



Feed, Pet Food, and Food Industries: The Impact of Software Technology on Current and Emerging Trends

Introduction

Despite the challenges that the food, pet food, and animal feed industry has faced over the past few years, there is still great growth potential. Companies should be aware of the environment they're operating in, and of the political, economic, ecological, technological, and social factors that can affect that environment.

The sourcing of raw materials is the most important element of any manufacturing process, and nowhere more so than in the animal feed industry. [The global animal food market accounted for \\$562.7 billion in 2022 and is projected to reach \\$838.2 billion by 2032](#), growing at a compound annual growth rate (CAGR) [of 4.2% between 2023 and 2032](#).

Global exports of animal feed, including pet food, totaled \$19.5 billion in 2021. The industry is constantly growing, up 27.7% from \$15.3 billion just five years ago. The biggest exporters in the industry — the Netherlands, U.S., Germany, China, and Belgium — make up almost half (46.2%) of the total global sales of exported animal feeds, but they are seeing [profit margins tumble as feed costs continue to increase at a faster rate than producer prices](#). Over the past quarter of a century, livestock farmers have found themselves under constant pressure to become as efficient as possible in their sourcing, and the feed producers themselves have had to deliver the most efficient compound feed to hit the right price points.

Global demand for food is also predicted to steadily increase over the coming years. Most of the growth in demand will come from low- and middle-income countries due to economic development, young population, population growth, and non-saturation of food consumption. [Revenue from the food market will reach \\$9.43 trillion in 2023](#). The market is expected to grow annually by 6.21% (CAGR 2023–27), and volume is expected to reach 2,917 billion kg by 2027, with an expected growth rate of 5.1% in 2024. The global pet food market was valued at \$94.76 billion in 2021 and is expected to expand at a CAGR of 4.4% between 2022 and 2030.

With such demand for the best-quality raw materials, fierce competition from players all over the globe, and disruption caused by world events make gaining a competitive edge more difficult than ever. An area that's often overlooked is the use of analytics (through data collection) to maximize the efficiency of recipe formulation. Companies are using software technology in recipe management to target ingredient availability, set product quality parameters, print documents and labels, and send BOMs to ERP and MES systems. There are four trends in particular that are challenging the pet food and animal feed industry right now:

The current geo-
political situation

Sustainability

Higher consumer/
customer
expectations

IP
protection

In this white paper we will examine these trends, look at how they are affecting the industry, and explore how the right type of software can give the advantage back to companies that take onboard the role that data can play in their business. Let's take a deeper dive!



Trend 1: The geo-political situation

The COVID-19 pandemic of 2020 and the subsequent shutdowns of factories, plants, and entire industries across the globe was just the beginning of the problems of the last three years in raw material procurement for the feed industry.



The unprecedented global shutdown of two years ago resulted in a cascade of supply chain disruptions that led to skyrocketing ingredient prices, and that trend continued through to the end of 2022 because of events such as the Russian invasion of Ukraine, droughts in Europe, and trade embargos.

Even as production has slowly returned to normal, instability still reigns worldwide and has caused further disruption of agricultural supply chains, as well as increases in global fertilizer prices. For example, Ukraine and Russia account for some [90% of the world's corn exports and 29% of its wheat exports](#). U.N. countries are feeling the strain as feed prices remain high and producers continue to deal with limited availability of key ingredients due to the massive supply chain disruption of two years ago.

What do these trends mean for the industry?

When prices are inconsistent for raw materials and feed additives, profitability across the feed industry takes a hit. Bottlenecks disrupt the supply chain and cause companies to default on orders, which damages their reputation with customers and leaves them scrambling to make amends and overpaying for the materials they need to fulfill their orders. This leads to price increases across the board. The increase in the price of ingredients leads to additional increases in the cost of feed materials. The U.S. has reduced the amount it exports due to its increased production of bioethanol, an alternative fuel made from corn.

