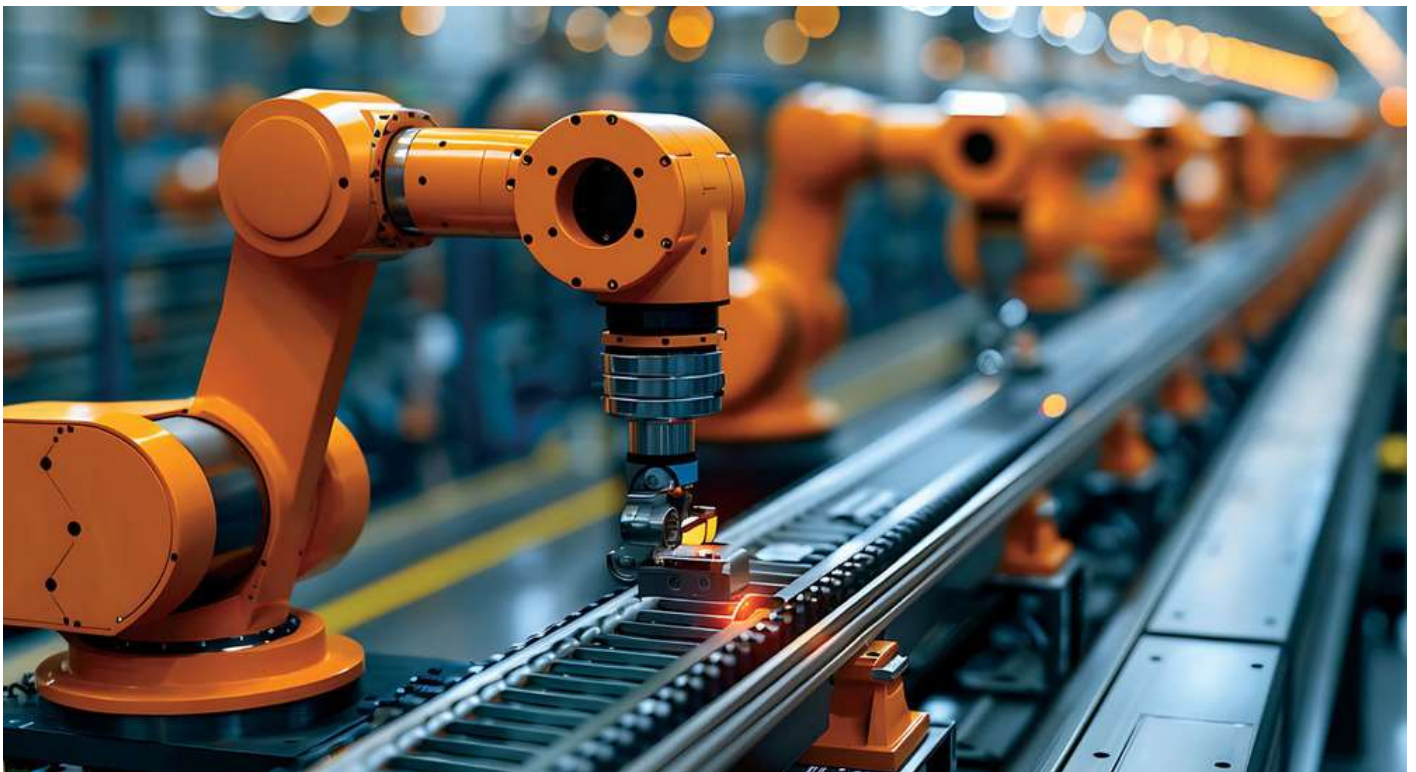


Redefining Distribution in a New Era of Construction Efficiency

By Dr. Perry Daneshgari & Dr. Heather Moore

As the construction industry continues to evolve toward greater efficiency, a pivotal transformation is unfolding. The Industrialization of Construction® — once a concept confined to hypothesis and theory — is now materializing, driven by the need for smarter workflows, integrated supply chains, and predictive planning. At the heart of this shift is a reimagined role for distributors, who are evolving from suppliers into strategic partners.



This article explores the evolving role of distributors in streamlining supply chains and enhancing efficiency through Agile Distribution® and highlights how predictive planning and strategic partnerships are shaping the future of construction. Additionally, a case study of Crescent Electric's experience helps illustrate how its transformation into an

Agile Distributor™ is reducing costs and improving productivity, paving the way for broader industrialization.

