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DIGITAL MONEY: A PATHWAY TO AN EXPERIENCE ECONOMY

Digitizing money flows can boost economies in a significant way, with measurable benefits for businesses, governments and consumers. But how and when should industry invest and why is this journey worth taking?

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Foreword

"It is not the strongest of species that survives, nor the most intelligent that survives. It is the one that is most adaptable to change." Charles Darwin

Although Darwin was writing about biological species, his theories on natural selection appear as applicable to organizations today as they did to organisms 150 years ago. There are many stories of once dominant corporations now failing to adapt and finding themselves in a fight for survival as relevance and revenue disappear. From music to manufacturing, from services to supply chain, digitization has transformed the structure, propositions and economics of markets, proving that what can be digitized will be digitized. As value is redefined and redistributed in a digital world, we believe that money, in digital form, can both facilitate this new order and create opportunities for more efficient and effective trade.

Recognizing the critical importance of the transition to digital money, Citi and Imperial College London came together and developed a Digital Money Index. Last year, in our inaugural report, we outlined a roadmap for digital money adoption and the associated benefits to society at large. This year, we wanted to take the research a step beyond the "what and why", and focus on the important question of "when and how" should industry invest?

If last year confirmed the importance of managing supply side dependencies, such as ensuring government support and an enabling infrastructure were in place before developing solutions, this year's research demonstrated how successful digital money deployments were just as dependent on demand side dynamics. We found that progressive digital money adoption was driven along a continuum of consumer needs and behavior. Initial adoption being driven by the desire to fulfil basic money management needs; progressing through to a desire for greater value and variety of digital money products; eventually leading to a more integrated and personalized experience, where digital money is seamlessly integrated into our lives — what we call the Experience Economy.

We believe the report provides a robust perspective on the digital money maturity of 90 markets, the propositions most likely to succeed and the capabilities that winning companies will need. Successful adaptation will be as much about "when" as it will be about "how" you adapt. While every company will need to chart its own course to success, this report should prove to be a worthy travel companion on the journey.

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Introduction

In a globally connected and digital world, a large proportion of consumer capital flows in emerging markets (and even in many developed markets) have largely remained physical in nature.

This persistence of physical money is discouraging – not only because of the impact it has on financial inclusion – but also because of increasing evidence that the digitization of money has benefits for both governments and corporations as well as individuals. In developed markets, we see significant investor interest and industry activity in driving digital money innovation such as peer-to-peer (P2P) payments and tap-and-pay at the point of sale (POS). While these markets have embraced traditional debit and credit solutions, new innovations have struggled to make a dent into the remaining well-established and stubbornly resistant physical cash flows.

While we acknowledge that the digital money journey is a long one, it is also our opinion that there is a structure and sequence which can help guide governments and businesses along the way. In other words, we believe that an analytically rigorous approach can enable stakeholders to optimize their journey towards digital money.

As a part of our analysis last year, we delivered three outputs.

1. We created a 90-country Digital Money Readiness Index against four building blocks that drive readiness and influence adoption: government and market support, financial and telecom infrastructure, the presence of digital money solutions and consumer propensity to adopt these. Based on the results, we categorized countries (from least ready to most ready) as Incipient; Emerging; In-transition and Materially Ready.
2. Based on these insights, we presented a roadmap that we believed any government could use to drive its digital money agenda forward.
3. We answered the obvious initial question on "Why should we pursue digital money?" by specifically quantifying the benefits to society at large.

An obvious part of this year's exercise was to measure progress relative to last year's initial benchmark. We have done this in the report that follows and present some insights based on country-specific movements.

Even more importantly, however, we were struck by the magnitude and materiality of the digital money benefits that we computed last year. Based on our view that businesses have a crucial role to play in this process, the obvious follow-on question this year is "How and when should industry invest in digitalization of consumer flows and associated solutions?"

We believe there are three insights that should guide industry investment:

1. **"One Size Fits All" does not work**: Not every market is created equal in terms of readiness or needs. Replicating a successful approach from one market to another is not a panacea/ silver bullet, and it can lead to sub-optimal outcomes. The fact is, culture and context are two important influencers of how truly ready a market is for digital money. Understanding how prepared a market is to accept a particular digital money solution, taking into account the cultural biases and contextual influence, can be an important determinant of success.
2. **Businesses and governments must tailor their approach to the readiness stage of the end-market**: We introduce a "Need-Value-Experience" (NVE) hierarchy as a part of our analysis. Consumer behavior is influenced by a progressive hierarchy: consumers first address core needs;

following that, expectations evolve and consumers seek more value and sophistication in their products; finally, when basic needs and value are both addressed, consumers expect tailored and personalized propositions.

The sequence of events seems to matter. Government & market support and technology & telecom infrastructure are necessary pre-conditions. Once these are met, the success of digital money solutions (i.e., consumer adoption) will depend on whether those solutions are appropriately tailored for and targeted towards the end-market and consumer. Only when basic needs are met can the notion of higher value offerings be considered – for example, even in Kenya, the basic M-pesa service had to be widely accepted before the company transitioned from money transfer to savings, lending and overdraft protection. Finally, only when the consumer has access to services that fulfil basic needs as well as value-added services do solutions that offer a high-quality and (often) seamless experience begin to make sense. As the needs and expectations of consumers evolve, previously successful propositions become commoditized. Delivering new propositions that meet these evolved consumer expectations requires new capabilities. Navigating the evolution in consumer behavior from Need to Value to Experience requires a migration from (vertically integrated) products that serve basic consumer needs to creating best-in-class consumer experiences or providing platforms that enable best-in-class consumer experiences.

We do not suggest that there should be only one type of solution per country at any given time. In fact we recognize that at any given point in time, there can be sub-segments of the population for whom different solutions along the Need-Value-Experience continuum can be presented. The key point here is that businesses have to be aware of the broader market maturity and their sub-segment and tailor specific solutions to these markets.

3. **Partnerships are critical:** Specific industries – such as telecoms, financial services (mainly banks), retail and public sector – can offer different advantages at different stages of the digital money readiness curve. These attributes may include the presence of a built-out local distribution network, knowledge of a local regulatory framework or experience with developing and deploying specific products and services that enhance value. Our analysis of successful digital money deployments highlights the need for digital money ecosystems which leverage industry specific strengths as opposed to point solutions. For example, successful mobile money deployments often see government/telecom/retail partnerships – government disbursements to transfer a large volume of cash to a digital form; telecom to bring the consumer relationship and network into the mix; and retail partnerships to keep money digital. As markets mature through the Need-Value-Experience hierarchy, new capabilities (and partnerships) are layered on top of existing infrastructure, creating new value and opportunities, while commoditizing previous propositions.

Our focus: how and when should industry invest in digital money solutions and why is this journey worth taking.

Substantial benefits of digital money adoption.

INCREASING THE PIE

220 million Number of individuals entering the formal financial sector[1]

USD 1 trillion of new flows in the formal economy[1]

USD 100 billion estimated increase in tax collections[2]

REDUCING OPERATING COSTS

USD 120 billion

In lower costs of cash handling in Retail[3]

USD 185 billion

In benefits from digitizing government disbursements[4]

POTENTIAL "SHARE SHIFT" IMPACT

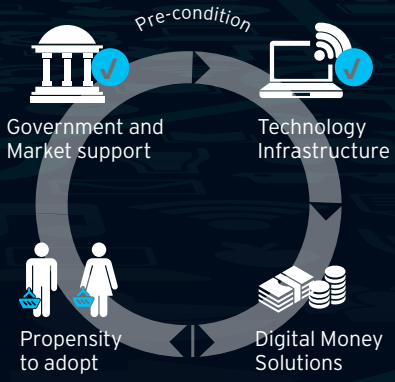
Market Share Gain Scenarios[5]

[1] Based on regression of the Citi Digital Money Index against GNI across 90 countries; estimate based on a 10% increase in digital money readiness score and commensurate increase in adoption
[2] Assuming average tax rate of 10%
[3] Cash sales as a % of retail sales computed using MasterCard and Lafferty benchmarks; Average cost of cash handling ranges from 2% to 2.8% (CEBR, Ailte group)
[4] Total benefits disbursements computed as a percentage of GDP; Admin plus fraud costs of cash handling range from 5 to 8% - 6% assumed for this analysis
[5] Total services across 90 countries estimated to be ~USD 35 trillion; Services cover communications, transportation, finance and retail.

How and when should industry invest?

"ONE SIZE FITS ALL" DOES NOT WORK

Culture and Context are Important influencers of market readiness



CONSUMER BEHAVIOUR IS INFLUENCED BY A PROGRESSIVE HIERARCHY

Transition from Need to Value to Experience requires a shift from products serving basic consumer needs, to creating best-in-class consumer experiences or providing the platforms that enable this.

PARTNERSHIPS ARE CRITICAL

Successful digital money implementation requires ecosystems that leverage industry specific strengths.

Source: Citi analysis

Updated Results from our Digital Money Index

The foundation for any digital money strategy needs to be an understanding of the underlying market readiness, as captured in our updated Digital Money Index. For the reader's convenience, we present a basic review of the Index; a year-over-year comparison of the Index results; and our analysis of the plausible reasons why certain countries showed an improvement this year versus last. An interactive version of our Digital Money Index can also be viewed at www.citi.com/digitalmoneyindex"

