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WHITEPAPER

Four Ways Artificial Intelligence Will Transform Food Businesses

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For many people, the concept of Artificial Intelligence (AI) is futuristic and confusing—something of fantasy novels and films where powerful machines threaten to overrun and rule the human race.

It's true that the potential and power of AI is limitless. It's incredible, really, the capabilities of this new technology. But AI isn't something to be feared; it's something to be embraced. Because it's changing the way the world works—for the better, too.

AI, specifically, is transforming how food manufacturers operate. Now, AI can't tell you how to make your business better; only you know what makes your business run well. Having said that, AI can use what you know, learn what you do, and actually help improve your business. AI can streamline processes, make data-backed decisions, cut costs, and reduce the risk of human error.

For food manufacturers, that means AI opens up a new realm of possibilities.

One of the most iconic food manufacturers in the world, The Hershey Company, has completely changed how they do business thanks to Microsoft AI technology. They have found answers to questions that seemed impossible before integrating AI. Now, with Microsoft AI, The Hershey Company can act upon the data they are collecting and leverage it in new ways.

The Hershey Company was able to increase its bottom line, save a considerable amount of money, and improve access to data across the company. After analyzing the various sources of variability in their production processes, they applied the AI functionalities to their Twizzler operations, where the technology was able to detect fluctuations in the licorice temperature. Because they were able to react in real-time to this variable—something they would not be able to do without AI—The Hershey Company was able to maintain production speed and ended up saving half a million dollars. As the former Senior Manager of Workspace Solutions, George Lenhart said, "Every time you reduce variability, you increase money."

The Hershey Company applied the AI to their Twizzler operations, where they were able to detect fluctuations in the licorice temperature during production. With AI, they were able to react to temperature variability in real-time resulting in the immediate savings of half a million dollars.

What is Artificial Intelligence?

AI has the ability to learn and then make smart, informed decisions based on what it has learned—it often involves quick, complex calculations and data analysis. Users must feed AI information so that it can learn and grow. In doing this, your system will become smarter and help you make better decisions about running your specific business. Kind of like how a person thinks—only because of the complexity and analysis capabilities of it—AI can process so much more data; humans simply do not have capacity like that.

Microsoft said it best, "AI-infused software applications and cloud services drive innovative customer experiences, augment human capabilities and transform how we live, work and play."

AI technology can learn from experience, analyze data, optimize functions, and execute human tasks with an increased level of precision and efficiency. This more informed decision-making allows room for enhanced accuracy and efficiency in whatever environment it's applied.

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AI and Food Manufacturing

Food production is a precise, process-oriented industry. For today's food manufacturing companies, finding ways to improve operations, make better decisions, and leverage innovative technology is essential to growth and remaining competitive.

Let's say you run a bakery that makes beautiful, intricately-decorated cakes; they're sold in grocery stores all across the United States. They're in-demand, they're delicious, and the processes for making the cakes rely heavily on consistency in the baking process. With this process, obviously, there's quite a bit of room for variability—maybe the butter isn't exactly the right temperature, or different brands of sugar are added to different batches. If the processes aren't entirely consistent, the resulting cakes aren't going to be consistent either.

That's the beauty of AI: it's able to analyze all aspects of your business (based on what you tell it) and then make the necessary adjustments that will keep the process consistent. It can keep these kinds of variabilities low by analyzing the data so that the impact is minimal, detecting potential issues with the process or product, like inconsistencies with the temperature of the butter used to make the cakes, before production actually reaches that point.

AI can help companies react to situations on the floor as they occur using real-time data, identifying potential issues long before they happen. In a way, AI acts as a form of automation; it's routinely monitoring for problems, transforming the factory's productivity and output. Only it's not automated; it's *thinking*. In the same way that you or I would think to solve a problem, only it does AI exponentially quicker and with a complete visibility into company processes. That kind of insight just isn't possible for a person. With AI, managers can understand issues, plan for potential risks, and act based on actual data that their system provides to them.

This whitepaper takes a deep dive into the four primary ways AI is transforming your business for the better:

1. Imaging
2. Forecasting
3. Prediction
4. Language Learning

1. Imaging

AI does what people are not capable of doing; it takes data analysis to the next level, thus enabling manufacturers to get more from their data and create leaner operations across the board.

Microsoft AI utilizes two image analysis options: computer vision and custom vision. As it relates to food manufacturing, this could be hugely helpful in organizing and optimizing your processes.

- **Computer Vision** allows the system to identify the content of an image by analyzing it against a massive database of images. Let's say you upload a picture of recently baked rye bread, but for whatever reason, the system recognizes it as a pile of peanuts. The system learns by allowing users to verify if the analysis was correct or incorrect. The more data associated with that image, the more accurate the system's analysis will be with subsequent images over time.

  With computer vision, AI generates a confidence level in its response. It's a percentage score that monitors how convinced the technology is that it made an accurate identification. At first, the score will likely be lower and have many options from which to select, but as you continue inputting data, AI will be more likely to match the appropriate image and offer a higher confidence score.

- **Custom Vision** starts from an entirely "blank slate." With this type of vision, you train your model, as opposed to using a pre-trained model, to recognize completely new images. You could, for example, train your system to recognize a food label that you use in your production process. So then, if there's an error in the processing line, and products are accidentally mislabeled—the system recognizes that. You can train your AI system to match the desired outcome for your products, processes, and facility.

