ISB CTO

Week 3: CTO as Innovation Catalyst: Discovering Innovation Opportunities

Video 1: Module Overview

When we talked about the role and value of a Chief Technology Officer, we said that one of the key elements of the role is that as a strategy catalyst. Another important role that a Chief Technology Officer plays is that as an innovation catalyst. So here, we will dig deeper into what does that role mean?

What are the types of ideas, concepts and frameworks will help a Chief Technology Officer be an effective innovation catalyst? We will focus upon how does a Chief Technology Officer be an effective catalyst in discovering opportunities for digital innovation. We will talk about a concept called digital innovation sweet spots. What are they and how can you identify those spots? First, we'll learn about a tool called business model and how can we develop a business model? Second, using the business model as a lens, can we identify a portfolio of opportunities, which we call digital innovation sweet spots? So, those are the topics that we will focus upon in this module.

Video 2: Business Models

A business model is a useful and fundamentally important tool, through which we can understand a firm's strategy. We can understand how does it generate value in a sustainable manner and use that as a foundation for identifying opportunities for digital innovation. This is a tool that provides a holistic approach towards describing a firm's business strategy in an actionable manner. As you will see on the graphic, there are four important components of a business model. They are: what is the customer value proposition?

What are the critical resources that the firm applies in support of its value proposition? What are the critical processes and capabilities and what is the profit model? Let's try to understand each one of them turn by turn. We already talked earlier about the customer value proposition, which is really fundamentally asking three important questions. First, who is the customer? Sometimes, firms make the mistake of not being laser-focused on who is their customer and who is not their customer, and we'll show that with a couple of examples. So, who is your customer? Secondly, how do you build that relationship with the customer? What is it that you deliver in a superior manner that helps build that relationship? Is it because your ability to do product innovation? Is it because you are the lowest cost provider, and you provide sustainable low cost value? Or is it because you really are knowledgeable about the customer? You have imagined your business about the customer, and you can identify their different needs through cross-selling and upselling, very different ways of serving the customer. And the third aspect is, which of these are important ways of delivering value to the customer. So, the value proposition is based upon the realisation that strategy really has to be built

around the customer needs. We talked earlier about delivered and latent needs, the customer needs and how do you do that in a superior manner.

Now, once you have identified the value proposition, the next two questions are: how are you going to deliver them in a superior and a sustainable manner? You do that through resources and processes and capabilities. What are resources? Critical resources are the assets that the firm will invest in. This could be human talent, this could be brand, this could be people, this could be store location, it could be land. These are all examples of critical resources. Similarly, what are the critical capabilities or processes? Examples of processes are supply chain management, manufacturing, operations, talent management, financial management. What is different about them from resources is that resources are things you can procure, whereas processes and capabilities are things you build in your organisation through culture, role and organisational values. So, these are two fundamental things, which describe how do you deliver the customer value proposition. The fourth element is the profit model, which is, how do you generate profit? How do you earn revenue, how do you manage your cost structure? Let's look at a couple of examples to understand how we build a business model.

As a first example, let's consider a well-known company, Apple. I would encourage you to follow me along on a sheet of paper and write down four different elements. These are the elements of a business model, which we said are, customer value proposition, critical resources, critical processes and capabilities, profit model. Let's explain the Apple business model in these terms. Who are Apple's customers? Apple's customers are the urban segment, technically literate or digitally savvy, who look at technology as an important part of their life, in everything they do. Their work, their entertainment, their fitness, their being on the move. So, Apple really looks at this urban segment. Interestingly, they have a high willingness to pay. Apple products are not cheap, but because of their focus upon understanding the wants of this urban segment, that's their value proposition that they provide seamless online access to content that shapes the lives of this segment. Who is the customer? Urban segment, value proposition, seamless online access to content. How does Apple deliver this? What are its critical resources? Most fundamental resource that Apple has is brand.

