Global Food and Beverage Industry Trends and Strategic Insights, 2022

Sponsored by: Aptean

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INTRODUCTION

Global disruptions, such as geopolitical conflicts or natural/environmental events, continue to materially impact manufacturing supply chains, increasing costs and delays and altering investment priorities. At the same time, inflation is experiencing record highs, energy prices globally are rising, and the food & beverage (F&B) industry has been contending with continually shrinking margins. In addition, competition has never been higher across the industry as more companies compete for the same customer base. Staying on top of rapidly changing consumer habits and evolving regulatory requirements is a constant concern for F&B organizations. Competing in this rapidly changing environment has led many to rethink how they operate. While companies realize that a digital-first strategy is critical to success, it is a complex journey with many challenges to address along the way.

To explore the state of the F&B industry and uncover strategic priorities of successful organizations as well as the impact of digital transformation (DX), IDC conducted a study of over 650 F&B companies. This paper, sponsored by Aptean, explores the results of this study. In addition, the paper highlights industry trends in the F&B industry and the impact of digital transformation, sustainability initiatives, outsourcing, supply chain management, and the technology approach supporting F&B modernization and automation. The key findings and insights in this paper are based on a survey that was completed in June 2022.

METHODOLOGY

Survey Demographics

The survey included 669 F&B respondents that were the digital transformation primary decision makers or part of the team that makes decisions for their organization. The decisions include those associated with supply chain management, ERP systems, Industry 4.0, and/or food safety. The study looked across three subsegments within F&B: processors (processing raw goods into ingredients), manufacturers (combining raw goods/ingredients into more complex products), and distributors.

Key demographics include:

- **F&B segment:** Manufacturers (48%), distributors (30%), and processors (22%)
- **Geographic location:** North America – 53% (United States – 42% and Canada – 11%) and EMEA – 47% (United Kingdom – 16%, Germany – 10%, Belgium – 9%, Netherlands – 8%, and Ireland – 4%)
- **Title:** C-level (7%), VP (18%), and director (75%)
- **Functional group:** IT (50%) and line of business (LOB) (50%)
- **Company annual revenue:** <$20 million (28%), $21 million-$100 million (27%), $101 million-$250 million (26%), >$250 million (19%)

A similar industry study was conducted in 2021, and IDC kept some questions consistent to provide year-over-year analysis. We also added new topic areas such as the use of outsourcing. This paper focuses on the overall research findings while weaving in notable subsegment, regional, employee-level, and role-based insights.

KEY FINDINGS

The survey that underpins this paper provided a wealth of data and insight for F&B companies, and we have identified eight key findings that are explored in greater detail in this paper:

- Digital transformation has clearly been delivering benefits for the industry, with roughly three-quarters of respondents seeing KPI improvements across all areas of the business (production, quality, supply chain, logistics, sales, ecommerce, etc.) as a result of their DX initiatives. In addition, a further 45-55% of F&B companies expect to see even greater improvements across these areas over the next 12 months.

- This cloud focus is reflected in the use of cloud-based ERP systems, which continue to gain ground across the industry. Over a quarter of respondents are in the process of moving to the cloud or are already on cloud ERP, with another 25% of respondents currently investigating a move to the cloud. The financial performance of F&B organizations that have moved to the cloud continue to show dramatic correlation with better financial results, with companies on cloud ERP reporting over twice the increases in revenue and profit over the past 12 months when compared with those with on-premises ERP systems. This performance difference is also shown when comparing F&B-specific ERP systems with those designed with more general applicability, with industry-specific ERP respondents citing a 5.3% increase in revenue and 4.9% increase in profit (general ERP increases of 2.9% and 3.7%, respectively).

- Economic uncertainty/rising inflation is the clear top concern across the industry. Inflation concerns are highest among North American companies; however, this ranks as the top concern across EMEA as well. This issue is expected to remain at the top of industry challenges over the next five years, with higher operating costs/costs of goods sold or the need to raise prices cited as the most impactful to the industry over that time frame. As a result of inflation and cost concerns, efficiency and waste reduction initiatives are expected to be a high priority over the next year.

- Even with cost/price pressures, the trend with the highest priority over the next year for F&B organizations will be sustainability, selected by almost 40% of respondents. There is a connection with efficiency initiatives, as there are cost savings that can be derived by sustainability improvements (reducing energy, water, waste, etc.), but the largest driver behind this focus can be traced back to customers. While there are many steps that companies can take to become more sustainable, the majority of the industry still has work to do from an adoption standpoint.

- Supply chain resiliency (visibility and adaptability) is still ranked as the largest gap F&B companies need to address for long-term success. Two related factors are contributing to this — limited flexibility and a lack of digital tools to manage the supply and limited supply chain talent/labor. The supply chain plays a critical role today in managing and mitigating business risk though traceability, visibility, and sustainability efforts.

- Outsourcing/contract manufacturing, a new focus for this year's industry survey, is expected to continue to grow in usage over the next 12 months. The ability to better meet fluctuations in demand in a timely manner was the top reason outsourcing was considered, and product quality/traceability concerns are the top barriers faced by this approach.

- A growing lack of talent/skills has now become the top overall digital transformation barrier faced by F&B companies. This is especially striking when compared with results from just one year ago: in last year's survey, 19.8% of respondents cited talent as the top barrier, while this year that proportion increased to 35.3% of respondents. One of the key questions that needs to be answered is, "What is the role of technology in combating growing skills gaps?"

- Even with economic and inflation concerns, the F&B industry plans to continue investing in technology to further improve its businesses, with half of the respondents expecting enterprise software spending to increase over the next 12 months (over 10% of respondents expect spending increases of over 25%). Artificial intelligence (AI) is viewed as the most impactful technology enabler over the next five years, yet the importance of cloud is not far behind.

CHALLENGES AND OPPORTUNITIES IN THE FOOD AND BEVERAGE INDUSTRY

At a time of constant disruption fueled by global events and challenges such as rising inflation, environmental changes, epidemics, trade across borders, and ever-changing and increasing regulatory requirements, global manufacturing supply chains face unprecedented pressures.

Supplies of wheat, sunflower oil, and corn are also impacted, which is having serious consequences for food security across the globe. The same goes for fertilizer as some survey respondents cited concern with producers of potash, phosphates, and so forth impacted by the ongoing conflict in Europe (see callout). Many organizations are now concerned how future geopolitical conflict could disrupt other aspects of the F&B industry. Labor shortages and transportation/delivery delays, which were hoped to be temporary, have turned into long-term gaps that have been almost impossible to fill, particularly in packing plants, processing areas, and trucking.

> "The F&B industry will experience major trouble due to fertilizer shortages and inflation. Over the past year, our DX experience has been without any major problems, and we have seen some small improvements with more expected to follow."
>
> — Operations director, medium-sized food distributor

With the rapidly changing consumer habits faced by the industry, IDC defines the digital mission of F&B companies as "engaging consumer experience at scale" or being able to create and offer engaging consumer (the end user) and customer (mainly retail) experiences at scale. It is not enough to meet the needs of consumer segments. Companies must meet and exceed the needs of individual consumers both in ways they expect and in ways they have not yet imagined. There will be an emphasis on innovation excellence in terms of the success of new products and the numbers required, the ability of the supply chain to manage different engagement models, and the ways in which both consumers and customers are engaged. Consumer and customer expectations in F&B and a growing focus on sustainable offerings will make this strategy mandatory, but implementation success and efficacy will determine ultimate profitability and competitive differentiation.

