IT Value Chain and Competitive Advantage

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Abstract
This entry presents a different viewpoint on how information technology (IT) or non-IT companies would be able to leverage the power of technology to gain competitive advantage. We look at different IT disciplines and draw an analogy with the coffee industry; an industry based on commodity that faces similar challenges. It draws upon Michael Porter’s Value Chain framework and Nicholas Carr’s perspective on IT (2003) to provide some insights into the strategic importance of IT. It gives new insights on how IT companies could construct a robust enough value chain to cater the right products to the target market by understanding how the different players in the coffee industry recognized and utilized each stage of their value chain. “Blending” or “proper integration of technology” must be paid special attention as IT implementation often relies on adequate utilization, good talent, and support to reveal its full capabilities.

INTRODUCTION
The value of information technology (IT) to a company’s business has long been a case of debate, often due to the misalignment between the goals of the business and the IT department, the latter of which is often perceived as a commodity. In most cases, the IT department is taken for granted and designated to be not only as a “call center,” but also a cost center for the company. The strategic importance of IT diminishes with the advances in technology; what is important now, rather, is to approach how investments in IT will change the strategy. Business leaders often fail to see the significance of the IT department outside what they assume to be core services, namely keeping the network and operations running smoothly. This is one of the primary reasons why businesses fail to fully utilize IT—instead of being in the driver’s seat, IT is put in the backseat as a commodity.

However, it is important to note that not all commodities are created equal. Different people can use even mundane commodities in a myriad of ways. A good example of this scenario is coffee. There are only two major types of coffee beans—Arabica and Robusta[2]—yet there are innumerable businesses worldwide (local, international, big, and small) making infinite blends of coffee. How is this possible? It is also interesting to see that there are only three factors that affect the quality of the consumable cup of coffee, which are 1) the type of bean; 2) how the coffee is grown and harvested; and 3) the blend.[3] How, then, could a company distinguish itself from the competition in a saturated market? How could a company construct a robust-enough value chain, which, when coupled with a strong strategy, caters the right products to the target market? To answer these questions, we look at different IT disciplines and draw an analogy with a coffee industry; an industry based on commodity that faces similar challenges.

In the IT term, the “type of bean” corresponds to the “purpose of IT”—whether it is strategic or routine; “Growth and harvesting” refers to “in-house or third party”—whether it is internally or externally developed; and finally, “Blending” means the proper integration of technology with the human capital. We believe that by understanding how the different players in the coffee industry make the best out of their commodity would give insights on how IT or non-IT companies would be able to leverage the power of technology to gain competitive advantage.

THE TYPE OF BEAN
The major determinant of the success of a coffee shop is the bean used in the coffee blends. Bad beans mean bad coffee but good beans do not necessarily mean good coffee. Ultimately, the blend affects the final flavor. However, it is all built on the foundation of the choice of bean: the superior Coffea Arabica or the inferior Coffea Robusta,[4] or a mixture of both. Each has distinct aromas, varying balances of sweetness and bitterness, and body characteristics. To get the best result, a good understanding of each of the beans and its characteristics is required. Table 1 shows some differences between these two types of bean.

Applying the basic concept of the type of beans to IT, this can represent the choice in direction that companies would use technology to run the business, either as enablers of excellence and distinction (primary activities), or as a basic infrastructure for routine work (supporting activities). Business theorists have been debating this issue for quite sometime until Michael Porter proposed a value-chain framework that was based on the idea that even though a firm can be viewed as a collection of activities and a set of resources and capabilities, activities are what firms do, and they define the resources and capabilities that are
relevant to the firm. In other words, IT is just an enabler (see Fig. 1). However, we can easily see that one firm’s supporting activity is another firm’s primary activity. In this case, a firm is running IT as a business where the entire value chain depends on IT capability of planning, building, and running the business.

The choice of IT and technology direction for a company is an important part of the company’s strategy. Should the assumption be that the IT department’s only purpose is to build the enterprise infrastructure and basic services to support daily operations? Should IT augment the business goals and objectives through continuous development and improvement of services and applications? Should these services and applications be outsourced or developed internally? What is the advantage of customizing or using an off-the-shelf application, commercially available product over reinventing the wheel?

