BANKING ON DISRUPTION:

The hype and reality of disruption in consumer payments

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FOREWORD

Society has made significant progress owing to technology. The steam engine helped to transform manufacturing and transportation thereby heralding the Industrial Age. Electricity brought lighting and power to nearly every facet of life. Computing and internet transformed the exchange of information. All of these technologies have enabled innovations that have solved an array of problems people face and dramatically improved our quality of life.

Now, we are in the midst of a large scale shift from the internet economy to a Digital Consumer Economy. This economy is distinguished by connections between consumers, consumers and machines, and between machines themselves. Further, it is characterized by business models that ease the exchange of goods and services. In the near future, innovations created through the combination of emerging technologies (such as big data and analytics, cloud, mobility & pervasive computing, social media, AI and robotics) promise to transform many industries including banking, healthcare, energy, retail, government, and security. We believe these innovations will have three broad areas of impact. First, they will lead to changes in organizations' business models. Second, they will lead to the rise of new firms. Finally, and most importantly, they will have a direct impact on society, as people will have access to solutions that were unthinkable even a few years ago.

In this context, Tata Consultancy Services, a leading IT services, consulting and business solutions organisation and the Clayton Christensen Institute have collaborated to produce a series of articles and whitepapers that explore the future of industries through the lenses of a set of fundamental theories developed by Harvard Business School Professor Clayton Christensen. The theories offer if-then statements for how the world works—so executives and leaders who find themselves in different situations can leverage their knowledge of these theories to predict what actions will yield what results, in each circumstance. These theories include Disruption Theory, the Theory of Jobs to Be Done, and Modularity Theory. In the current era of technological change, the objective is to apply these theories in order to solve problems facing businesses and societies.

In the third of a four-part series on disruption in retail banking, this whitepaper provides an analysis of the future of payments. Until recently, this space has been dominated by banks, but today, there are countless non-bank entities creating innovations with disruptive potential. This paper applies Disruption Theory in order to examine the impact of these innovations on customers as well as existing providers of payments services. It also highlights the issues that are most likely to have a bearing on the future of payments.

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EXECUTIVE SUMMARY

There is a lot of excitement surrounding the influx of startups entering the financial services business. And with that excitement comes a lot of talk of disruption. It seems that nearly every new entrant is labeled as "disruptive" resulting in bewildering assessments that everyone will cause disruption in financial services. But is that really what is going to happen? Or, is there more to it than meets the eye? In this paper, we apply the Theories of Disruptive Innovation to shed light on a particular segment of the financial services space: payments. Why is it worth special analysis? First, because the ability to make and accept payments is fundamental to commerce. It is necessary for anyone involved in either the purchase or sale of goods and services. Even before we can avail credit, we need the ability to make and receive payments. Second, payments services is the only area within the industry where technology giants such as Apple and Google have made their initial entry. Of course, there is no shortage of startups. But, our analysis reveals that incumbents—traditional banks and credit card networks—are prepared to fight with entrants. And many are in a position to win. While entrants entering the space may cause institutional changes to occur, disruption is unlikely to happen.

Introduction

The Theory of Disruptive Innovation explains whether an entrant is disruptive *with respect to a specific, established firm*. Thus, to perform an analysis using the theory, we must understand the incumbents being targeted by disruptors.

Payment transactions usually involve one or two of the following three parties—individuals, businesses, and the government—resulting in six different kinds of payments:

1. Individual-to-business
2. Individual-to-individual
3. Business-to-business
4. Business-to-government
5. Government-to-business
6. Government-to-individual

Given the wide scope of payments, the primary focus of this analysis is individual-to-business transactions, and individual-to-individual transactions since emerging technologies are in a position to gradually diminish the differences between the two. We narrow our focus to these two forms of payments since transactions by individuals represent a large volume of overall transactions. Additionally, most of the entrants are targeting these sub-segments. Payments can either be in the same currency or in multiple currencies where each party is in a different country. From a geographic perspective, the major focus of our analysis is the United States.

Individual-to-business payments

Behind the swipe of a credit card, there is a complex set of processes that ensure that money moves from the payer to the payee. The market for such payments is different from that of other products and services since it involves more than two parties.

Let us explore each party and its role in the payments process.

An issuer is a traditional bank that issues debit and credit cards to consumers. For credit cards, the issuer takes responsibility for the associated credit risk. Chase and Bank of America are examples of issuers.

The network is the entity that moves information and value between an issuer and an acquirer. Broadly, there are two types of networks. Open-loop networks—such as Visa and MasterCard—process transactions between any issuer and acquirer. Open-loop networks do not take any responsibility for the credit risk associated with the product issued to consumers. Alternatively, closed-loop networks like American Express process payments as a single entity that acts as an issuer, network and acquirer.

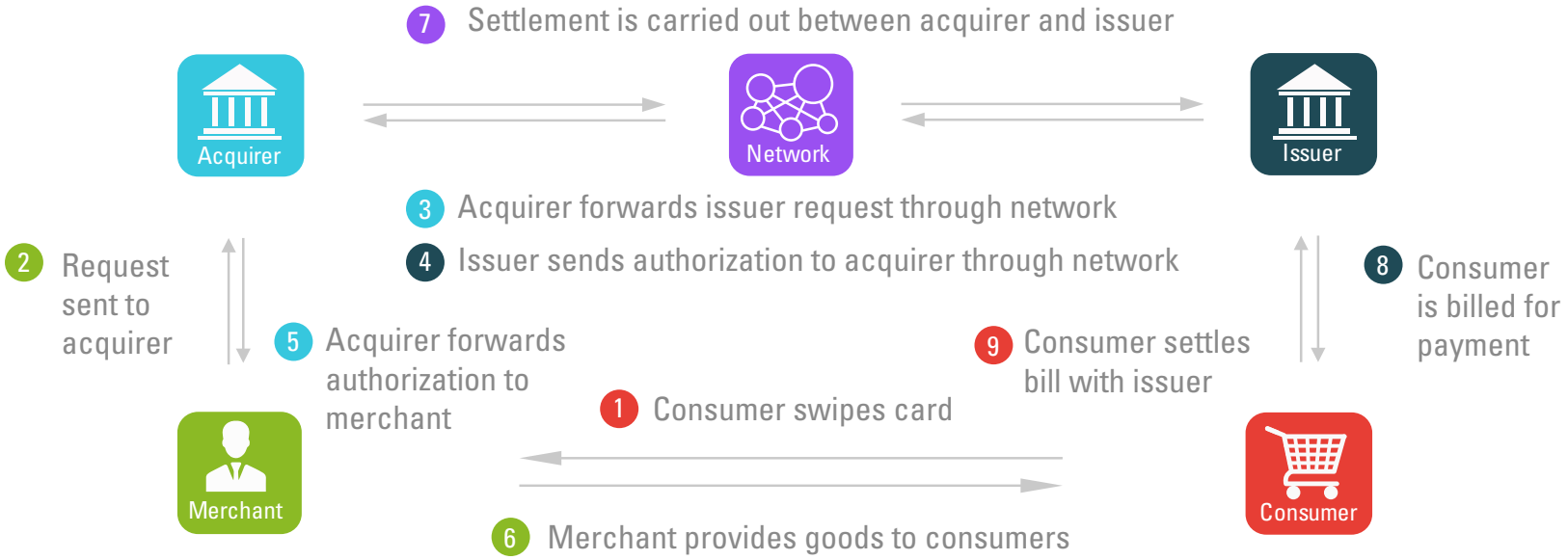
An acquirer helps merchants accept payments. It manages the technology enabled processing of data and value associated with payment transactions. Both banks such as Chase Paymentech and non-bank entities such as First Data can be acquirers. Sometimes, an acquirer works directly with merchants without relying on a third party such as an ISO/MSP.