Even with the constant disruptions, worker shortages, an evolving regulatory landscape, and potential COVID-19 variants, the top concern by far for the F&B industry over the next year comes back to cost (see Figure 1). This focus on inflation and economic uncertainty remains high no matter how you slice the data – it is the top concern whether you ask a manufacturer, processor, or distributor, regardless of company size, level of employee, or geographic region – although there are some regional variations in who is most concerned, with the U.S. and Canada F&B companies most concerned (4.1 out of 5), the United Kingdom/Ireland in the middle of the pack (3.9 out of 5), and Belgium/the Netherlands being the least concerned of surveyed regions (3.6 out of 5). Rising inflation has been causing raw materials and finished goods prices to increase, and F&B executives are concerned with having to pass on those price raises to the customer. This sensitivity to even minor price increases does not come as a surprise as executives in the industry are generally managing enterprises that are asset intensive, at the mercy of global commodity markets, and face both low margins and high demand variability.

FIGURE 1

Top External Concerns Over Next Year

Q.   *How would you rate your organization's level of concern around the following external pressures over the next year?*
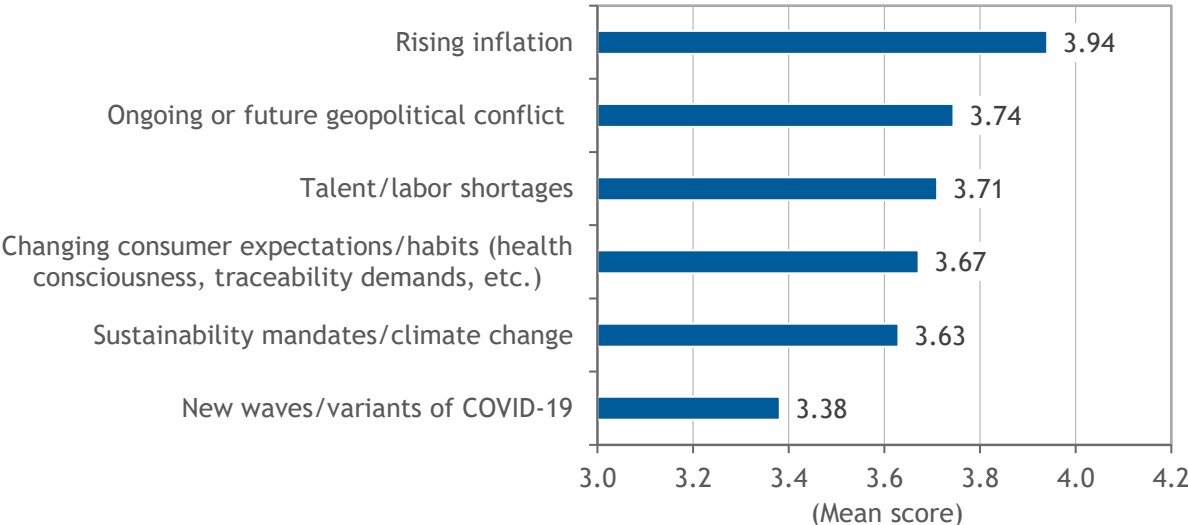
n = 669

Note: Scoring is based on a scale of 1-5 (1 = not a concern, 5 = significant concern).

Source: IDC's *Food and Beverage Industry Survey,* June 2022

The concern over cost remains the greatest when considering the next five years as well (see sidebar), with higher operating costs/costs of goods sold or the need to raise prices cited as the most impactful to the industry over that time frame. One difference of note that stands out when looking at impact over five years by subsegment, F&B processors, and distributors is highly focused on the potential impact of cost of goods sold (COGS), while manufacturers are most concerned with customer preferences and sustainability, although higher costs is a close third for F&B manufacturers as well. As a result of inflation and cost concerns, identifying new ways to become more efficient and cut costs will be imperative.

On top of these external influencers, the F&B industry is unique in that the nature of the business and the products produced has a direct impact on the health and safety of its consumers. This relationship with consumers, combined with the jump in food recalls over the past few years, has put an increased spotlight on the industry as a whole. It is more important than ever for executives at F&B manufacturers to get ahead of the curve and ensure that the products they produce are safe and of high quality.

Most Impact Over Next Five Years (All Respondents)

- Higher operating costs and COGS/raise prices — 37.2%
- Changes in consumer demands and preferences — 36.0%
- Sustainability and environmental stewardship — 34.2%
- Pressure to cut costs/lower prices — 32.0%
- Emerging technology and data solutions — 31.7%
- Talent/labor shortages — 29.0%