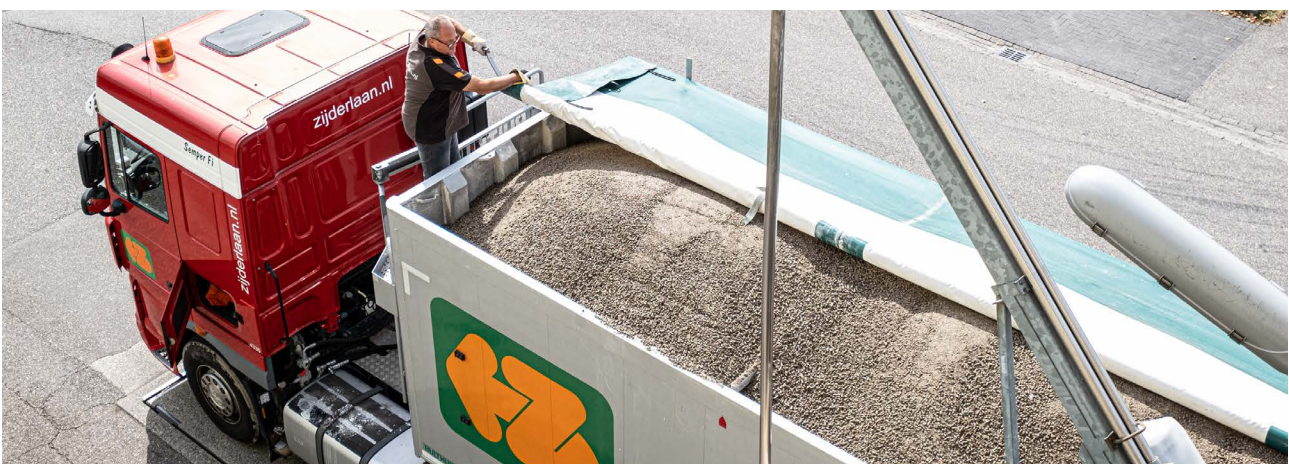
With gasoline prices steadily increasing, the price of corn has gone up as well. Those who have turned to South American producers for corn and soybeans have found slim pickings in countries like Argentina and Brazil, which have been hit by a drought caused by La Niña, which is not expected abate until well into 2023.



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The problems arising from the pandemic shutdown aren't just shuttered factories and dwindling stockpiles but also the mass exodus of labor from many industries. Livestock farming has long struggled with labor shortages; the pandemic only exacerbated that problem. Finding skilled and willing labor has become difficult for many labor-intensive industries, such as freight, crop harvesting, and food processing. This has resulted in companies forging long-lasting relationships with suppliers that have consistent access to essential ingredients and raw materials. Jumping from one supplier to another in search of the best deal of that month or that quarter now puts companies at risk of being without the raw materials they need when it's time to fulfill their orders. When companies struggle to build these relationships, one alternative is to introduce new formulations using alternate ingredients that might be less effective but are easier to source. Another alternative is to outsource the procurement of certain materials to third parties in other regions of the world where there is a stronger relationship or lower taxes and tariffs.

Waste streams can become a potential source of animal feed. With some 60–70% of the cost of raising and maintaining livestock going on feed, using domestic materials to lower that cost organically could be an impressive way to reduce costs. Competition for raw materials has economists predicting that feed industry inflation will continue until 2050. This means that companies need not just a workaround but a long-term solution. Finding alternate formulations with different ingredients that still deliver the same quality is the best way forward.



How does software help?

Knowledge is the number-one weapon in any company's arsenal when it is facing price swings, limited availability of raw materials, global trends like inflation, weather-related issues, and socio-economic shifts.



To be able to plan ahead and keep pace with customer demand, it is essential to have real-time information on the prices of raw materials in various world markets.

BESTMIX offers software solutions that can compare actual stock to the projected needs of the next week, month, quarter, and year. It can predict long-term prices of raw materials and run analysis on different simulations to give insight into cost prices and the likely profit margins that will result from one choice as compared to another. With close analysis, the software can perform smart inventory management on a company's existing stock to keep a precise track of when reorders are needed and what the best bets for sourcing materials are. You therefore always have the most up-to-date insights to take advantage of opportunities in the raw materials market and to make the most cost-efficient decisions in a volatile environment.



Trend 2: Sustainability

The population of the planet continues to expand at a dizzying rate. Consider that at the turn of the twenty-first century, the world's population was 6.11 billion. It has grown by more than 28% since then to the current total of 7.84 billion. To provide the world's growing population with a nutritious and sustainable supply of food in the future, the entire food chain must become more sustainable, and the animal food and food industry is among the first links in that chain.

Sustainability is no longer optional; it's a must for every future-oriented feed company.

