EMBRACING INDUSTRY 4.0

A roadmap for Digital Transformation success

Phil Fry MBA,
Partner, Advanced Analytics
& Digital Transformation

Joseph Helmy,
Managing Partner, Strategy

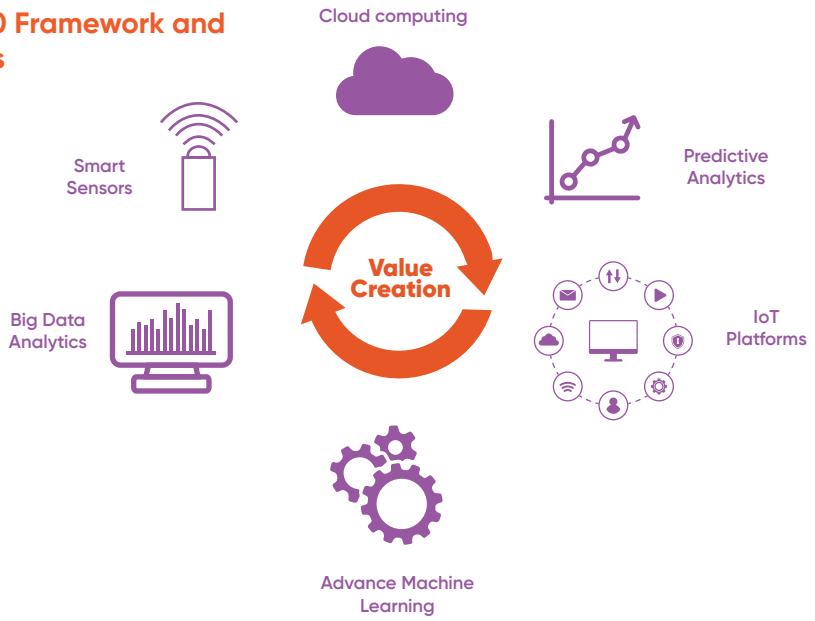
Jose Gomez MBA,
Associate, Operations
& Analytics

JH elmy & CO.

Digital transformations in manufacturing and production have revolutionized value creation, enhancing companies' efficiency, customization, and adaptability. Industry 4.0 technologies highlighted in Figure 1, such as automation, advanced analytics, and IoT, play a crucial role in these transformations, enabling seamless connectivity, real-time insights, and intelligent decision-making. A recent analysis conducted by the World Economic Forum revealed that organizations could gain efficiencies of up to 35% through the successful integration of these technologies[1]. We examine case studies of companies that completed digital transformations in Industry 4.0 to learn important lessons on having a clear strategy, a roadmap for execution, and the right technology adoption for achieving successful outcomes. Industry 4.0, the fourth industrial revolution, represents the integration of these advanced technologies into traditional industrial processes, revolutionizing how businesses operate and innovate for the customer.

Digital transformations in manufacturing and production have revolutionized how companies generate value. According to the MIT Center for Information Systems Research (CISR), companies that complete digital transformations experience a 16% increase in margins, surpassing the industry average in which they operate[2]. This level of value creation resulting from digital transformations is a testament to their transformative power, as they enhance efficiency, reduce costs, and elevate overall business performance. A recent survey conducted by Professor Linda Hill at Harvard Business School, involving 1,500 senior executives, provides further insights into the immense potential of digital transformation efforts. The survey reveals that 97% of respondents "agreed" or "strongly agreed" that organizations will not remain competitive unless they have a plan for a digital transformation in a part of their business shortly. This showcases the widespread recognition among industry leaders of the critical importance of embracing digital transformation. These statistics underscore digital transformations' undeniable impact and significance in modern business landscapes. They have become imperative for organizations to remain competitive, drive growth, and unlock new opportunities for innovation and success.[3]