It is important here to distinguish between the IT strategies the company would adopt and the business model the company follows. “Business models describe [...] how the pieces of a business fit together. But they don’t factor in one critical dimension of performance: competition.”

What will set apart a company from the competitors then is the strategy. However, this does not mean that the two are mutually exclusive; this is where alignment between the IT strategy and the business model takes place.

Take Zara, a Spanish clothing and accessories retailer, for example. IT provides the competitive advantage for the firm by allowing a fully integrated vertical supply chain network with real-time updates to enable the business model, based on short production and delivery cycles. The typical seasonal cycle for an apparel store is 4–6 months, whereas, Zara, enabled by technology, achieves a delivery time of only two weeks. This is due to the fact that at Zara, each branch manager is connected to the central system to update on a daily basis on the customers’ requirements and expectations, and emerging trends specific to that store, for the awareness of the entire supply chain. This transparency allows for the timely management to handle all the logistics for the two-week delivery. Such an integrated supply chain, made possible by technology, makes it difficult for competitors to replicate, or, at least, replicate as effectively. Zara has set itself apart from the competition, affirming what Porter said: “A company can outperform rivals only if it can establish a difference that it can preserve. It must deliver greater value to customers or create comparable value at lower cost, or do both.” Had the direction of IT been different, Zara as a company would have functioned in a completely different manner and the whole company direction would have taken a different route, as can be observed from the other apparel retail chains under Inditex.

Knowing the exact purpose of IT implementation would help with the choice in direction to be made (i.e., the type of bean). As such, in assessing the role of IT in a company, the real question to be asked is not how much IT would cost, but rather how can the technology be used to bring in money.

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**Table 1** Differences between Arabica and Robusta Coffea.

<table>
<thead>
<tr>
<th>Description</th>
<th>Arabica</th>
<th>Robusta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date founded</td>
<td>1753</td>
<td>1895</td>
</tr>
<tr>
<td>Chromosomes (2n)</td>
<td>44</td>
<td>22</td>
</tr>
<tr>
<td>Time from flower to ripe cherry</td>
<td>9 months</td>
<td>10–11 months</td>
</tr>
<tr>
<td>Yield (kg beans/ha)</td>
<td>1500–3000</td>
<td>2300–4000</td>
</tr>
<tr>
<td>Root systems</td>
<td>Deep</td>
<td>Shallow</td>
</tr>
<tr>
<td>Caffeine content of beans</td>
<td>0.8–1.4%</td>
<td>1.7–4.0%</td>
</tr>
<tr>
<td>Shape of Bean</td>
<td>Flat</td>
<td>Oval</td>
</tr>
<tr>
<td>Typical brew characteristics</td>
<td>Acidity</td>
<td>Bitterness, full</td>
</tr>
</tbody>
</table>

Source: Adapted from Coffeechemistry.com

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![Fig. 1 Porter’s generic value chain.](image-url)
GROWTH AND HARVEST

A typical coffee farm ranges in size from small and traditional to massively large. However, size is not necessarily a factor in determining quality; other plants present in the farm will. In the coffee industry, well-integrated agricultural systems where coffee plants grow alongside other types of plants will provide a natural and more harmonious growth of the coffee plants. In addition, coffee plants that were grown naturally where plants were allowed to adapt to their natural habitat should provide higher-quality beans for roasting and blending, whereas the mass-produced coffee plants should be of inferior quality. In addition, the way the crops are harvested also plays an important role in determining the quality of coffee. A manually harvested crop typically done in smaller farms should provide better-quality beans, compared to the mechanical harvesting typically done for mass production in the bigger farm.

In the IT world, this can be translated as the difference between developing a solution in-house that suits the business needs, or resorting to a third-party commercial supplier of a solution that could or could not be customized. Thus, IT growth in a company does not necessarily mean the growth in volume (i.e., it is not the increase of storage capacity or servers or other hardware/software); rather, it is the growth in maturity of IT. This takes place in the transition in the IT value chain from demand/relationship management to solutions development (see Fig. 2). The focus is on the word “development,” the reason being is that the creation of IT tools and/or (with an emphasis on “or”) the increase in creative skill in using the tools is what gives the company the competitive advantage. Theoretically, knowing what the full picture looks like makes it easier to put the puzzle pieces together, i.e., with the direction from the demand/relationship activity, core and value-added services would emerge to form the full picture.