With the Internet, digital technology, and social media making the world a much smaller place, companies involved in agriculture and livestock have found themselves under the magnifying glass of public opinion and consumer awareness. Environmentally conscious customers want to see a reduction in companies' carbon footprints as well as a return to more organic ways of producing food, free from pesticides, chemicals, and growth hormones. Elected officials are also changing the landscape, passing legislation that encourages a more balanced relationship with the environment. The feed industry has taken to storytelling in an effort to show that its operations are sustainable, using omnichannel strategies and various touchpoints to engage with concerned citizens. Sustainability might have started as a grassroots movement, but it will only succeed with the merging of technology and policy.

What does it mean for the industry?

Analysis from the Global Reporting Initiative (GRI) shows that the most important measures that feed industry companies are concerned with include annual reductions in water withdrawal, greenhouse gas (GHG) emissions, energy consumption, and total waste.

A bigger problem is that there is no true global system in place to define standards and hold companies accountable. This is on top of existing crises like a lack of water reserves and arable land in countries such as Saudi Arabia, where a series of bad decisions over several decades has left that country with scarce renewable resources. Increased transparency is essential when it comes to environmental impact, in order to improve production techniques and procurement strategies.

With so much difficulty across the supply chain, the American Feed Industry Association (AFIA) is developing a Sustainability Road Map for the animal food sector to address consumer and other stakeholder demands for transparency and sustainability, and to cultivate new strategies for everyone from the smallest farmers to major producers working out of large facilities. The roadmap stresses alignment in sharing information, identifying critical issues, aligning feed systems, and coordinating sustainability efforts. There are plenty of companies out there trying to do better by the environment, but if their efforts are disorganized, it can be difficult to build upon each other's achievements. As of late 2022, the roadmap is still in the preparation stages, with the AFIA working on assembling teams, reviewing inventory, and defining the scope, process, and deliverables. A seven-month execution stage will follow.



The redrawing of the roadmap is putting the feed industry on edge. It must acknowledge that the demand for sustainability includes the development of emerging industries, such as the use of insects as feed to reduce waste, and the production of artificial meat that will reduce greenhouse emissions and lower water and land usage.



To remain relevant today and into the future in a rapidly changing world, the industry must shift to a sustainability mindset and intensify its efforts.

The food system, from production to consumption and waste, has a significant impact on the environment, health, and food safety. We must change our way of producing, buying, and consuming food to reduce the impact on the environment and mitigate climate change, while also protecting the livelihoods of workers by generating fairer economic returns and opening up new opportunities.



Increasing consumption of plant-based food, growing demand for locally grown food, and the drive to reduce waste to a minimum in both production and consumption are also changing consumer preferences in the food sector and causing the market to adapt quickly.

In addition to being responsible, the pet food industry seeks to be efficient and stand at the forefront of technology. In this way it minimizes the use of resources while maximizing safety standards. Concern for environmental and ethical issues has led to the adoption of a number of voluntary policies by the industry and has encouraged the efficient use of energy in the production of raw materials and packaging, in pet food manufacturing and transportation. There is also an increasing consumer awareness of natural and organic pet food, which is one of the major forces impacting the global market.

How does software help?

The key requirements of feed optimization are two-fold: adequate nutritional content and lowest possible cost (or maximum profit). The focus on these important factors will remain, yet this third dimension — environmental impact — is becoming much more important. Feed is a dominant factor when considering the total environmental impact of animal protein across the different species. By working on feed formulation, we can positively impact, directly or indirectly, up to 80% of the overall environmental footprint of animal protein. The impact of different feed ingredients varies significantly and may be surprisingly high or low depending on their origin and how they are produced.

BESTMIX® software helps you to keep sustainability in mind when you're creating your formulas and recipes.

Trend 3: Higher customer / consumer expectations

Environmental and biodiversity concerns are causing a paradigm shift among consumers, with about 85% saying that they consider ethics and sustainability when making a purchase, making those two categories just as important as quality of product and customer service. Likewise, the average consumer has a lot more information than they did 20 years ago due to their ability to do independent research and access to a wealth of knowledge. For the first time in a long time, it appears that profitability might no longer be the bottom line. Companies are held to much higher standards than in previous generations because the Internet connects whistleblowers, policy makers, communities, shareholders, and a legion of interested parties who seek to ensure that agricultural producers follow the industry's best practices, build trust, and live up to their commitments to provide good products, rather than simply justify the means with the end result. With the explosion of ecommerce over the past two decades, the focus of commercial transactions has shifted from the product to the consumer.