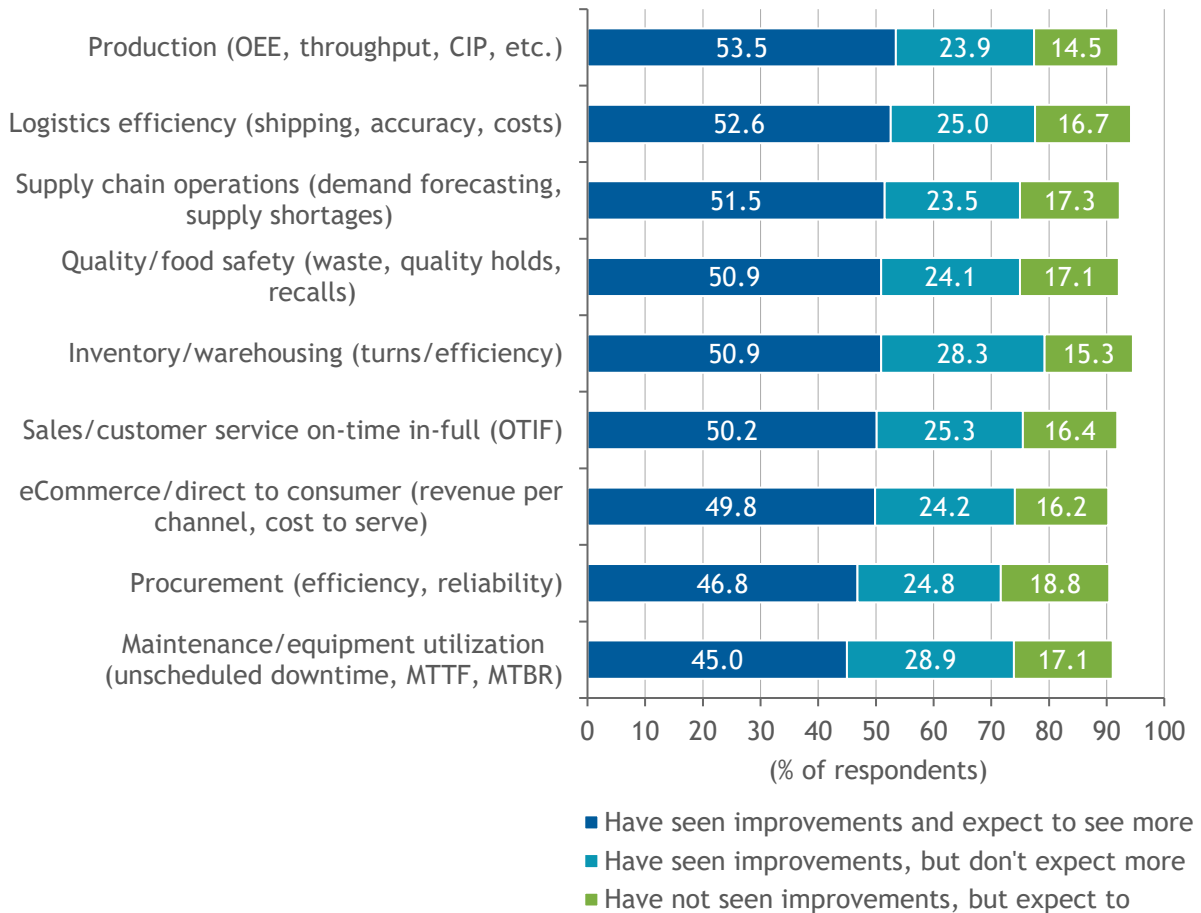## DIGITAL TRANSFORMATION IMPACT ON BUSINESS PERFORMANCE

IDC defines digital transformation as the application of new technologies to radically change processes, customer experience, and/or value. For manufacturers, that means transforming decision making through the use of data and technology. Digital transformation is by no means a new concept for the F&B industry, but the impact of embracing this approach cannot be overstated. Figure 2 highlights the improvements experienced as a result of DX initiatives across a wide range of business areas/key metrics.

Digital transformation has clearly been delivering benefits for the industry, with roughly three-quarters of respondents seeing KPI improvements across all areas of the business (production, quality, supply chain, logistics, sales, ecommerce, etc.) as a result of their DX initiatives. In addition, a further 45-55% of F&B companies expect to see even more improvements across these areas over the next 12 months. As economic uncertainty and price concerns continue to be top of mind, ongoing improvements in efficiency, cost, waste, or inventory management can play a large role in assuaging these concerns. It is also not a surprise to see that the most mature companies from a DX perspective were far more likely to have experienced improvements and expect to see more. Most respondents were well along in their progress from a DX maturity perspective; however, when drilling down into F&B subsegments, manufacturers were clearly the most mature. Almost a quarter of F&B manufacturers ranked at the most mature level, while distributors and processors ranked in that stage at 12.1% and 11.1%, respectively.

FIGURE 2

DX Initiatives Are Delivering Results

Q.   What areas of the business do you expect or have you seen KPI improvements from digital transformation initiatives?

Area	Have seen improvements and expect to see more	Have seen improvements, but don't expect more	Have not seen improvements, but expect to
Production (OEE, throughput, CIP, etc.)	53.5	23.9	14.5
Logistics efficiency (shipping, accuracy, costs)	52.6	25.0	16.7
Supply chain operations (demand forecasting, supply shortages)	51.5	23.5	17.3
Quality/food safety (waste, quality holds, recalls)	50.9	24.1	17.1
Inventory/warehousing (turns/efficiency)	50.9	28.3	15.3
Sales/customer service on-time in-full (OTIF)	50.2	25.3	16.4
eCommerce/direct to consumer (revenue per channel, cost to serve)	49.8	24.2	16.2
Procurement (efficiency, reliability)	46.8	24.8	18.8
Maintenance/equipment utilization (unscheduled downtime, MTTF, MTBR)	45.0	28.9	17.1

(% of respondents)

- Have seen improvements and expect to see more
- Have seen improvements, but don't expect more
- Have not seen improvements, but expect to

n = 669

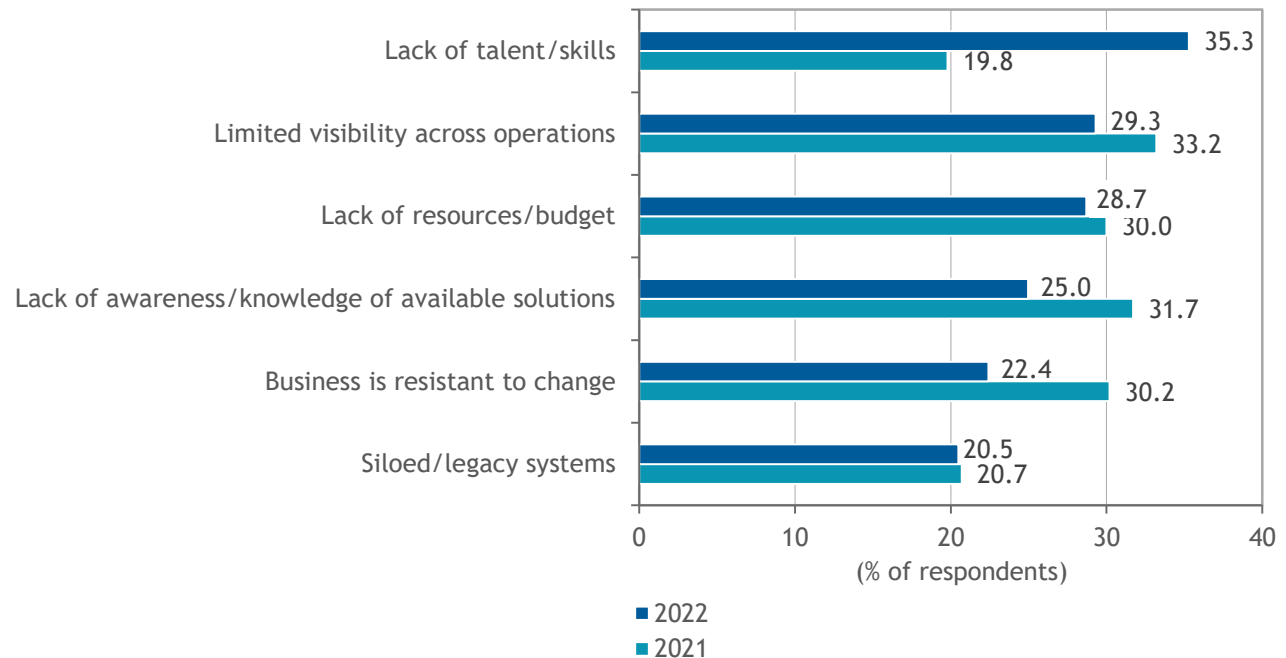Source: IDC's *Food and Beverage Industry Survey,* June 2022

Fortunately, only 1.3% of respondents said they had no DX plans, meaning it is a widely accepted approach by the industry. However, there were still 17.2% of respondents that reported just starting their digital transformation process. It is important to keep in mind that improvements grow over time, and there are many companies that have been on this journey for years and are now reaping the benefits. The more time that passes without taking any actions, the more of an advantage their peers experience. In today's highly competitive F&B industry where disruption can occur at any moment, companies cannot risk inaction when it comes to digital transformation.

Another important point to consider are the digital transformation challenges that F&B companies face, not only in the initial adoption of technology but also in successful deployment across the business. While there are consistent challenges that will come up in most discussions like trying to secure budget or convincing the business that change is needed, looking at how F&B industry challenges have shifted highlights a growing problem (see Figure 3). While a talent/skills gap has been talked about across manufacturing for years, the difference between 2021 and 2022 is striking. The COVID-19 pandemic accelerated talent issues as IDC has often heard issues with early retirements or furloughed workers not returning, but this labor problem is only going to get worse as time goes by. More workers will continue to reach retirement age and leave the business, and the knowledge gaps that are left behind are becoming impossible to fill. Talent/skills as the top barrier is almost universal when comparing by region as well, with only Belgium citing legacy systems as its top challenge (35%), although talent was a close second (30%).