Independent Sales Organizations/Merchant Services Providers (ISO/MSP) help merchants start accepting payments. They also help manage the relationship between the merchant and the acquirer, but they do not take responsibility for refunds requested by consumers.

It should be noted that banks—both issuers and acquirers—act as customers of the open-loop card networks. Two such networks can compete for business from the same bank. However, from a systemic perspective, it is merchants and individual consumers who are the end customers of payment transactions. This is reinforced further as entrants in the payments space seek to innovate around them. Therefore, this analysis is performed from the perspective of consumers and merchants as customers.

As Figure 1 shows, there are multiple steps involved in the payments process—and several risks as well. Apart from fraud, the principal risk is associated with fulfillment of the payment obligation. Even if the customer fails to pay his or her balance in full, the issuer must fulfill its obligation

Figure 1. Steps of individual-to-business payment transactions



to the acquirer for transactions that have been approved. If a refund is requested by the consumer, the merchant must be in a position to fulfill the request. Otherwise, the acquirer is liable for the refund. For the consumer, this ability to seek recourse with an intermediary, i.e. the acquirer, can be very useful if there is a problem with the payment.

Merchants bear the direct cost of the payments infrastructure as they pay for every transaction made by consumers. Between acquirers, networks and issuers, it is issuers that capture the largest value of fees paid for each transaction. For consumers, the act of paying is essentially free. Thus, the motivations of consumers can often be at odds with those of merchants.

While consumers prefer to use cash for small value payments, and checks for high value payments, they typically choose a particular payment instrument based on the benefits it offers, such as rewards. Often, consumers show little consideration for how much the merchant is paying for the transaction. To that end, cards—credit, debit and prepaid—are the most popular instruments today. According to a Federal Reserve study, 82.4 billion transactions were made using cards in 2012. To put this into context, this number reflected two-thirds of all non-cash payments, up from one-third in 2000.[1]

Individual-to-individual payments

Traditionally, individuals have paid each other using cash, checks or bank transfers. But, despite their long history, such instruments do not adequately address all the needs of consumers. With cash, an inability to "make change" can create awkward social situations. Heavy users of checks must ensure, and purchase, an adequate supply. Bank transfers can take days to complete, leaving people waiting for money. For these reasons, there is growing interest in innovations that address these needs. A key difference between individual-to-business and individual-to-individual payments is that the latter has no third party acting as an intermediary for the transaction. In other words, there is no immediate backup should there be an issue with the payment.

A profile of the entrants

While incumbent players are fairly easy to identify—banks that issue cards, credit card networks, and acquirers such as First Data and Vantiv—entrants require a more nuanced analysis to fully understand their disruptive potential. Based on their targeted market segments and underlying goals, entrants can be grouped into four main categories.

1. Entrants focused on consumers

The first group of entrants are those that target consumers. Within this category are two subcategories: peer-to-peer payments solutions and alternatives to credit cards.

Peer-to-peer payment applications are designed to solve the problems that consumers face when they pay each other. These new solutions include Venmo, Dwolla, Snapcash, Google Wallet and Facebook. Because individuals historically have not paid directly for peer-to-peer transactions, any solution that attempts to charge for such payments will likely be met with strong resistance and may not succeed. An obvious path to a viable business model is to position the solution for individual-to-merchant payments.

Alternatives to credit cards, conversely, offer credit to consumers at checkout. An example of this is Affirm, an alternative lending site that provides real-time credit decisions based on information provided at checkout. Similar to a credit card, Affirm enables people to pay over a period of time with APRs ranging from 10% to 30%. However, consumers do not need to apply for a credit card separately—they can get the line of credit when they are making a purchase. Not only can it be easily accessed at online checkout, the firm has partnered with First Data to enable access to its product at physical points of sale.

2. Entrants focused on merchants

The second group of entrants includes those that target merchants by offering either online payments services or small business payments solutions. Stripe, for instance, simplifies the process of accepting payments within applications and websites. While Stripe's strategy is not publicly available, it appears that it is building its business around services provided to merchants by simplifying the process of accepting payments within applications and websites. Many entrants in this subcategory act as payments facilitators. They help merchants with the complex processes associated with accepting a variety of card payments, as well as simplify the process of onboarding and underwriting for new merchants. They do not, however, take responsibility for the risks associated with payment transactions.

Square has been the most successful in the offline payments space for small businesses. It started by targeting micro-merchants who could not accept card payments. However, it has no influence on the consumer's payment instrument choice, and thus most of the money charged to merchants goes to the banks and card networks. For these reasons, there is a deliberate effort by Square to build a business model around a variety of value-added services for merchants.

Entrants in the offline payments subcategory act more as aggregators. The merchants they address are primarily those who cannot accept card payments because they are not eligible for merchant accounts. To get a merchant account, a merchant must undergo a rigorous onboarding and underwriting process. This is because acquirers want to ensure that their risk exposure to refunds and chargebacks does not increase disproportionately as they work with new merchants. To solve the problem, Square acts as a merchant to acquirers taking responsibility for the risk of chargebacks. In turn, the actual merchant becomes a sub-merchant of Square. Payments made by consumers pass through Square before reaching the merchant. Thanks to the efforts of Square and other entrants, small and micro-merchants are now able to offer different payment options to their customers.

3. Entrants leveraging their presence with consumers to build adoption amongst merchants

Entrants who fall into this group—such as Apple and Google—are pushing for merchants and banks to adopt their payments solutions by leveraging their respective products and platforms among consumers. Banks pay a very small portion of the fee that they earn from each transaction to Apple for Apple Pay while Google's Android Pay is free. At this point in time, both have built their respective solutions on top of existing infrastructure.

