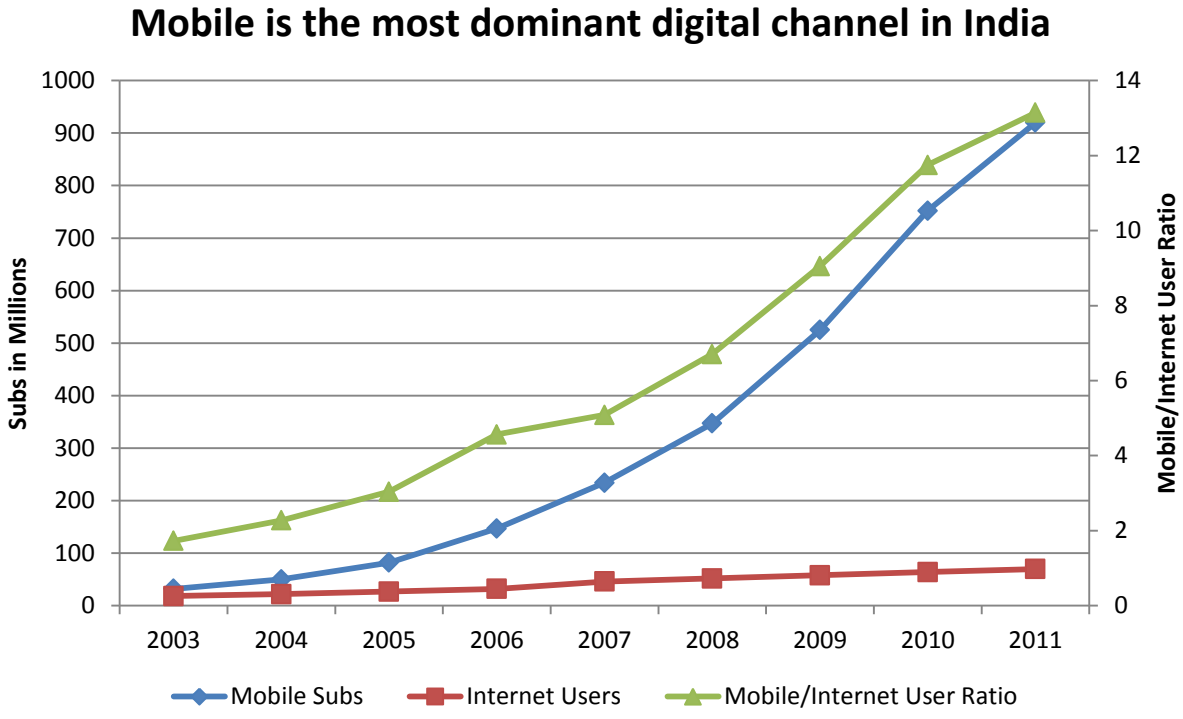

Figure 10. Mobile is the dominant digital channel in India

[9] The Bird of Gold: The Rise of India's Consumer Market, 2007, McKinsey Global Institute
[10] The Bird of Gold: The Rise of India's Consumer Market, 2007, McKinsey Global Institute

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So, mobile will continue to weave itself in all aspects of consumer spending from awareness to research, from asking to sharing, from finding the best deal to optimizing the shopping basket, and from engaging a brand before purchase to giving feedback after the experience. Different countries will embrace the role of mobile in commerce differently.

Kenya lacked banking infrastructure so mobile is now driving 20% of national GDP. China and India lacked online penetration so mobile has become the primary digital umbilical cord. Japanese were looking for convenience so mobile payments using FeliCa took off. PayPal expects $4B in mobile transaction value in 2011. US is gearing up for NFC-based ecosystem to evolve fairly rapidly in the coming months. Mobile is impacting many verticals; it will disrupt retail, entertainment, recreation, and healthcare in profound ways. For example, retail will undergo significant consternation over the next 5 years as traditional brick-and-mortar retailers will need a very strong digital presence in the stores to complement their online efforts in order to compete effectively with the e-tailers like Amazon. The imperative strategic operating principles have changed to neurological connectivity, preemptive distribution, and value chain control.[11]

In only a matter of 2-3 years, the mobile commerce volumes will increase manifold. Players who are experimenting and engaging consumers today are better prepared. Companies who are yet to embrace mobile are in for a rude awakening. This decade will cement mobile's place in commerce forever.

