What Disruptive Innovation Means in the Identity and Payments Business

By Greg Pote

The Economist recently published an article explaining "What disruptive innovation means"1. This issue of Vantage Point explores the meaning of disruptive innovation in the context of the payments and identity business, what innovations are genuinely disruptive, how long they take to create disruption and what might be their expected outcome.

In the not-so-distant past the term "disruptive innovation" was only used by enthusiastic start-ups pitching to VCs, or by overenthusiastic management consultants waving their arms around in front of whiteboards. Today the term is so widely spouted that it has entered mainstream business jargon. From where did this term originate and what is it actually supposed to mean?

Targeting New Customers

The theory of disruptive innovation was proposed by Clayton Christensen2, a professor at Harvard Business School, and explained in his 1997 book "The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail". According to Christensen, a disruptive innovation is a new product or service that targets a new category of customers and (if successful) eventually creates a new market. The new, unexpected market can eventually disrupt the existing market and its incumbent players, either forcing them to adapt or possibly marginalising their businesses.

Business Model over Technology

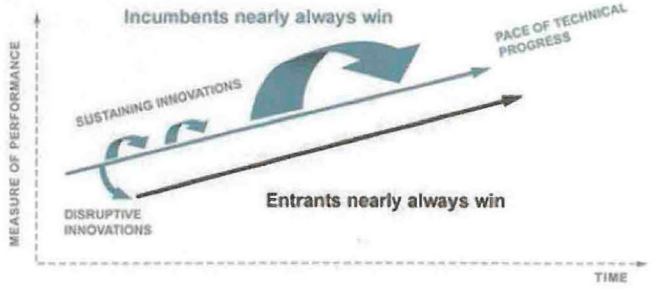
Although the term "disruptive technologies" frequently appears in the media, disruptive innovation is broader and not always the result of technologies. Christensen originally used the term disruptive technologies but subsequently replaced this with the term "disruptive innovation" when he realised that few technologies are either intrinsically disruptive or sustaining and that it is actually the business model which creates the disruption. Disruptive innovations can use new technologies, use existing technologies in new ways or simply create new and more effective business models.

Low-End or New-Market

Christensen distinguishes between two characteristics of disruptive innovation. "Low-end disruption" which targets customers who do not need the full performance valued by customers at the high end of the market, is characterised by lower prices for products and services that are (almost) as good as incumbent offerings. "New-market disruption" targets customers who have needs that were previously unserved by existing incumbents. In practice some disruptive innovations can have elements of both characteristics.

Sustaining Incumbents

Christensen defined the opposite of disruptive innovation as sustaining innovation, which incumbent firms use to maintain and develop the upper tiers of their markets by charging higher prices to their most demanding customers. Sustaining innovations do not create new markets or new categories of customers but rather only evolve existing ones with better value, improved quality and higher performance, allowing the firms within to compete against each other's sustaining improvements.



In many cases low-end disruption begins with products and services that are inferior to those that they are trying to displace. However over time the quality and performance of these products and services improves dramatically. The disruptor firm then improves the products and services and moves up-market to increase profit margins. Eventually the disruptor firm's products and services reach the point where they can outperform and replace the original higher-end products from the incumbent firm.

Greg Pote, APSCA Chairman.

This column tries to provide a different perspective, a vantage point, of the smart device industry and identity-based applications that use secure chip technology. APSCA is not a supplier of technology solutions, but most of our members are in this category. APSCA is also not an end-user, scheme operator or application owner but almost half of the delegates attending APSCA events fit into this category. So we have to understand and balance the viewpoints of both industry suppliers and their customer end-users. We also have to cover all business segments where there are applications of smart devices for securing identities. This gives us a bird's eye view of both sides of the buyer and seller relationship and an overview of all business segments.

A Textbook Example

An example of a disruptive innovation that illustrates all of these points is the mobile point-of-sale (mPOS) business. Square created a low-cost card reader dongle to enable consumer mobile devices to accept card payments. This "new-market disruption", inspired by a friend of the CEO being unable to complete a sale because he could not accept credit cards, was also a "low-end disruption". The subsequent explosion in the availability of low-cost mobile POS solutions quickly created a new market of potential merchants that wanted to accept card payments. Eventually incumbent POS payment terminal manufacturers were unable to ignore this new market and had to adapt their businesses. At the same time Square and their fellow disruptors moved upmarket and continue to challenge the incumbents.

So what innovations have we seen recently in the identity and payments business that genuinely fit the definition of disruptive innovations? How long will it take for these disruptive innovations to take effect and what will be the likely outcomes?

Plastic to Mobile - a Disruptive Innovation?

From the smart card industry perspective, the mobile phone might seem to be a disruptive innovation. Smart card manufacturers in particular frequently talk about how smart phones, through the provision of mobile payment, mobile banking and mobile identity services, look set to replace cards and thereby shrink the size of the card business. Is this really a disruptive innovation? If so then is it a low-end disruption or a new-market disruption and how long will it be before we see the results of this disruption?

The Innovator's Dilemma

The mobile phone might be considered a new-market disruption. Connectivity, displays and computing power should enable smartphones to meet customer needs that are currently unserved by traditional smart cards. The problem is that these are needs that most customers do not know that they currently need - future needs. This is the innovator's dilemma, as Christensen explains in his book, because these future needs can take a long time to become real needs that will support a real business case.