WHERE IS THE INDUSTRY NOW? THE STATE OF INDUSTRIALIZATION IN CONSTRUCTION

Recent industry-wide polling (Exhibit 1) reveals that the industry is on the verge of moving from traditional to transitional workflows. Despite growing interest in leveraging data for project management, both at the GC and trade contractor level, many challenges remain common, even on large-scale megaprojects:

- Why are so many resources in building information modeling (BIM) needed — can't you get your labor onsite and just start working?
- Why didn't you warn that this job was going to lose money (although labor fade was predicted six months in advance)?
- Our distributor can assist in project planning, but they still need a counter for our technicians to grab parts at the last minute.
- Contracts are being drafted without clear ramifications for scope changes, effort, and timelines.
- Forepersons often say their most critical role is onsite cleanup/housekeeping and protection of finishes; secondary to that is managing off-site work, like keeping plans updated with ongoing changes and externalizing tasks (e.g., prefabrication).

This way of thinking and operating is holding the industry back. And, as Exhibit 2 highlights, most decisions are still made in the field where integration risks are highest.

To fully realize industrialization, decision making must move upstream, away from the point of installation.

Getting there requires shifting decision-making into more controlled environments and relying on data driven insights from those outside the jobsite (e.g., prefabrication, BIM, project controls, vendors, and manufacturers).

At the core of this shift is the Work Breakdown Structure (WBS), which should serve as the central plan for installation based on the knowledge and skill of the trades. All

planning efforts should stem from here, with an ongoing focus to reduce cost at each juncture.

By externalizing more work and involving off-site resources earlier, we can optimize project outcomes, minimize risks, and truly transition to a more industrialized construction process.

FROM PARTS TO PARTNERSHIPS: SHIFTING THE ROLE OF DISTRIBUTORS IN CONSTRUCTION

For the *construction megacenters* concept to become a reality, the role of a distributor needs to shift from buying, representing, and selling parts to that of connecting construction consumers with construction producers (i.e., a dealership).

As more production leads to faster consumption, buffers shift from the producer to the consumer during step 2 of Industrialization (Management of Work). Buffers become less necessary as the inputs and outcomes become more predictable.

In the current material supply channel, the contractor serves as the safety valve of the pipeline. As the accuracy of the following factors improve, the contractor's role in reducing the impact of these risks will be diminished.

The contractor acts as the final buffer protecting owners and users, ensuring correct installation despite many variables impacting the jobsites, such as:

- Engineering
 - Drawings
 - Timing
 - Schedule
 - Delivery
 - Coordination among the trades
 - Human resource risks and variation
 - Safety
-

- Weather
- Inspections/government regulations
- Building operation, maintenance, and usage
- Project dysfunction (e.g., conditions/overall oversight, you don't know until you get to it)
- Qualified workforce ¹

REDUCING COST WITH A SYSTEMATIC APPROACH

Distributors in any industry have traditionally survived with one basic formula: *buy low, sell high*. Gross margin on product sales is the primary metric measured and managed.

Increasing volume has often been seen as the easiest way to improve profit, as it brings more gross margin dollars to the bottom line. However, this incentive doesn't necessarily align with lowest installed cost. While it may help contractors get a volume discount, it does nothing to reduce their labor cost, most specifically the cost of material handling.

The costs below the gross margin line are not as visible or easy to manage for a distributor, and, therefore, few focus systematically on improving them. Agile Distribution® turns this approach upside down by aligning customer buying habits with distributors' operations in sales, warehouse, and delivery operations to reduce the cost of processing orders. As an example, the Crescent Electric Supply Company Case Study on page 45 shows how the company redeveloped itself as an Agile Distributor™.

As shown in Exhibit 3, each of the four pillars of Agile Distribution® plays a part in delivering better value through the distributor's role in construction outcomes. Crescent Electric initially focused on the first two pillars, helping the company improve its internal capacity from sales through delivery, which in turn reduces operational cost.

