

## Lessons > Lesson

### The Technology Environment

In Week 4, we continue to look at our "Best" and "Worst" companies in light of the Technology Environment. We all love technology, so it's a subject most of us are probably very familiar with and comfortable discussing, but hopefully you'll discover a few new ideas this week. The application of Technology to business has become one of the most critical success factors (core competencies) and has a huge impact on the success every enterprise (including the military).

Having said that, you might conclude that the "Worst" companies are not applying Technology very well, and the "Best" companies are doing it right. This might be true as a generalization, but I believe you can find some counter examples where you'll find a "Worst" company doing Technology very well and a "Best" company that doesn't really emphasize Technology to a great degree.

Netflix is an interesting example; they are really selling a service, not a product (until recently when they began to develop "content" – under contract with studios). Initially they developed a very clever, but low tech (OMG, based in part on the USPS – "snail mail") business model to blow their competition away! Blockbuster may have been a Best company until Netflix showed up, but they ignored technology improvements that might have made their customers happier and more loyal. For example, Blockbuster made you return the DVD to the same store where you rented it. Redbox, a later competitor, said "just drop it in any "Redbox". Made a big difference if you travel a lot. But Blockbuster was indifferent to customer wants and needs because they weren't looking over their shoulder. Shame on them!

So what is the "*lesson learned*" from the Netflix/Blockbuster story? I'd say it suggests Best companies, in general, are applying emerging technologies that are critical to their particular business model, quickly (AKA *nimbleness*) and cost effectively to lower costs and increase customer/employee satisfaction. They might not be the "Best" in every Environment, or perhaps even in any one Environment, but are pretty good in all six Environments. Likewise the "Worst" companies may do well in some Environments, but are missing the boat in at least one critical Environment (e.g. customer service in the case of Blockbuster and the airline industry). If it's the Technology Environment where they are failing, it might overwhelm everything else they are doing right.

### What do Business Theorists Say About the Technology Environment?

Most business theorists see the Technology Environment as an enabler to all the others, especially the globalization of business. The true business experts, could be viewed as theorists, in the Technology Environment are not academician (although of course there are some), but business leaders/practitioners. John Chambers, CEO of Cisco, a successful developer and manufacturer of chips for pc's and networks, was also a noted technology theorist, inventing the axiom that the capacity and speed of pc chips doubles every 3 years. He also said (way back in the early 1990's "voice communication will be free" and the "internet will change the way we do everything". All of his predictions have already come true.

It's worth noting that technology breakthroughs often are the result of academic research, for example the "search engine" and the Windows interface. Other breakthroughs have been made in "garages" by dropouts (e.g. Gates and Allen – DOS, Brin and Page – Google, Zuckerberg – Facebook, Alan Emtage – search engines). In addition, collaboration between academia and the military was the initial creator of the internet.

Equally as important as the creators of breakthrough technologies are the practitioners who have further developed and deployed new technology. We'll discuss the developers like Microsoft and Apple in the next section when we

discuss “hard technology” companies. We’ll also discuss “soft technology” companies, i.e. all the other companies that don’t develop the new technologies directly but deploy/implement them to increase productivity, customer/employee satisfaction, etc.

### **Hard and Soft Technology Companies**

The distinction that we make between “hard” and “soft” technology *companies* (not the technology itself) in business is a very helpful way of thinking about the Technology Environment.

Virtually every enterprise (including corporations, non-profits, government agencies, military organizations, etc.) has been implementing new technology to improve the administrative side (accounting, payroll, HR, inventory management, etc.) of their operations for 50 years. More recently (perhaps the last 20 years) technology has entered operational areas of the enterprise like customer service, supply chain management, automated manufacturing, robotics, etc. to achieve increased employee productivity and morale as well as increased customer satisfaction. This is what we mean by a *Soft Technology* company – a *user* of technology as opposed to a *developer* of technology.

In the 60 Minutes segment entitled March of the Machines (probably available on YouTube) you can see how advanced automation (robotics, artificial intelligence, etc.) is currently helping some innovative companies (sometimes called “early adopters”) reach an entirely new and perhaps unanticipated level of efficiency, productivity and quality. Manufacturers are working with hi-tech companies to develop these new technologies. Does this mean a manufacturer suddenly becomes a Hard Technology company? I’m not sure, but maybe it’s not too important what it’s called, as long as you know about it and apply it. Businesses that ignore new technology developments do so at their own peril.

