

Epilogue

Radio frequency identification, or RFID, stories for the last few years have been numerous, and they are almost all about the same thing: Wal-Mart and the Department of Defense mandating their suppliers to use RFID tags for pallets and containers as a replacement for the standardized, accepted bar code. But there are continuing reports of potential warnings or pitfalls that RFID tags probably will not begin to replace bar codes for at least a decade.

There is a growing concern by many experts and journalists about this ubiquitous dark side of RFID, where supply chain corporate leaders will use them as “spy chips.”¹ This may be a benefit to helping secure the country’s borders from illegal packages entering the country. But as a spy chip, others see civil liberties at risk. This fear of misuse of RFID technology is compounded by the increasing numbers of experts or managers who still do not know enough about RFID or what the RFID issues are that face supply chain or logistics firms.¹ “No one knows how RFID tags will perform in extreme conditions.”² No one knows what to do when the tags do not work.²

Economic or operations research studies have not yet put a definitive return on investment with RFID, which further fuels the distrust of this technology insertion. “All this security stuff costs as much as the container itself.”³ “There is no return on investment for manufacturers.”⁴ Many trade stories and discussions with business leaders and students assume that replacing bar codes with RFID tags is not going to happen.

Besides the uncertainty and the lack of defensible metrics, there is a process gap in the standards needed to use RFID technology efficiently and effectively. “Lack of standards is the biggest challenge; the second biggest being the cost of the tag.”² “In international logistics, RFID systems are today virtually non-existent.”² “The most common objection is that RFID technology is not mature enough.”⁵ Wal-Mart does not have a pilot. Well, there are pilot projects abounding around the country; many firms are contracting with experts to experiment with RFID in their logistics systems; many are trying to grow their own experts in the technology in hopes of lowering these fears and risks, which mainly is the bottom line: Do we still make a profit with RFID?

With all these dire warnings, RFID technology seems to have created its own tidal force in transportation, materials management, and really all aspects of logistics and supply chain economy. To better understand this force, let us step back in time a decade, or four, to better see what may be happening to our lives with all this talk and energy and money being dumped into RFID tagging on pallets or products within the logistics systems from the mom-and-pop stores to Wal-Mart. Are we in another

computer revolution of some kind, or another event as traumatic as Y2K? Alvin Toffler described the Industrial Revolution as a “flash flood in history ... where many streams of change flowed together to form a great confluence.”⁶ The current wave of RFID appears to be part of yet another flash flood of technology that will alter the computer industry one more step toward some as-yet-defined global communications system of systems.

But having lived through the last 4 decades of how the computer, and a soup of acronyms from ADP to artificial intelligence (AI) to knowledge management (KM), has changed the modern office and workplace, how can we measure the future impact of RFID, which promises to deliver billions of pieces of data, hourly, to our workplace? Toffler went on to say that “any search for the cause of the Industrial Revolution is doomed” because there are so many possible causes. He did go on to say that “technology, by itself, is not the driving force of history.”⁶ This is important because there are many articles being written about RFID technology from the perspective of the technology itself, mainly its limitations. Toffler warned us that because we cannot find the single cause of technology of industrial impacts on our society and culture, “the most we can do is to focus on those that seem most revealing for our purposes and recognize the distortion implicit in that choice.”⁶ So far, these distortions seem to be people warning of excessive cost or how the technology is not quite ready.

We may begin to glimpse the future impact of RFID technology when we remember Toffler’s concerns that “the greater the divorce of producer from consumer ... the more the market ... with all its hidden assumptions ... came to dominate social reality.”⁶ In the 1980s, he was concerned with the limited nature of the communications systems between the manufacturers and retailers in the long supply chains that separated the customer from what the customer really wanted in a product. Now, in the 2000s, that has changed, with the advent of just-in-time manufacturing, Internet, B2B, and other business model changes, focused solely on the customer’s near-instant demands. All these warnings about the use of technology form a useful pattern of pitfalls that we should watch for as we rush into adopting RFID technology. Besides the warnings at the beginning of this chapter, one of the earliest signs of a huge pitfall is from the antitechnology sector of the workforce or customer base.

There has always been an antitechnology force at work in our society, since the early days of the Industrial Revolution. There are decades of studies on the causes and identities of those in the antitechnology movements. However, one of the early technology watchers examined the most recent example, in our memory, of technology changing our way of life. H. W. Lewis said that “displaced workers do not form the core of the antitechnology movement ... it seems to be an upper-middle-class phenomenon.”⁷ When you read the majority of the trade magazines in the last year about RFID, you get the sense that the workingman or -woman in the warehouse or the truckers will be against the use of the technology. However, that does not seem to be the case.

At the beginning of 1990, John Naisbitt said, "Telecommunications and computers will continue to drive change, just as manufacturing did during the industrial period."⁸ Naisbitt went on to say, "We are laying the foundations for an international information highway system ... moving to a single worldwide information network ... becoming one global marketplace."⁸ This appears to be what will finally happen with the advent of widespread adoption of RFID, but it comes at the price of a crisis of acceptance of this newest paradigm, or model, of technology replacing the older paradigm: bar codes.