Brand is an asset and Apple is among the world's top five brands. Why is the brand an asset and a resource? Because brand drives traffic. It lowers the cost of customer acquisition. Another important asset or resource that Apple has, are their product designers and architects. The world's best product designers choose to work at Apple, and they are a critical resource and an asset. Another important asset, a resource, is Apple's relationships with the music companies. This is what let them introduce a new industry first, which is, selling single songs rather than albums. So, critical resources at Apple. What are their critical processes? Apple is legendary for product design, so that's a critical process. Apple does not manufacture, it outsources, but its process for managing outsourcing relationships, where on a given day, its manufacturers in China are shipping almost a million phones out of the airports. So, Apple's ability to manage that relationship at cost, quality and value is a critical process.

And finally, Apple has a tight control of sales and marketing, so that's an example of a process. Remember the fourth element is a profit model, so what is Apple's profit model? Apple focuses on high willingness to pay, which means that the revenue is generated through high prices and through high margins. That's the key to Apple's profit model success. So, hopefully you can see the four elements, and how we have used that to describe Apple's strategy.

Let's compare that with a different company in the retail space, Walmart. Like most retailers, Walmart's value proposition is everyday low price. They serve customers who are looking for price and value, who are looking for large product selections and available product selections. But Walmart deliberately chooses customers who are price conscious. It does not attract customers who are brand or label conscious, they are the ones who go to Macy's. The ones who come to Walmart are price conscious. So, that's their 'who is the customer' and the value proposition is 'everyday low price'.

So, what are the critical resources that Walmart builds to deliver this value proposition? First, it is land. Walmart is famous for acquiring large acres of land, building large stores, and acquiring land when the prices are cheap so that they can keep the cost of the store and the parking lots within control. Another important resource at Walmart are their talent, their IT talent and their people. So, those are examples of critical resources.

What about processes? Walmart is legendary for supply chain management. They do their own supply chain management. They are legendary for merchandising, through which they maintain tight cost control, two critical processes for a retailer. When we think about their profit model, you will see the contrast with Apple. In the case of Walmart, their profit model is built around thin margin, meaning low margin, not high margin in the case of Apple and large sales turnover. So, thin margin, high volume turnover is how they generate their sustainable profit. So, we have seen two examples. Let's think about your own company and how would you define your own company's business model? So, I encourage you to take another sheet of paper, draw the four quadrants: customer value proposition, critical resource, critical processes, profit model. And take a look at how you would generate that business model.

Video 3: Digital Sweet Spot

Now that you know how to describe strategy in terms of a business model, the next step is, how can we identify opportunities for digital innovation?

Are there certain sweet spots for digital innovation? I'll introduce you to a framework which says that there are three areas of opportunity that will help us identify innovation opportunities or the digital sweet spots. They are: first, look at what are you doing with your customer and how can you enrich the customer experience. Second, look at your core operations, manufacturing, supply chain, warehousing, operations, sales, service and how can you streamline, synchronise and improve their effectiveness? Third, can you create new products and services? We call them can you create digital products and services, digital product and services innovation. And in future videos, we'll explain each one of them with some examples.

Video 4: Enriching Customer Experience

One area of digital innovation sweet spots is to focus upon the customer experience. How can you enrich the customer experience?

What ideas can you generate, and how can you define them as innovation projects? Today, with technology, there are numerous ways in which we can enrich the customer experience. For example, with mobility and social webs, we can create better reach and engagement. In retailing as an example, there is a concept called geofencing, geolocation, geotargeting. What they all mean is that every customer's smartphone is an opportunity for sensing their location and identifying opportunities for creating impulse moments, micro moments. If they are in the vicinity of a store or dealership, you can identify them. With smart analytics, you can immediately learn who they are, what they do, what their needs are, preferences are, and can you create a micro moment. Invite them in for their favourite product or service. Starbucks. You walk by a Starbucks location. Can they recognise you and offer you your favourite beverage at the deal to entice you to walk in? That's what we call creating reach and engagement.