Rather than passing their transactional costs to customers, Agile Distributors™ create opportunities for cost reduction by:

- Reducing internal waste to:
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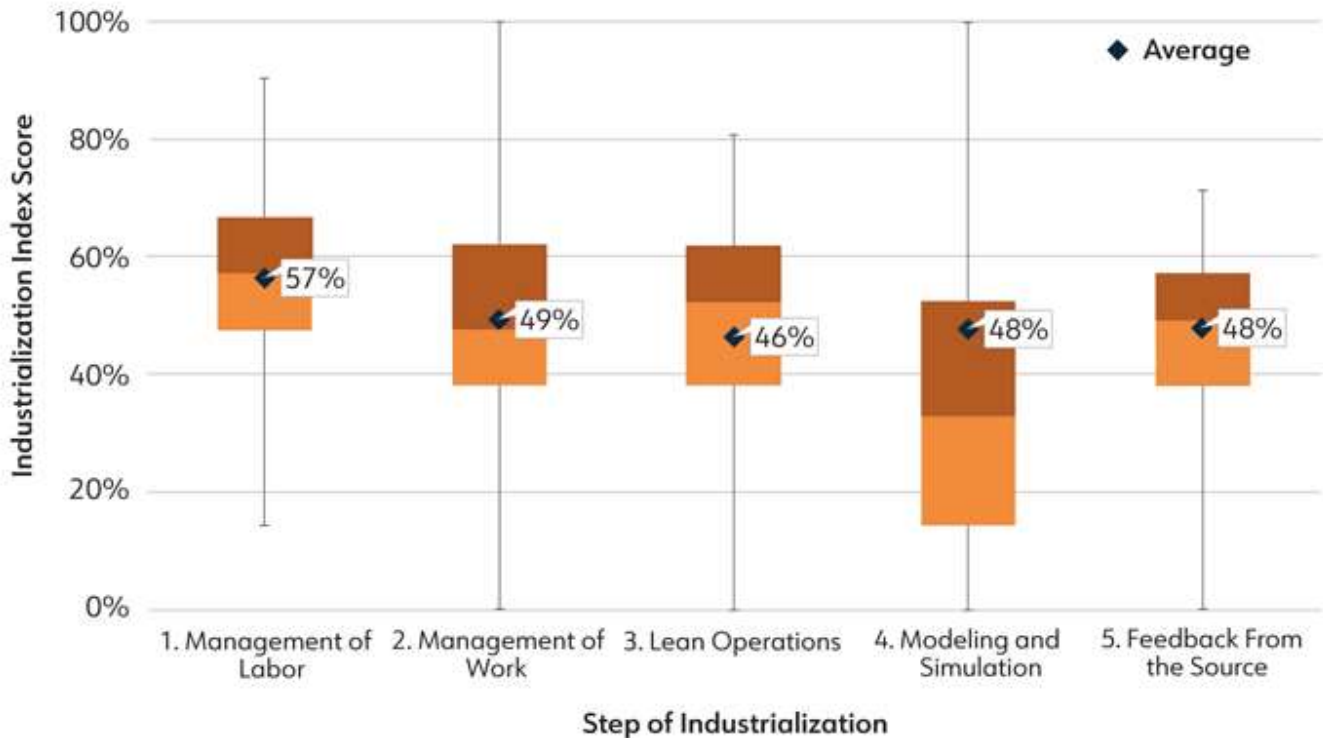
- Lower the transactional cost to contractors, hence reducing their prices
- Improve the quality of delivery and enhance the overall experience
- Minimize waste at jobsites
- Improving communication by:
 - Enhancing the customer point of entry
 - Participating in competitive bidding on major material/ equipment packages (e.g., gear and lighting)
 - Using feedback from jobsites to boost labor productivity
- Creating strategic alliances with their contractors to:
 - Ensure material is ready when, where, and how contractors want it
 - Manage jobsite inventory to reduce labor time spent on ordering
 - Reduce the cost and time of product returns resulting from inadequate communication on bidding, takeoffs, and jobsite materials logistics and returns
 - Actively participate in the contractors' job planning, WBS, and scheduling

Exhibit 1: Industrialization Index Self Evaluation Summary of Results

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Traditional: 0-57
Transitional: 58-85
Industrial: 86-100

Responses as of June 19, 2024



Within one year of this transformation, Crescent Electric improved its capacity by studying customer buying behaviors and realigning its internal operations accordingly. Exhibit 4 shows how it has reduced its time to pick by over 50%, freeing up capacity for double the amount of material to be moved with the same resources. This direct link from customer, to operations, and to cost reduction is the goal of Agile Distribution® and a key to making the dealership model a reality that doesn't just pass on cost or add buffers to the supply chain.