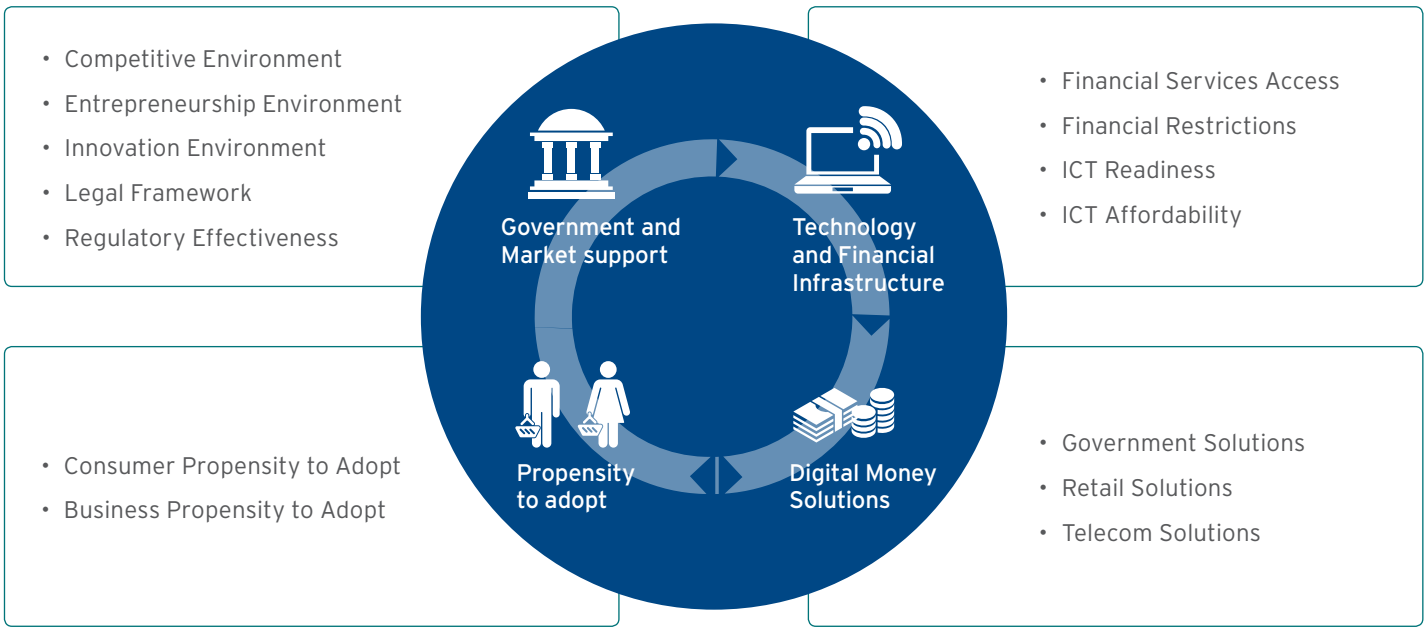
Measuring Digital Money Readiness

The underlying framework for the Digital Money Index assumes that four building blocks determine digital money readiness, as follows.

1. Government and Market Support: This building block considers the national institutional characteristics within which digital money needs to operate – this includes factors like property rights and the governments support for innovation.
2. Technology and Financial Infrastructure: This building block considers the technological and financial infrastructure which underpins the deployment and the operation of digital money. Both regulatory and operational aspects are considered.
3. Digital Money Solutions: This building block consists of the industries and functions that drive the provision of digital money solutions (and the most frequent use cases).
4. Propensity to adopt: This building block captures the rate at which consumers and corporates adopt new innovation.

Each of the four building blocks can be reasonably explained by the indicators shown in Figure 1. There are over 50 sub-indicators underlying this summary graphic. Further details are in the Appendix.

Figure 1. Four building blocks of digital money readiness



Source: Citi, Imperial College

The Digital Money Index measures "readiness", not "adoption". It is reasonable to expect that adoption will lag readiness because there is bound to be a measurable time gap between improvements in capabilities ("building blocks") and measurable changes in consumer behavior, corporate adoption and ecosystem mobilization. Further, cultural and environmental factors unique to each country can influence the extent to which a country fully realizes, lags or at times exceeds its readiness potential.

This year, we wanted to focus on how and when specific industries should invest in Digital Money solutions. To that end, we consciously added industry-specific dimensions in the underlying indicators.

Our Index results categorized the countries in four quartiles or "Stages of Readiness" – Incipient, Emerging, In-transition and Materially Ready – based on characteristics exhibited by the underlying building blocks and indicators. More details on these Stages are available in our inaugural report, "Getting Ready for Digital Money: A Roadmap".

2015 vs. 2014 – A Slow but Steady March Towards Digital Money

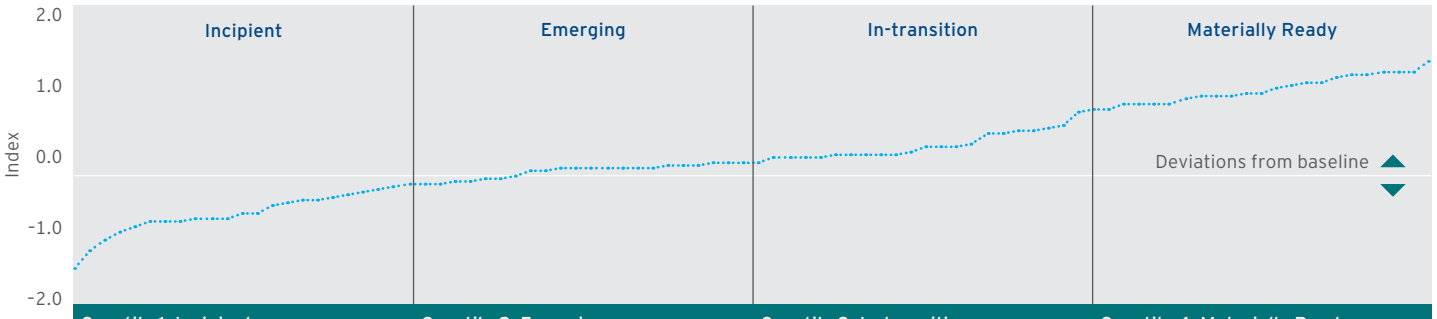
Overall, we have seen marginal progress in overall readiness across our sample set of 90 countries from last year. Clearly, improving digital money readiness and driving adoption is not a quick fix – this requires commitment for the long haul. Our conclusions are listed below.

1. The "Incipient" (or least ready) quartile saw the highest improvement in readiness on average. An analysis of the underlying indicators shows that these improvements have been driven by investments in information and communications technologies (ICT) infrastructure and higher ICT affordability – often against a backdrop of favorable regulation that has encouraged private sector competition and resulted in private sector investment in the markets.

   For example, Tanzania saw a four-fold increase in international Internet bandwidth per user (from 0.9 to 4 kbps over a year), and Bangladesh enjoys some of the lowest call charges in the world due to fierce competition in the telecom sector.

Improving digital money readiness and driving adoption is not a quick fix – this requires commitment for the long haul.

Figure 2. Digital Money Index



Quartile 1: Incipient		Quartile 2: Emerging		Quartile 3: In-transition		Quartile 4: Materially Ready	
Egypt	Tanzania	Romania	Morocco	Israel	Poland	Finland	Austria
Nigeria	Venezuela	Mexico	Mongolia	Panama	Italy	Singapore	Canada
Zambia	Nepal	El Salvador	Peru	Chile	Indonesia	United States	Qatar
Tunisia	Mali	Dominican Republic	Greece	Portugal	Croatia	Sweden	New Zealand
Pakistan	Iran	Guatemala	Namibia	Saudi Arabia	China	Hong Kong	Australia
Argentina	Mozambique	Trinidad And Tobago	Botswana	Spain	Brazil	Norway	United Arab Emirates
Cote D'Ivoire	Algeria	Kuwait	Ghana	Czech Republic	Kazakhstan	United Kingdom	Ireland
Uganda	Burkina Faso	Russian Federation	Honduras	South Africa	Philippines	Netherlands	Malaysia
Bangladesh	Ethiopia	India	Vietnam	Turkey	Thailand	Japan	Korea
Cameroon	Angola	Sri Lanka	Ukraine	Costa Rica	Hungary	Switzerland	Belgium
Gabon	Chad	Jamaica	Senegal	Slovenia	Columbia	Denmark	France
		Kenya				Germany	

Source: Citi Imperial College Digital Money Index 2015

However, as expected, countries at this stage continue to struggle with retail readiness (only Venezuela showed minor improvement), a favorable business environment and consumer propensity to adopt.

2. In the "Emerging" quartile, most countries (but not all) have addressed ICT penetration and affordability. Further, readiness improvements were largely a result of improvements in the ease of doing business, coupled with local innovation and entrepreneurship (e.g. Dominican Republic, Jamaica and Ghana). An innovative local market and a legal environment which supports intellectual property rights can help the emergence of new technologies such as digital money solutions.

   We are also starting to see the implementation of specific use-cases that contribute to readiness and adoption. For example, Sri Lanka and Morocco have benefited from government disbursements; Kuwait and Greece exhibit higher retail readiness compared to peers. However, these examples are grass shoots; for the most part countries in this quartile need to continue progressing industry specific digital money solutions.

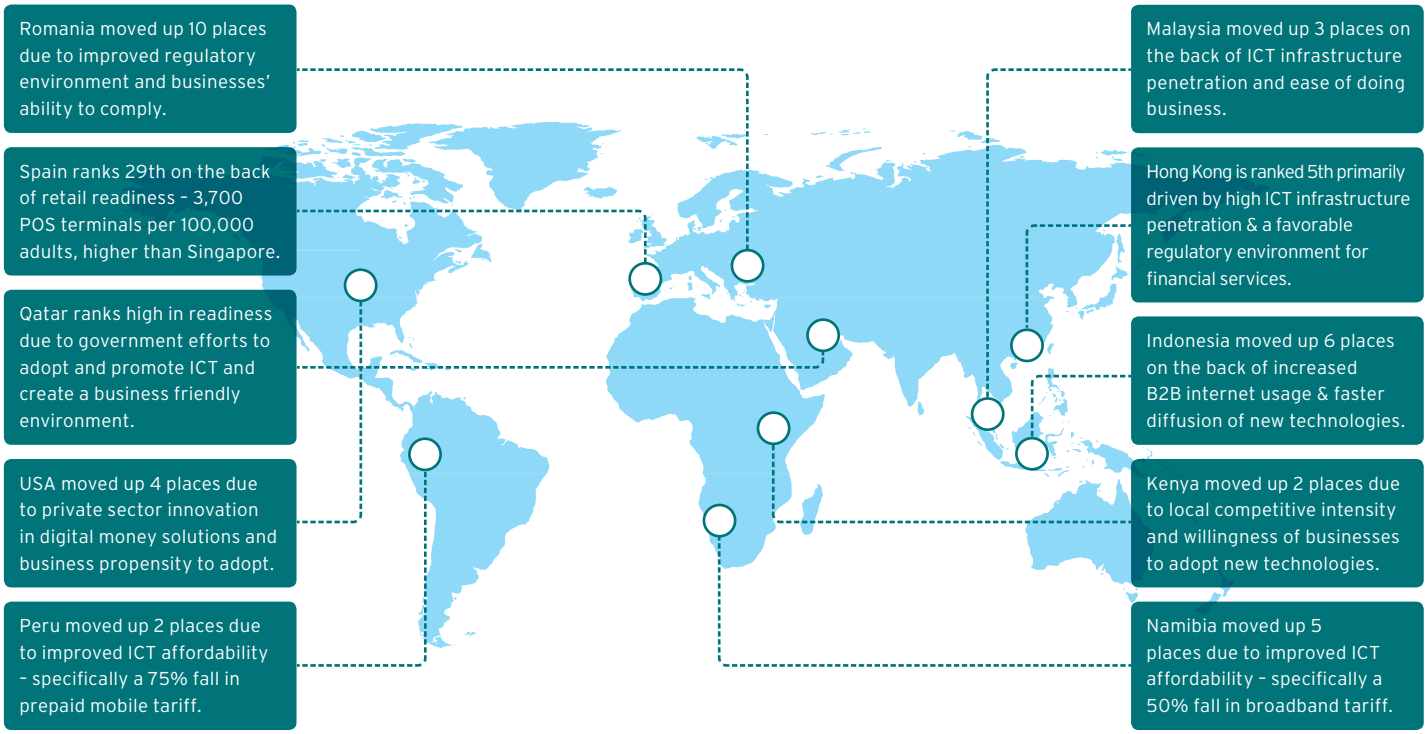
3. The top two quartiles — "In-transition" and "Materially Ready" — are characterized by increasing consumer propensity to adopt digital (money) solutions and the continued evolution of industry-specific use-cases (covered more in a later section). Many of the improvements in these two clusters can be traced to improvements in a wide range of underlying indicators.