FIGURE 3

Top DX Barriers — 2021 Versus 2022

Q.   What are the primary barriers to digital transformation at your organization?

n = 669

Source: IDC's *Food and Beverage Industry Survey,* June 2022

One of the key questions that needs to be answered is, "What is the role of technology in combating growing skills gaps?" In an environment where finding labor and talent is a major challenge, it is critical for companies to know how to better train the people they can find and how to more effectively use technology to augment routine or rote tasks that can distract them from more value-added activities. It will also be important for F&B organizations to consider knowledge management systems and collaboration tools to allow newer workers to learn from their more experienced counterparts. These tools can help onboard new employees more rapidly and dampen the damage of losing knowledgeable employees. In IDC's February 2022 *Talent Management Survey,* leaders were far more likely to rank digital literacy as one of the skill sets most sought after among new hires. Younger workers are more likely to possess digital skills and prioritize the use of these tools when evaluating potential employment. As digital technology continues to be adopted across all parts of the business, F&B companies will need to focus on attracting, hiring, and training employees to take advantage of these new tools. At the same time, F&B organizations should consider the user experience and ease of use of the technology tools they evaluate and utilize. Software development environments have continued to improve and are approaching a state of usability that allows employees to build or customize applications with minimal effort.

> **"The major challenge we face is finding qualified employees as the industry's new technology trends demand better prepared/skilled workers."**
>
> **— Director of IT, large F&B processor**

One positive trend for the F&B industry can be viewed in the reduction in "lack of awareness of available solutions." This trend can be linked to the steadily increasing maturity of the industry when it comes to DX and the realization that a digital-first strategy is table stakes. As F&B companies are able to attract a younger workforce that is more familiar with digital technology and work with more technology partners, awareness should only continue to become less of a challenge. One additional interesting finding is when looking at reported barriers by title. Not suprisingly, the lower you go in the organization, down to director or manager level, the more a lack of talent/skills becomes the top barrier. However, when looking at C-level respondents, 14.5% selected "no barriers" compared with only 4% for director/manager respondents. There is a clear misunderstanding by some in the C-level of the complexities and challenges faced during the DX journey.

TECHNOLOGY TO SUPPORT F&B TRANSFORMATION

The systems that F&B companies rely upon play a large role in the success of their transformation efforts. Most in the industry tend to rely upon a mix of plants, assets, and technology systems that are decades old and limited in functionality. This situation results in information being difficult to access and analyze, hindering the ability to make the most effective decisions in the necessary time frame. ERP systems serve as the backbone of F&B organizations; the use of cloud-based systems continues to be a topic of high interest across the industry. While the overall number of F&B companies that have moved completely onto cloud ERP is still low, there is a clear shift occurring when compared with 2021 (see Figure 4).

FIGURE 4

Cloud Strategy for ERP — 2021 Versus 2022

Q.   What is your organization's cloud strategy plan regarding your ERP?
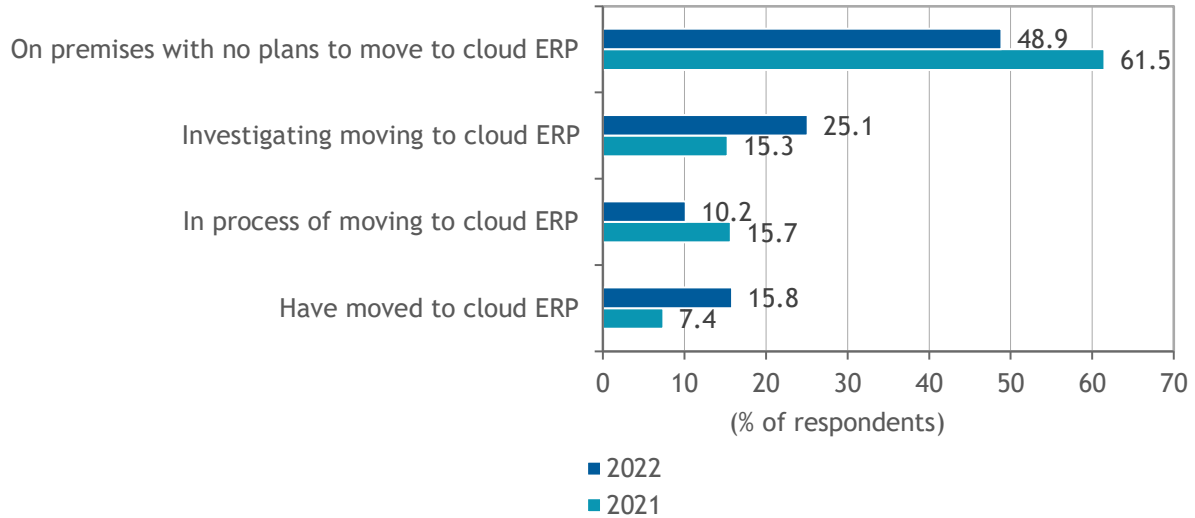
n = 669

Source: IDC's *Food and Beverage Industry Survey,* June 2022

The percentage of cloud ERP respondents has doubled in just one year's time, with another full quarter investigating cloud ERP currently. The use of cloud-based ERP systems continues gaining ground across the industry. In fact, it is now the minority of F&B companies that have no plans to move ERP to the cloud, according to our most recent survey. From a regional perspective, the United States (19.9%) and the United Kingdom/Ireland (17.5%) are the most mature from a cloud adoption standpoint, followed by Germany (13.5%) and Canada (9.9%), with the Netherlands (69.2%) and Belgium (61.7%) most likely to still be on premises.

With F&B companies facing strong cost pressures over the next year, any improvements that can be made are essential. When looking at the revenue and profit performance of cloud versus on-premises ERP organizations, the difference in performance is stark:

- **Cloud ERP** — 6.2% increase in revenue and 6.3% increase in profit
- **On-premises ERP** — 2.8% increase in revenue and 3.1% increase in profit

One thing that is important to keep in mind is not implementing "technology for technology's sake" but solving business problems or seizing on new opportunities. The most successful companies work with a technology partner and focus their efforts on how technology helps solve existing business problems or in anticipation of future ones (such as sustainability and regulatory mandates). While there are tangible cost benefits associated with the use of cloud systems, the ability to stay up to date on the latest version is where the most value can be derived.

> "Our shift to cloud ERP has been beneficial as development/ functionality is steadily on the rise, we have seen new features added to the cloud technology to help us ensure safe and reliable operations."
>
> — Director of IT, medium-sized food processor

Moving a workload from on premises to the cloud is not transformative. Reimagining a business process by taking advantage of the latest capabilities on the cloud is what will drive true results. From a food quality and safety perspective, companies utilizing cloud will have instant access to compliance data and documents in real time, and food safety measures will always be up to date. The ability to analyze larger data sets and advanced reporting capabilities enabled by cloud systems allows employees to make better decisions on stock levels, shelf life, and product quality. Also, with the disruption caused by the global pandemic, remote work/connectivity became essential to business continuity. However, this push for hybrid work models (onsite and remote) is expected to continue and serve as a long-term enabler of manufacturing success. The growing importance of enabling a remote workforce is also a relatively new challenge for the industry to address, and cloud systems are needed to support this shift by providing secure access to employees no matter their location.