The various steps and processes involved in getting an order from the customer (as an inquiry) into the warehouse (as an order) for pick, pack, and ship operations due is complex, potentially convoluted, and likely inefficient (think spaghetti on a plate). The various departments, systems, and manual steps of the order fulfillment process may include:

- Customer inquiry: initial contact from the customer

- Order entry: capturing and processing the order details
- Credit check: verifying customer creditworthiness
- Inventory check: confirming product availability
- Production/purchasing: initiating production or purchasing orders
- Shipping: preparing and shipping the order
- Invoicing: generating and sending invoices
- Payment processing: handling customer payments

The complexity of this process suggests potential challenges in tracking orders, identifying bottlenecks, and ensuring timely delivery.

By studying and quantifying the current state, Crescent Electric's Process Implementation Team built solutions to improve the information flow from inquiry to order all the way through to customer delivery, saving time and reducing errors throughout the process to result in better productivity and labor efficiency on the jobsite.

As we look to the future, the dealership model presents the next evolution of this transformation.

THE FUTURE OF DISTRIBUTION

The construction megacenter model (Exhibit 5) illustrates Dr. Perry Daneshgari's prediction of how Industrialization of Construction® will change the landscape of project delivery for customers. ² The expansion of prefabrication and mega production centers are now seen globally, which are early steps toward achieving this model.

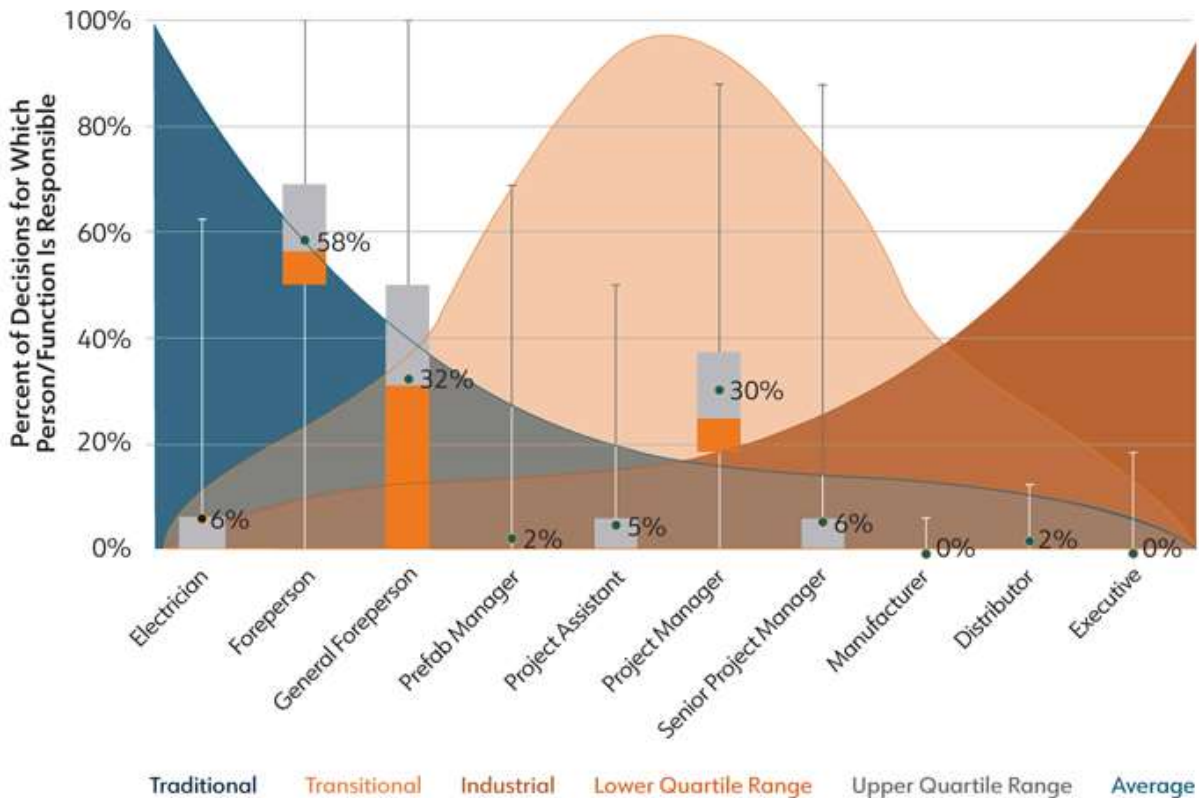
Looking at other industrialized industries, an interim step in completing this model is advancing the supply chain to move more product along stages represented in the model faster, with more options available for consumers.