For example, markets like Romania and Spain have shown marked improvements in business friendly regulation and business propensity to adopt digital solutions. The U.S. scores high on readiness due to its vibrant private sector and the rate of diffusion of the latest technologies among consumers and businesses — driving significant innovation in the form of industry specific digital money solutions. But even in the U.S., mass adoption is hampered by the sheer diversity of the market and available payment choices. Some markets such as Ireland have shown improvements on the back of affordable financial services to drive inclusion among the under-banked segments. Qatar is an example of a country where concerted government efforts in ICT usage and also proliferation among industries has allowed it to materially improve readiness for digital money usage.

It is interesting that, even at the In-transition and Materially Ready stages, continued investments in ICT infrastructure and affordability are necessary to enable mobility-based convenience and experience solutions.

Figure 3. Examples of Country-Specific Improvements

The figure below illustrates many of the examples we discussed in the sub-section above – it is worth repeating here that while these countries have progressed in readiness, adoption may lag



Source: Citi Imperial College Digital Money Index

Insight #1: "One Size Fits All" Does Not Work

Not every market is created equal. At a high level, it may seem obvious that the digital money solutions that succeeded as "killer apps" in a Materially Ready economy are not automatically destined for success in an "Incipient" economy. What is less obvious but equally true is that there is considerable diversity among countries within each index category.

The clearest example of this is the much-heralded M-pesa deployment in Kenya. This is clearly a success – it is now used by 83% of the Kenyan population and processes $15 billion in payment flows annually (which constitute 25% of Kenya's GDP). Subsequent mobile money deployments in similar markets have not achieved nearly the same degree of success – in fact M-pesa deployments in South Africa and India have not been successful. There are many reasons offered as to why M-Pesa succeeded in Kenya, including (1) the presence of a national ID system (which supported subsequent Know Your Client (KYC) requirements); (2) the dominant market share enjoyed by Safaricom, the M-pesa proponent; (3) the deployment and ramp preceded, rather than followed, the associated regulation; and (4) the cost of competing domestic remittance options was high. Clearly these are difficult conditions to replicate, which may explain why, according to a recent study by the GSM Association, only 8 of the 69 mobile money initiatives reviewed had revenues greater than $1 million in July-2013.

We do not provide the above explanation to deflate optimism about digital money. But it is a cautionary tale that clearly shows that merely replicating the technical aspects of a successful implementation does not guarantee success.

The fact is, Culture and Context, are two important influencers of how truly ready a market is for digital money adoption. Germany and Japan, for instance, are two countries that primarily use cash despite being Materially Ready. Consumer behaviour in Germany is influenced by a belief that carrying cash prevents overspending and the country has about three times more ATMs than point of sales terminals. Japan has a cultural bias against liabilities, resulting in a lower card usage despite high penetration.

Context is equally important. Philippines has a large diaspora of migrants that need to send money back home and have seen a substantial uptake of relevant remittance solutions; intra-country mobile money solutions have also taken root due to the physical difficulties of transportation across the archipelago. Venezuela, driven by the need to reduce fraud, theft and leakages, has a large appetite for digital money solutions. It has more point of sale terminals per-capita than many European countries that appear high on the index (Germany and the Scandinavian states among them). Recent runaway inflation (~47% in Oct '13) has increased card usage for basic needs.

Understanding the target market's readiness to accept a particular digital money solution and taking into account its cultural biases and contextual influences can be an important determinant of success.

Insight #2: Industries Need to Tailor Approach to Match Market and Consumer Readiness

Introducing the "Need-Value-Experience" Hierarchy

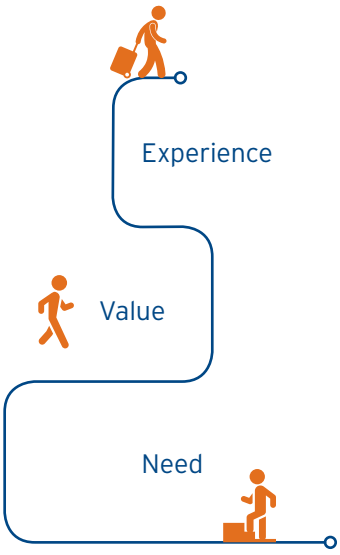
Consumer behavior is influenced by a progressive hierarchy: core needs, product value and customer experience. Consumers first address core needs; as core needs are met, expectations evolve and consumers seek more value/ sophistication in their products. Once needs and value are both addressed, consumers then expect tailored and personalized propositions (i.e., the user experience matters more).

We indicated that that there are four building blocks for driving digital money adoption: government and market support, financial and telecom infrastructure, the presence of digital money solutions and consumer propensity to adopt these. We have found that there is a natural progression among these building blocks – government support in the form of adequate regulation and telecom infrastructure are preconditions. Digital money solutions are unlikely to get off the ground in the absence of these "necessary" pre-conditions. Following that, adoption is linked to an evolution of use-cases/digital money solutions tied to consumer propensity which evolves through a "Need-Value-Experience" continuum.

The fundamental insight is that the consumer's motivation to adopt digital money solutions undergoes an evolution form need to value to experience. The specific solution being targeted to the consumer should check the right box – in other words, if the consumer is looking to fulfil a basic need, then a high-end experience is likely to be either over engineered, overly expensive or overly complicated and is unlikely to succeed.

Figure 4 illustrates the "Need-Value-Experience" (NVE) hierarchy. Below, we describe each of the building blocks of this framework.

Figure 4. Adoption is linked to a progressive hierarchy of consumer needs

Adoption is linked to a progressive hierarchy of consumer needs . . .		. . . and associated evolution of use-cases (examples)
	Incremental consumer adoption is driven by personalized experiences linked to consumer journeys (purchase journey, transit journey, etc.).	Seamless and personalized experiences (e.g., integrated/ one-click payments).
	Basic needs are met. Consumer adoption is based on incremental value, efficiency or convenience.	Manage financial future; increase and protect quality of life (e.g., investments, insurance, credit).
	Consumer adoption is based on the desire to meet basic needs and/or avoid unreasonable hardship.	Need to safely store money and transact, need affordable access to credit (e.g., no-frills banking, stored value solutions).

Source: Citi

Businesses need to tailor their strategies to consumer readiness which follows a progressive hierarchy of Needs to Value to Experience.

- **Need:** At this stage, consumer adoption is based on the desire to meet basic needs and/ or avoid unreasonable hardship. Consumers desire the need to safely store money and the ability to transact without unreasonable hardship. They also seek affordable access to credit. Services such as savings and interest-bearing accounts, bill payment and access to credit are required. Solutions at this stage tend to be broad-based and even regional or national in nature.
- **Value:** The Value stage represents an evolution to an incrementally more sophisticated use case than just satisfying a basic need. Consumers seek sophisticated products such as convenient banking supported across multiple channels and investment and protection products to manage their financial future. They seek more value in purchasing via rewards and access to credit, and move towards greater online choice.
- **Experience:** This last stage represents a phase in which incremental consumer adoption is driven by personalized experiences linked to consumer journeys. Consumers enjoy an immersive retail experience with inventory and prices being checked by mobile devices and seek instant gratification via one-touch payments. Consumers hail a cab, book a movie ticket, order groceries or do other tasks they need to do. In this evolving commerce flow, the payment transaction is seamless or at minimum hassle free. Because these solutions seamlessly integrate digital money into the lives of consumers, they tend to be tailored and personal in nature.

Linking this back to the stages of digital money readiness, we found that:

- In markets at the Incipient stage of readiness, most consumers seek to address core needs;
- Most consumers in markets at the Emerging and In-transition stage, are driven by value and convenience propositions;, and
- More consumers in markets at the Materially Ready stage, respond to tailored and personalized propositions, i.e., they are seeking an enjoyable experience.

Tailored/ Well-Targeted Products can Accelerate Adoption

As needs and expectations of consumers change, previously successful propositions become commoditized. Delivering new propositions that meet evolved consumer expectations requires new capabilities. Businesses need to tailor their strategies in order to maintain and grow market share. Navigating the evolution in consumer behaviors from Need to Value to Experience requires a migration from (vertically integrated) products that serve basic consumer needs to creating best-in-class consumer experiences or providing platforms that enable best-in-class consumer experiences.

Industries need to tailor their approach to match market and consumer readiness; below we discuss strategies that business should consider for each stage of market readiness.