Similarly, many companies have a lot of data about their customer. Can they derive insight from the data and put that at the heart of enriching customer experience? There is a credit card company in the US, called Capital One, and they have a very catchy campaign and slogan, "What's in your wallet?" What they really have done is they have recognised that they have a lot of data about what their customers use the Capital One credit card for. What do they buy? So, based upon that data, they can analyse and identify their preferences. Who are the people like them, what do they buy? And they can help them with better deals for a car, for clothes, for music, wine, depending upon what their tastes are. So, Capital One is essentially looking at their customers' credit card purchases as data, generating insights and building greater value in their partnership with their customers. Similarly, with the Internet of Things, the ability to seamlessly connect the physical and the digital has led to creating omnichannel experiences. Let's look at a couple of examples. So, I'm going to show you an example of a retailer called Old Navy. Now, Old Navy is a retailer which is a mid-quality, mid-style retailer. What we mean by that is, they are not like Walmart, where they are focused on everyday low price and those who are looking for low price. Neither are they like Macy's on brand labels and expensive labels. They cater to working professionals who still are conscious and attentive to how they dress, but they are attentive to being dressed professionally. They frequently like to change their professional dresses, but they don't spend a whole lot of money.

So, think of an example and you will see this in a graphic. Think about a young woman who is an Old Navy customer, and she is walking by an Old Navy store. And that's a moment for creating reach and engagement. With geofencing, they know it is her, they know what her tastes are, and that's a perfect moment to create a micro moment by sending her an invitation and a deal, "Some new styles of your professional clothing are in. Come on in, try them out." Now, the traditional method is walk among the aisles and keep searching for them. That might be laborious and time-consuming. How about building a digital screen when she walks in, and presenting a virtual display, augmented

reality of all the new arrivals and having her sample through them, click and select through a touchscreen, the three or four designs that she is interested in.

What's the next element in a shopping experience? Social advice. So, how about where she can easily take snapshots of those designs, Instagram or social media, to have a moment of social connection with her friends, confidants, advisors and create a social shopping moment, where they are giving her advice on what she might consider, because they are familiar with her taste, and they are giving her advice. Assuming that's helpful, the next stage is trial. The traditional model is going to a backroom, try it out. You may like it, but you may find that it is not in your size. Or some people might find that it is such a pain to keep taking off clothes and trying new things. So, how about, again using augmented reality with a digital mirror, which actually can take her measurements and show her how that particular clothing would look on her, customised to her. If she is satisfied and places an order, then automatically you can search in the backroom to see if the exact style and the measurements is available. If it is, bring it out and sell. If it is not, then immediately confirm the order and, indicate that her exact measurement and the dress will be shipped to her home within a certain amount of time, still taking advantage of that moment.

What's the next step in that purchase process? She may still want to price compare. And when she compares on her mobile phone, she might find, in this example, that at Old Navy, the price is $24.99. She can buy it cheaper at Amazon, four dollars cheaper, or she can spend more money or at Macy's it's four dollars more. The quality of the shopping experience and the richness of the experience that she has had might be sufficient for her to say, "I am in the moment, I don't know what I am going to get at Amazon, and what I get at Old Navy, so it's still a good deal." The next step in the purchase process is payment, so supporting it through digital payments. So, what does this example teach us? First, in order to enrich the customer experience, map the customer journey, understand the steps, enrich each step of the process through creative design and technology, so that the whole shopping experience from the invitation to purchase has been so enriching, that it builds loyalty even in a retail sector, which is subject to price competition. So, this is an example of how do you think about enriching the customer interface.

Another example. There is a financial services company called USAA in the United States. They are like any financial services company except they are unique in one aspect, namely, their clients are only military families. Now military families, they frequently get displaced very often. One member of the family goes on long tours or duty, leaving the rest of the family behind. USAA is committed to all their needs, integrated access to banking and financial services. They decided to take this one step further by focussing upon two important needs that their customers have: buying cars, buying homes. So, they created an app called Home Circle and Auto Circle, through which they bring together for buying a home, the real estate consultants, the inspectors, the repair people and financing, so that the families can take all the pain out of searching for a home, finding a trusted home, getting the maintenance inspection done, and getting a loan. Same thing with cars, the Auto Circle. Again, an example of how do you enrich the customer experience. So, I hope that these examples and these concepts

help you think about enriching the customer experience as one example of discovering the digital innovation sweet spot.

Video 5: Power of Core Operations

A second area of opportunity in the digital innovation sweet spot, instead of the customer focus upon your core operations. How can you exploit technology to enhance the power of your core operations?