Conclusions and recommendations

It is clear that mobile services are going to become a utility so imbued with infrastructure that we will come to expect it to become tightly integrated with everything we do. The last 10 years were about providing access to voice communications to the masses while laying the foundations for mobile data services. The next 10 years will see a rapid growth in the way applications and services are built in each vertical segment to reach an ever-expanding mass market and close to 100% penetration by 2020.

There are significant opportunities to leverage mobile technology in health care, retail, education, recreation, entertainment, food and beverages, enterprise applications, governance, and several other segments. However, while opportunities are rich, the challenges are daunting as well. It is hard to anticipate our needs 10 years out but if we lay the foundation of a robust and modular platform, it will be capable of delivering any new opportunity or need. Specifically, industry players will need to work together to chart out functionality of the mobile services platform going forward. Consumers will come to rely on mobile as their primary commerce companion and mobile will permanently change the way we spend.

[11] Source: The New Rules of Retail, Robin Lewis and Michael Dart, Palgrave Macmillan, 2011

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About Chetan Sharma Consulting

Chetan Sharma Consulting is one of the most recognized management consulting and strategic advisory firm in the mobile industry. We are focused on evolving trends, emerging challenges and opportunities, new business models and technology advances that will take our mobile communications industry to the next level. Our expertise is in developing innovation-driven product and IP strategy. Our clients range from small startups with disruptive ideas to multinational conglomerates looking for an edge. We assist major brands formulate winning, profitable, and sustainable strategies.

Please visit us at www.chetansharma.com

About the Author

Chetan Sharma is President of Chetan Sharma Consulting and is one of the leading strategists in the mobile industry. Executives from wireless companies around the world seek his accurate predictions, independent insights, and actionable recommendations. He has served as an advisor to senior executive management of several Fortune 100 companies in the wireless space and is probably the only industry strategist who has advised each of the top 6 global mobile data operators. Some of his clients include NTT DoCoMo, Disney, KTF, China Mobile, Toyota, Comcast, Motorola, FedEx, Sony, Samsung, Alcatel Lucent, KDDI, Virgin Mobile, Sprint Nextel, Skype, AT&T Wireless, Reuters, Juniper, Qualcomm, Comverse, Motricity, Reliance Infocomm, SAP, Merrill Lynch, American Express, and Hewlett-Packard.

Chetan is the author or co-author of five best-selling books on wireless including *Mobile Advertising: Supercharge your brand in the exploding wireless market* and *Wireless Broadband: Conflict and Convergence. He is editor of Mobile Future Forward series of book.* His books have been adopted in several corporate training programs and university courses at NYU, Stanford, and Tokyo University. His research work is widely quoted in the industry. Chetan is interviewed frequently by leading international media publications such as *Time* magazine, *New York Times, Wall Street Journal, Business Week, Japan Media Review, Mobile Communications International,* and *GigaOM,* and has appeared on NPR, WBBN, and CNBC as a wireless data technology expert.

Chetan is an advisor to CEOs and CTOs of some of the leading wireless technology companies on product strategy and Intellectual Property (IP) development, and serves on the advisory board of several companies. He is also one of the most sought after IP strategist and expert witness in the wireless industry and has worked on and testified in some of the most important cases in the industry such as Qualcomm vs. Broadcom, Samsung vs. Ericsson, Sprint vs. Verizon, and Upaid vs. Satyam. Chetan is a senior member of IEEE, IEEE Communications Society, and IEEE Computers Society. Chetan has Master of Science degree in Electrical Engineering from Kansas State University and Bachelor of Science degree from the Indian Institute of Technology, Roorkee.

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