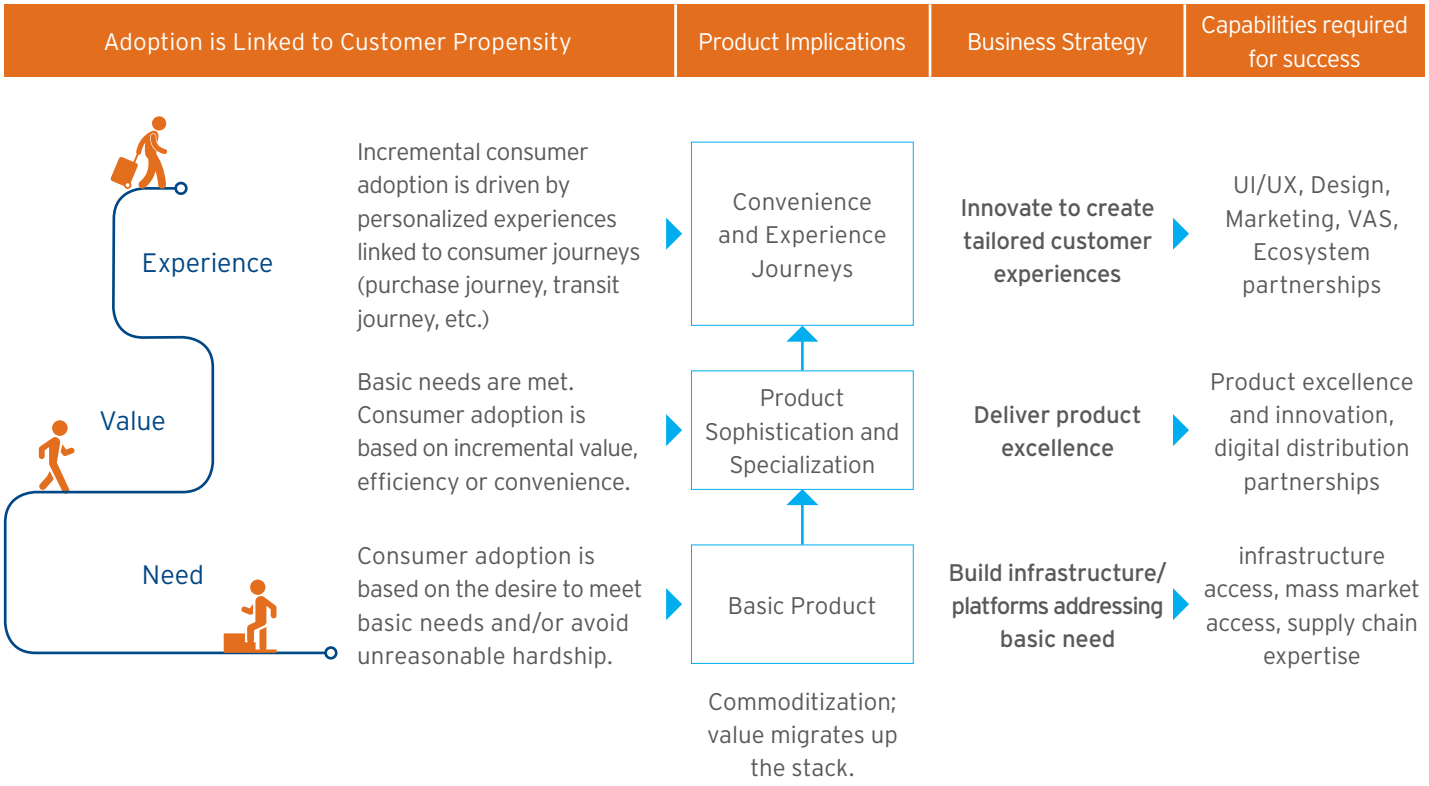
Create Platforms to Address Basic Needs

A consumer's first foray into digital money is likely to be with a product that fulfills a basic need. Examples of such products are remittances/ P2P and prepaid cash storage. Broad-based market access and scale is required to succeed at this stage because individual transaction amounts are likely to be relatively small. Telecom companies – especially those with a dominant market share – are in a good position to deliver vertical money management solutions because they can bring two critical capabilities to the table – deep market penetration and a well-established agent network to allow people to conveniently cash-in and cash-out. Governments can aid the success of such digital money initiatives by delivering disbursements. It is important to understand that the consumer is looking to solve an obvious need, and may only have access to, and understanding of basic technology; so the presence of simple, end-to-end solutions is critical to success.

Delivering Value via Product Excellence and Choice

Once basic needs are met, consumer motivations shift to finding the maximum value in the form of a best fit solution. This process is further

Figure 5. Consumer adoption hierarchy and business strategies



Source: Citi

intensified as heightened competition, in a bid to differentiate, enhances basic propositions.

So what does adding more value mean? Solutions such as savings accounts and lending can qualify as valid products in this category, as does the provision of credit and loyalty products as they increase the value of consumer assets, provide flexibility in spending and reward consumers for their business. These are services that banks (and sometimes retailers) are adept at providing and this product knowledge is useful in the creation of value-based products.

Similarly, retailers can successfully leverage rewards, loyalty schemes and credit sales as a way to provide incremental value and drive consumer spend. Solutions that just meet basic needs become increasingly commoditized.

Success at this stage requires product excellence and innovation – in other words, it is important to take an existing product proposition and make it better and/or more convenient. This is about meeting an evolved need, not just a basic need.

Transition to an Experience Economy…Get it Right or Risk Irrelevance?

The last phase is what we call the Experience Economy. In this phase, demand shifts to "experiences". In other words, the key is to provide a much more convenient and integrated solution.

No single industry has a right to win in the Experience Economy. Correspondingly, there are examples of use-cases across industries. For example, retail can provide one-click check-out solutions, browsing, price comparison and pre-order capability; Companies across industries can integrate payments into

Materially Ready markets are transitioning to an "Experience economy" where success depends on the ability to provide personalized experiences linked to consumer journeys.

everyday consumer actions such as booking a taxi, paying for a meal or making an in-game/ in-app purchase; Governments can provide an integrated portal where taxpayers can initiate and complete a wide variety of tasks related to their tax payments, forms and certificates.

An interesting outcome is that as commerce gets integrated in seamless consumer journeys (transit journey, health journey), clear demarcations between customer ownership have blurred. We find businesses across industries attempting to own the experience. Success depends on the ability to develop world-class user interfaces, leverage deep customer insights, integrate with ecosystems and leverage digital platforms that enable new consumer journeys.

The transition to an Experience Economy is not imminent but it is a transition that bears watching because not getting it right can have dire consequences for an incumbent. The Citi Digital Strategy team's analysis concludes that digital segments are significantly more concentrated than traditional segments with an average of ~80% top-3 share vs. ~45% top-3 share in physical segments, so it is obviously important to a corporation's future to get this right.

Within a Market there can be Diversity with Multiple Segments

While we have discussed macro characteristics that define broad market clusters, industry is very likely to encounter diversity with multiple segments in any single market and that progress will require tailoring the roadmap to suit each country's' unique circumstances.

For example, 65% of India's population is unbanked and about the same proportion lives in rural areas according to the Census of India. These 800 million individuals seek simple products that meet their basic needs. At the same time, with nearly 250 million Internet users, India has the third largest Internet subscriber base after China and the U.S. According to the Economist Intelligence Unit, India has 35 million households with an annual income of over $50,000. The needs and behaviors of these urban inhabitants are likely to mirror that of a developed market. An extremely similar, arguably only more compelling picture, can be painted for other markets such as China and Brazil. Even in the U.S., according to the FDIC, 20% of households are under-banked. The success of alternate financial inclusion propositions such as Bluebird – which is a debit account alternative and boasts over a million customers – is evidence that their adoption drivers are more "need" based and likely to be similar to the consumers in emerging markets.

Insight #3: Partnerships are Critical

Each industry – whether it is telecom; financial services (mainly banks); retail; public sector – can offer a set of core attributes that can be advantageous at different stages of digital money readiness. We also find that each industry can have a set of challenges that it struggles with.

For example, telecoms enjoy wide market access due to their built-out local distribution networks – including physical agents that can provide handset- and billing-related services. Financial service organizations tend to be good at developing sophisticated financial products but often find the cost to serve the "bottom of the pyramid" prohibitive especially with a branch network approach. Similarly, organized retail can often provide an excellent in-store experience but struggle with the migration to mobile that delivers convenience and often, instant gratification.

The obvious answer to these challenges is to create cross-industry partnerships that leverage the strengths of each industry while mitigating their weaknesses. An example of such a partnership is the Tran$fer mobile money initiative in Mexico between leading bank Banamex (a subsidiary of Citi), the dominant mobile telecoms company TelCel and Mexico's most extensive retail franchise Oxxo. Apple Pay is another example of a cross-industry partnership between Apple, several leading banks, the major card networks and retailers – each of which brings specific advantages to the table.

Based on our analysis of several (successful and unsuccessful) digital money pilots, we believe that three steps are crucial to increasing the chance of success.

1. A compelling use-case that addresses a pressing need, significantly outperforms the traditional model and/ or holds the potential to drive mass adoption (e.g., government disbursements);
2. A transaction medium that enjoys deep penetration (e.g., mobile, prepaid card); and
3. Use-cases that keep money digital (e.g., airtime top-up; online or mobile bill payments; POS acceptance).

In our view, the first two factors are reasonably well-understood, but a brief comment on the third step is worthwhile. It draws from an observation that at the early stage, consumers often continue to prefer cash as a medium of transaction. Consequently, when a government digitizes disbursement accounts, they tend to witness a peak once a month (at the time of funds deposit) followed by immediate withdrawal. The immediate withdrawal implies that the consumer continues to live, for the most part, in a cash economy. To encourage their transition to a digital economy, use-cases that keep money digital are needed.

In figure 6, we present an exhibit on the South African Social Security Agency (SASSA) which successfully established digital disbursements of its social security benefits in line with the above principles.

Figure 6. Implementing a successful government disbursement program – a case study

South African Social Security Agency (SASSA) successfully established digital disbursements of its social security benefits by leveraging card-linked accounts of a major nonbank payment provider, namely Net1, whereby the cards can be used to withdraw cash or buy at specified retail agent locations.

Key Tenets of Success

In addition to a compelling value proposition which provided faster access to funds for citizens and reduced leakage for Governments, Net1, the provider who ran the program for SASSA, attributes the success of the program to three key tenets.

Partnered for KYC

- Net1 signed up target customers, managed KYC and registration.
- Partnered with a bank in the background to help manage regulatory requirements.

Partnered for Distribution

- Built a wide distribution footprint – over 10,000 cash-out points (incl. EMV-enabled POS or ATM).
- Installed battery powered point of sale terminals to allow rural operations.

Partnered for Value Added Services

- Introduced range of services such as balance check, airtime top-up, bill pay via Telco/Retailer partnerships resulting in high transactions.
- Processing 2MM transactions per day.