Figure 2. Types of entrants

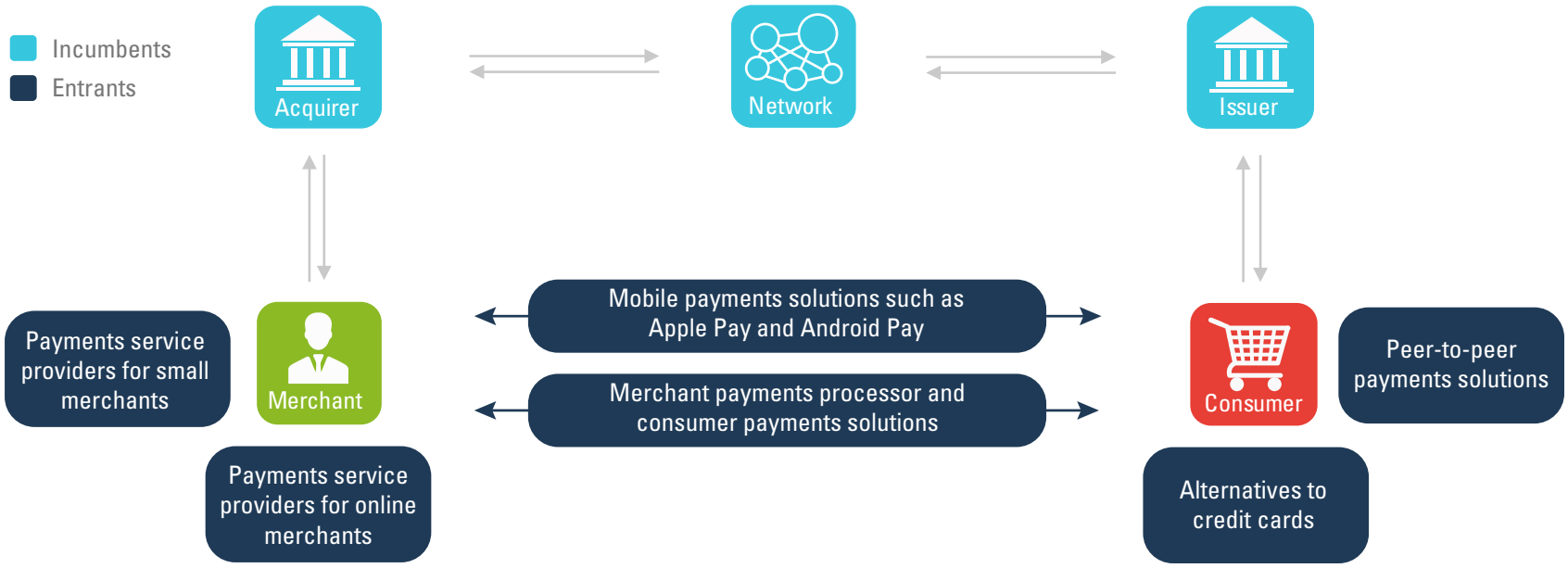
Category	Sub-category	Examples
1. Consumer focus only	Peer-to-peer payments	Google Wallet, Circle, Venmo
	Alternatives to credit cards	Affirm
2. Merchant focus only	Payment service providers for online merchants	Stripe, WePay
	Small business payment service providers	Square, Revel
3. Leverage presence with consumers to build adoption amongst merchants	Mobile payment applications	Apple Pay, Android Pay
4. Leverage presence with merchants to build adoption amongst consumers	Combination of merchant payment processor and consumer payment solutions	Braintree (with Venmo), Klarna

However, having gained sufficient adoption amongst both consumers and merchants, they could present a very real threat to incumbents' position in the future. It is also possible that they may seek to augment their income from payment transactions at the cost of existing providers.

4. Entrants leveraging their presence with merchants to build adoption amongst consumers

The fourth category includes companies like Braintree and its subsidiary Venmo. Braintree is in many ways similar to Stripe as it helps web-based merchants process payments easily. However, in 2012, it bought Venmo before its subsequent acquisition by PayPal. As we discussed before, Venmo is a peer-to-peer money transfer application that was created to address the problems of consumer-to-consumer payments. If Venmo gains sufficient adoption amongst consumers, and Braintree gains adoption among merchants, it will open up an opportunity for Braintree to capture the entire fee paid by the merchant instead of passing it onto banks and card networks. Another example is Klarna. The e-commerce company was created with the objective of simplifying and improving security of online shopping. While Klarna allows consumers to use its cards, it also has an option where consumers can pay within 14 to 30 days after purchase. This creates a window to push consumers to pay without a card thereby providing Klarna the opportunity to pocket transaction fees. It seems that the company is also exploring the opportunity to extend credit to consumers.

Figure 3. Entrant roles in the individual-to-business payment transactions



The Theory of Disruptive Innovation: a primer

Disruptive Innovation, a term coined by Harvard Business School Professor Clayton Christensen, is a theory of competitive response. It denotes the process by which new products and services take root among consumers who are either ignored by established companies or who do not have access to adequate solutions to their problems. The new entrants gradually move upmarket into the markets served by incumbent firms and displace them, resulting in disruption. Figure 4 provides a graphical representation of the process of Disruptive Innovation.

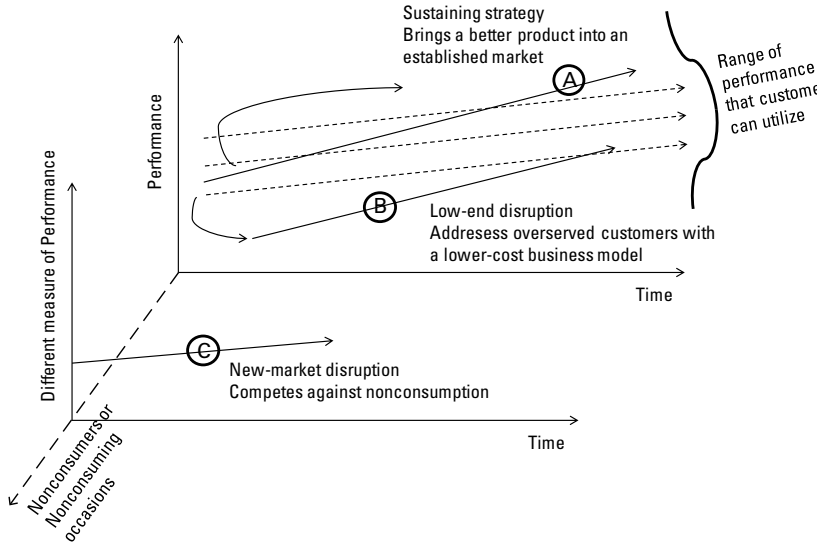
A market consists of customers who demand and utilize different levels of performance from products. The dotted lines at the back of the diagram denote the trajectory of performance demanded by different customers (there are multiple lines because there are different tiers of customers from the most demanding to the least demanding). In keeping up with customer demands, companies create sustaining innovations (denoted by solid line A) that enable better products that can be sold for higher profit margins. However, after some time, sustaining innovations tend to overshoot the ability of certain customers to utilize them, thus creating the context for new players to enter the market with Disruptive Innovations.