The Rise of the Dealership Model

As automobile production expanded in the early 20th century, manufacturers needed a buffer to sell, represent, and service their vehicles to end customers.

Exhibit 2: Industrialization of Construction® Litmus Test Industry Wide Results

Exhibit 2: Industrialization of Construction® Litmus Test Industry Wide Results



While some direct/factory sales still occurred, the majority of selling shifted to wholesale distributors. The first car dealership was established in 1898, and by 1927, there were over 50,000 dealerships in the U.S.

“Between 1923-29, the leveling of demand for new cars logically resulted in a change of emphasis in the industry from production to distribution,” Alfred P. Sloan described. “On the sales end, that meant a change from easy selling to hard selling. Dealer problems of an entirely new nature began to arise.”

This new challenge along with tighter regulations and limitations reduced the number of dealerships to less than 22,000 by 2001. ³ Meanwhile, the number of vehicles per thousand people grew from 195.77 in 1927 to 811.83 in 2010, ⁴ with 19.5% of the population having more than two vehicles per household. ⁵

Embracing the Dealership Model in Construction

As infrastructure (e.g., houses, buildings, roads, bridges) is produced faster, better, and cheaper through industrialization, what role will the distributor play?

To summarize shifts and predictions that support this model's development, which may be years away but will be noticed first by construction distributors, there might be an emergence of a new role focused on representing, selling, and servicing construction products rather than simply supplying raw materials:

- There will be a separation of roles in building (producing) and delivering (selling) construction
 - New buffers will be generated to handle expanding demand; these come with both advantages and disadvantages for both consumers and producers
 - New specialties will be needed in sales and service, customer/market niche segments, producer-specific knowledge and customer training, maintenance and warranty of prefabrication assemblies and subassemblies, and financing
-

Crescent Electric Supply Company Case Study

In 2022, through the vision of Scott Teerlinck, President & CEO, and leadership of Joe McDermott, Vice President of Contractor Solutions, Crescent Electric Supply Company embarked on a journey to be redevelop itself as an Agile Distributor™.

Teerlinck connected the dots between the path to Industrialization of Construction® and his role as CEO of Crescent Electric. Having led other large organizations, he built a vision for Crescent Electric to catalyze industrialization by shifting its role through Agile Distribution® as well as defining a new ecosystem needed in construction to reduce overall cost by shifting roles of the contractors, distributors, and manufacturers.

A few key points for the distributor/contractor business model optimization include:

- Construction productivity has historically been flat and does not pace with other industries
- The workforce shortage in construction will be a persistent problem going forward and creates an unavoidable requirement for increased productivity
- Using MCA, Inc.'s framework for Industrialization of Construction® will help Crescent Electric offer value and impact customer success in ways not previously imagined; however, getting there requires a new ecosystem between contractors, distributors, and manufacturers based upon real-time data to support a new business model for collective cost reduction

With this vision, Crescent has:

- Established five Regional Distribution Centers in Wisconsin, Iowa, Kentucky, Arizona, and Colorado
 - Streamlined its supplier base to focus on tighter partnerships with fewer supplier partners, creating stronger alignment with each resulting in better support of customers' needs
 - Developed the Crescent Electric workforce to embrace a mindset of daily continuous improvement, while adhering to the principles of Agile
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Distribution®

- Created a strategy for Large Project Support (see below) to test the concept of a different role and direction toward a dealership for assured construction project delivery

Through this transformation process, Crescent Electric has been actively implementing the cost reducing and efficiency improving aspects of Agile Distribution® to reposition itself to offer contractors customer solutions that were not previously possible.