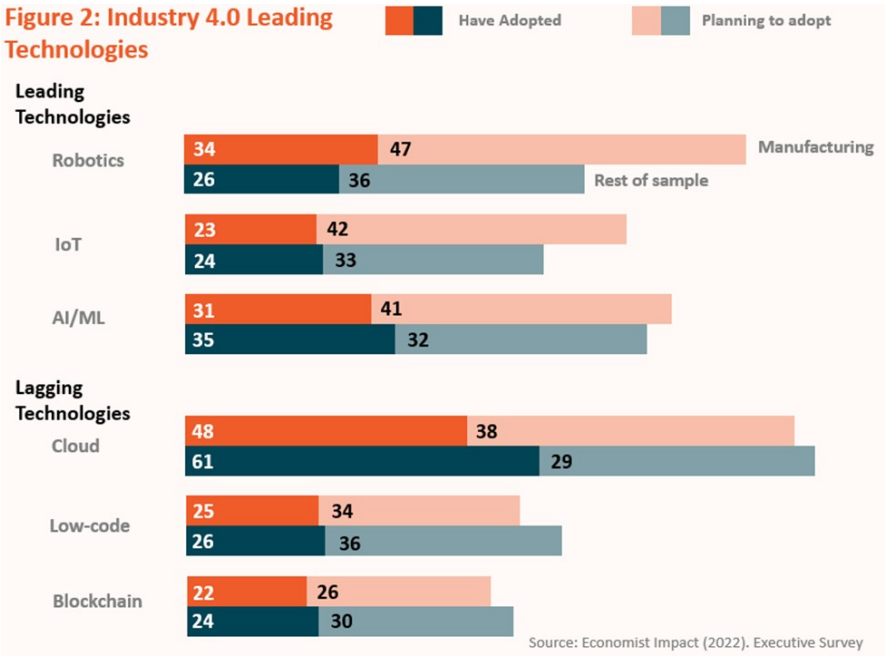
Figure 1: Industry 4.0 Framework and Digital technologies



These statistics underscore the undeniable impact and significance of digital transformations in modern business landscapes. They have become imperative for organizations to remain competitive, drive growth, and unlock new opportunities for innovation and success. For example, digital transformations enable organizations to build agile and responsive supply chain systems, allowing them to adapt quickly to changing market conditions and customer demands. Companies like Amazon have embraced Industry 4.0 and implemented sophisticated digital technologies to optimize supply chain operations, including real-time inventory tracking, predictive analytics, and automated order fulfillment. Amazon can adjust its inventory levels dynamically, respond rapidly to customer orders, and minimize delivery times. This agility improves customer satisfaction and allows the company to stay ahead of competitors in the fast-paced e-commerce industry.

INDUSTRY 4.0: DRIVERS FOR DIGITAL TRANSFORMATIONS IN 2023

Changing customer demands and market trends also drive the need for digital transformation in manufacturing companies. Consumers increasingly demand customized and personalized products and services and expect faster delivery times and improved quality. Manufacturers must respond to these demands by embracing digital solutions that allow them to streamline their operations, improve efficiency, and meet the needs of their customers.



A recent survey by The Economist (Figure 2) reveals that Manufacturing companies lead other industries in adopting Robotics, Cloud, and AI/ML. Executives in Manufacturing highlighted that 82% of companies that implemented machine learning transformations reported cost savings, and 79% reported increased productivity. These statistics demonstrate the tangible benefits and success that companies have achieved by implementing robotics, cloud computing, and machine learning technologies. They highlight the positive impact on productivity, cost savings, growth, and overall business performance.

Digital Transformations present many challenges, including siloed decision-making, legacy systems, and digital skill gaps in the labor force. Only about 30% of companies navigate a digital transformation successfully[4]. To better understand what makes manufacturing and production companies successful in digital transformations, we examine three case studies in which production and manufacturing companies embarked on internal digital changes. The case studies highlight how Coca-Cola leveraged Advanced analytics to optimize the supply chain for Minute Maid, how Blue Apron uses machine learning to understand customer preferences and minimize production costs, and how Michelin Tires uses IoT to create more customer value. Each case study illustrates different applications of Industry 4.0 in Manufacturing and Production and how each of these companies embarked on their internal digital transformations.