A Disruptive Innovation redefines the trajectory of performance by bringing products that are not as good as current products and services, yet provide other important benefits such as simplicity, convenience and affordability. Once the disruptive product gains a foothold in the lowest tiers of the market, the cycle of improvement begins and the product eventually improves enough to meet the needs of the most demanding customers. Established companies typically choose to avoid the lower end of the market, which represents the least profitable customers. Because the innovation targets this specific segment of the market, it is known as *low-end* disruption. The rise of steel minimills is representative of this type of disruption. They found their first market in rebar—the lowest end of the market—and gradually worked their way up to higher-end segments of the market such as structural steel and sheet steel. The incumbent steel companies were unable to compete profitably with the business model of the minimills. The minimills, having succeeded in the lower tiers without any competition, were able to displace the incumbent steel companies from other tiers of the market.

The other type of disruption, called *new-market* disruption, targets nonconsumption. Nonconsumers (represented by the z axis) are those who previously were unable to buy or access the product or service. Because new-market innovations are more affordable to own and simpler to use, they enable entirely new segments of the population to own and use the product. Although the innovation initially competes against nonconsumption in its own value network—i.e. consumers are limited to either purchasing the product or nothing at all—performance improves and ultimately it becomes good enough to pull customers out of the original value network (denoted by solid line C).

For instance, photocopying was a new market disruption relative to offset printing. Formerly, the task of copying documents in offices were performed by offset printers—big, complicated machines that had to be housed in separate photocopy centers and run by expert technicians. Then, photocopiers were introduced.

Figure 4. Disruptive Innovation



A Disruptive Innovation redefines the trajectory of performance by bringing products that are not as good as current products and services, yet provide other important benefits such as simplicity, convenience, and affordability.

When launched, photocopiers performed poorly with respect to offset printers. But, they enabled people to keep one close by and create photocopies whenever they needed one. Over time, the product improved to the point that it replaced offset printers for nearly all photocopying needs.

Disruption happens because of the following reasons:

1. Incumbents and entrants have asymmetric motivations with respect to customers—what is unattractive for one is attractive for the other. Low-end customers or nonconsumers are less attractive for established firms as they cannot serve them profitably with their existing business model. However, such customers tend to be attractive for entrants who are attempting to bring poorly performing technology into the market. These customers may be paying too much for an existing solution or do not have access to a useful solution, making them willing to use seemingly inferior innovations. And, since the established firms choose not to compete, entrants are able to succeed despite their limited resources.

2. Technology is not good enough for incumbents' customers. Poorly performing technologies are not useful for incumbents since they cannot be used to create sustaining innovations for high-demanding customers. On the other hand, entrants that target nonconsumers or the low-end of the market are able to successfully build their business models around these technologies. Over time they are able to improve performance to the point that they displace the incumbents.

3. New business models enable entrants to serve the low-end of the market or nonconsumers. An established company cannot change its business model owing to its priorities that are primarily centered on revenue and profitability. When confronted with another entity that has a disruptive business model, the incumbent chooses to move to those tiers of the market where its existing business model is relevant. The only way to compete in such cases is to create an autonomous business unit that can create its own business model to compete with the entrant.

4. An alternate value network emerges. A value network denotes the context in which a company establishes its business model and works with suppliers, channel partners, distributors, etc. so that together they can respond profitably to the common needs of a class of customers. Established value networks favor sustaining innovations as they are compatible with the existing business models of its members. If entrants seek to disrupt incumbents, they must utilize a different value network.

DISRUPTION ANALYSIS: INCUMBENTS HOLD THE UPPER HAND

Applying the Theory of Disruptive Innovation, we find there are three primary reasons entrants are unlikely to disrupt incumbents in payments services. First, there is no asymmetric motivation between entrants and incumbents. Second, technology is enabling sustaining innovations as much as it is capable of addressing nonconsumption and low-end consumption. And third, entrants rely on the existing value network that is controlled by incumbents.

Lack of asymmetric motivation

As previously described, asymmetric motivation between incumbents and entrants is one of the primary causes of disruption. This juxtaposition enables entrants to establish their business models without competition from incumbents in markets that are less attractive.

So, what does the theory have to say with regards to asymmetric motivation in payments services? Let us start with credit card networks. Though they derive their revenues from banks who are their actual customers, they still need to market themselves to consumers and merchants. The reader may recall MasterCard's popular advertisements that informed consumers: "For everything else there's MasterCard." Considering individual buyers as their customers, there is no low-end or high-end of the market for card networks. Their revenue is linked to payments' volume and value, and they do not bear credit risk on behalf of consumers. Thus, their business model is designed to process as many transactions as possible. For these reasons, no segment of the market is undesirable or asymmetric to them. In other words, there is no space in the market for entrants to succeed without competition from the card networks.

Even banks do not appear to ignore the low-end of the market for payments instruments. Consider how credit cards are offered to various segments of consumers. Figure 5 shows the distribution of credit card ownership in the US by FICO score. While there are lenders that specialize in subprime lending, many banks offer credit cards to subprime customers. In some cases, banks continue to service customers whose scores fall below 660. Such customers tend to be more profitable than prime customers, especially when the economy is doing well. Figure 6 illustrates the total cost of credit by FICO score, demonstrating that subprime consumers are not the least profitable segment of the market. As such, this segment is not necessarily asymmetric or unattractive to banks. Alternative lending sites like Affirm may be appealing to people in this segment that have a higher cost of credit or to those who do not have access to credit. But, this does not mean that banks will leave the market without competing.

