

A WHITE PAPER DISCUSSING
DISRUPTIVE INNOVATION AND TECHNOLOGY

By

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Clayton M. Christensen, in an April 24, 2004 interview with Howard Dresner describes disruptive innovation as: “A disruptive innovation brings to market a product not as good as the products in the current market, and so it cannot be sold to the mainstream customers. But it is simple and it is more affordable.” He describes sustaining innovation as: “... an innovation that brings to market a product or service that a company in the market could sell for higher margins to its best customers. In other words, sustaining innovation brings a better product into the market.”

There has been much commentary on this topic, most being supportive of Christensen’s view. One dissident view was expressed by John Dvorak, in a PCMAG.com article.

I do not believe either view to be totally in sync with reality. Christensen’s view does not take into account the overall socio-political environment we live in, nor does he factor in “the human element”. Dvorak spews out a dissenting view, which, to some extent, makes sense, but has little factual evidence to support his views.

In “Made in America” the authors discuss several factors for the changes in America’s economy. They make the point that these factors are interrelated and one cannot “pick-and-choose” what needs to be changed to revitalize the economy. There must be a coordinated effort to integrate changes in all the factors.

Likewise, there are multiple factors in disruptive innovation, none of which neither Christensen nor Dvorak nor any other commentators on this topic discuss. Only three, “Human Nature”, corporate vision, and Labor-Union Relations will be discussed here.

First consider “Human Nature”. People, for the most part are reluctant to change. Disruptive innovation, or any innovation, requires acceptance of change. This said, there will always be a small portion of the population that embraces change and these will be the first people to accept new technologies. For these people, price and performance will be secondary. Their primary need is to always have the latest technology, whether for personal use or for business/corporate use. These are the people to target new technologies towards. Personal computers (PCs) are one example. When first introduced, they were expensive and had limited capabilities. They did not process near the capability to displace mainframes, in the workplace, for any but the most basic functions. PCs, initially, did not compete with mainframes; they competed with desktop and handheld calculators, and slide rules. Most people did not understand what they could be used for in the home. Regardless there were people who wanted the newest and bought PCs. Eventually, prices went down and capabilities went up, and people began to see uses in the workplace and in the home. In fact, some people are fearful of new technology, even when it would make their lives easier. Take the case of microwave ovens. At one point this was a potential disruptive technology, easier, faster cooking using less energy than “conventional” cooking methods. When the technology had reached a point when microwave ovens were economical from both cost and space used many people were

reluctant to purchase. First because they would need to relearn how to cook. Secondly, because of ignorance of how the technology worked causing fear. This same reluctance is just as likely in the corporate world as in the home.

There is also the issue of a company's vision of itself hampering the willingness, or ability, of management to look to new technologies for their customers. Using, as an example, a Tier 1 Auto supplier I worked at some years ago. This company designed and manufactured Hydraulic Clutch Controls. These were, arguably, the best on the market. Management, and most of the employees, saw the company expertise as a designer of these assemblies, and held a vision of doubling sales in the next several years. The question was asked how we do this in a market segment, vehicles with manual transmission, which is declining. My contention was that our expertise was in design of injection molded pressure vessels and brackets. The reluctance to accept a different vision of the company is leading to its loss of business volume and it will eventually be out of business. The same could be said for the disk drive example that Christensen uses. Was it just the fact that there was a limited, low margin market? Or, did management take a narrow focus on what the company's expertise and market were? When the trucking industry in this country was in its infancy, railroads moved the bulk of cargo. The rail companies saw themselves as in the railroad business, not in the cargo and transportation business and failed to invest in, the then disruptive technology of, trucks.

Christensen uses as one of his examples the steel industry with mini-mills displacing large integrated steel mills. His focus is on mini-mill as a disruptive technology first entering the low margin market segments and then displacing integrated mills as mini-mill technology improves and the quality of the product improves. He does not consider any mitigating effects of labor-management relationships. Were the unions willing to accept new labor rules requiring more flexible job descriptions? Was management willing to adjust pay scales with workers who were trained in, and able to perform, multiple jobs? The labor-management relation factor cannot be ignored but was not considered by Christensen. Likewise, with steam shoves replaced by hydraulically operated equipment. Were labor unions, and management, averse to retraining equipment operators who had many years invested in becoming adept in operation, and use of, a particular technology?

What was the effect of the three issues discussed here on acceptance of disruptive technology? It would be difficult to determine, in any case, and especially without an in-depth study. While both Christensen and Dvorak make excellent points, there are many factors to be considered when determining the reasons why, and how, a new (disruptive) technology was or was not adopted. The narrow view that Christensen takes simply does not take into consideration all of the factors that affect the decisions that people make.

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