What does that mean? Generally, firms seek productivity, quality, reliability and cost to serve as metrics of the effectiveness of their operations. They want to produce high quality, but at the same time, they want to keep the cost of production under control. The challenge is, increasingly, the same companies want to serve their customers with personalisation and customisation. So, there is a fundamental tension. The more you customise at the customer end, the more costly it is to produce that product variety. So, the dilemma is how can we synchronise our operations for standardisation, quality, productivity and cost control. while still serving variety and customisation at the frontend? How do you balance standardisation and variety? Today, companies are beginning to examine how technologies can help us with that. A great example is Asian Paints. Asian Paints is an incumbent paint manufacturer. They have existed for many years, and they excel at paint production. In order to produce paint with high quality, reliability and low cost, they standardise upon the number of colours that they manufacture. So, let's say they manufacture 10 colours, they can deliver them very cost effectively with high reliability and quality. The traditional model has been sell indirectly to the customers through the dealership network. The challenge for Asian Paints was, that their customers no longer wanted to simply buy paint. As they became affluent, as they began to own homes, what they wanted to do was build a decor, which is build an ambience by painting their walls in a unique shade that reflects their personality, their choice, that reflects the furniture that they have. And the ten colours that Asian Paints sells, was not good enough for them.

So, the challenge facing Asian Paints was, here is the business opportunity to enrich the customer interface by not selling paint but helping them design decor. But if that means, selling 150 different shades of paint, it is expensive. It is not sustainable from an operations point of view. So, how do you do this? So, their brilliant solution was to create a field sales force and empower them with iPads. So, imagine a field salesperson going to a customer's home or apartment and giving them an iPad and saying here are the 10 colours we manufacture, but you can design your own shade on this iPad. So, go ahead and create your own unique combination by mixing and matching these ten colours, which is the equivalent of saying the customer is now the co-designer, the co-creator of their decor. Maybe their whole family gets involved with and they create a shade that is unique and satisfying. They can then hold up the iPad against the wall, against their furniture to see if this is the right shade that we want. Once they are settled on it, the iPad can capture how did we produce the shade, what combination of 10 colours and in what percentages resulted in the shade, and you can automatically capture that. The next question is how much paint do you need? Again, remember augmented reality. Hold that iPad up against the walls, and it can automatically measure

the dimensions, and estimate what is the total volume and translate that into what number of cans of red, how many cans of green, how many cans of yellow and so on. And also, create the mixing instructions and the directions for buying the paint. At that moment, the customer can either tell the salesperson, can you order this for me, or go to a painter and give them that slip and say this is the shade, these are the instructions, do it, or go to the dealer give them that slip, they will create the mix, mix the shade, give them instructions and paintbrushes and they can go home. It is a brilliant way of applying digital innovation to solve a fundamental tension, and Asian Paints increased their market penetration, while still being able to hold the cost and productivity. 10 paints, 150 decors made possible through the power of digital innovation.

Another way of thinking about core operations is balancing control and innovation. Innovation requires experiments. Experiments are risky. Experiments can go out of control. So, how do you allow freedom to experiment, while still maintaining control? So, think about mobile apps or websites. Those are platforms for customer experiments, but at the same time they provide enough control guides to make sure that the experiments don't bankrupt the company or damage the company's reputation. Amazon does many experiments, but within the framework of its website or apps so that there's still some control. Another way of thinking about core operations is understanding the pain points and how technology can do better.

Let me share with you an example to illustrate these concepts. There is a British grocery retailer called Tesco, a dominant retailer in the Europe and UK. When they decided to enter the Korean market, they realised that there were barriers to entry. And what were they? When you think about Korea, what's the first thing that comes to mind? It is an island. Land is scarce, land is limited. The density of land occupation is such that there is very little land available, or whatever is available is expensive. Why does that matter for a grocery store? Because they need land, they need land to build a giant grocery store to display what they have and attract customers. So, Tesco realised that already the barrier to entry was high because they could not get quite land, or the land would be so expensive that their costs would be very high. So, what do they do?

