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Robotized Retail: Historical Analogy and Retail Disruption

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In the 1970s and early 1980s, the U.S. automotive industry suffered a significant loss of competitiveness. Its ability to meet consumer expectations for price and quality declined, as challenges from an upstart, ascendant Japanese automotive industry took hold. In general, this was due to high cost structures of the Detroit-based auto manufacturers as compared to the new manufacturing methods pioneered by the Japanese. These emergent methods were driven by a new design approach, lean processes, and automation – materialized via robotics – that began in Japan in 1971.[1] To create lean and automated manufacturing, and reduce the price of outputs, a new set of critical competencies and capabilities emerged that U.S. car companies did not possess. As a result, the U.S. auto industry's margin became the Japanese manufacturers' opportunity, and the U.S. auto industry was disrupted. This degradation of the U.S. auto industry impacted the economic fabric not just of the industry, but also the U.S. economy as a whole. Ironically, the Japanese automotive companies of the 1970s adopted the methods of an American engineer and management consultant named Joseph Juran.[2]

Today, significant change is disrupting the retail industry, driven by new methods and pioneered by an upstart, ascendant online retailer. Amazon methodically identifies consumer expectations for price and quality of experience and meets them with reinvented retail processes – realized by automation in its distribution centers and home office.[3] The cost structures of incumbent retailers are misaligned with this emergent way of satisfying consumer expectations and operating retail processes. This caused a scramble to understand the critical management competencies and capabilities that retailers must possess. While this misalignment persists, the resultant degradation of brick-and-mortar profitability has led to a spike in store closures and retail bankruptcies. Some called it an "apocalypse."

The auto industry analogy (and others, such as the airline industry disruption of the mid-1980s through 1990s) is an informative comparison to today's retail disruption. What is interesting is not just the common patterns of problems and symptoms, but

1. Kazutoshi Koshiro, "Personnel Planning, Technological Changes, and Outsourcing in the Japanese Automobile Industry," Workshop on Industrial Relations and Industrial Change; February 1983. (Paper obtained from the U.S. Bureau of Labor Statistics).
2. Peter J. Kolesar," Juran's Lectures to Japanese Executives in 1954: A Perspective and Some Contemporary Lessons," The Quality Management Journal, 2008.
3. World Economic Forum, "Impact of the Fourth Industrial Revolution on Supply Chains," October 2017. Also, Blake Morgan, "How Amazon Has Reorganized Around Artificial Intelligence and Machine Learning,"

the common driver of companies that have successfully transitioned through these disruptions. U.S. auto companies transformed themselves with lean processes that were aligned with a consumer's expectations for style, price, and quality by revamping design studios – and realizing new capabilities with robotics. When asked where the most robotics companies are located in the U.S. in 2018, most would reply Silicon Valley or perhaps Boston. However, the correct answer is Detroit.[4] Robotics companies over the years have either started up or moved to Detroit to support the retooling, continuous improvement, and ongoing operations of the U.S. auto industry.

Similarly, retailers can successfully transition by accepting that the current disruption is actually not at all unprecedented, but has historical precedents that provide clear lessons. One lesson among several is: transformations should not be organized purely around the concept of a digital interface with consumers, but additionally around drastically improved labor productivity (reduction of the cost of outputs) driven largely by automation and specifically, robotics and artificial intelligence.

Today, a consumer's expectations have expanded significantly, if not exponentially. For this reason, a more robust method must be adopted to meet consumer experience expectations and align automation to those needs. Design (design thinking, design research) offers a more robust, modern corollary to methods used in the past, just as the robotics and AI platforms of today offer more advanced methods for converting processes to be handled by robots. In addition, it is no longer adequate to reinvent just around lean practices, so new design methods that deliver lean innovation must be adopted. Design results from these methods are often feasible to materialize at scale only via robotics and artificial intelligence. In future publications, we'll dig deeper into specific, applicable, design methods and process decomposition customizations necessary to pull this off.

The purpose of the Retail Robotics Initiative at the Retail Analytics Council is to inform this retail robotics transformation; to provide inspiration, insights, use cases, research and connections; as well as to continue to advance the idea that robotics should be a primary driver of retail's resurgence. Examining historical analogies is a useful way to understand more thoroughly the context of today's disruption and chart a path forward. This context is not just about technology. U.S. auto companies' resurgence via robotics also required progressive management programs such as teaching new skill sets to employees, education on how to effectively collaborate with robots, a move from antagonistic labor-management relations to joint ownership of labor productivity, and, where low-skill jobs were impacted, programs that helped those affected to transition to new ways of working.

The goal of this article is to establish a baseline from which we can illustrate in future publications a methodical approach to resurgence via robotics and explore the competencies and capabilities required for this retail transformation.

4. Richard Florida, "America's Robot Geography," CityLab, July 2018.