Customers want to know all about what they're buying, they want it tailor-made to their requirements, and they want real-time customer service options when they have questions or concerns.



In the human food industry, we're seeing the impact of these demands in the [trend toward healthier choices, as quantified in Nutri-Score](#), a labeling system that allows manufacturers to show a product's nutritional properties on the front of its package with a simple five-letter/five-color system that informs consumers how healthy a food is based on the absence or restriction of 'unfavorable' ingredients such as salt and sugar and the presence of 'favorable' ingredients such as fruits and vegetables.

In the food sector, as well as the feed and pet food sectors, claims demonstrate that a product has favorable characteristics, such as joint health benefits, digestive health benefits, skin and coat benefits, oral health benefits, immune system benefits, and even heart health benefits. Customers prefer those products because of the claims, and it gives manufacturers an opportunity to target a specific audience.

What does it mean for the industry?

Whether it's food for human consumption, animal feed, or pet food, transparency and information sharing are increasingly important. This means that all stakeholders want easy access to information on the ingredients they're buying. Producers want to ensure that their products always meet the requirements that were established during formulation and that they tally with the claims they make on their labels.

Traceability and quality control throughout the supply chain are of the utmost importance.

Where possible, you should also document each step using tags, barcodes, or even blockchain technology.

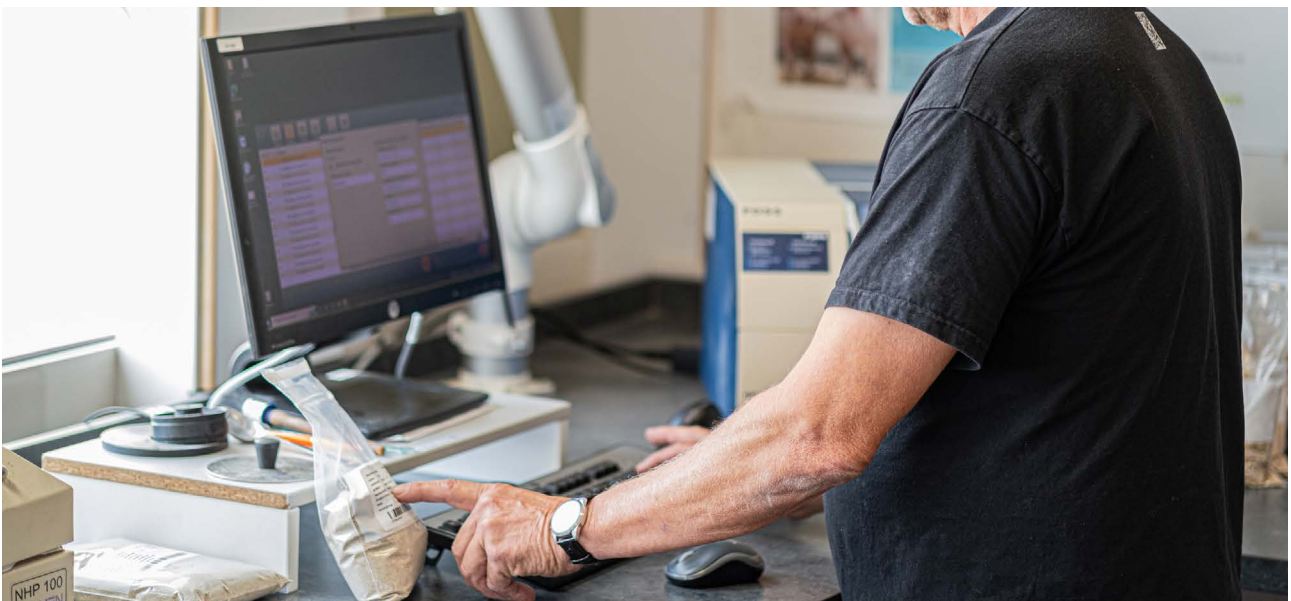
In the feed sector, precision feeding aims to precisely match nutrient supply with the nutrient requirements of individual animals. Real-time sensor feedback from animals helps you to decide whether or not to allocate feed, according to the animal's individual needs.

Customer relations and customer service are also key. In a crowded marketplace, a strong relationship with the supplier helps you to work together in confidence and to achieve quality, cost efficiency, sustainability, and the highest degree of food safety.

How does software help?