Figure 5. U.S. credit card holding population by FICO scores

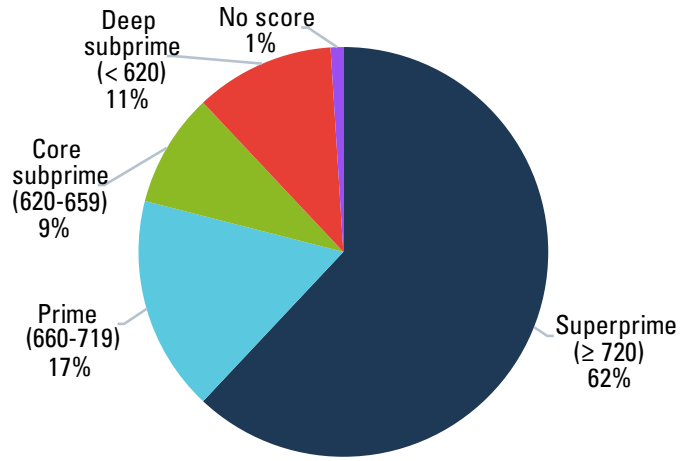
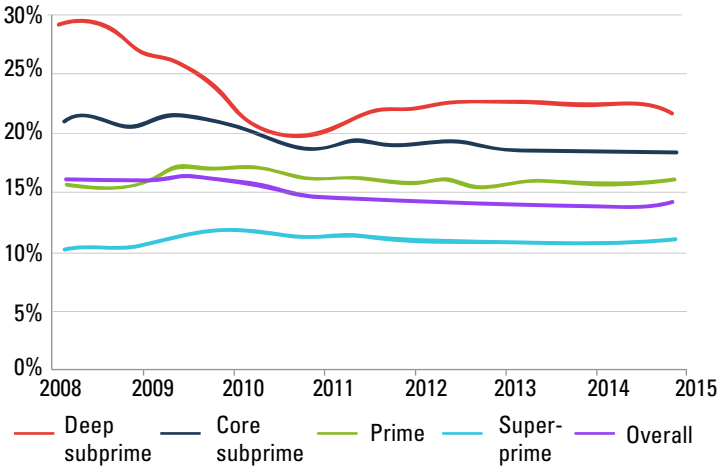
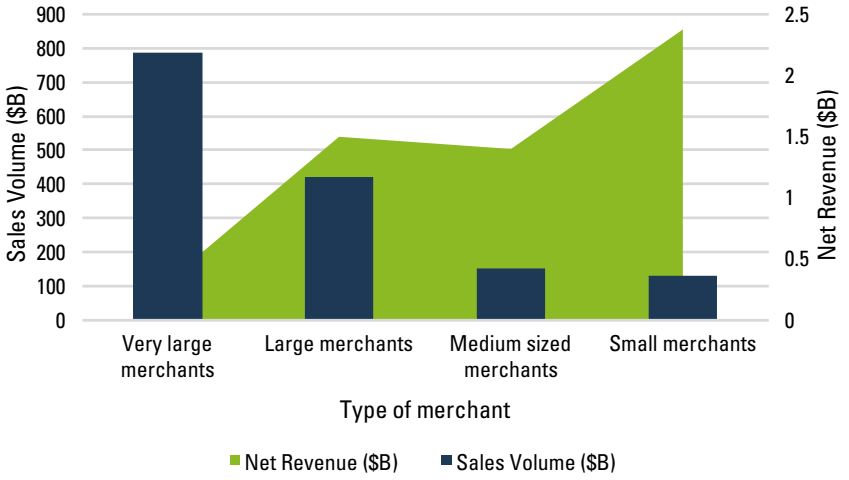


Figure 6. Annualized total cost of credit



*Total cost of credit captures the totality of payments by consumers to issuers each quarter as an annualized percentage of cycle-ending balances.
Source: Consumer Financial Protection Bureau

Figure 7. Sales volume and revenue for acquirers by customer (2004)



A similar story unfolds on the acquirer side as well. The customers of acquirers are merchants— small, medium and large. While one might assume that larger merchants constitute the high-end of the market and small merchants constitute the low-end, from a profitability perspective, that is not entirely true. Even as acquirers process a high volume of payments for very large merchants, they tend to earn higher profits from smaller merchants, as seen in Figure 7.

Entrants are also targeting small merchants with their products and services. In response, acquirers have launched innovations that are similar to those offered by entrants. Their motivation is clear: they want to hold onto their most profitable customers. If asymmetric motivation were at play here, incumbent acquirers would have disregarded small merchants and ignored entrants.

Thus, we see that incumbents are not willing to abandon any segment of the merchant or consumer market without competing with entrants. Instead, they are motivated to fight tooth and nail to retain customers, thereby negating the likelihood of disruption.

The technology is good enough for all customers

Generally, when entrants employ an evolving technology, it can lead to disruption if incumbents fail to understand the trajectory of improvement. Since the technology is not suitable for incumbents' most profitable customers, they tend to ignore its potential. Meanwhile, entrants are able to utilize such technologies for customers that do not have any solution at their disposal. Since they are not burdened by the need to focus on the most profitable customers, they can afford to position the technology at the customer whose needs can be most suitably addressed. Over time, as the technology improves, these firms are able to target the incumbents' more demanding customers.

Let us illustrate with an example. When Sony introduced its small transistor-based television sets, RCA was the market leader. It sold large, expensive floor standing television sets. Sony's early products performed poorly with respect to such products. To find a market, Sony targeted nonconsumers of television. Subsequently, Sony was able to improve the product to the point that customers moved away from RCA into Sony's arms. RCA failed as it could not improve its existing products with the transistor—it was simply

not good enough to replace the floor standing television. The lesson here is that a seemingly low-quality technology can lead to disruption if incumbents are unable to deploy it towards sustaining innovations that improve existing products.

While there is a sense that mobile payments and faster payments are disruptive—both of which are utilized by entrants—the technologies are actually equally suitable for sustaining innovations**.** Consider the effect of mobile payments targeting nonconsumption of banking systems. Mobile payments have increased access of electronic payments to nonconsumers in many countries across the world. MPesa is the most well-known, launched in 2007 by Safaricom. Today, 25 million registered users use the mobile application to transfer money and pay for products and services using their phone.[2] Other examples of innovations targeting nonconsumption through the use of mobile phones include Smart Money in the Philippines, bKash in Bangladesh and Tigo Money in Latin America. Each of these innovations has targeted nonconsumers who do not always have access to a fully functioning banking system.

While innovations that target nonconsumption are often disruptive, just because one has been used to address nonconsumption does not discount it from also being suitable for sustaining innovation by incumbents. In places where there is an abundance of bank branches and a variety of payments instruments, mobile wallets are proving to be sustaining innovations when considering the performance requirements of customers. Mobile payments applications such as Apple Pay and Android Pay attempt to improve on dimensions of performance that are relevant to most consumer segments. For many people, carrying multiple cards virtually on a mobile wallet is better than carrying physical cards in a bulging leather wallet. Rewards are also more easily tracked and managed on a mobile wallet. For a bank, all of its customers, including its most profitable customers, would like solutions that address these existing problems associated with payments. Thus, issuers and even networks will not shy away from mobile payments innovations. Any entrant that develops mobile payments solutions independent of incumbents will face competition, since these are sustaining innovations that improve existing solutions.

Faster payments systems represent another technological development in payments. A number of countries have adopted or are in the process of adopting systems that facilitate real-time payments. Does the technology, then, lend itself to Disruptive Innovation, or does it lend itself to sustaining innovation? We would argue the latter. This is because a faster payments process is useful for everyone—both the most profitable and demanding customers as well as the least profitable customers of incumbent issuers. Another relevant question is whether faster processing of payments will overshoot the performance dimensions of consumers. If payments were currently processed in a few seconds, but the new technology enabled them to be processed in milliseconds, the answer would be yes. However, some current systems take a few days to process payments, making faster processing of payments a reasonable request. For these reasons, entrants and banks alike are making investments in faster payments solutions. While a central, faster payments system is yet to be implemented, banks

are working on their own. A number of them have come together to create ClearXchange, which facilitates real-time payments between individuals.