As they started thinking about Korea, they realised something else about Korea. You may guess that Korea is one of the most digitally advanced country. People have 5G phones and they have the latest technologies in the form of smartphones. Secondly, most people in Korea don't drive, they take the train to work because driving is expensive with limited parking spots. So as a result, a lot of their daily lives are organised around train stations and trains. That led to a brilliant idea at Tesco. A wallpaper pasted on the walls of a train station displaying all the products that Tesco is selling. And people can walk up to what they want to buy, use their smartphone, scan in the QR code. At the operations end, Tesco operations can consolidate the shopping basket. The customer can also indicate when they want this to be delivered. And through geotagging or geolocation, the operation centre can sense when the customer is headed home, and they can ensure and synchronise in such a way that the shopping basket is delivered at their doorstep the moment they are there, because people don't want their groceries to be sitting on the doorstep for long hours. This was a brilliant way of using digital innovation to create a virtual grocery store, synchronised with a giant

operation centre using geosensing to synchronise delivery, and very quickly, Tesco landed into the number two spot. So, I hope that this example inspires you to think about how do you think about digital innovation and the power of core operations?

Video 6: Digital Product and Services Innovation

A third way of thinking about digital innovation sweet spots is to think about product and service innovation. Can you identify new opportunities for product innovation?

Remember, earlier we said reimagine your business around the customer, not around the product or service that you are currently selling. So, in that spirit, can you think about not selling standalone products, but think about consumption platforms, meaning that what other things does the customer need along with your product and service? What makes that consumption complete? Can you provide them with smart context for their consumption? Let's think about an example. The example is Nike. Nike sells sneakers and their sneakers are expensive. People who buy Nike sneakers have a high willingness to pay. As Nike started understanding their customer and what do they do with the sneakers, they realised that one significant segment of people who buy their sneakers are fitness freaks. People who run, people who keep track of their statistics, like how many miles did I run, where did I run, what was my heartbeat, pulse, and all of that. They are members of communities which like to brag about their fitness, but they also like to share that data with their doctor. That's their lifestyle. That realisation led Nike to realise what they were not selling are sneakers, what they were selling were fitness platforms.

So, they embedded a Bluetooth into their sneaker, and that Bluetooth syncs with the smartphone that the runner has, through which they can listen to music. They can track their running, they can track their pulse, heartbeat, and they can build a record of the vital signs, which they can post on to social community or which they can share with their doctor. So, a great example of taking a standalone product, understanding the context of its consumption and creating a consumption platform in the shape of a fitness and health platform, not a sneaker, fitness and health platform. So, I hope this gives you an example, an inspiration for how you think about digital product and service innovation.

Video 7: ING Case Study

How can you apply some of the principles and lessons that we have talked about as an innovation catalyst?

I am going to illustrate the concepts through the case study of ING, which is a legacy incumbent firm. When they looked at their emerging competition, and they looked at the digital giants and tech entrepreneurs, they realised that there were four important challenges on the road to digital transformation. First, consumers had high expectations from that bank. Consumers wanted the same type of experience that they experienced with other consumer firms. For example, they wanted the Amazon type of experience with ING. They wanted the experience that they got from FinTechs and from the digital giants. So, this was a big change for ING, which was not built for that kind of experience,

particularly with the rise of the digital natives. Digital natives are the millennials. Their parents are very different. And so, ING realised that while they had made investments in branch offices and ATMs, the expectation from the millennials was, 'Banking is important to our life, but we don't need to go to the bank.' So, how do you bring the bank to the customer whereas the traditional model had been the customer comes to the bank? Third, as an opportunity with the rise of mobility and Internet and the cloud, how do you build a platform of opportunities that takes advantage of smart, mobile, analytics and cloud? And then of course, there was a rising tide of regulations to protect the consumer interests.

So, a dilemma of how do you use the data while still respecting the rights of privacy and regulation? So, what was their digital vision? It was to be clear and easy with an anytime anywhere service offering that makes the customers make smart decisions and keep getting better. How did they do this? Once again, they identified enriching the customer interface as the digital innovation sweet spot. So, in order to enrich the customer experience, they focused on launching a new mobile management application in the UK in 2017. This application was called Yolt, and it allowed the users to manage their financial holdings across different institutions.