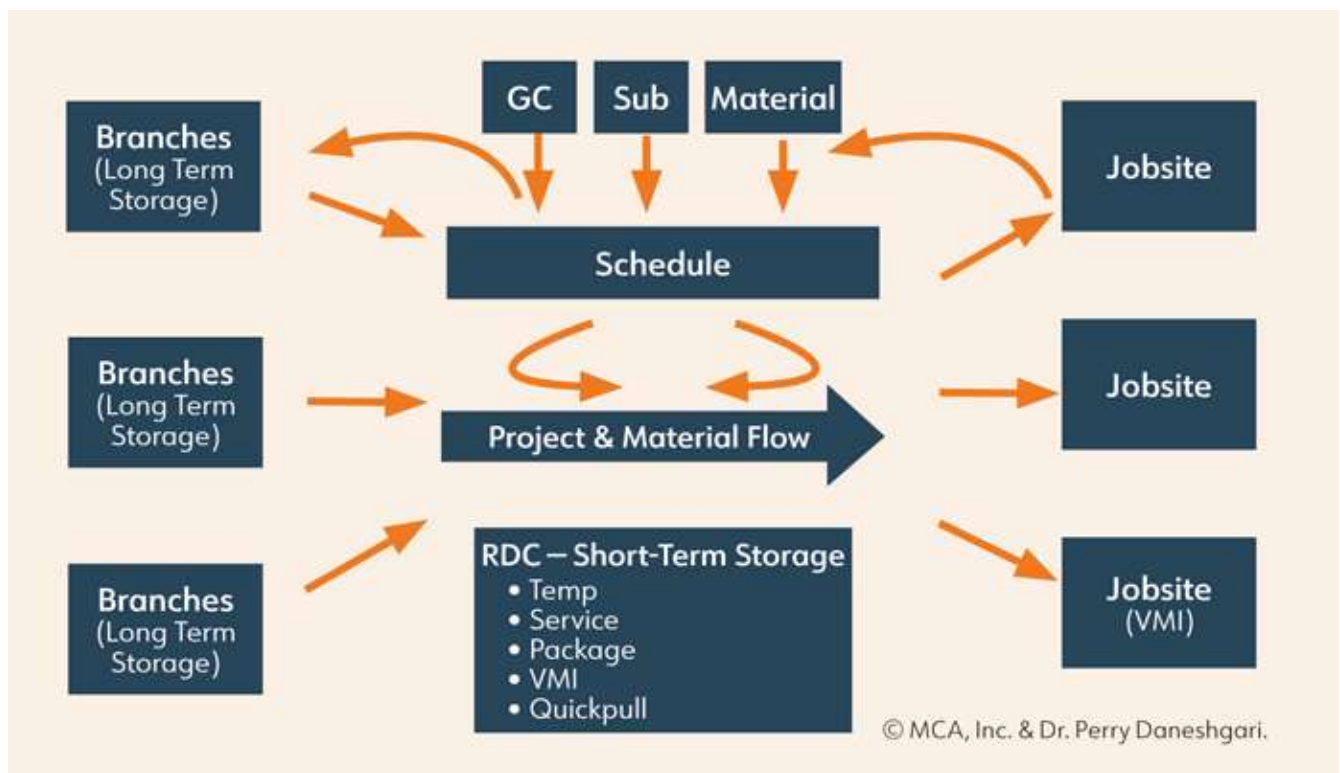
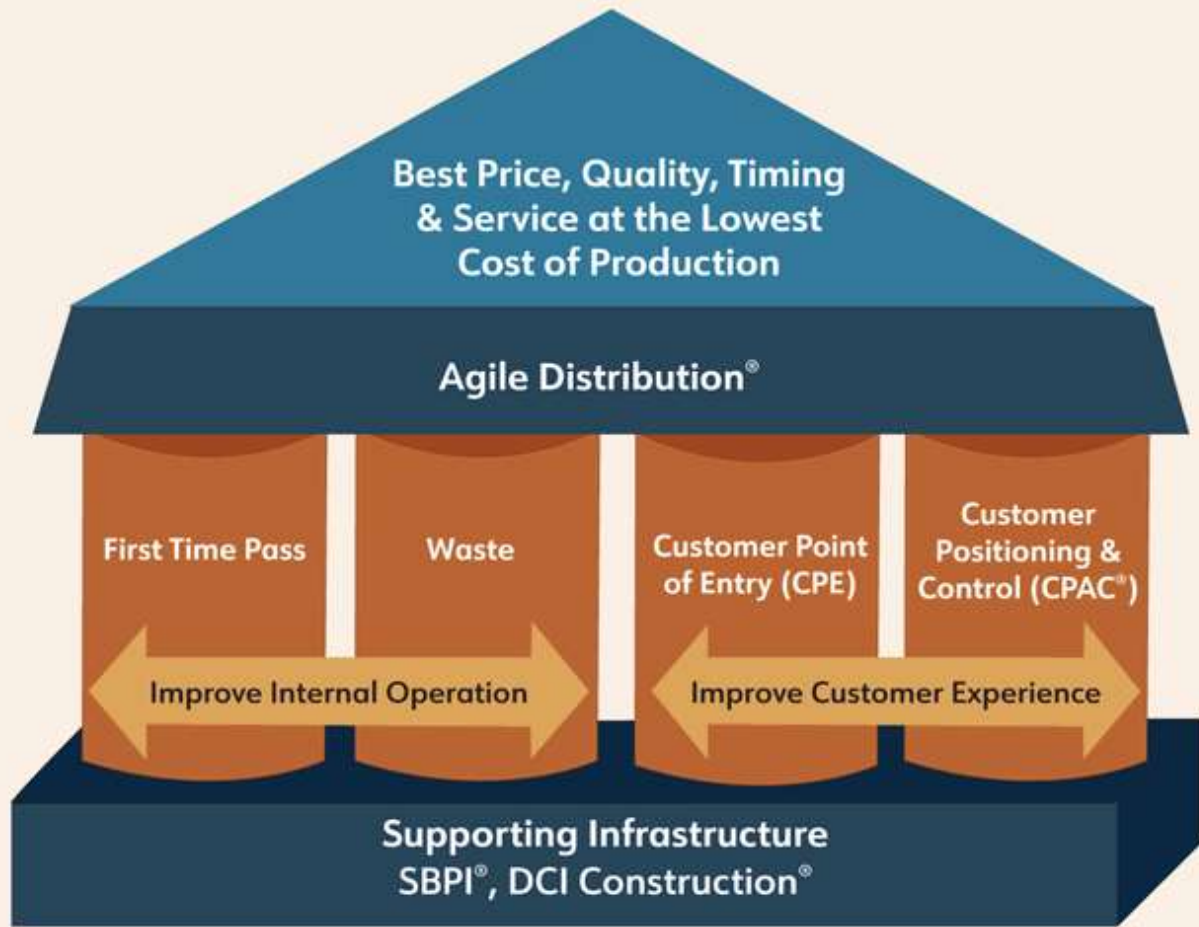