Entrants rely on the existing value network

Earlier, we briefly discussed that Disruptive Innovations typically require a new value network that comprises of suppliers, distributors and other channel partners whose business models are distinctly compatible with that of the potential disruptor. In this context, let us revisit the story of Sony and RCA. Apart from Sony's strategy of focusing on nonconsumers, there was another factor that played an important role in its success—its reliance on an alternate value network. Appliance stores, the leading distributors of RCA's products, made money by servicing burned-out vacuum tubes. They could not make money selling solid-state televisions and were not interested in carrying Sony's products. Without an enabling distribution network, it is unlikely that Sony would have been able to reach its target market. Faced with resistance from the existing value network, Sony chose to work with discount retailers who had previously been shut out of this market. They were ready to carry the new products since they had never been able to sell products that consisted of vacuum tubes. By choosing a value network with aligned interests, Sony was able to reach its target customers without compromising its business model, thereby initiating the process of disruption.

In payments, the value network in which entrants must participate comprises of incumbents—issuers, acquirers and card networks. The scenario is complicated further because there are two customers whose motivations are aligned in a few respects but can be orthogonal in most others—merchants, and consumers. Any solution offered to merchants must conform to payments instruments that are used by consumers. And these instruments are offered by incumbents. Consumers do not use cards only because they need a payments instrument—they use them as a line of credit, for rewards, or for accessing their bank account. As we have already explored, incumbents are willing to make every effort to fulfill these functions for consumers. As long as this continues, entrants cannot move away from the existing value network.

Furthermore, entrants must conform to the business models of the different entities in the value network. Most of the money that entrants charge merchants for providing them payments solutions does not go to the entrant—instead, it goes to incumbent issuers, acquirers and card networks. As such, it is extremely difficult for the entrant to introduce new, potentially disruptive business models when it is essentially keeping incumbents in business. One would be tempted to think that acquirers are under direct threat from entrants since entrants are targeting their merchant customers with different solutions. But, the value network helps them to retain their position. Any merchant that wants to accept card payments must sign up with an acquirer directly or indirectly. Even on the consumer side, applications like Apple Pay and Android Pay cannot work as effective payments instruments without a network that manages the authorization, clearance and settlement of each transaction.

Therefore, in payments we see that it is not possible to offer a new solution to either merchants or consumers without relying on the existing value network—made up of incumbents. To that end, it is difficult to cause disruption within an existing value network. In this particular case, as incumbent issuers, acquirers and card networks control the network, they will restrict efforts of entrants to move away.

> Disruptive Innovations typically require new value networks whose business models are distinctly compatible with that of the disruptor.

We can thus conclude that incumbents will not be disrupted by entrants. They are motivated to fight as there is no asymmetry as far as the customers are concerned. Additionally, the technologies that are enabling the entrants' innovations are adequate for sustaining innovations directed by incumbents. Lastly, they retain a significant influence on the value network. However, while disruption is highly unlikely, that is not to say that incumbents can sit idly by, or that entrants cannot grow successful businesses and influence the market. With that in mind, there are a few things that incumbent organizations must watch out for.

DISRUPTION ANALYSIS: POTENTIAL THREATS ON THE HORIZON

As incumbents invest in innovation to retain their customers and compete with entrants, the Theory of Disruptive Innovation indicates that there are four potential threats that they must watch out for, namely the threat of disruptive business models, failure to understand customers' Jobs to Be Done, the potential for poor-performing technologies to improve over time, and areas of nonconsumption. Let us explore each in detail.

The threat of disruptive business models

First and foremost, incumbents should take into account new business models that are likely to pose a disruptive threat in the future. Earlier, we discussed one reason why most entrants will struggle to disrupt incumbent banks—their business models must match those of incumbents, since they are forced to be part of incumbents' value network. However, it is possible that some entrants could actually succeed in developing new business models, so long as they are useful for both customers of the existing payments infrastructure—consumers and merchants.

For instance, closed-loop networks created by entrants that gain adoption among both consumers and merchants could pose a threat. PayPal is a historical precedent worth keeping in mind. The payments service was able to grow without competition from incumbents as it targeted nonconsumers—merchants who were unable to accept payments online. In the early days of e-commerce, small merchants could not process payments using cards as they were ineligible for merchant accounts. PayPal offered them a solution and it also enabled consumers to protect their bank accounts and card numbers. While the payments service has certainly not disrupted the likes of Visa, MasterCard or incumbent banks, it has become one of the top ten acquirers in the world. Any entity that is useful to both the primary customers of the payments infrastructure—consumers and merchants—is in a position to capture a higher share of the value from payments transactions, thereby reducing the earnings potential of incumbent organizations.

Since they offer solutions for both merchants and consumers, Apple, Google and even large social networks could make a move for a deeper role in payments. Even a large e-commerce firm could attempt the same since it is already a merchant and the nature of online shopping makes it possible to control the customer interface in a way that was never possible in physical retail. In physical retail, the customer takes out her card every time she passes the checkout. She is made aware of the need for plastic provided by a bank and a network every time she shops. But when she is making purchases on the web, she can set up the card only once and forget about it. An issuer or a network thus loses control of the customer touch point, enabling entrants that serve both merchants and consumers to gradually push them away from incumbents towards their own solutions or those created in partnership with other entrants. For example, a mobile wallet could be positioned to distribute short-term loans for purchases from alternative financial services providers, effectively eliminating the need for credit cards. Owing to the fact they make money differently from the incumbents, in the future these firms could represent a serious potential threat to incumbents.

Consider an entrant that has achieved success in a specific segment of the market, with a different profit structure than the incumbent. If the entrant attempts to move upmarket, response through sustaining innovations are unlikely to succeed if the new competitive context offers lower profitability for the incumbent. Further, changing the business model to address the situation can be an extremely difficult proposition—the most feasible alternative would be to move to those tiers of the market where the firm can

continue to retain its profit structure. This movement away from entrants often leads to disruption.

For example, discount retailers were able to disrupt department stores because they used a profit model that incumbents could not replicate. Discount retailers made a 23% gross margin per inventory turn versus 40% by department stores. But, they turned the inventory over more than five times a year, in contrast to the three times that department stores could manage. The net result was that discount retailers' profitability was the same despite making less money per inventory turn. But, department stores could not change their merchandise mix or supply chain in order to match what the discounters were doing. Instead, it was relatively easier for them to retreat to those tiers of the market where their existing business model was relevant, by targeting high-end consumers.

In order to avoid being disrupted, incumbents must carefully evaluate the business models of entrants and assess if a response from within their existing business models is sufficient. They must keep in mind one of the cardinal principles of the Theory of Disruptive Innovation—that an autonomous business unit must be established to compete with entrants that have a fundamentally different business model. If not, the priorities of the firm will severely limit the response. The organization as a whole will be driven to act as before, when it should instead be working in such a way that it is able to compete effectively against the disruptive threat. Without an independent response organization, the priorities will work inconspicuously to encourage the organization to continue business as usual by focusing efforts on the most profitable customers, and that is when the process of disruption will start.