Note: Savings of ZAR 3 billion (USD equivalent changes based on current FX conversion rate approximately $261 million)

Source: Based on an interview with Dhruv Chopra, Managing Director and Head of Investor Relations, Net1

Such partnerships can be beneficial not only in countries in the lower three quartiles of the Index, but also for Materially Ready countries. Examples like Uber or Hailo (car service apps) as well as Apple Pay demonstrate that the transition to an Experience Economy is all about providing an integrated consumer journey. This kind of seamless experience is gaining traction as customers increasingly want to order ahead to skip the line or pay for their meal with a tap of the finger at the moment that they are done (as opposed to waiting for the check to arrive). There are more substantive examples here than paying for your meal or beverage digitally when we consider that the principles of the Experience Economy can be applied to use-cases like home mortgages and college tuition. Clearly, such experiences cannot be provided by a single entity – it requires an entire ecosystem to come together.

Industry Right-to-Win

As it pertains to providing digital money solutions, industries have a natural "right to win" at different levels of market and consumer maturity, based on their capabilities and assets. Telecom is well placed to provide alternate financial inclusion solutions addressing a basic need due to market access and established distribution (cash in/ out). The financial services industry has successfully created a range of sophisticated products that addressed value and convenience for the consumer. Similarly, organized retail propositions address consumer value by accepting safer/ alternate forms of payments, credit sales, rewards and loyalty schemes, greater online choice and streamlined commerce experiences.

As consumers transition from Need to Value to Experience, value shifts to new propositions creating a window of opportunity for industry players and external entrants to grab share. The Experience Economy is an "open playing field" – no single industry appears to be dominant as the focus moves from products to consumers. New and established players are jostling to capture the consumer relationship by building better experiences on top of existing products and infrastructure. This resulting disruption will create a bifurcated market of consumer champions and commodity providers.

In the subsections that follow, we provide specific commentary by individual industries. We observe that the core attributes of certain industries match up better with specific stages in the Need-Value-Experience hierarchy. We also discuss how industries could navigate the transition to an Experience Economy.

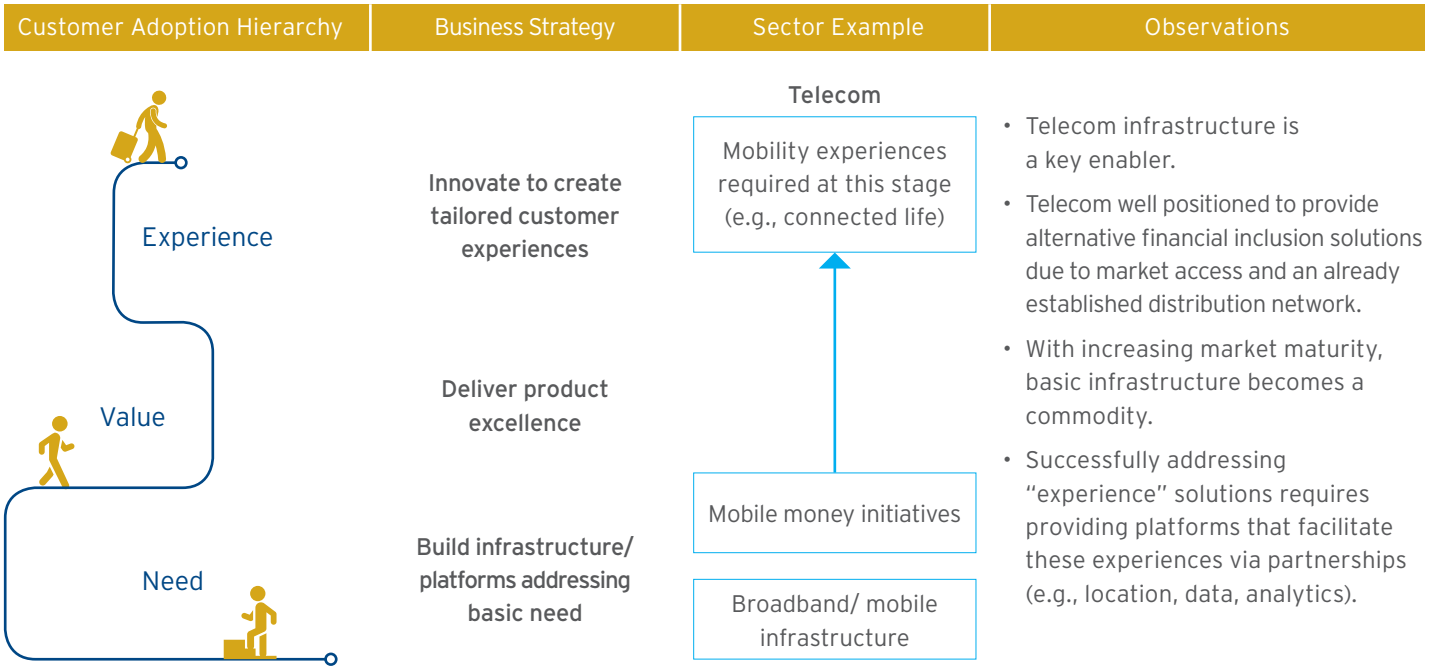
Telecom Provides Critical Enabling Infrastructure

As previously highlighted, the telecom industry provides critical enabling infrastructure for digital money solutions – it is a pre-condition for digital money success. In addition to their role as a key enabler, the telecom industry is well placed to provide alternate financial inclusion solutions which address a basic need. This is due to existing mobile service penetration and the presence of an agent network to serve as cash in/ out points.

As stated in the previous section, at the early stages of digital money readiness (Incipient and Emerging), consumers require products that fulfil basic needs. Examples of such products include mobile-assisted deposits, money transfer and cash-out solutions as a safer alternative to managing physical cash. These transactions are conducted without the need for traditional bank branches. The core underlying requirements include a wireless communications platform, mobile phone, basic cash management solution, some form of KYC (for example, in the form of an existing national ID system) and a network of retail agents who act as a liaison between the consumer and the provider of such basic financial services. We can see that most of these attributes are available to a telecom provider, and with a supportive Government/ regulator many telecoms company have indeed built out these services.

With increasing market maturity, value migrates to more sophisticated and value added products (for example: interest bearing accounts, credit and loans, insurance), and ultimately to mobility

Figure 7. Telecom is well placed to provide alternate financial inclusion solutions addressing a basic need
Capturing value at later stages, incremental to the technology infrastructure, requires a substantial shift to their operating model



Source: Citi

enabled experiences integrated with consumer journeys (e.g., transit, healthcare, commerce, etc.). Companies that have greater experience in building these products, or are already embedded in consumer journeys are well placed to capture value here. Although several telecom companies are gearing up for the Experience Economy and investing in the Internet of Things and other mobility initiatives, there aren't live examples of a successful transition to the Experience Economy by a telecom company. Success at this stage is about being a partner rather than a provider. It requires a deeper understanding of the consumer journey, and through world-class user experience/ user interface (UX/UI), deeper consumer insight, integrated propositions and an ability to be an embedded part of the consumer journey. It also requires consumers to want the company to play that role. These are neither the typical strengths nor positioning for a telecom player in a developed market.

Having said that, telecom companies clearly have a role to play even if it is just providing the commodity infrastructure that enables these experiences. To succeed in the Experience Economy a telecom company would more likely have to partner with providers in other industries who can bring the experience platform and positioning.

Transforming a digital disbursement scheme into a sustainable digital money ecosystem requires a wide distribution/agent network to provide cash-in/cash-out capability coupled with services such as air-time top-up, bill-pay, and groceries that keep the money digital.

Connecting the Remaining 5 Billion

Connectivity to the Internet is almost a utility to many in the developed world. So it could be hard to imagine that two thirds of the world population does not have access to the Internet.

Facebook and Google are developing ways of providing Internet access to people in remote regions lacking basic data infrastructure like 2G. Google is considering a network of high-flying balloons to provide broadband connectivity to remote areas, has tested this technology in New Zealand, and has now partnered with Telstra in Australia to conduct further tests. Facebook, through its Internet.org initiative in partnership with Nokia, Qualcomm and other telecom corporations, is aiming to drive Internet connectivity by leveraging existing cell phone connectivity and/ or air and space-borne devices like solar powered drones and low-earth orbit satellites.

Mark Zuckerberg titled a paper on this topic, "Is connectivity a human right?" Given the potential upside from connectivity, it sure can be.

Government Disbursements is a Critical Use-Case

Governments are extremely well placed to digitize disbursements at the Incipient and Emerging stage and only require an existing telecom infrastructure and a distribution/ agent network to provide cash-out solutions. Even the cash-out solution can be provided by an existing Post Office network. Social and payroll disbursements provide a critical "trigger" use-case to drive mass adoption. However, as discussed earlier, transforming a digital disbursement scheme into a sustainable digital money ecosystem requires a wide distribution/ agent network to provide cash-in/ cash-out capability coupled with services such as air-time top-up, bill-pay, and groceries that keep the money digital.

As markets mature, the need and expectation for more comprehensive digital government services grows. Several governments have provided integrated information portals that incorporate digital payment capabilities for citizens (e.g., tax collections are digitized in several markets such as India, Sri Lanka, and of course developed markets such as Korea and Singapore).

Retail Better Placed to Reap Benefits as Consumers Seek Value

The retail industry is better placed to realize benefits once factors such as bank account penetration, card penetration, credit monitoring services, logistics (to enable e-commerce fulfilment), etc. are met. Building on top of this infrastructure, retail is well positioned to integrate digital money into the customer commerce

Retail establishments that accept mobile payments, often disbursed by the government or payroll, not only play a critical role in keeping money digital – as opposed to immediate withdrawal upon deposit – but also realize a substantial business upside from doing so.

journey, and create more convenient, compelling and personalized experiences. In this sense, while retail is crucial to any widespread digital money deployment, it is often a lagging indicator.