In addition, the interoperability of ERP systems with other enterprise systems was researched. The top 3 systems F&B companies had integrated or made interoperable with their ERP were supply chain management (46.2%), quality management (41.4%), and customer relationship management (41.1%). When comparing respondents by DX maturity, the most mature companies were more likely to have systems integrated with their ERP across the board. Even with inflation and economy concerns, the F&B industry plans to continue investing in technology to further improve its business, with half of the respondents expecting enterprise software spending to increase over the next 12 months (over 10% of respondents expect spending increases of over 25%). From a regional perspective, U.S. companies are expecting the largest increases in investment, with Germany expecting the second-largest increase. Canada, the Netherlands, and the United Kingdom/Ireland are also expecting moderate increase in spending over the next 12 months. Belgium is the only region surveyed that expected overall software spending to decrease over the next 12 months, although the reduction is minor (3% reduction on average). Specific technology enablers were also ranked by overall potential industry impact compared with the previous F&B study, which are shown in Figure 5.

FIGURE 5

Top Technologies to Transform F&B — 2021 Versus 2022

Q. *Which technologies do you think will have the greatest impact on your organization over the next five years?*
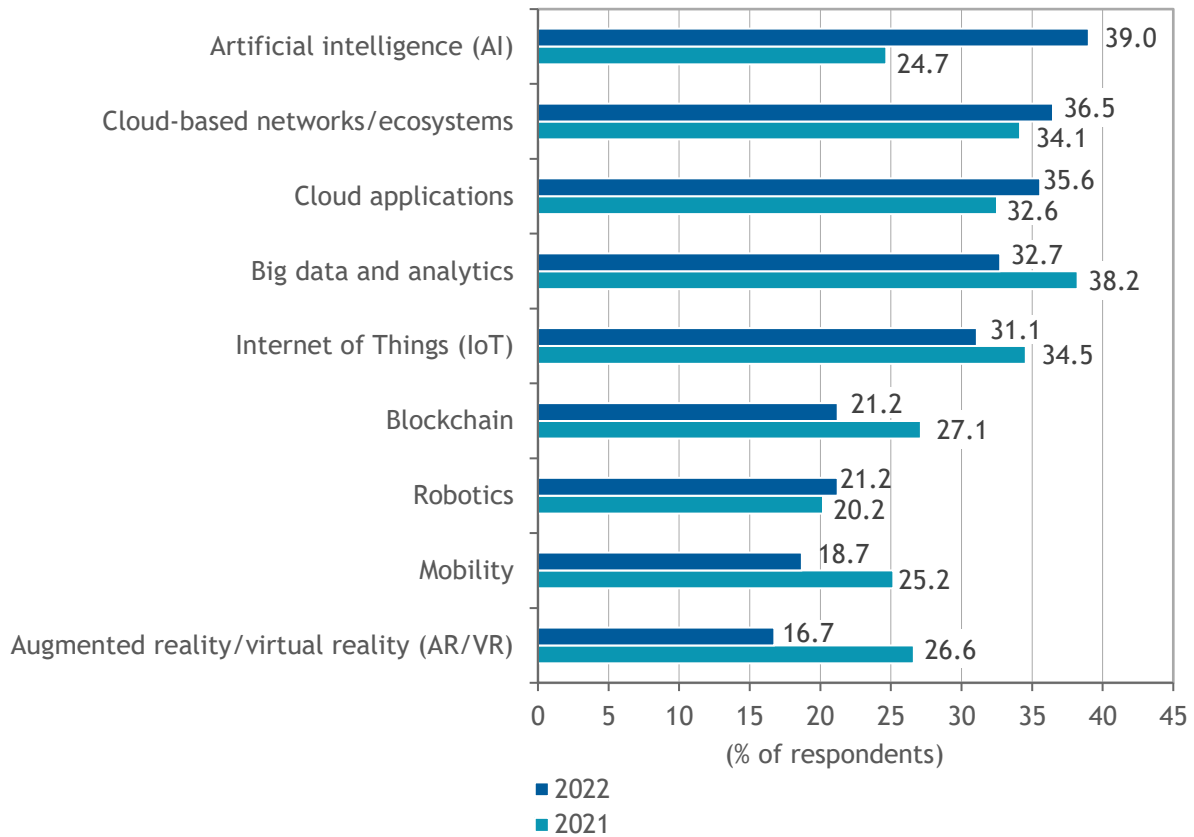
n = 669

Source: IDC's *Food and Beverage Industry Survey,* June 2022

From a regional perspective, Canada (45.1%), the United States (44.0%), Germany (40.3%), and the Netherlands (32.7%) have identified AI as the technology with the most potential, the United Kingdom/Ireland (41.6%) believes cloud-based ecosystems will be most impactful, while Belgium (30%) cited cloud applications. The most noticeable shift is the coalescing of F&B interest in artificial intelligence in the past year. AI and machine learning (ML) are the use of algorithms and statistical models to effectively perform a specific task without using explicit instructions. This takes human action out of the decision-making process, instead relying on patterns and inference. In addition, AI provides systems the ability to automatically learn and improve from experience without being explicitly programmed. In IDC's ongoing research on digital transformation, we find that companies that are further along in their AI efforts are organizing their investments along three constructs — modernizing existing systems, deploying digital platforms, and using industry clouds.

While most AI projects are still in the proof-of-concept or pilot phase, it is clear that the industry realizes the potential of AI to transform the decision-making process across the industry. However, closely behind AI is the continued realization that cloud (both cloud-based networks/ecosystem and cloud applications) is an integral part of the DX equation. This further supports the results showing the increased usage of and interest in cloud ERP systems. Shifting more workloads to the cloud will continue to be a focus for F&B manufacturers, processors, and distributors as all three subsegments rank cloud investments in their top 3 technologies. In the analysis of specific technology functionalities enabling leading performance, it was found that these functionalities span the plan, make, maintain, and deliver business processes fairly evenly without any clear winner. Therefore, in assessing where any organization should invest, it is important to first understand which of these processes are most important for success and where gaps in technology investment currently exist.

A final area that was explored in this study was the usage and importance of using systems and applications designed specifically for the F&B industry. As technology has continued to mature and the unique requirements of industries have become even more important to address technology, providers have focused on purpose-built applications. These industry-specific systems can include functionality designed for the F&B industry as a whole or even focus on functionality specific to subsegments such as meats, fresh produce, or brewing. While the usage of generic software solutions (not designed for a particular industry) is still the dominant approach, the use of industry-specific offerings is growing, with ERP (26.9%) and SCM (25.3%) systems the most likely to take this approach. With the unique challenges faced by F&B organizations, having functionality designed specifically for their requirements results in a system requiring less configuration or customization to implement and a more effective system overall. This, combined with the growing approach to utilize cloud deployment models, allows an organization the ability to always incorporate new F&B-specific functionalities/capabilities. This again is backed up by the revenue and profit performance numbers:

> "Our industry is going through rapid transformation. It's important to keep up to date with the changing market trends to be successful. Technological advances create a challenge in terms of adoption and budget restraints but also represent massive potential."
>
> — Director of IT, large F&B manufacturer

- **F&B-specific ERP —** 5.3% increase in revenue and 4.9% increase in profit
- **Horizontal ERP —** 2.9% increase in revenue and 3.7% increase in profit

It is essential for F&B organizations to look for technology partners that understand their needs. While there are many issues F&B organizations face that apply to all manufacturers, issues such as food safety/compliance, farm-to-fork traceability, or packaging innovation all can benefit from an industry-specific mindset.