CASE STUDY #1: HOW COCA-COLA USES ADVANCE ANALYTICS TO RE-INVENT THE FOOD AND BEVERAGE INDUSTRY

Modern technologies like the Cloud, Artificial Intelligence (AI), Machine Learning (ML), and the Internet of Things (IoT) are driving the optimization of production processes for Food and Beverage companies. Industry 4.0 is a reasonably new era associated with Industrial-technology companies that harness the power of digital technology as the core competency of their business. We often ignore industries where companies have existed for hundreds of years and have leveraged advanced analytics to unleash customer value. Coca-Cola is one of those companies that has applied data analytics to create and capture value for their customers, suppliers, and vendors. As the world's largest beverage company, with over 3,500 products sold worldwide, Coca-Cola has about 250 bottling partners with 900 bottling plants and employs over 700,000 system associates worldwide. This entails an enormously complex production and operation system that relies on robust data analytics to forecast supply and demand. It is no coincidence that Minute Maid, a Coca-Cola company, is the number one juice brand in the world and consistently ranks as the top choice for orange juice in consumer surveys. Coca-Cola underwent a digital transformation to harness Big Data, IoT, and Machine learning to create a sophisticated algorithm called Black Book to manage Minute Maid's production. Black Book is a model that combines data sources from databases across agricultural, transportation, customer demand, and taste profile variables for orange juice. Each dataset contains extensive profiles about specific inputs like weather dates, expected crop yields, satellite imagery, regional consumer preferences, detailed data on the 600 flavors that make up an orange, transportation variables that impact fruit quality, and many other factors. Coca-Cola uses the output of this model to produce an orange juice that tastes consistent year-round, despite orange sourcing from multiple geographical locations worldwide.

Black Book is a tool that Coca-Cola has leveraged in other parts of its supply chain and has created savings of $3B. Bob Cross, the inventor of Coke's Black Book juice model, calls it "one of the most complex applications in business analytics. It requires analyzing up to 1 quintillion decision variables to deliver the optimal blend consistently. It has helped Coca-Cola meets shareholder expectations to create value and customer preferences by optimizing taste"[5]

CASE STUDY #2: PREDICTIVE ANALYTICS IN MEAL KIT DELIVERY MEAL SERVICE PROVIDER BLUE APRON

Blue Apron captures value through a subscription model that allows consumers to sign up and receive weekly boxes with ingredients and recipes to prepare meals. Core to the success of Blue Apron is a robust data analytics structure[6]. The knowledge of variables and their relationships is necessary for Blue Apron to sustain fluidity in its supply chain. For example, Blue Apron factors farmers' data regarding the quality of crops they produce and the size of the crops to aspect in meal size and the expected shelf life before crops reach consumers. Blue Apron then factors customer demand preferences, pairing popular meals in real-time based on previous orders and similarities to other customer segments. Blue Apron uses an algorithm that attempts to predict, based on previous purchases, the popularity of specific ingredients, so that future recipes would appeal to a more excellent consumer pool. And if there is a surplus of ingredients, there needs to be a readjustment of recipes to account for the excess element so there isn't any wasted food.

What is different about Blue Apron relative to traditional food delivery methods is that it leverages advanced analytics from the customer end and its supply chain to find a perfect balance[7]. The surplus of the raw material area is easily corrected by the item utilization in a recipe and by knowing which customers prefer which ingredients. Bradley Dickerson, CEO of Blue Apron, highlighted in a recent interview with Business Insider the effective integration of Blue Apron's supply chain, which allows Blue Apron to transfer savings to consumers of up to 30%, facilitating Blue Apron's new partnership with Costco[7].

Dickerson also highlights that while digital transformations and the tools that Industry 4.0 offers have created tremendous value for Blue Apron, there are new challenges that the company has had to face, including attracting talent with the skill base required to manage a more sophisticated supply chain.

CASE STUDY #3: MICHELIN TIRES LEVERAGE IOT AND DATA TO SERVICE CUSTOMERS

The Internet of Things, a vast network of sensors and intelligent devices combined with advanced analytics and cloud services to make sense of data, promises to augment and disrupt products and services across industries. Forecasters predict IoT will create $3.3T of economic value for Industrial companies worldwide, almost double that of Human Health, the second highest sector[8]. The successful integration of IoT and the data insights it can provide about customers can help companies adapt their products and production processes to meet customer needs. Michelin, the second largest tire manufacturer in the world, embarked on a digital transformation to sell business results driven by data and IoT.

Fuel cost is increasingly becoming a headwind that jeopardizes the profitability of truck companies, with most trucking companies having margins of less than 2% across their business[9]. Truck drivers also face the challenge of reducing CO2 emissions given new regulatory requirements such as the Advanced Clean Trucks Rule that requires half of the trucks sold in California to be zero-emission by 2035[10]. Michelin decided to offer a service solution for customers to help truck drivers reduce their costs and CO2 emission. The service provides trucking companies with telematics equipment that collects and processes information about all critical parameters of a trucking operation, such as vehicle information, type of usage, weather conditions, and fuel consumption. All this data collection is analyzed by an advanced analytics algorithm that provides insights to truck drivers and managers about optimizing costs and emissions.