Thomas Kuhn said, "Crises are a necessary precondition for the emergence of novel theories."⁹ Although he was talking about scientific theories being replaced, his concepts are equally applicable to our everyday technology acceptance or rejection. He also said, "To reject one paradigm without simultaneously substituting another is to reject science itself." That act reflects not on the paradigm but on the person. Inevitably, their colleagues will see them as "the carpenter who blames his tools."⁹ There are concerns from those who have invested heavily into bar codes; they will not go easily into RFID. The old tool of the bar code works; why mess with it? So, it is to be expected that over the next few years, we will see a flurry of articles evoking crises of confidence over the new tools for the data carpenters of logistics systems.

Kuhn said, "If an anomaly is to evoke crisis, it must usually be more than just an anomaly. There are always difficulties somewhere in the paradigm-nature fit; most of them are set right sooner or later, often by processes that could not have been foreseen."⁹ So, the question to you and to the CEO or general manager contemplating the switch to RFID is, Can you identify these difficulties in time to avoid too many crises within the workforce, or in the customer base?

Kuhn said, "Often a new paradigm emerges, at least in embryo, before a crisis has developed far or been explicitly recognized."⁹ Many articles cite the immature nature of RFID; they see the technology as some embryo and not ready for capital investment.

On the benefit of bar codes or RFID, Kuhn helps us further understand what is happening. He said, "When paradigms enter, as they must, into a debate about paradigm choice, their role is necessarily circular. Each group uses its own paradigm to argue in that paradigm's defense."⁹ Thus, when reading about bar codes versus RFID, the very theme pitting one against the other is not a sign of the failure of RFID; it is a stage-setting premise, a dance, if you will, that is being played out in the natural course of technology paradigm changes. One technology is changing, and the owners are reluctant to let go; not for bad science, but just because that is the nature of paradigm shifts.

But there are those who insist on facts to know how good RFID is. How do we measure the difference between bar codes and RFID? Kuhn again helps us understand, when he said, "The competition between paradigms is not the sort of battle than can be resolved by proofs."⁹ He also said, "In

the first place, the proponents of competing paradigms will often disagree about the list of problems that any candidate for paradigm just resolves. Their standards or definitions of science are not the same.”⁹

When we go from bar code standards to RFID standards, as has been indicated in the press on this matter, there is “more involved than the incommensurability of standards. Since new paradigms are born from old ones, they ordinarily incorporate much of the vocabulary and apparatus, both conceptual and manipulative, that the traditional paradigm had previously employed. But they seldom employ these borrowed elements in quite the traditional way. Within the new paradigm, old terms, concepts, and experiments fall into new relationships with the other. The inevitable result is what we must call, though the term is not quite right, a misunderstanding between the two competing schools.”⁹

So, how and when will this transition from bar codes to RFID take place? Kuhn helps us when he said, “Before they can hope to communicate fully, one group or the other must experience the conversion that we have been calling a paradigm shift. Just because it is a transition between incommensurables, the transition between competing paradigms cannot be made a step at a time, forced by logic and neutral experience. Like the gestalt switch, it must occur all at once (though not necessarily in an instant) or not at all.”⁹ What this means is that what Wal-Mart is doing is following the models of paradigm shifts set out by Thomas Kuhn from 30 years ago.

Again, when does transition from bar code to RFID occur? Kuhn said, “The transfer of allegiance from paradigm to paradigm is a conversion experience that cannot be forced.”⁹ Yet, Wal-Mart and DoD are forcing suppliers to comply. Will their force wave be successful? Perhaps Wal-Mart and DoD have the answer. So, when we are asked by someone why we should replace bar codes with RFID, Kuhn once again helps us understand. He said, “Probably the single most prevalent claim advanced by the proponents of a new paradigm is that they can solve the problems that have led the old one to a crisis.”⁹

So, what is this word *paradigm* that we have used? According the Kuhn, “The term ‘paradigm’ is used in two different senses. On the one hand, it stands for the entire constellation of beliefs, values, and techniques, and so on shared by the members in that constellation. On the other hand, it denotes one sort of element in that constellation, the concrete puzzle-solutions which, employed as models or examples, can replace explicit rules as a basis for the solution of the remaining puzzles or normal science.”⁹

For those who are still skeptical, as these pitfalls indicate you could be, John Naisbitt stated in his best-selling book that “you may choose to challenge the trends, but first you must know where they are headed.”⁸ That RFID is here to stay is a fact. That bar codes are here for quite some time yet is also a fact. However, the smart investor will look beyond the emotion of the posturing by the old paradigm advocates and the antitechnology purists, and realize that this is just another step in our long climb into the computer age, which is still defining itself.

References

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