F&B PRIORITIES AND DRIVERS OVER NEXT YEAR

Even with concerns for addressing higher costs, quality, and food safety, the top priority over the next year cited by F&B respondents is to focus on sustainability (see Figure 6). Cost has always been king for manufacturers, especially in F&B, as margins are razor thin. Now we are seeing producers and manufacturers recognize that a large portion of operational costs for F&B manufacturers are sustainability related (energy, water, wastewater, etc.).

FIGURE 6

Top Priorities

Q.   What food trends does your organization anticipate prioritizing over the next year?
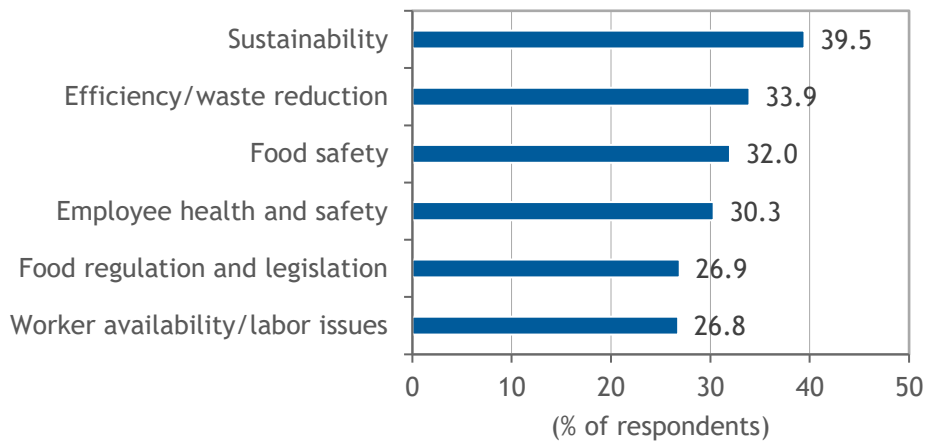
n = 669

Source: IDC's *Food and Beverage Industry Survey,* June 2022
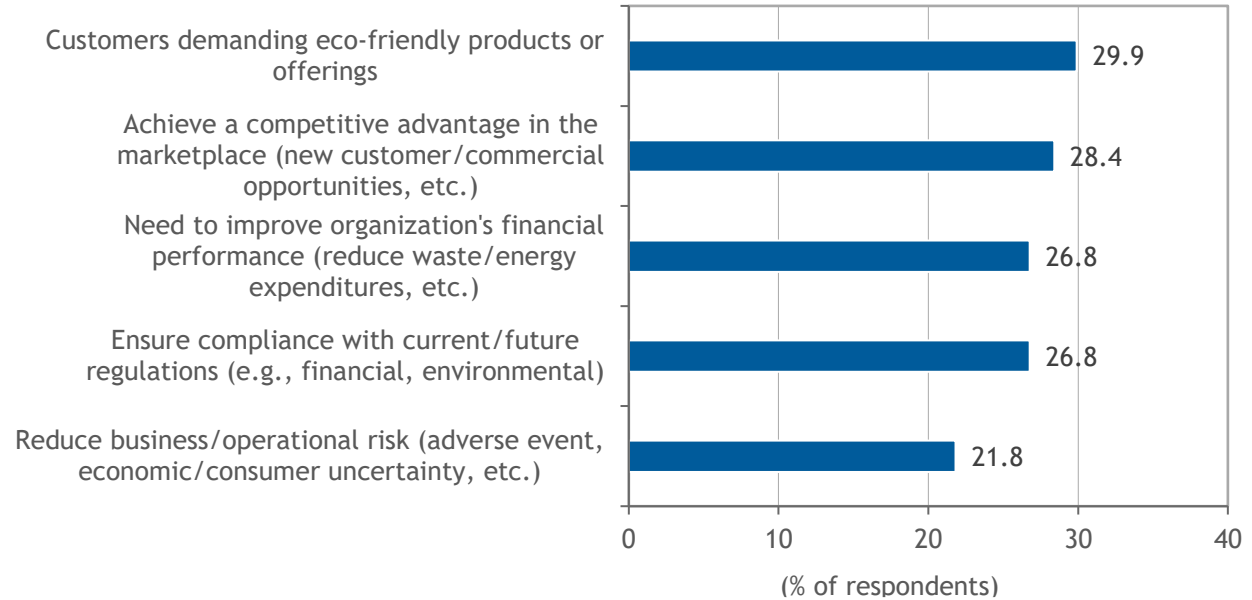
Sustainability

IDC Manufacturing Insights has also seen a noticeable increase in sustainability-related inquiries over the past 12-18 months — this is clearly a topic that is rising on the executive's agenda. However, while many across the industry recognize that change is needed, the most common question asked is, "Where do we start?" Given the risk averseness of the industry, most F&B companies appear to be stuck in a holding pattern waiting for other companies to take the lead and then emulate those approaches.

It is important to understand the drivers behind F&B organizations becoming more focused on sustainability. While the top pressures can vary depending on the type of company, regional factors, or size, the reasons most often cited are a mix of consumer, regulatory, and stakeholder pressure causing this focus (see Figure 7).

FIGURE 7

Top Sustainability Motivators

Q.   What are the top factors motivating your organization's move toward sustainability?

Factor	% of respondents
Customers demanding eco-friendly products or offerings	29.9
Achieve a competitive advantage in the marketplace (new customer/commercial opportunities, etc.)	28.4
Need to improve organization's financial performance (reduce waste/energy expenditures, etc.)	26.8
Ensure compliance with current/future regulations (e.g., financial, environmental)	26.8
Reduce business/operational risk (adverse event, economic/consumer uncertainty, etc.)	21.8

(% of respondents)

n = 669

The fact that customer demand and competitive advantage are the top drivers shows the influence that younger consumers are now bringing to the market. There has been an ongoing shift in the decision-making criteria for purchases, with the sustainability performance and reputation of a company weighing much larger in terms of preferences, especially among younger consumers. This has implications for product traceability, visibility, and the ability for companies to accurately measure their carbon footprint, water consumption, and so forth.

Consumer expectations are clearly shifting to be more attuned to sustainability as a purchase decision criterion (see sidebar). F&B companies that demonstrate success in this area can better stand out and gain an advantage when compared with their peers. This is also reflected in how F&B companies think from a risk mitigation perspective, with sustainability cited as the top risk companies are focused on (38% of respondents). While regulatory compliance was not cited as the top driver of the focus on sustainability, that does not mean that meeting regulatory requirements or the risk of noncompliance is not important. There are still stringent regulations in place depending on the industry or region a company operates in, but the bigger concern is that these requirements are constantly evolving. Technology can play an important role with maintaining compliance — central repositories can be built that include controls and workflows that will automatically alert decision makers of any changes. This allows for any immediate analysis of any regulatory change and action to be taken to ensure that all products and processes can update to stay in compliance. Using technology for document management is another area critical to reduce the cost or risk of noncompliance. A robust document management system helps manage the massive amounts of complex data related to energy, environment, safety, and/or compliance. When an organization performs an audit/inspection, a document management system ensures that the right data is captured, stored correctly, and easily accessible for future reference. The only way to properly keep track and manage all of this data, most of which may be currently stored on a paper-based system, is to have a centralized, searchable database.