Truck drivers receive alerts about preventive maintenance needs based on data collected by telematic systems or driving techniques leading to poor fuel efficiency and CO2 production. Management can gain insights from truck drivers to improve the training of new drivers and performance management of existing drivers. Florent Menegaux, Michelin's CEO, highlighted in a recent CAC40 forum that the most significant challenges he has faced in Michelin's digital transformation are employee skill and creating a digital culture "enhancing the skills of employees so that they can become ambassadors of change, and around integrating and retaining people with digital skills," composed of CEO's from the 40 largest French companies (CAC40)." [11]

DIGITAL TRANSFORMATION JOURNEY

Embarking on a successful digital transformation begins with developing a clear, well-defined strategy aligning with the company's vision and objectives. This involves a comprehensive assessment of the organization's current state, including its technological capabilities, processes, and customer needs. We define a framework in Figure 3 that companies can use to create a roadmap for a successful digital transformation to address their specific challenges. Organizations must remain open to exploring different modes of technology and finding the best fit that aligns with their goals. In the case studies we examined, we observed how companies strategically implemented technologies such as predictive analytics to optimize their supply chain, advanced forecasting models to meet customer demand efficiently, and leveraging IoT to gain insights into challenges and enhance the customer experience. Each organization must consider the unique problems it aims to solve and determine the scale of impact it wishes to achieve to determine the most appropriate technology and the extent of change required.

Figure 3: Framework for a Successful Digital Journey

1. **Define the Strategy** – what value is the organization looking to create?
2. **Prioritize Areas** – what technologies can be leveraged?
3. **Embrace Change Management** – are the employees ready for change?
4. **Organizational Readiness** – Does your organization have the necessary skills to thrive?
5. **Execute and Monitor** – Do you have a roadmap in place to monitor and drive continuous improvement?

Senior leaders play a pivotal role in leading successful digital transformations in the context of Industry 4.0. Groups within an organization may have different incentives to not share data across teams, often from trying to protect their respective workflows. Senior leaders play a pivotal role in breaking these silo's by defining what success looks like and incentivizing each level of the organization to be engaged in the digital transformation. Another important aspect where senior leaders become an important factor of change is to identify internal talent that is best suited to be part of the digital transformation or to hire that talent. Embracing digital transformations is no longer an option but a strategic imperative for organizations to remain

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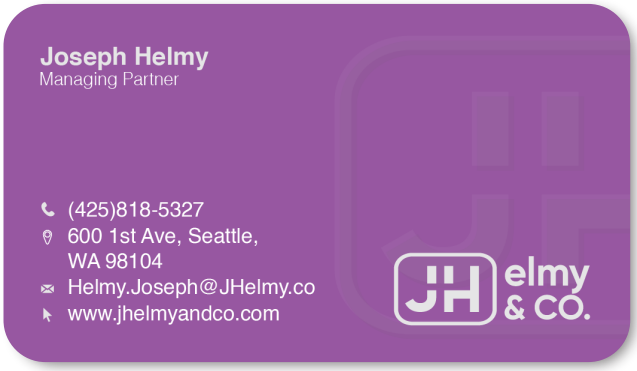
JHelmy&Co. is not your typical consulting firm; we are driven by a passion for empowering businesses and delivering real impact. As a boutique consulting firm, we have established ourselves as a go-to partner for visionary business leaders seeking exceptional results and a collaborative approach. Since our inception, we have been at the forefront of guiding organizations to success through insightful and customized consulting solutions. With offices in Seattle and Chicago, our local presence and national reach enable us to understand the unique challenges and opportunities specific to each location, ensuring our clients receive tailored solutions that make a genuine difference.

OUR DIFFERENTIATING FACTORS:

Empowering Excellence: At JHelmy&Co., we are deeply committed to empowering excellence in all aspects of our clients' businesses. We believe in fostering a culture of continuous improvement, innovation, and adaptability, helping organizations reach new heights and stay ahead of the competition.