Exhibit 3: Pillars of Agile Distribution®

Exhibit 3: Pillars of Agile Distribution®



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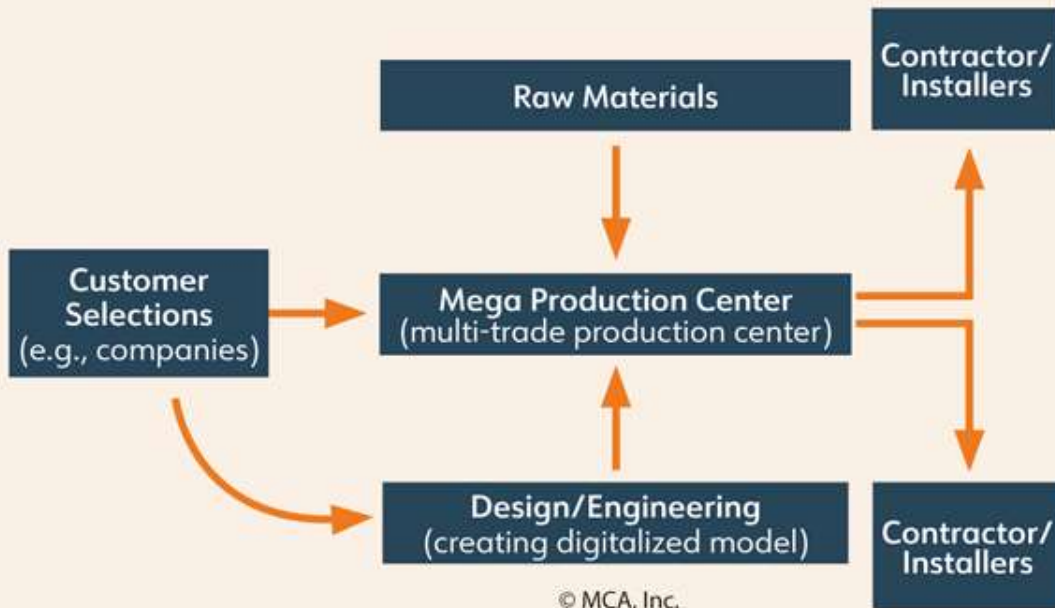
Exhibit 4: Time to Pick 1 Line Item (in Minutes)