Similarly, they were among the earliest to experiment with a voice-driven AI interface called Ginger, which would enhance the customer's experience by enabling voice payments. And third, in order to build a new ecosystem, they created a €300 million fund to invest in FinTechs and they created about 110 partnerships. So, what do we learn from this case? Once again, the importance of the business model, identifying the innovation sweet spot, here, enrich the customer offering. looking at different ways in which those interfaces can be enriched through mobile app, through a voice-driven AI. And then of course, recognising that there is a need for a new ecosystem and therefore becoming a venture capitalist and investing in startups either to learn from their experiments or in the future to acquire the ones which seem very promising.

Video 8: DBS Case Study

Let's look at the example of a bank called DBS, to understand some of the concepts that we have talked about the innovation catalyst role, how do you spur innovation and how a CTO could help in some of those conversations. So, DBS is a bank in Singapore. It has a history of being in the banking sector. And one of the challenges was that its customers were becoming younger and younger. We talked about the digital natives, but at the same time, unfortunately for the company, it was perceived a bureaucratic, slow and too many rules and procedures. So, the digital vision at DBS was to be clear and easy, with an anytime, anywhere service offering that would make customers, make smart decisions and keep getting better. In other words, their motto was, "How can we make banking joyful?"

And in looking at their business model, they identified three principles. First, be digital to the core. Now remember, this is a traditional bank, that was not necessarily the case with them. They used technology primarily for back-office functions and now their new goal was digital to the core. Everything we do in transactions with our customers, in how we operate and all the things.

Secondly, be customer obsessed rather than being inside out, meaning that we design products, and we offer them to customers. If you remember, we said the new rule is imagine your business or reimagine your business around your customer. So, be customer obsessed. Look at yourself from the outside in. Look at yourself through the eyes of your customer and what do they expect? What will they want if you want to make banking joyful? And third, for a legacy organisation with a rich background and past, how do you now create a start-up culture? How do you start building a culture of risk taking and experimentation? So, what did they do? They needed an inspiring vision, and that inspiring vision was to be the D in GANDALF. For those of you who are Lord of the Rings fans, this is a reference you will easily relate to, Gandalf, the wise wizard. But here, GANDALF means something slightly different, but it is a clever play on the pun, again, to inspire people. GANDALF stands for: G is Google, A is Apple, N is Netflix, again, A is Amazon, L is LinkedIn, and F is Facebook. Take a moment to think about what's common among all these companies. And if you said that they are digital to the core, you would be right.

So, DBS's vision was, we should be spoken of, in the same league as these technology companies. We are the D in GANDALF, which is a way of saying don't look at other banks but look at these technology companies because that's how we get digital to the core, that's how we get customer obsessed and that's how we build a start-up culture. So, compare yourself with technology companies, not banks. Shift from specific projects to a platform. Organise for success through agile processes. Automate as much as you can so that you can be fast, and design for modern systems. These are a couple of ideas we will connect back when we talk about the role of the CTO as a technology architect. Now, what was the result? The transformation was to embed themselves in the customer journey. They launched Digibank, which is the first mobile-only banking app. They were among the first to bring a banking app to the market. That was a huge transformation for what was an incumbent legacy banking firm perceived as slow and boring. So, what were the lessons learned? Their business model itself was fundamentally sound, but they identified, enriched the customer interface as their digital innovation sweet spot. And in order to enrich that customer interface, they realised that they needed to be the D in GANDALF. They needed to be customer-obsessed, and they needed to be digital to the core and they needed to build an entrepreneurial culture. Ideas to think about through this case study of the digital transformation at DBS.

Video 9: Module Summary

And we can say that the first step is to focus on understanding the business model. You will recall that the business model has four components as a tool: What is the value proposition? What are the critical resources? What are the critical processes and capabilities, and what is the profit model? So, start with understanding the business model. Then, in looking at this business model, what are the innovation sweet spots? We said those sweet spots are enrich the customer interface, synchronise core operations, and third is create new products and services. I hope that this framework helps you as you think about your own organisation as you test your skills about becoming an innovation catalyst.