Delivering Real Impact: We go beyond providing advice and strategies; we focus on delivering tangible and sustainable results. Our dedication to achieving measurable impact sets us apart and drives our commitment to driving positive change for our clients.

Collaborative Partnership: We believe in true collaboration with our clients. By immersing ourselves in their challenges and opportunities, we become partners in their journey towards success. Our shared ambition ensures that our clients' goals become our goals, and we work tirelessly to bring their visions to life.



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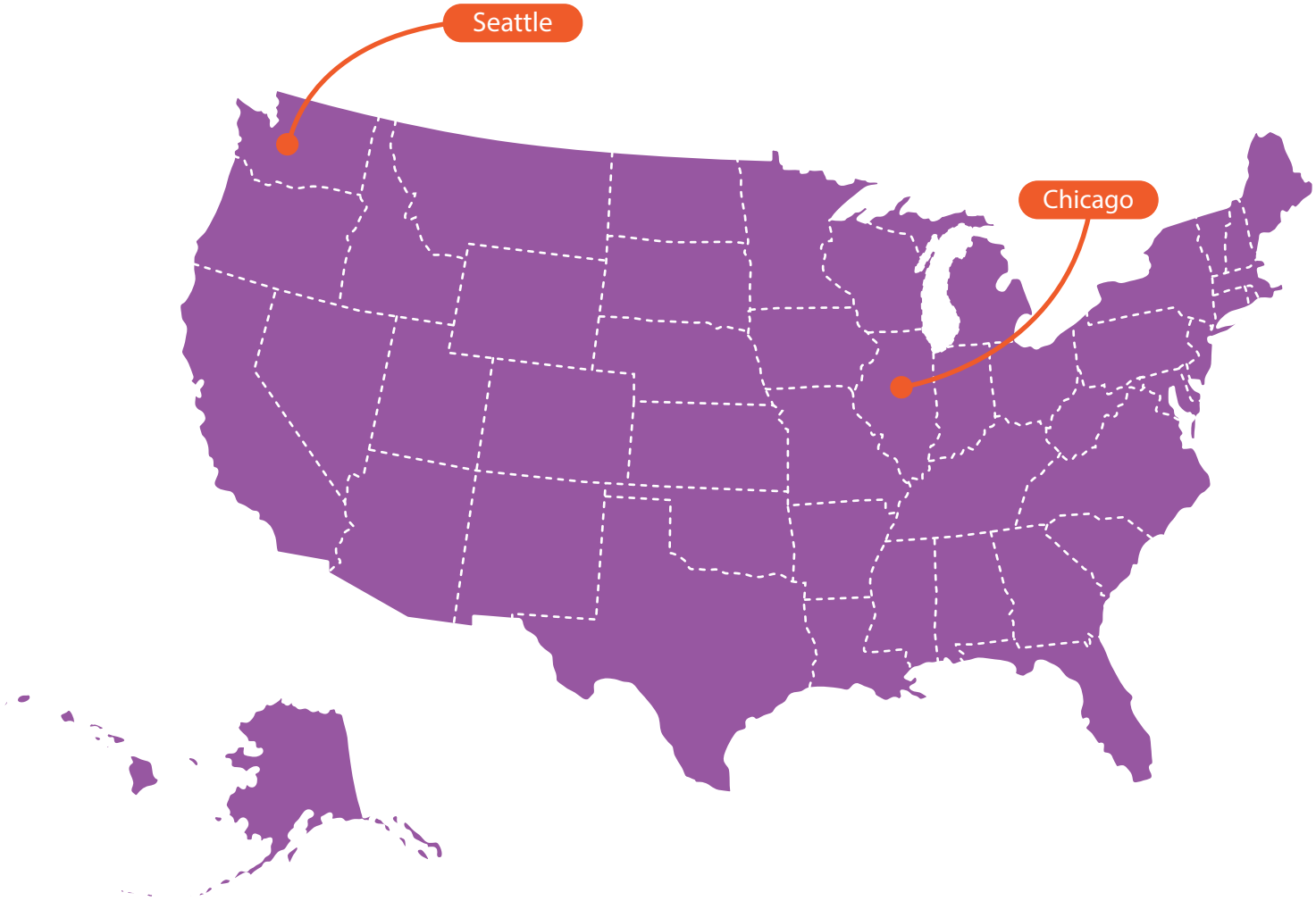

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