An autonomous business unit must be established to compete with entrants that have a fundamentally different business model.

From the perspective of incumbent banks, there appear to be some encouraging signs as far as their response is concerned. In 2015, several banks came together to facilitate the acquisition of their peer-to-peer payments solution ClearXchange by another bank-owned but independent entity called Early Warning. While one aspect of the initiative may have been to combine the complementary solutions of both entities, if the combined organization operates independently, it will have a better chance of competing with entrants and avoiding disruption

Jobs to Be Done of customers

The second consideration that must be kept in mind is the Job to Be Done (JTBD) of merchants and that of individual consumers. A job is a problem that an individual faces in a particular situation, and by identifying the job—or problem—firms are equipped to develop the right solutions. Any JTBD has three dimensions—functional, social and emotional—and the best solution is one that is integrated to address all three. For smaller merchants, the ability to accept payments is just one part of the larger JTBD that they are trying to accomplish—running their business. Consider a small merchant who has just started a new business but at each step is confronted with a host of problems. Entrants like Square and Stripe have understood this and have developed solutions targeted at this JTBD. For example, Stripe has launched a product called Atlas that is designed to ease the process of starting an internet business, while Square offers a variety of services such as capital, payroll, employee management, and email marketing to its merchant customers. Incumbent acquirers are also moving to offer similar solutions in an effort to fight back. But, offering hardware, software and services—as some of them have done—is only one part of the competitive response. Incumbents must also make efforts to understand if the customer needs a modular solution or an interdependent one. Interdependence and modularity denote how the parts of a product or service interact as well

as its implications for innovation. If the innovation performs poorly with respect to the performance expectations of customers, firms must take an interdependent approach, i.e. they must control all aspects of the overall solution. If the innovation exceeds the performance requirements, a modular approach where independent firms work on specific components of the overall solution is a better approach. For example, in the early days of the computing industry, IBM controlled all aspects of its overall solution—hardware, software, service, marketing and distribution of its computer. As the product became good enough for customers, other entities started to take responsibility for different pieces of the final product. Today, several entities contribute to the design, manufacturing, distribution and servicing of computers.

> Any JTBD has three dimensions: functional, social and emotional. The best solution is one that is integrated to address all three.

Absolute interdependence and absolute modularity are extreme ends of a spectrum. The firm in question must understand the problem at hand and decide which aspects of the overall service that they must control and which aspects can be performed better by another entity. In this specific case, larger merchants may need a modular approach but many small merchants will prefer an interdependent approach—especially, those that are just starting out. To that end, some entrants are willing to take a more interdependent approach to address the JTBD of their customers. As acquirers respond to the plethora of entrants who are attempting to serve merchants, an informed choice about the context of their customer segment and the appropriate balance of interdependent and modular solutions is essential to address the JTBD of their customers.

It is equally important that incumbents understand the JTBD on the consumer side in order to prevent disruption. With that in mind, though adoption of mobile wallets has been slower than expected, they present a real opportunity since they address many of consumers' jobs. The mobile is uniquely suited to do a lot of things that the plastic card could never do. For instance, rewards can now be offered in a much more dynamic way than it was ever possible before, and credit offers can be customized to specific situations. Beyond such improvements, the opportunity remains open for innovations that address other jobs that people are trying to get done when they take out their cards. People do not go to a store to pay—they go there to get what they need. So, what can be done? For starters, the checkout mechanism at stores could be changed to allow people to checkout without waiting in a queue. PayPal enables individuals to find small business stores from within its mobile wallet and even allows them to place an order in advance. This has implications beyond just convenience of ordering with a mobile application. The small business can now serve more customers during peak hours without investing for a second checkout queue. Further, a mobile payments solution can be positioned at a variety of commerce transactions, such as distributing daily deals and offers. If issuers and networks are able to figure out the JTBD of individual buyers and develop payments innovations targeted at them, they will be able to retain control of the customer interface even in the context of changes driven by technology. As is the case on the merchant side, they must make the appropriate choice regarding which elements of the service they should control in order to ensure that the JTBD is being addressed adequately.

The threat of disruptive technologies

Previously we examined how mobile payments and faster payments technologies are essentially sustaining in nature, and as such, do not pose a disruptive threat to incumbents. But poorly performing technologies that improve over time can develop into disruptive threats. For instance, the bitcoin blockchain that enables financial transactions to be processed in a decentralized way, appears to bear the characteristics of such a technology. Today, with respect to individual-to-merchant payments, it underperforms on several important dimensions of performance. Security is not

adequate—several wallets and exchanges have been hacked. The number of transactions that can be processed is several orders of magnitude lesser than a network such as Visa. Also, there are several unknowns such as the possibility of a 51% attack where a single mining entity controls a majority of the processing power of the infrastructure. The network does not allow chargebacks—a nice feature for those cases where the merchant is not ready to refund customers. And then there is regulation, requiring any innovation built on top of the bitcoin blockchain to conform to it.

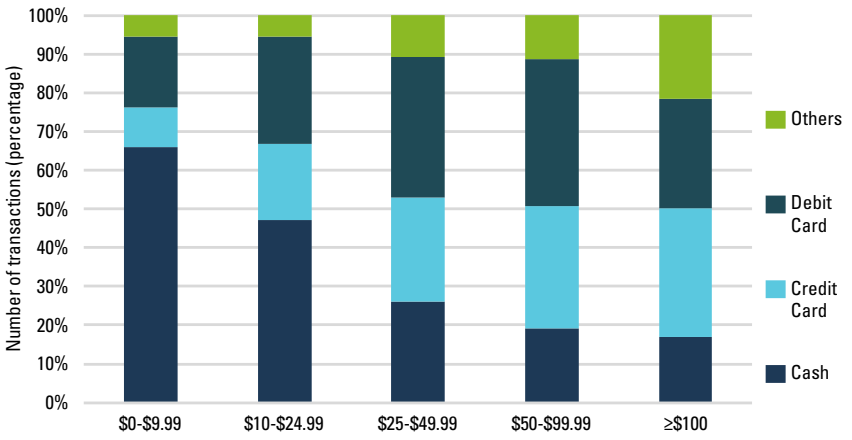
But poor performance today is no indicator of poor performance tomorrow. The Theory of Disruption was developed on the basis of research that demonstrated how technologies have the potential to improve over time as they are put to use to address specific problems, thus enabling them to later be disruptive. Revisiting the story of minimills, we see that in its early life, the electric arc furnace could only be used for manufacturing the cheapest quality steel—rebar. But, gradually, the technology was improved to the point that the best steel grades could be manufactured with it. Today, bitcoin blockchain is being applied to a variety of problems such as remittances and business-to-business payments. It is possible that in addressing these problems that are not directly related to consumer payments, the performance will improve to become good enough to enable payments solutions. Incumbents should therefore be aware of its potential trajectory as well as new solutions that can be enabled by the technology

Areas of nonconsumption

Finally, the fourth point that incumbent banks must consider is nonconsumption. Areas of nonconsumption are often where Disruptive Innovations take root, which is why it is essential that incumbents are aware of these opportunities.