To illustrate the concept of IT value chain further, let’s take a look at Li & Fung, a global trading group based in Hong Kong. Initially, the company had little to do with IT but soon realized the potential of not only investing in the Coffea Arabica type of IT, but also cultivate it internally, given the sensitive nature of the communicated information as well as exposing the business model to possible threats. In 1995, the company established a global intranet to streamline the internal communication between all offices and realized an immediate result. The value added was that tracking and inspection, a core part of Li & Fung’s business model, became real-time. In 1997, the company rolled out a similar yet customized implementation, linking the company to their customers. The implementation facilitated the communication across the supply chain, promoting real-time monitoring and quick response manufacturing. In addition, it cleverly set up the network to allow participating companies to learn from partners up and down the value chain. A major influencer on this decision is the customer where each value chain is tailored to different customers. At Li & Fung, IT enablement and continuous improvement is critical—rather than placing IT in a reactive mode, it was set to seek out opportunities. By understanding the current resource assumption and the visibility of what’s coming, both internal (value-added stages within the company) and external (upstream and downstream distribution processes) value chains were explored, leading to a strategic understanding of customers’ needs.

Li & Fung’s solid-distribution network was augmented by an IT system to add value not only to the company, but also to all its business-to-business customers. Though no research or literature has been done specifically...
to Li & Fung, Crain and Abraham\(^\text{[13]}\) applied their approach to companies such as Wal-Mart and Nike. However, if a customer value chain is to be constructed for Li & Fung, it could be deduced that IT growth within the companies has been cultivated with the entire supply chain in mind.

Similarly, if we were to apply the IT value chain (Fig. 2) to Zara, we can see the value added to both the primary and support activities provided by IT at Zara. Point of sales (POS) at all Zara’s stores are linked to headquarters to track how items are selling, what the customers want, and what they like the least. This information is transmitted daily from stores to designers to keep each store and the entire Zara clothing line at the cutting edge of fashion.\(^\text{[8]}\) IT is used to support tight collaboration among designers, store managers, market specialists, production managers, and production planners. As a result, IT enabled just-in-time (JIT) strategy where orders are received and promptly processed and delivered. This way, Zara can be very timely in responding to customer preferences. IT not only adds value to Zara’s processes but suppliers and customers in its supply chain also realize value added by IT. Most notably, Zara’s customers are better served as a result of applying IT in an appropriate and timely manner and in proper alignment with its business strategies, and needs.\(^\text{[7]}\)

**THE BLEND**

The type of bean and cultivation method will only get a coffee retailer so far as the overall taste of coffee is not dependent on one type of coffee classification. As coffee shops and chains are innumerable around the world, the final piece of the puzzle to their success is the list of different coffee blends they offer. A blend means using different combinations of Arabica or Robusta coffees to create a different taste.\(^\text{[15]}\)

Let’s take a look at Starbucks, one of the leading retailers, roasters, and specialty coffee in the world. One of the key success factors of Starbucks is product innovation. At Starbucks, innovation involves a cycle of testing different blends, research, as well as testing the blends in-store, mostly done by the baristas.\(^\text{[15]}\) Baristas are not just baristas at Starbucks; they are a critical driving force in selling the drinks, in innovating new blends that lead to Starbucks differentiated drinks, and in building relationships with the customers. Customer loyalty and customer satisfaction are also directly linked to the success of Starbucks.\(^\text{[16]}\)

In terms of IT, blending is the process of taking already-established IT services and fusing it with human intelligence to go forward with new ideas. Only because a company has the correct type of coffee does not mean it will produce the best coffee; similarly, a company possessing the latest technology will not guarantee its competitive advantage and market share retention. As an ongoing part of the development cycle, IT services and processes should always be revisited to ensure that they are still aligned with the business objectives as well as tap into previously unexplored areas due to the lack of prerequisite technology.\(^\text{[7]}\) Additionally, the strategic needs of the customers should be explored using the value-chain analysis as discussed in an interview with Margretta in “Joan Magretta: What Executives can Learn from revisiting Michael Porter.”\(^\text{[17]}\)