Consumer expectations are often driven by consumer trends. Software can help you to quickly adapt your products to meet those expectations, and efficient tools are crucial to your business processes.

Software like BESTMIX® that encourages collaboration across multiple profiles — including nutritionists, formulators, and ingredient buyers — can be used to find new solutions that improve your product portfolio, reduce environmental impact, and result in new offerings that put you at the forefront of the industry. This sort of engagement requires secure platforms that maximize security and shared workspaces.



The labels used in the animal feed sector (or “feed-tags” in the US) contain important information about the composition and instructions on how to use the feed safely and effectively. Most countries require that this information is printed on or attached to all feed products to assist customers and guarantee that their animals are fed properly. BESTMIX®’s answer to this challenge is bulk blending — real-time label composition for products with additions. When a new recipe is created, a label is created simultaneously. BESTMIX® knows all the properties of the raw materials food manufacturers use and translates the information into the required labels.

BESTMIX®'s formulation software allows you to develop completely customized recipes and tailor-made feed programs according to your customers' demands, so that you can always create the products that perfectly meet the needs of the market.

Precision feeding is only possible through quality data management and recipe management that ensures each animal is getting exactly what it needs without wasting precious resources. BESTMIX® feed-formulation software provides precision feeding to create products with nutritional qualities that result in greater economic return, optimal production, and fewer health issues.

Trend 4: IP Protection

There's nothing more sacred than a company's intellectual property (IP), and in the nutrition industry, that means formulations, innovations, and a company's research, trials, and simulations. Data protection is a huge concern for any company operating in the digital era. While the European Union (EU) has passed major legislation to ramp up data protection and the penalties for breaching the rules in the past decade, the U.S. has not. Food and animal feed companies are big businesses that must protect what is theirs, something that is becoming more and more difficult as data breaches and cybercrime continue to plague the business world. The most glaring statistic is that [82% of all data](#) breaches are a result of human error: people sharing passwords, falling for social media scams, or getting roped into visiting phishing websites. Another 62% occur due to bad actors pretending to be real customers or fellow industry suppliers. It's a scary time to be doing 100% of your business online because lots of companies truly don't believe that they are at risk of cyberattacks. What would cybercriminals want from a company producing animal feed? The answer is everything: your employees' personal information, your customers' information and financial data, your formulations (to sell to the highest bidder on the dark web), and the chance to install spyware and keystroke loggers on your system to keep skimming information without you knowing for as long as possible.

Not only is data at risk, but so are the automation components of factories and production runs.

With the Internet of Things (IoT) becoming so prevalent in recent years, with remote processes and controls, a cybercriminal could gain control of a significant element of production under the right circumstances. Even more alarming is that it's not just rogue hackers who pose this threat. As the tech and trade war between the U.S. and China accelerates, it has been revealed that [China was behind 67%](#) of all state-sponsored attacks between the middle of 2020 and the middle of 2021.

What does it mean for the industry?

Companies that cannot protect their most valuable pieces of IP will find themselves in trouble. Competition is fierce, the margins between industry positions are narrow, and great ideas must be kept safe. When companies are successful, criminals will come looking for ways to penetrate their walls; but that also holds true for smaller players that are just starting out. Hackers often believe, and rightly so, that startups don't have the will or the budget to invest much in cybersecurity because their focus is elsewhere and they don't believe that they are in danger of being targeted. Bad actors and state-sponsored hackers are always on the lookout for their next target, scanning the internet for vulnerabilities; they may even exploit the same vulnerability multiple times. It doesn't matter how a company's formulations and other IP wind up for sale on the dark web or plastered across InfoLeaks or Reddit; the point is that once the genie is out of the bottle, there's no putting it back in. For all of our wondrous digital achievements, the one unfortunate constant remains that once something is published online, it never goes away.

While cybersecurity is the better-known threat given the large number of [data breaches](#) that have occurred over the years, just as big a threat is hackers' ability to tap into parts of companies' manufacturing units and factories and disrupt production runs, costing time, money, and reputation, which might take weeks, months, or years to restore and recover. Ransomware remains a huge problem for companies because it effectively locks owners out of their own systems. When you can't access your own processes, data, and customer contact information, you can't keep your business moving forward. You also don't want your company's sensitive data or customer information to leak or be accessed by cybercriminals. This puts the company in the position of having to pay a ransom to the person or organization that installed the ransomware, or effectively start over at some backup point in the system. There were ransomware attacks every 11 seconds in 2022, totaling [\\$20 billion in damages](#) to companies globally.