With that in mind, consider the use of cash. Despite the ubiquity of cards in the United States, cash is involved in several kinds of payments transactions, as shown in Figure 8. According to the 2012 Diary of Consumer Payments choice, a large number of small value transactions in the United States involve cash.[3] At a global level, the use of cash is significantly higher than cards—estimates suggest that more than 80% of the volume of consumer payments involves cash. While it is unlikely that people will give up entirely on using cash, at least in the foreseeable future, there are clearly circumstances where cash does not address people's JTBD. Earlier we discussed the difficulties associated with making change when using cash. However, there are other challenges such as the lack of safety while carrying large amounts of paper money, as well as problems accessing cash in places that do not have sufficient ATM machines or bank branches. These circumstances in which people still use cash represent nonconsumption of electronic payments instruments. Rather than wait for future Disruptive Innovations to emerge from this context, incumbents would be wise to target this nonconsumption and use it as another opportunity for growth.

Figure 8. Use of payments instrument by transaction value



Source: Federal Reserve Bank of San Francisco

CONCLUSION

Over the last few decades, the consumer payments space has been dominated by the adoption of plastic. Now, with a large number of new players in this space, there appears to be an endless stream of innovations, most of which are sustaining in nature. As of yet, new entrants do not pose a disruptive threat to the incumbent cohort of issuers, credit card networks and acquirers. This is primarily because incumbents are prepared to compete with entrants in all segments of the market. Further, the technologies that are enabling the innovations of entrants can also be used by incumbents for sustaining innovations, and incumbents continue to retain control of the value network that serves customers.

However, there is no doubt that incumbents will need to adapt to the changing terrain. As incumbents respond to the challenge from entrants, they must keep four things in mind. First, they must watch out for entrants that utilize a different business model from their own. Second, they should understand the Jobs to Be Done of their customers. Third, they should be aware of poorly performing technologies that could emerge as a disruptive threat in the future. And, finally, they should make efforts to address areas of nonconsumption. The Theory of Disruptive Innovation has powerful insights for anyone seeking to use innovation for competitive advantage. Adhering to its rules can be immensely beneficial for both incumbents and entrants as they battle for the future of payments.

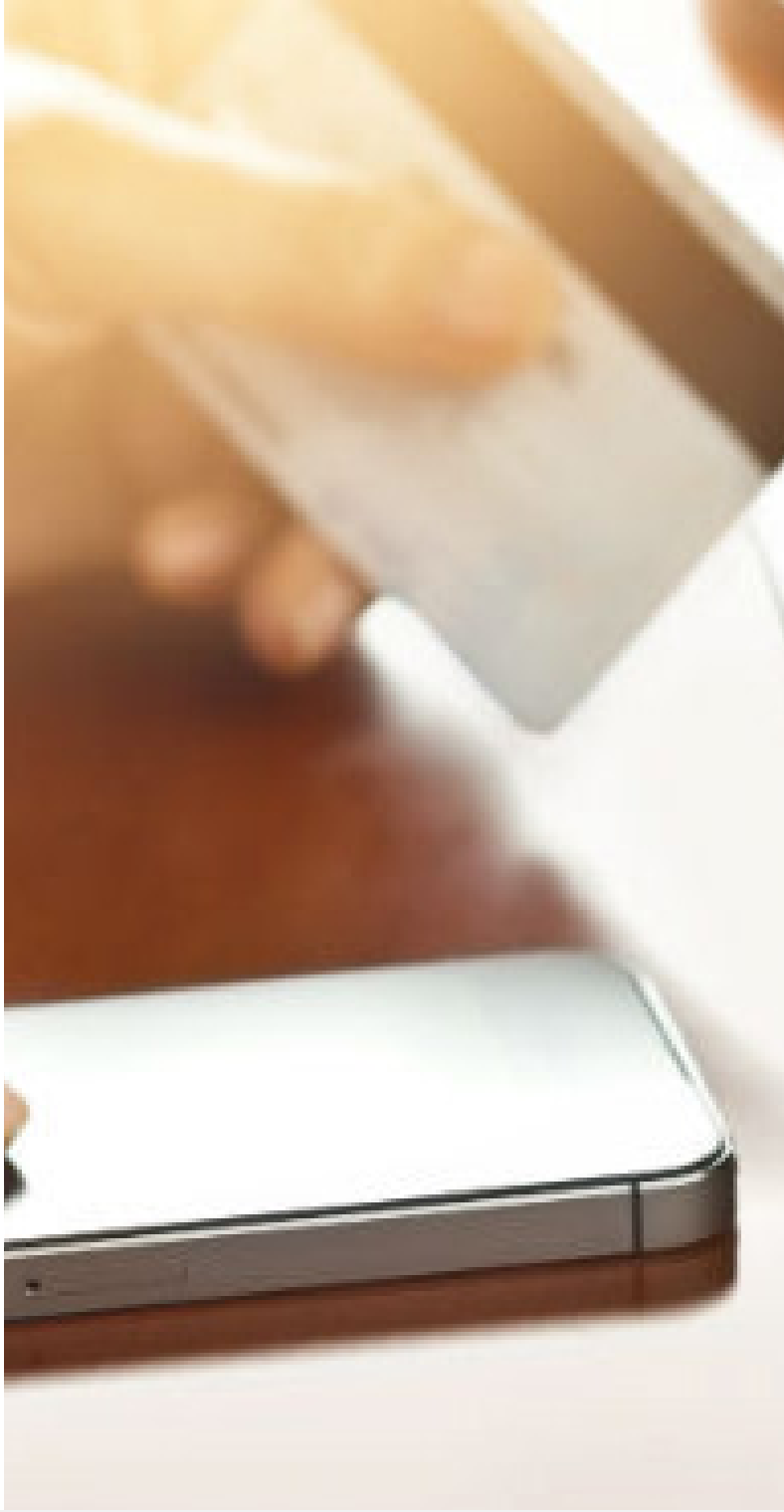


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Figure 5

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Figure 9

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About the Institute

The Clayton Christensen Institute for Disruptive Innovation is a nonprofit, nonpartisan research organization dedicated to improving the world through Disruptive Innovation. Founded on the theories of Harvard professor Clayton M. Christensen, the Institute offers a unique framework for understanding many of society's most pressing problems. Its mission is ambitious but clear: work to shape and elevate the conversation surrounding these issues through rigorous research and public outreach.

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