Beyond brand image and compliance aspects, the potential to impact the bottom line cannot be overlooked. Sustainability-related costs (energy, water, wastewater, etc.) are a large percentage of the total operational cost in most F&B plants. There are tangible ways to increase profits through sustainability initiatives. Reductions in energy, water usage, and waste can add up to significant savings over time. Thinking back to the top 2 priorities over the next year — sustainability and efficiency/waste reductions — these line up with the areas of focus for F&B companies, and particularly of those employees in the line of business. Luckily, Industry 4.0/smart manufacturing is an initiative that manufacturers have been embracing for years and serves as the perfect opportunity to drive a transformation to sustainable operations. If inflation and energy prices continue to rise, using sustainability initiatives to also combat these cost concerns can be an effective way to have a business that is sustainable and profitable.

Top Sustainability Driver for Each Region

Customer demand:
- Germany — 38.8%
- United Kingdom/Ireland — 32.1%
- Belgium — 30.0%

Competitive advantage:
- United States — 32.3%

Financial performance:
- Netherlands — 32.7%

Compliance with regulations:
- Canada — 33.8%

"Our organization has undergone a major transformation in recent years. We are a truly sustainable and innovative company. Our cloud efforts in the future will mainly focus on supporting sustainability and climate change."

— Director of IT, large F&B Manufacturer

While sustainability is a topic that almost every company talks about and on which leaders make companywide commitments to improve performance, achieving success and hitting these goals is often a different story. Knowing that the business must become more sustainable is not enough; companies need to take action to make sustainability a reality. The top actions that F&B respondents cited to foster sustainability include:

- Reducing waste and spoilage across the supply chain — 35.1% of respondents

- Repurposing and recycling — 33.0% of respondents

- Increasing product traceability (e.g., farm to fork) — 31.5% of respondents

- Reducing packaging/creating more sustainable packaging — 31.2% of respondents

- Reducing energy/water consumption — 30.0% of respondents

- Working with local and responsible sourcing suppliers — 29.7% of respondents

- Leveraging technology to better identify sustainability improvements — 29.6% of respondents

While there are many steps that companies can take to operate in more sustainable ways, much of the industry still has work to do as the most widely adopted action was still only cited by 35% of F&B respondents. When analyzing F&B respondents by their DX maturity level, companies that were the most mature were more likely to have undertaken these sustainability actions on average (see sidebar). The largest gap occurred, however, in the use of technology to identify sustainability improvements. It is important to realize that technology will play a key role in achieving the sustainability results that F&B companies have been committing themselves to. As advancements continue to be made in analytics, machine learning, and artificial intelligence, the opportunity to apply these technologies to foster sustainable operations is becoming a reality.

> **DX Maturity and Sustainability Actions**
>
> The most mature DX respondents were more likely than all respondents to leverage the following sustainability actions:
> - Leveraging technology — 31% more likely
> - Innovating distribution approach — 29% more likely
> - Tracking/reducing climate footprint — 25% more likely
> - Using organic ingredients — 24% more likely
> - Increasing product traceability — 22% more likely

Effective decisions are always based on data analysis and information, not speculation or conjecture, and this is no different for sustainability-related decisions. The unfortunate reality is that many companies still rely on paper-based or manual processes when it comes to sustainability. Connecting business processes to eliminate silos and apply analytics to newly expanded and contextualized data removes bottlenecks and empowers workers to make rapid and confident decisions. Visibility into energy and emissions is one of the key strategies differentiating successful organizations from their peers. Another key capability is related to how F&B companies use sustainability information. Successful organizations are using this visibility to influence their day-to-day decision making. For example, a production engineer or plant manager can use information such as energy price to schedule operations. In a lot of geographies, energy price fluctuates on a frequent basis, and using this information to schedule production can result in direct cost savings. It is also important to connect this sustainability information with production data. Understanding how energy costs vary with product mix, production volumes, and schedules is critical to improving efficiency.

With the commoditization of sensors, controls, and wireless connectivity, the opportunity is arising to apply these technologies to energy management initiatives. The data that is being collected needs to be managed via a formal energy management and intelligence solution to provide executives with the ability to make the connections between day-to-day tactical operations and the strategic business goals. Controls can be put in place (automatic shutdown, dimming of lights, etc.) to truly optimize processes and further reduce energy usage. This can significantly reduce energy usage while improving operational performance. This type of solution should be complemented by key functionalities such as dashboards, alerts and event management, reporting tools, advanced analytics, and AI/ML.

In addition, while carbon management was one of the least mature programs for F&B organizations and manufacturers as a whole, IDC expects the adoption of carbon-related capabilities to increase at the fastest pace as more organizations understand the importance of managing carbon for social and business gains. This represents an opportunity for most companies to get ahead of the curve and establish such capabilities to gain a competitive advantage in the marketplace before they become industrywide. The consistent theme no matter the process is that automated data collection is the basis for creating the real-time enterprise and is usually a telltale sign of a successful organization versus a poorer performing one.

> "Sourcing and transport costs are putting a lot of pressure on the industry. Going forward, we are looking to use a higher proportion of public cloud hosting to help with costs."
>
> — Director of IT, medium-sized food distributor

Supply Chain Management

IDC Manufacturing Insights has been writing about the modernization of the supply chain for several years now, but a digital transformation strategy creates a tremendous sense of urgency to create and enable capabilities that are resilient enough to handle the underlying complexity of satisfactorily delivering on the promised experience. Because of the complex nature of demand and the obligations for a productive innovation ecosystem, F&B organizations have always had to deal with demand complexity through multiple tiers both upstream to suppliers and downstream to customers and now consumers. F&B companies are dealing with the complexity that their end-to-end supply chain brings, entailing shipping and storing perishable goods within strict temperature parameters, and information requirements about the origin and ingredients of products. Because of the critical role the supply chain plays in managing and mitigating business risk, it is no surprise to see F&B respondents cite supply chain gaps as some of the most pressing issues.

Current gaps likely to be problematic if not addressed include:

- Lack of supply chain visibility and flexibility/adaptability to see necessary changes in time to react to them effectively – 28.6%
- Lack of skills/labor shortages – 26.0%
- Lack of digital competencies that limits the ability to transition the supply chain to new business models – 24.7%
- Inability to get products to market fast enough – 23.2%
- Lack of sufficient collaboration with external suppliers and/or customers – 22.1%

Digital technology can provide real-time access and visibility into supply chain material, order, and supplier information. Analytics can be applied to the data to further improve supply chain planning, particularly at more granular levels, by reducing errors and making better time-sensitive decisions. An F&B company with robust supply chain visibility will be able to sense potential disruptions and swiftly initiate a business continuity plan to switch to alternative suppliers and adjust schedules as needed to still meet consumer demands. Although visibility remains critical to mitigating risk in the supply chain, it is no longer the top priority. That now falls to improving agility – in part because most companies have been working on visibility for a while, and capabilities are much more progressed, but also because many F&B organizations found that even when they see a problem, they were unable to do anything about it. The incorporation of digital technology to manage the supply chain plays an important role in enabling agility. IDC's May 2022 *Supply Chain Survey* highlighted how supply chain networks and orchestration are the most common focus areas for investment, with supply planning being not far behind. The ability to dynamically control the supply chain is a clear priority for the industry.