For smartphones to be seen as a low-end disruption that reduces costs (with reduced service levels), card issuers would need to stop issuing physical cards. Today it seems unlikely that banks would want to take such a dramatic step. It is likely to be years before smart phones can completely replace all functions of today's payment and identity cards. Mobile is an extremely important channel for many card issuers but they are still understanding how to use it and are unlikely to sever their relationship with cards yet.

No Zero-Sum

So far the perspective of international payment schemes seems to be that mobile will complement smart cards rather than replace them in a zero-sum game. Today the explosion in smartphone adoption and usage is not leading to wholesale replacement of the smart card business. Mobile is certainly driving banks to reinvent their businesses but scaling down card issuance is not yet part of that reinvention. Might this happen in the next 2-3 years? No. Could it happen in the next 5 years? Unlikely. In the next 5-10 years? Unknown.

So while the smartphone is a disruptive innovation that will impact the smart card business in the long term, this will not happen overnight.

Cloud-based Mobile Payments and the Secure Element Business

One of the clearest examples of disruptive innovation was the introduction of host card emulation (HCE) and cloud-based solutions as a new means to enable NFC mobile payments. Although the NFC mobile payments business was far from developed it could be considered to have several incumbents at the time, including mobile operators, TSM providers and secure element providers, all of whom were affected.

HCE existed well before Google's introduction of HCE into Android 4.4 KitKat in November 2013. Most NFC experts already understood the concept of HCE after its initial introduction to the industry in 2011 but it was not taken seriously by large incumbents, smaller companies and most stakeholders in the NFC ecosystem at that time - a typical

example of low-end disruption.

The endorsement of HCE and cloud-based mobile payments by the international payment schemes in February 2014 quickly gave it a market credibility that made this a new-market disruption targeting the needs of customers that were previously unserved by existing market incumbents. These customers, particularly banks and payment card issuers, needed a solution with lower costs, less complexity, issuer control and independence from mobile operators.

The impact of this disruptive innovation on industry incumbents is already significant. Mobile operators are coming to the realisation that they may have no role to play in the mobile payments business. Solutions providers that have been targeting the TSM and NFC SIM business have had to revise their business strategies. The launch of Apple Pay, and speculation that other handset OEMs will launch similar initiatives, may be the only factors still driving the NFC secure element business for the time being.

Why Innovative Use of Data Could Be Disruptive

But the mobile payments business is not driven by handset OEMs, not even by Apple. The direction of the consumer payments business is driven by the payment card schemes, led by Visa and MasterCard and followed closely by the other schemes that are shareholders of EMVCo. Most of the innovations that they have introduced recently focus on mobile and digital payments but they revolve around innovative use of data rather than secure elements.

Payments to or from Any Connected Device

The payment card schemes are now focused on using tokenisation to enable any connected device to become a commerce device that can make and receive payments. That includes cloud-based mobile payments, HCE for NFC, in-app and all types of digital payments, while also addressing card-not-present (CNP) fraud. This is a new-market disruption to meet needs that were not previously served by the EMV chip-based approach to payments.

Nothing Worth Stealing Here

This disruptive innovation for "digital payments" is a significant shift from the card-based approach, where payment card data is protected by securely storing it in tamper-proof chips. The new approach is to simply ensure that there is no valuable data to be stolen. Traditional payment card data is "devalued" by replacing it with tokens. Additional transaction data is included that restricts the transaction to a single use with a single device. In the future, the phrase "EMV specifications" is likely to cover more than just chip-based approaches to security.

The impact of this disruptive innovation is difficult to predict at this point in time. It seems clear that the payment card schemes that drive consumer payments have decided to use data as the solution to securing all types of digital payments through all devices, rather than rely on the secure ICs that are required for card-based payments. Apple is using a secure element for their own business model, not for any reason dictated by the international payment schemes or their issuing banks. Other handset OEMs may decide to include secure elements in their smart phones but this would also be for their own business reasons.

Longer Term Disruption

The globally interoperable specifications for consumer payments using mobile devices and digital payments will not require secure elements although they will allow for them. In the short-term the impact might not be significant as some handset OEMs are expected to build secure elements into their smartphones to try to emulate Apple Pay, or something similar. It will be easier to persuade handset manufacturers to add secure elements to their smartphone designs sent to persuade international payment schemes to design payment products that use those secure elements. In the longer term it would seem that this disruptive innovation could lead to reduced demand for embedded secure ICs to support mobile payments in smart phones.

Conclusions

This short article only scratches the surface but you can see that there is more to disruptive innovation than meets the eye. The term has already entered everyday business conversation even though many people are not aware of what it really means. Whether disruptive innovation is actually present, or not, is often not a clear-cut case. Not every innovation is disruptive. From both the "low-end" and "new-market" perspectives, smartphones are not always guaranteed to be disruptive. That said, most of the recent disruptive innovations in this industry relate to various aspects of digital payments and mobile devices. Where these innovations are genuinely disruptive the impact can appear rapidly or it can take years. Most of the disruptive innovations discussed here affect relate to the payments business but you can expect to see them reappear in the identity business at a later date.

[1] - http://www.economist.com/blogs/economist-explains/2015/01/economist-explains-15
[2] - http://www.claytonchristensen.com/key-concepts/