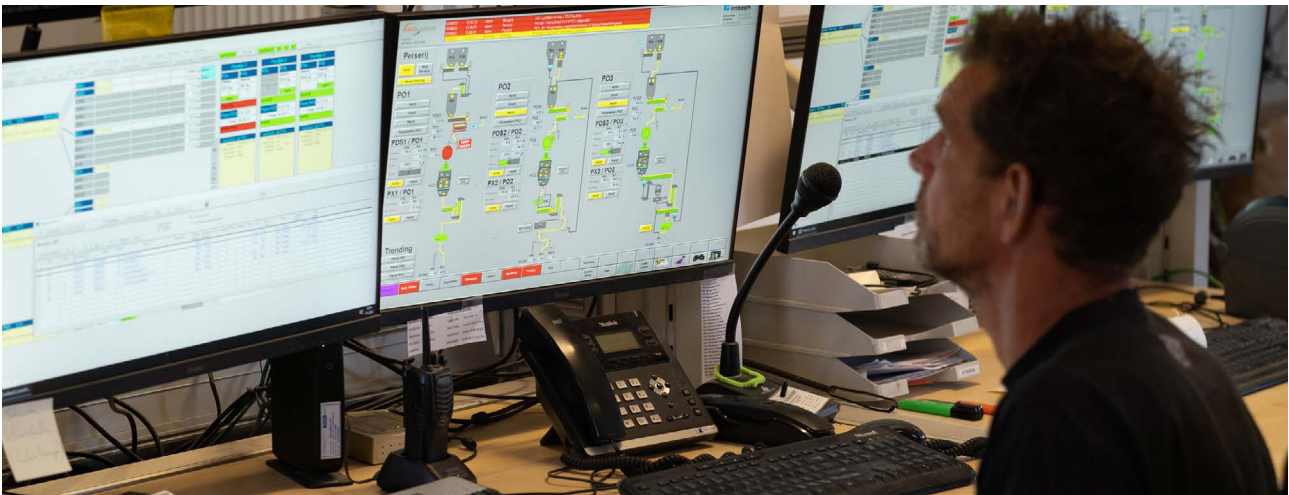
How can software help?

Getting a company's most important proprietary information off-premises and onto a secure cloud platform is paramount when upgrading security and eliminating the risk of cyberattacks.



BESTMIX offers a secure, centralized platform where all data is vigilantly and constantly guarded, reducing the likelihood of any sort of breach through round-the-clock monitoring.

This platform doesn't just provide security but also guarantees the most uptime possible for your entire business suite, regardless of what software you're using. Today, with the amount of work being done from home, the number of contract staff, and the number of people who travel for work but still need to access proprietary information and collaboration tools, having a secure cloud-based platform has never been more important. With a SaaS-solution, you don't have to invest in additional skilled labor, firewalls, servers, or secured systems.



Running many of your company's processes in the cloud will further reduce the risk of attack by bad actors seeking to steal your IP and wreak havoc with your business processes.

Conclusion

The rapidly changing face of competition and technology in the feed industry, combined with the demands of consumers and key stakeholders, is bringing new challenges to companies seeking to gain a competitive advantage. Beyond the battles within the industry are the global trends and historical events shaping our day-to-day lives and the decisions that will ultimately determine whether companies succeed or fail to adapt to the constantly changing business environment. Being flexible requires specific tools that go beyond hard work and dedication, and require powerful software solutions to innovate more effectively, reduce costs while maintaining product quality, and focus on environmentally sound best practices that support sustainability and the health of our planet, its inhabitants, and the quality of food they eat. These challenges require multi-dimensional solutions that can help companies achieve success across the board, all in the same package. IT is helping companies overcome challenges by enabling them to make fast decisions based on reliable and easily accessible data. During times of crisis, the right IT tools can help businesses to be resilient and turn challenges into opportunities. Implementing the right software is the best way to ensure that your company can meet the challenges it will face in the future.

For almost 50 years, BESTMIX has served the industry with leading software for feed producers, providing solutions across the entire production and supply chain. This includes purchase decision support, quality control, logistics and finance, sustainability, and much more.

Talk to our specialists to explore how BESTMIX can help your business to adapt fast and gain a real competitive advantage.