Although supply chain resiliency is critical in today's disruptive environment, companies have often found it difficult to fully justify the return on investment – and to build the necessary internal capabilities. However, the past two years of the pandemic and the ongoing conflict have revealed persistent "cracks" in the supply chain and presented organizations with a unique opportunity to transform their supply chain and be truly resilient. Disruption has been occurring across the breadth of the supply chain, and the capabilities and tools necessary to better manage risk, both proactively and reactively, must span that width. The emergence of supply chain management platforms that integrate the disparate elements of supply, demand, and fulfilment are helping, as are the ecosystems and multi-enterprise networks that many forward-looking companies are using to great effect.

Represented as a "formula," IDC views supply chain resiliency as: **Supply chain resiliency = visibility + intelligence + agility.** Based on this definition, we see four areas of focus for resiliency efforts:

- **Visibility/risk assessment –** The vulnerability of the supply chain to both internal and external disruptions and the ability to see them as they develop in real time
- **Intelligence/data analysis –** The ability to quickly turn massive amounts of visibility and operational data into focused, actionable insights
- **Agility/disruption mitigation/response planning –** Readiness assessment and the operational capability to effectively manage disruptions and communicate status
- **Agility/disruption response execution –** The actual response performance of both mitigation and responsiveness

The manifestations of supply chain resiliency, as well as the drivers, will differ for different companies. For some, it may be about improving inventory performance (getting to a more "agile" inventory); for others, it may be about visibility into mixed factory networks; and for still others, it may be about supplier diversification. No matter the goal or outcome looking to be driven by resiliency efforts, digital technology will play a key role in F&B supply chain transformation.

Outsourcing/contract manufacturing was a new focus for this year's industry survey, with 74% of respondents utilizing outsourcing in some form for production and 21% of production being outsourced on average. There were regional variations in overall usage and the average percentage of production outsourced (see sidebar), with the United States, Canada, and Germany expecting to see slight increases in outsourcing over the next 12 months, while the Netherlands, Belgium, and the United Kingdom/Ireland expect to see slight decreases in usage over the same time period. In the F&B industry, as with many others, supply and price management through multiple tiers of the supply chain remains important. This is particularly true as many F&B companies move from making their own products to relying on contract manufacturers for finished goods (see Figure 8).

Regional Outsourcing

Percentage of F&B companies outsourcing:
- United Kingdom/Ireland — 80.3%
- Netherlands — 78.8%
- Canada — 77.5%
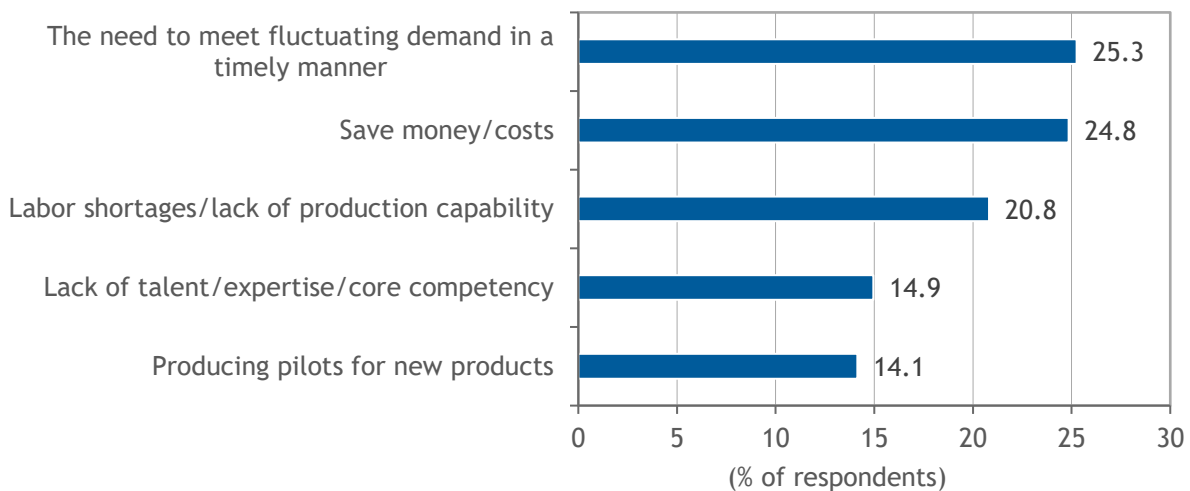- United States — 74.1%
- Belgium — 68.3%
- Germany — 58.2%

Average percentage of production outsourced:
- United States — 23.7%
- Netherlands — 21.5%
- Canada — 20.9%
- United Kingdom/Ireland — 19.2%
- Belgium — 17.4%
- Germany — 14.8%

FIGURE 8

Top Reasons for Outsourcing

Q.   *What is the top reason your organization considers or utilizes contract manufacturing/outsourcing?*

Reason	% of respondents
The need to meet fluctuating demand in a timely manner	25.3
Save money/costs	24.8
Labor shortages/lack of production capability	20.8
Lack of talent/expertise/core competency	14.9
Producing pilots for new products	14.1

(% of respondents)

n = 669

Source: IDC's *Food and Beverage Industry Survey,* June 2022

Procurement has been traditionally based on buying defined volumes of ingredients, packaging, and finished goods from suppliers but will transition to an approach that recognizes and reserves capacity for important inputs at key suppliers, which in turn will give companies the flexibility to respond to demand shifts more quickly. F&B companies manage complex networks of contract manufacturers and owned factories. While the former tends to be viewed through the lens of procurement, the operational reality is that these blended networks must work seamlessly to optimize inventory performance and capacity allocation in the digital age. However, that operational reality is not the case for most F&B companies – most lack visibility into operational metrics for outsourced factories. This operational visibility component with contract manufacturers is reflected when looking at the top concerns/barriers cited by F&B respondents:

- Less control over product quality – 25.1%
- Traceability/compliance concerns – 22.4%
- More expensive over the long term – 21.0%
- Potential data exposure/IP risks – 19.2%
- Communication/language barriers – 12.3%

When looking at concerns by region, the Netherlands, Germany, and the United States cited control over product quality as their top concern, Germany and Canada are most concerned with traceability and compliance, the United Kingdom/Ireland is worried about long-term costs, and Belgium reports communication as the top barrier.

CONCLUSION

The F&B industry, like most industries in the global economy, has become accustomed to unpredictable demand, unreliable supply, consumer habit shifts, sustainability pressures, and differentiation challenges. Underlying all this disruption, food and beverage organizations are contending with traditional pressures around costs, quality, and efficiency. Making effective decisions to address these concerns can be a major challenge for companies that do not possess the right infrastructure. Successful F&B organizations are focused on empowering their talent bases with the data and information they need to make the best decisions possible in the right time frame. Using this approach and cloud-based ERP systems as the digital foundation for F&B transformation programs has clearly been delivering results. No matter how long inflation lasts, or uncertainty remains from an economic standpoint, the improvements that are possible from a revenue and profit standpoint are too important to ignore. F&B organizations need to embrace digital transformation and accelerate their efforts to stay competitive no matter where global business environments may go.

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

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