Exhibit 4: Time to Pick 1 Line Item (in Minutes)



Exhibit 5: Construction Industrialization Megacenter

Exhibit 5: Construction Industrialization Megacenter



- Regulations will be needed to protect the “stretch” from a few large national producers to multiple localized dealers for pricing; transportation and distribution; and licenses, taxes, and regulations

- The industry will go from prototyping (“every building is unique”) to mass-customization through the prefabrication process, Integrated Material Logistics Solution (IMLS®), and a significant increase in Externalized Work®
- Agile Distribution® will play a central role in reducing the cost of material movement and storage

All of these changes support the Industrialization of Construction®.

This trend will also require a heightened focus on quality and consistency in production (prefabrication and installation), as the industry moves from *buyer beware to seller beware*. The tools introduced — developed in the early 20th century to support expanding manufacturing, such as statistical process control (SPC)⁶ and process failure mode and effects analysis (PFMEA)⁷ — will be essential for construction to expand production without retractions in quality and cost.

The Crescent Electric case study presents a large project support plan whereby the distributor becomes integral to the overarching project schedule, which is also the embodiment of Generation 4 Distribution where the distributor is integrated into the project through information and logistics, not just a third-party parts buyer/seller.

BEWARE OF FAKE USERS & ADVOCATES

While all of these changes advance industrialization, the history in other industries tells us that there will be a clinging to the past by players who don’t adapt and evolve.

For example, legacy institutions that may have been pioneers of the industry’s advancement decades ago may portray their involvement with a “me too” approach, but they won’t “walk the walk” in their actions and investments. On the other end of the spectrum, capital enabled outsiders may come in attempting to put a model in place without recognizing where construction currently stands in the trajectory of industrialization.

For example, even though the megacenter envisioned may look easy to put in place, especially to those outside of construction, the five steps of Industrialization must be followed for it to succeed. Several attempts to implement this in construction have failed in the last decade, and the same could happen in the dealership model without correct application for the construction environment.

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The pure applications of industrialization require a foundation in principles, not copying models from one industry to the next or from one company/peer to the next. We can learn from peers, but copying or thinking a best practice will fit every environment can stagnate progress or even take a company or industry backward.

CONCLUSION

The Industrialization of Construction® is no longer a distant concept — it's an evolving reality. As distributors transition from traditional suppliers to strategic partners, models like Agile Distribution® are proving to be vital in driving efficiency, reducing costs, and enhancing productivity.

Crescent Electric's journey exemplifies the possibilities that come with this transformation, while the dealership model points to a future where distributors play a central role in connecting producers and consumers in a rapidly industrializing construction ecosystem.

To fully embrace this shift, the industry must adapt to foundational principles, prioritize data-driven decisions, and anticipate the

demands of an ever-changing market. As the industry continues down this path, only those prepared to evolve will thrive.



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DR. PERRY DANESHGARI is President and CEO of MCA, Inc. (mca.net) in Grand Blanc, MI. MCA, Inc. focuses on implementing process and product development, waste reduction, and productivity improvement of labor, project management, estimation, and accounting. He has been previously published in CFMA Building Profits, linking his background in management, economics, and his PhD in Mechanical Engineering with the industry's practical needs. He has worked with hundreds of contractors to improve productivity and processes both on construction projects and within the contractor's overall operations. Dr. Perry can be reached at 810-232-9797 and perry@mca.net .



DR. HEATHER MOORE is the Vice President of Customer Care and Support at MCA, Inc. (mca.net) in Grand Blanc, MI. A frequent author for CFMA Building Profits, she holds a PhD in Construction Management with a focus on information available from the jobsite work environment using MCA, Inc.'s processes and tools for Work Environment Management (WEM®). She has contributed to research as well as customer process implementation with MCA, Inc. Dr. Heather can be reached at 810-232- 9797 and hmoore@mca.net.

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