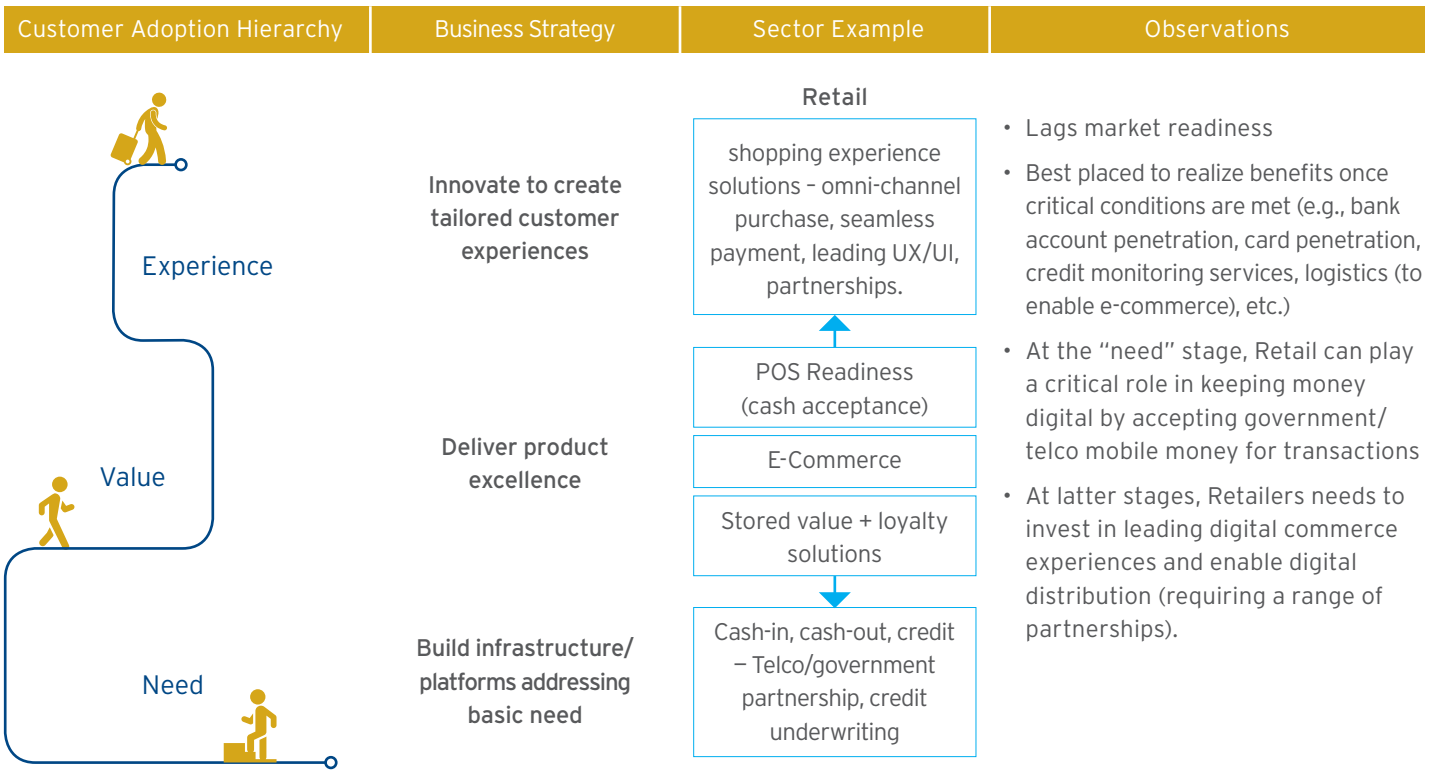
The two key components of retail's contribution to digital money readiness are the deployment of (1) Point-of-sale (POS) systems for digital money acceptance and (2) digital commerce capabilities. However, retail organizations often find themselves facing a chicken-and-egg quandary – should they make an investment in POS readiness before sufficient consumer card usage has kicked in or should they wait for consumer card penetration to occur before investing in POS acceptance? Analysis shows that retailers that have led the market in POS investments have generally reaped benefits from higher foot traffic and higher consumer spending due to access to credit. A World Pay survey of 5,000 UK consumers shows that retailers see 20% higher foot traffic and increased spending by 87% of customers, by accepting card payments.

Role of Governments in Accelerating POS Readiness

Governments can often accelerate the transition to digital money by introducing incentives to drive private sector investments in POS readiness and/ or increasing consumer card penetration. For example, Argentina had a value-added tax (VAT) rebate on card transactions (3% VAT rebate on credit cards until 2008 and 5% on debit cards until 2012) since 2001. This incentive was aimed at promoting consumer spending through cards, as well as encouraging investments in the payments infrastructure. Argentina now has a higher POS terminal density – 11,000 per million adults – compared to ~7,000 in Mexico and Peru. South Korea has similar tax rebates in place for credit and debit card usage and can boast similar results – 6 cards per capita and 44,000 terminals per million adults. Ukraine on the other hand has chosen to mandate (as opposed to incentivize); the government has approved regulation in 2013 which fines retailers for not having POS terminals and therefore denying card payments to customers.

At the early stage, retail locations stand to benefit from accepting digital disbursement solutions being implemented by Governments or telecom organizations. Creating services that allow for digital money usage are critical to changing the cash culture that traditionally exists. According to Lafferty, ATM withdrawals, rather than payments, account for more than 80% of all card transactions in India (even higher in countries like Morocco and Vietnam where ATM withdrawals account for over 90% of all card transactions), indicating that in these countries, even the banked predominantly transact using cash. Retail acceptance of mobile payments, often disbursed by the government or payroll, can play a critical role in keeping money digital as opposed to immediate withdrawal upon deposit. Retailers often realize a substantial

Figure 8. Retail is better placed to reap benefits as consumers seek value and experience solutions



Source: Citi

upside from doing so. For example, Diconsa, operator of rural stores in Mexico, saw a 20% increase in foot traffic as it supported cash-out for the Government disbursement program.

Finally, at the more advanced Experience Economy stage, retailers face a range of choices, all aimed at integrating digital money into a better commerce experience for the consumer. Beyond this, a retailer can invest to enable newer forms of tap-and-pay solutions such as Apple Pay; they can implement in-store digital experiences in conjunction with a closed-loop payment solution (e.g., Starbucks); and they can implement and integrate complex solutions that offer a range of capabilities such as pre-order and pay, price and inventory check, integrated in-store and digital commerce, etc.

To increase digital money adoption, implementing digital experiences that target cash strongholds is critical. The quick-service restaurant (QSR) industry has done a good job on this front, especially in a market such as the U.S., spurred on by competition/ leadership from early implementations like Starbucks. Success requires significantly evolved digital capabilities to build best-in-class UX/UI and flexible platforms that allow cross channel presentment of inventory, distribution and delivery partnerships, etc.

Figure 9. Strategies to address cash strongholds

	Low Value Transactions	Cash Heavy Sectors	Person to person payments	Micro Businesses
Drivers of cash usage in Materially Ready Markets	66% of transactions below $10 are conducted in cash	47% of transactions in dining and 21% transactions in grocery are conducted in cash in the US	Cash is used for more than 2/3 of Person to Person transactions	55% of small businesses in the U.S. do not accept credit cards
Solutions Employed to drive digital money adoption	**Stored Value Payments** • Starbucks Mobile Payments – 7 MM per week (16% of all payments) • Octopus card in Hong Kong (transit, retail) – 24 MM users	**Digital Experiences** • Order ahead (food) – Square, PayPal • Grocery experience (same day delivery) – Amazon Fresh, Google Shopping Express *Loyalty and one-click checkout applies for all*	**Interoperable P2P Solutions** • Interbank P2P network Paym in UK – 1 MM downloads and $10MM in transactions in 3 months • Popmoney – 2,000 FIs with 40 MM+ potential users	**Mobile Point of Sale** • Square (US) – 2 MM+ merchants, ~$20Bn processed in 2013 • PayPal Here – 200k+ merchants • Vantiv – 400k+ merchants

Source: San Francisco Fed, ECB paper, Intuit, Square, Paypal, Vantif

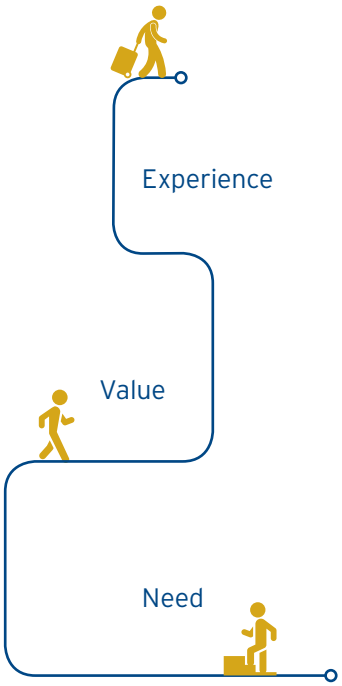
Financial Services Right-to-Win is in Value Products

As the market infrastructure matures and consumer expectations progresses from basic needs to product value, banks are well positioned to capture value. At this stage, consumers want greater product choice, sophistication and expertise, as well as more value from an increasingly competitive market. Banking penetration levels and the breadth of bank product portfolios (savings, credit, personalized investments and protection products) in In-transition and Materially Ready markets positions them well to successfully address the value and convenience needs of consumers. For banks, the natural right-to-win is this Value portion of our "Need-Value-Experience" framework in relatively mature markets.

Even though financial services organizations have the expertise to play a key role in addressing basic financial inclusion needs, they struggle to do so at the Incipient stage since they lack adequate distribution and market access. Establishing the market access requires "feet on street" and/ or distribution partnerships to increase outreach. A lower technological complexity may also be warranted in such a market, given the still-high penetration of feature phone users. Cost is a factor not just for the bank but also for the consumer. Cash-in/ cash-out at ATMs tends to be 3 times more expensive than a bank teller agent and up to 10 times more expensive than a retailer POS according to the Bill and Melinda Gates Foundation – so a bank/ retail partnership can clearly be fruitful in the Incipient quartile. The presence of retailer partnerships can also facilitate the goal of reducing full cash withdrawals post-disbursement. Similarly, a partnership with a dominant telecom can provide a financial services organization with the critical mass it needs to succeed.

On the other hand, the transition to an Experience Economy requires a financial services company to create platforms that enable integration of payments/ banking with consumer journeys (e.g., transit, health, purchase, etc.).

Figure 10. Banking successfully addresses value and convenience needs of consumers

Customer Adoption Hierarchy	Business Strategy	Sector Example	Observations
	**Innovate to create tailored customer experiences** **Deliver product excellence** **Build infrastructure/ platforms addressing basic need**	**Retail** Integration with Customer purchase journeys - payment platforms, open banking, partnerships Convenience solutions (e.g. pre-approvals, one-click applications) Digital channel enablement No frills banking - feature phone propositions, "feet on street", distribution partnerships	• Banking has a range of sophisticated products that address "value". • Struggle to provide basic financial inclusion solutions since they lack adequate distribution and market access. • With increasing integration of payments in consumer journeys, financial institutions are faced with creating platforms that enable integration of payments/banking with consumer journeys (e.g., transit, health, purchase, etc.).

Source: Citi

Cash-in, cash-out at ATMs tends to be 3 times more expensive than an agent and up to 10 times more expensive than a retailer PoS (Bill and Melinda Gates Foundation); further Retailer partnerships provide avenues for ongoing transactions which avoids full withdrawal in cash post disbursements.