International express courier service FedEx, for example, is known to be the leader in automation advancements and technological leadership. In 2003, FedEx launched the “Six-by-Six” IT Transformation program in the Europe, Middle East, Indian subcontinent, and Africa (MENA) region to improve its IT-service delivery to its business partners. At FedEx, technology is just the enabler and the employees are the real reason behind their success stories. The project would never be successful or even possible if the employees were not creatively attempted to find innovative solutions to establish enterprise-wide business–IT engagement.\(^\text{[18]}\) The employees recognize the opportunity that technology provides and understand that as technology continues to evolve, more exciting possibilities can be created. Here, FedEx properly “blends” or integrates IT and the employees’ creative talents to find out areas of improvement that were aligned with the overall strategy of the organization.

If we were to apply the concept of proper “blending” to Zara, we can see that Zara’s competitive advantage did not come from the specific hardware or software technologies that it used. Much of Zara’s value creation is from its valuable IT management skills. Even though its management spent less time on technology, and did not possess exceptional technical skill,\(^\text{[8]}\) they are strong to the extent that they can leverage the use of IT resources. Zara’s relationship skills also serve as a tool for value creation and sustainability.\(^\text{[19]}\) The tight-knit teams at headquarters and store managers worldwide allow Zara the ability to correctly interpret and respond to customers’ needs in a timely manner. In addition, IT is integral in supporting Zara’s relationship with its suppliers. The special relationships that Zara maintains with manufacturers in Europe allow for a very short turnaround time from conception to distribution.\(^\text{[8]}\) This type of working relationships would be a challenge for other companies to imitate.

It is imperative to be fully aware of the blending stage and what is expected of it. The vision of the management must be properly transferred to employees and they in turn should be fully involved in the project so that the blend will be ideal and balanced. In the blending part of the value chain, it is not just about how you blend the ingredients; it is about blending the right ingredients as well. If the wrong ingredients were used but blending is done perfectly, the taste will still be horrible; similarly, if the right ingredients were used but the blending was poorly done, the taste will not be pleasant anyway. Therefore, it is important to have fully conceptualized vision of what must be blended and how it must be blended to have great chances of success.
YOUR CUP OF COFFEE

The coffee and the IT industries are two different industries that parallel in terms of challenges faced, i.e., the question of “what to do with what we have.” IT and coffee beans are both regarded as commodities, but the true potential of both can only be unlocked through innovation. Employees are the company’s greatest asset in any industry; it is the mixture between the limitations of the commodity with intelligence of employees that will provide a competitive advantage. Three factors play in the success of a company: the strategy, the execution, and, most importantly, continuous innovation to increase the gap between the company and its competitors, while closing the gap between customer loyalty and customer satisfaction—which, in the end, is the ultimate goal of any business.

Understanding how the different players in the coffee industry make the best out of their commodity would give insights on how IT or non-IT companies would be able to leverage the power of technology to gain competitive advantage. For example, by studying how the players in the coffee industry such as Starbucks recognized and utilized each stage of the value chain and properly aligned IT and their business strategies might be valuable for the other companies as well. This concept can be applied in many instances especially in the IT industry. We can relate the “type of bean” to the “choice or purpose of IT” in an organization, whether it is strategic or routine. The choice of IT for a company is important to ensure proper alignment with the company’s business strategy. “Growth and harvesting” refers to the “solutions development,” whether it is “in-house or third party,” in other words, whether it is internally or externally developed. Additional “growth” means maturity of IT, which is not necessary to increase in technology adoption. Finally, “Blending” means the proper integration of technology with the human capital. Competitive advantage does not come from a specific technology but rather from a proper “blending” of technology and human resources. As such, “blending” must be paid special attention as IT implementation often relies on adequate utilization, good talent, and support to reveal its full capabilities. Without proper blending, no matter how good the bean is and how efficient the harvesting is, we will never get the perfect cup of coffee. If IT is not properly blended into something meaningful for the company, it will remain a commodity.

REFERENCES