We define a *Hard Technology* company as one actually developing/making/selling technology products – both hardware and software - as their primary business activity. Companies like Intel (pc chips), Cisco (network chips), Microsoft (pc software), Verizon (wireless networks), Apple (smart phones), etc. are clearly in this category. Now even more traditional Soft Technology companies like Ford, GM, Boeing, GE, Frigidaire, etc. are building more and more embedded technology into their products to increase profit margins and customer appeal. A new car nowadays contains hundreds of microchips, actually small special purpose microcomputers), to implement new features customers demand. Same with a washer, dryer, refrigerator, etc.; their control panels are looking more like the flight deck on the starship Enterprise than an appliance (and they even come in colors too, whoopee!!!).

In addition, we are not just talking about manufacturing companies either. Retailers and fast food companies are working feverishly to deploy wireless ordering and checkout systems to lower personnel costs. Banks and other financial institutions have deployed ATM networks and electronic banking that customers love, at the same time eliminating many jobs. Some banks, insurance and mortgage companies have gone entirely virtual, not only reducing labor costs but also expensive brick and mortar facilities.

The take-away here is competency in designing and implementing technology into products and services has become another core competency in businesses where previously it wasn't seen as that important.

### **Barriers Facing Hard and Soft Technology Companies and Strategies Used to Overcome These Barriers**

Hard technology companies face a myriad of challenges, notably; the cost/risk of developing new technology, attracting investment capital, recruiting and retaining world-class developers, cutthroat competition, both domestic and foreign, and legal barriers erected by foreign governments to protect their domestic developers and/or restrict their peoples’ access to technology and information.

Soft technology companies include everyone else, i.e. companies buying and deploying new technology from hard technology companies (i.e. developers). The more aggressive soft technology companies (AKA “first movers”) all face the twin challenges of cost/risk and technology/implementation failure (see Obamacare website rollout for a good example). Those slower to adopt new technology (we’ve discussed Blockbuster) face the very real risk of being left

behind.

Most US multi-nationals, in the 1990s faced the challenge of implementing global “enterprise systems” to increase customer/supplier communications, productivity and customer service and across their global operations. Most were operating in a “smokestack” environment, where their individual operations were highly independent of each other. This works OK until you begin to deal with global customers and suppliers who were expecting them to coordinate orders, service, etc. worldwide.

Did you know that the initial cost of implementing a worldwide enterprise system – like SAP or PeopleSoft/Oracle - could approach a billion dollars (that’s billion, with a “B”)! To make matters worse, installing a so-called “new release” of the same system every few years can easily exceed \$100 million. However, technology eventually solves all problems. So-called “cloud-based systems” have begun to lower these costs and reduce the risk of implementation failure.

### **Strategies Used by Hard and Soft Technology Companies to Develop (Hard Technology Companies), Implement (Soft technology Companies) and Protect Proprietary Technology.**

Hard technology companies have adopted many strategies to cope with the huge challenges they face. Maybe the most successful has been partnering and collaborating with global business partners via the web. This includes involving customers and prospective customers in identifying the requirements of new technologies. Another strategy has been to build new products using core components of older systems, sometimes referred to as reusable code and “containers” (we’re getting down in the weeds now!).

Soft technology companies have adopted similar strategies. They rely on third party consultants to implement new technologies, and prefer to buy commercial off-the-shelf technology (referred to as COTS by the military and other government buyers) rather than be pioneers and risk technology/implementation failures, which have cost many people their jobs! It’s become a balancing act deciding whether to be a nimble first mover or wait for someone else to go first.

### **Conclusion**

The important take away this week is you and your organization must be focused on the future and adopting new technology as rapidly as possible. This can be risky too if it’s not done carefully and professionally, many excellent business franchises (brands) have exploded by introducing a new technology prematurely or simply poorly implemented (but Microsoft seems to get away with it over and over again). Nevertheless, ignoring new technology is more dangerous than adopting too soon IMHO. So just because you’re paranoid doesn’t mean the enemy isn’t sneaking up on you.

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