Substantial Benefits from Driving Digital Money Adoption

The rewards for industries and companies that are able to exploit the slow and steady march towards digital money are significant – so too, are the risks of missing the boat. We believe that digital money adoption results in three sets of benefits.

10% improvement in digital money adoption can help up to 220 million individuals to enter the formal financial sector shifting over a 1 trillion in flows to the formal economy.

1. With greater financial inclusion and higher spending power, it increases the pie for everyone involved;
2. Handling cash has multiple "hidden" costs – theft, fraud, cost of securing, storing and transporting cash, etc.). Reducing cash in transaction flows can help lower operating costs for businesses and the government; and
3. Migration of consumer flows from physical to digital is accompanied with changes in consumer behavior. Businesses that are able to seize the resulting opportunities stand to gain share – sometimes from competitors in the same industry and sometimes cross industry.

Increase the Pie

Arguably, the most intuitive benefit of digital money usage is financial inclusion. Individuals in the informal economy have to pay high rates for credit; they lack safe means of savings and investment and many face security concerns in handling cash. Access to financial services can be a key element in overcoming these stubborn realities. Not only does it help consumers accumulate, increase, and protect their money, it also allows them to weather financial shocks.

According to our estimates, a 10% increase in the digital money readiness and commensurate increase in adoption for the countries included in the Index, can help up to an estimated 220 million individuals enter the formal financial sector. This translates to an additional $1 trillion moving from the informal economy to the formal economy, which in turn can allow governments to collect in excess of $100 billion in incremental taxes. Further, as these individuals enter the formal economy, access to affordable credit could lower their cost of financing by ~$600 annually. This amounts to a direct positive impact to consumer spending of approximately $150 billion dollars. The overall impact to GDP can be substantial due to the multiplier effect of this incremental spending.

Potential for over $300 million in savings for Government and Retail alone from lower costs of cash handing

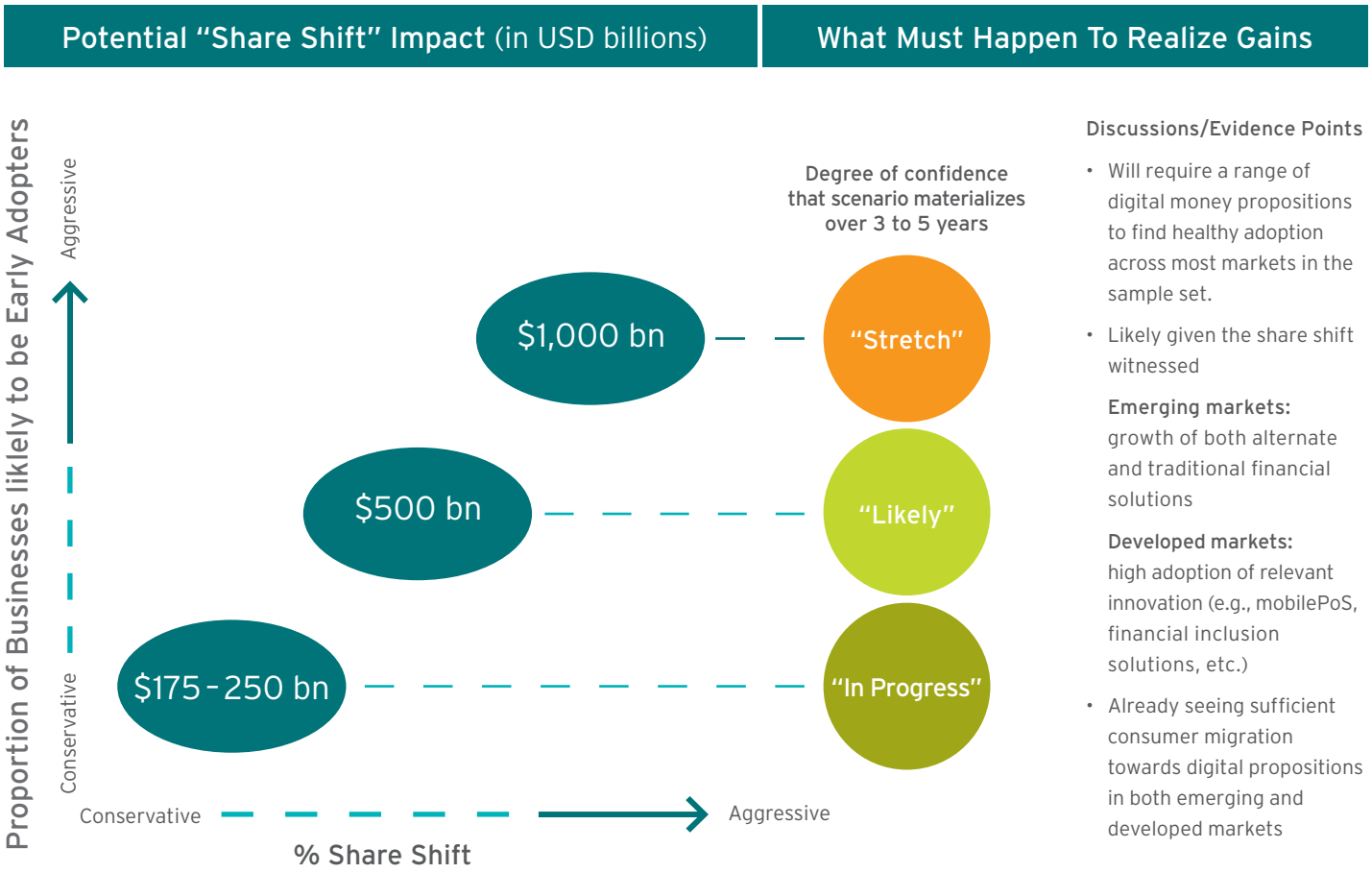
Reduce Costs

Although cash is often thought of as a "costless" means of transaction, this is far from the case. Cash must be held in physical form, counted, managed and is susceptible to theft and fraud.

We looked at two areas where transitioning to digital money can have significant upside – Government and Retail.

A study by the World Economic Forum indicates that leakage affects 5-25% of total benefits and accounts for 75% of total losses. Government disbursement through digital money, arguably, has the potential for higher social impact. According to our estimates, aggressive adoption of digital money for social disbursements by Governments globally can results in $200 billion in cost reductions.

Figure 11. Potential Share Shift
Potential for substantial share gains for business "in the right place, with the right proposition, at the right time."



Source: GSMA, CapGemini World Payments Report, Citi analysis
Total services across 90 countries estimated to be ~$35 trillion; Services cover communications, transportation, finance and retail.

Retail is another industry that is hugely susceptible to the costs of cash. In the U.K, 48% of retail transactions by volume are conducted in cash. That numbers jumps to 55% for the U.S., 67% for Germany and over 90% for India according to MasterCard. The Center for Economics and Business Research (CEBR) estimates the cost of cash to be 2.8% of total cash takings by retailers. According to our estimates, adoption of digital money can result in over $125 billion in lower costs of cash handling.

Capture Share Shift

The digitization of consumer flows is typically accompanied with a change in consumer behavior. Businesses "in the right place, with the right product and at the right time" – i.e., businesses that accurately gauge market readiness and time their market entry with a value proposition that matches consumer needs should be able to capture an unfair share of the shift in consumer flows.

Potential for $500bn in share gains from businesses within and across industries from successful deployment of digital money solutions.

No conclusive market sizing data exists and it is difficult to accurately estimate the potential for share gains globally and across industries. However, we believe these share gains can be substantial based on the three scenarios we illustrate in the exhibit below.

In a conservative scenario, we estimate share gains for businesses to be in the tune of $175 to $250 billion over the next three to five years. We believe this extent of shift is already happening and this increases the probability of success. Customer migration to early adopters of digital money solutions in banking (mobile money providers, prepaid card providers) and commerce (Mobile POS for retailers, online payment solutions) appears to bear testimony to this view.

However, we believe that the businesses will realize higher share gains than the conservative scenario stated above, given the momentum evidenced across both emerging and developed markets. For example, emerging markets are witnessing substantial adoption of alternative financial inclusion solutions in the form of mobile money initiatives. According to the GSM Association, 13 mobile money initiatives in emerging markets have more than a million customers. Nine countries – Kenya, Tanzania, Uganda, Zimbabwe, Cameroon, Congo, Gabon, Zambia and Madagascar – have more mobile money accounts than bank accounts. In parallel, card payments are growing at 26% in these markets indicating an increasing adoption of traditional payment solutions. Similar share gains have been witnessed in retail. As already highlighted, Diconsa, operator of rural stores in Mexico, saw a 20% increase in foot traffic when it started supporting cash-out for the Government disbursement program

There is sufficient evidence of relevant momentum in developed markets as well. Mobile POS solutions – attaching a card reader to a smart phone to accept card payments – were introduced around the 2010 timeframe. Currently, 40% of small- and medium-sized businesses already use such devices. Square, a leader in this space is estimated to have processed $30 billion in payments in 2014. An attrition study conducted by First Data, a leading acquirer, highlighted Square as their primary attrition competitor with attrition to Square growing from 5% in Jan 2012 to 13% in May 2012; According to a survey by Electronic Transactions Association and Goldman Sachs, more than one-fourth (27%) of acquirers have lost 10% or more of their merchants to new mPOS based acquirers in the last year. Now consider banking – low cost financial inclusion propositions for the under banked have gained share from traditional banks. Bluebird, a checking account/ debit card alternative, now has over a million subscribers onboarded while the share of unbanked households using pre-paid cards rose from 12.2% in 2009 to 17.8% in 2011. The Mercator Advisory Group forecasts a compound annual growth rate of 21% for the pre-paid card market to 2015, by when it expects the total dollar amount Americans load onto cards to be around $390 billion, more than ten times as much as in 2006. Similar evidence of share shift exists in retail. Retailers who have adopted order-ahead solutions report 20% higher footfalls and higher ticket size. With continued momentum of such trends, we believe a global share shift of approximately $500 billion in three to five years is very likely.

In the event that these trends accelerate substantially on the back of aggressive adoption of a range of digital money solutions at scale across industries and across markets, it is possible for businesses to stretch the share gains up to $1 trillion over the next five years.

According to the GSM Association, 13 mobile money initiatives in emerging markets have more than a million customers.

Conclusion

The desire to replicate success is understandable, but it is also evident that business models proven in some markets yield sub-optimal results in others.

The solution to this problem appears simple: match the business model and product strategy to the specific needs of each market. The realities are significantly more complex, requiring an intricate understanding of market maturity, consumer demand and corporate capabilities.

- The Digital Money Index provides a basis for understanding market maturity across 90 countries – assessing the readiness of critical enablers to drive adoption, while also recognizing the unique impact that culture and context have on every market.
- Within markets, understanding consumer segments and demand is critical for developing propositions that will succeed, and for recognizing when those sane propositions will commoditize. Consumer needs evolve; from addressing basic needs, to wanting greater product value and variety, through to expecting best-in-class consumer experiences. The "Need-Value-Experience" hierarchy frames this progression and the digital money propositions most likely to succeed with consumers at each level.
- As expectations and propositions evolve, so to do the capabilities a firm needs to win. Value migrates up the hierarchy, while scale migrates down – each building on top of the other, each requiring different capabilities. Mapped against the "Need-Value-Experience" hierarchy are a set of capabilities that we believe are necessary to stay ahead of the market. Increasingly we believe partnerships will be a more reliable approach to access new capabilities versus building in-house and competing on all fronts. The concept of partnerships to build healthy ecosystems is not new, but we still see many companies trying to build capabilities that compete along the value chain.

Besides the known benefits of financial inclusion for society at large and the opportunity to lower costs of cash handling, these shifts create opportunities to create new markets and capture share in existing ones. Disproportionate gains await those who are able to seize the opportunity – and time it right.

Appendix: 2015 Index Results

Figure 12. Digital Money Index

Rank	Country	Change in rank from 2014	Government and Market Support	Technology and Financial Infrastructure	Digital Money Solutions	Propensity to adopt
1	Finland	0	7	5	1	3
2	Singapore	1	1	2	8	9
3	United States	4	6	7	6	4
4	Sweden	-2	11	4	7	1
5	Hong Kong	0	4	1	17	11
6	Norway	-2	15	6	2	7
7	United Kingdom	-1	12	14	5	5
8	Netherlands	1	2	15	13	8
9	Japan	2	5	26	9	2
10	Switzerland	-2	3	8	23	6
11	Denmark	-1	21	12	4	17
12	Germany	0	9	13	20	15
13	Austria	0	17	10	14	18
14	Canada	0	16	9	16	22
15	Qatar	0	8	23	21	10
16	New Zealand	0	14	30	11	12
17	Australia	0	22	16	10	16
18	United Arab Emirates	4	18	35	15	13
19	Ireland	0	13	37	19	21
20	Malaysia	3	10	11	27	24
21	Korea, Republic of	-3	26	51	3	14
22	Belgium	-2	19	19	26	20
23	France	-2	20	21	18	23
24	Israel	0	27	20	12	19
25	Panama	0	31	3	32	30
26	Chile	0	23	18	31	28
27	Portugal	1	29	39	25	27
28	Saudi Arabia	-1	32	41	22	26
29	Spain	0	35	22	24	29
30	Czech Republic	0	28	25	39	25
31	South Africa	0	24	45	51	32
32	Turkey	2	34	50	29	37
33	Costa Rica	0	36	40	45	31
34	Slovenia	-2	30	56	30	36
35	Poland	1	33	24	41	47
36	Italy	2	45	48	35	39
37	Indonesia	6	38	43	53	35
38	Croatia	-1	60	17	37	46
39	China	2	25	66	42	43
40	Brazil	-5	79	33	34	34
41	Kazakhstan	4	55	60	28	40
42	Philippines	2	56	31	64	33
43	Thailand	-1	46	27	58	41
44	Hungary	-5	40	46	48	44
45	Colombia	2	44	47	44	56

Incipient Emerging In-transition Materially ready

Rank	Country	Change in rank from 2014	Government and Market Support	Technology and Financial Infrastructure	Digital Money Solutions	Propensity to adopt
46	Romania	10	43	53	47	51
47	Mexico	-7	52	44	49	52
48	El Salvador	5	39	28	59	62
49	Dominican Republic	-1	58	38	61	42
50	Guatemala	0	49	29	68	49
51	Trinidad And Tobago	-2	57	57	43	50
52	Kuwait	3	73	65	36	38
53	Russian Federation	8	67	61	38	45
54	India	-8	65	49	40	61
55	Sri Lanka	-3	48	52	65	54
56	Jamaica	-2	47	59	56	48
57	Kenya	2	53	54	52	53
58	Morocco	-7	42	32	57	71
59	Mongolia	-1	64	58	33	63
60	Peru	2	63	34	67	59
61	Greece	-1	61	70	50	55
62	Namibia	5	50	68	70	58
63	Botswana	-6	37	72	54	69
64	Ghana	0	51	62	63	70
65	Honduras	3	69	36	79	65
66	Vietnam	-1	71	64	60	64
67	Ukraine	-1	72	67	62	60
68	Senegal	1	54	69	74	66
69	Egypt	-6	74	42	78	72
70	Nigeria	2	80	74	46	68
71	Zambia	0	41	80	73	67
72	Tunisia	-2	62	73	71	75
73	Pakistan	0	81	55	82	74
74	Argentina	0	87	79	55	57
75	Cote D'Ivoire	2	59	77	77	76
76	Uganda	-1	75	63	76	81
77	Bangladesh	-1	83	71	72	80
78	Cameroon	1	68	86	83	77
79	Gabon	-1	82	84	69	79
80	Tanzania, United Republic Of	3	78	81	80	82
81	Venezuela, Bolivarian Republic Of	1	90	75	66	73
82	Nepal	-1	77	76	89	84
83	Mali	1	70	87	81	83
84	Iran, Islamic Republic Of	-4	86	82	75	78
85	Mozambique	0	66	85	88	85
86	Algeria	1	84	78	86	87
87	Burkina Faso	-1	76	83	84	89
88	Ethiopia	1	85	88	87	88
89	Angola	-1	89	89	85	86
90	Chad	0	88	90	90	90

Appendix: 2015 Index Development Methodology

Figure 13. Four Building Blocks of Digital Money Readiness Comprise of Over 50 Indicators

GOVERNMENT AND MARKET SUPPORT

Competitive Environment

- Effectiveness of antimonopoly policy (GCR, WEF)
- Extent of market dominance (GCR, WEF)
- Intencity of local competition (GCR, WEF)
- Respect for Intellectual Property Rights - Industrial Counterfeiting (WGI)
- Respect for IPR - trade secrets and industrial patents (WGI)

Entrepreneurship Environment

- Start-up procedures to register a business (number) (EDBI)
- Cost of business start-up procedures (% of GNI per capita) (EDBI)
- Time required to start a business (days)(EDBI)
- Effect of taxation on incentives to invest (GCR, WEF)
- Venture capital availability (GCR, WEF)

Innovation Environment

- State of cluster development (GCR, WEF)
- Government procurement of advanced technology products (GCR, WEF)
- Patent applications, residents (WDI)
- Technicians in R&D (per mln people) (WDI)

TECHNOLOGY AND FINANCIAL INFRASTRUCTURE

Finanacial Markets

- Affordability of finacial services (GCR, WEF)
- Availability of financial services (GCR, WEF)
- Bank Z-score (GFDD)

Finanacial Regulations

- Credit depth of information index (Findex)
- Regulation of securities exchanges (GCR, WEF)
- Financial Freedom (Heritage Foundation)
- Investment Freedom (Heritage Foundation)

ICT Affordability

- Fixed broadband internet tariffs (GITR, WEF)
- Mobile cellular tariffs (GITR, WEF)
- Internet and telephony sectors competition index (GITR, WEF)

DIGITAL MONEY SOLUTIONS

Government Solution Provisioning

- Online solution provisioning by government (UN E-Govt. Development Index)
- Account used to receive government payments (Findex)
- Government success in ICT promotion (GITR, WEF)
- Importance of ICTs to government vision of the future (GITR, WEF)

Retail Solution Provisioning

- Percentage organized retail (Euromonitor)
- POS terminal density (Lafferty)
- Credit Card holders (adults) (Finex)
- ECommerve penetration (Euromonitor)

Telecom Solution Provisioning

- ICT readiness (GITR, WEF)
- Mobile-cellular telephone subscriptions (ITU)
- Mobile money initiatives[1] (GSMA)
- Accessibility of digital content[2] (GITR, WEF)

PROPERTY TO ADAPT

Consumer Propensity to Adopt

- Buyer sophistication (GCR, WEF)
- Adult literacy rate (GITR, WEF)
- Use of virtual social networks (GITR, WEF)
- Percentage of individuals using the internet (ITU)
- Wireless-broadband subscriptions (ITU)

Business Propensity to Adopt

- Capacity for innovation (GCR, WEF)
- Extent of marketing (GCR, WEF)
- Availability of latest technologies (GITR, WEF)
- ICT use for business-to-business transactions (GITR, WEF)
- Internet use for business-to-consumer transactions (GITR, WEF)
- Firm-level technology absorption (GITR, WEF)

GOVERNMENT AND MARKET SUPPORT

Legal Framework

- Juditial Independence (GCR, WEF)
- Efficiency of legal framework in challenging regulations (GCR, WEF)
- Intellectual property protection (GCR, WEF)
- Property Rights (Heritage Foundation)

Regulation Effectiveness

- Procedures to enforce a contract (number) (EDBI)
- Burden of government regulation (GCR, WEF)
- Monetary Freedom (Heritage Foundation)

TECHNOLOGY AND FINANCIAL INFRASTRUCTURE

ICT Infrastructure

- International Internet bandwidth (GITR, WEF)
- Mobile network coverage rate (GITR, WEF)
- Annual investment in telecommunication services (ITU)
- Faults per 100 fixed-telephone lines per year (ITU)
- Percentage of fixed-telephone faults cleared by next working day (ITU)

1. Included in the index only if proportion of prepaid telecom subscriptions was higher than 30% in the market
2. Included in the index only if proportion of prepaid telecom subscriptions was lower than 30% in the market

sources:
GCR, WEF: The Global Competitiveness Report, World Economic Forum
GITR, WEF: The Global Information Technology Report, World Economic Forum
ITU: ICT Facts & Figures, International Telecommunication Union
WDI: World Development Indicators, World Bank Data
Findex: Global Financial Inclusion (Global Findex) Database, World Bank
EDBI: Ease of doing business index, World Bank
Euromonitor: World Retail Data and Statistics, Euromonitor
Heritage Foundation: Index of Economic Freedom, Heritage Foundation
GFDD: Global Financial Development Database, World Bank
WGI: Worldwide Governance Indicators, World Bank
GSMA: GSMA State of the Industry - Mobile Money for the Unbanked

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