  Both computer vision and custom vision do more than just index products and employees; they help quickly detect issues, evaluate data faster, and optimize processes. These real-time insights into exactly what's happening on the shop floor ensure things are running smoothly.

2. Forecasting

Accurate forecasting is essential for a business's success—predicting the operational and financial ups-and-downs of your company enables you to better manage your business. The process of this, however, is extremely complex. And people are limited to only what they can evaluate. Often when those evaluations are made, so much information is still missing. They don't have enough data, sources of data, or the ability to make proper connections with that data to make meaningful forecasts. When people make forecasts, really, they're just making good guesses. AI takes the "guess" out of "guesswork" and makes more accurate forecasting a reality.

Let's say, for example, you want to forecast the sales and inventory for chocolate-covered pretzels. Within your forecast settings, you have many options to customize what kind of forecast you want. It's important to first select an endpoint. How far into the future do you want this forecast to run—a day, a week, a month, six months? Next, you select your historical period—how far in your history do you want your AI to gather data to evaluate? You also have the ability to select an expiration date for the forecast—the time at which you think the information forecasted will become outdated.

AI connects real-time and historical data to give you the most precise predictions about whatever component of your company you want to evaluate—inventory, sales, etc. In analyzing thousands of data points, AI provides an accurate forecast to help you make better, more informed business decisions for both the long-term and short-term health of your business.

3. Prediction

AI enables food businesses to better analyze their data and make connections they weren't able to make before. These new insights translate to a new way of doing business; you're able to use more data in new ways.

AI connects the data in your system and helps identify the potential financial bottlenecks impacting your business. For food manufacturers, the cost savings opportunities are huge.

AI prediction technology could benefit your business in three big ways:

- **Predictor on Late Payments**

  AI makes intelligent decisions based on your previous digital interactions with your clients. Let's say you sell a specific product to a particular customer every month. And every single month, they're late with their payments. AI can recognize that, and based on the data in the system, it can deliver a confidence level as to whether or not a particular payment will be paid on time.

  For so many businesses, it's not until after a customer misses a payment do they realize their cash flow is a bit short. But not with AI. When a customer makes an order, the late payment predictor analyzes the data to see if that customer typically pays on time. You then have the ability to pass that information onto accounts receivable so they can follow up with that customer before they're late with their payment rather than after.

- **Predictor on Purchasing**

  AI can also help you solve problems before they even occur. AI has the ability to tell you whether the quality of flour from an individual vendor, for example, generally arrives late or is of lower quality than others.

  AI is assessing the data based on years of past purchase orders so that the purchaser can make the best decision with all of the information. Maybe he/she orders more flour from another vendor for quality purposes, or he/she shifts vendors because there's a higher percentage that the order will be delivered in a timely manner. AI uses previously entered data to analyze patterns and connections with the purchases your company makes, encouraging you to be proactive rather than reactive in your purchasing orders.

- **Predictor on Repacking in Warehouses**

  In warehouses, orders are often sent down to the floor for picking and shipping in waves, and groups of orders are selected at different points throughout the day. Generally, there's a cut off time for shipping to make sure orders are picked, packed, and shipped per the delivery schedule.

  AI analyzes which customers tend to make changes and how frequently they make those changes. If an active order is flagged to have a high prediction of changes, for example, that order could be shifted to a later wave rather than in one of the first waves. This prevents things from slowing down on the floor; your employees will eliminate redundant work, and your customers are happy because their order is still on time, and it'll be correct, even with those last-minute changes.

4. Language Learning

One of the core benefits of Artificial Intelligence lies in streamlining the important, mundane tasks of the everyday—like filling out order forms and invoices. AI is incredible not only because of its complexity but because of its intuitive nature. It anticipates where a digital conversation may be going and then creates options for what the next steps may be.

AI can, for example, read through the context of a message or e-mail, and based on its knowledge and understanding of the natural language, take that language and then recognize what exactly that means. This is an incredibly powerful tool. Conversationally, you and I both understand that "send an order" and "send an invoice" are synonymous, but your average computer can't understand that. AI can.

AI attempts to connect the dots between information and a specific task by understanding the context of language; then it links that information to data in your system. If a client were to send an e-mail asking you to create an order for several of your products, AI can take the language of that e-mail, contextualize it, and then ask you if you'd like to create an invoice. If your answer is yes, AI would open that invoice in another system, create it, associate the new invoice with a specific client account, and streamline the task entirely. The system recognizes what the action should be, and so it prepopulated the order with the information it had from the e-mails—this makes life so much easier for you and your employees.

The Future is in Your Hands

Artificial intelligence is powerful— enabling us to do so much more than we ever could on our own. Food manufacturing organizations can use the data in their ERP systems more efficiently and effectively when employing AI. You already have all this data; it's in your system right now. AI can help you use that data in a way that you've never been able to use it before. It can deliver meaningful, data-driven information that you can use to make better business decisions, improve processes, cut costs, and strengthen your bottom line.

Though the technology is still in its infancy, we can see the promise of what it can deliver. Make no mistake, AI is the future. And not in a scary, unpredictable way, but in a way that's ground-breaking and forward-thinking. As revolutionary as artificial intelligence is, it's up to businesses to create algorithms and make plans and work to build out models that work with AI. It can't do everything for you, but it can do so much more for you. The potential you have with AI is limitless. It's out there, you just have to be ready and willing to take it.

The opportunities with AI are limitless, and JustFood can help you get there. Contact us today, and a member of our team will setup a demo of JustFood ERP to see the AI capabilities within.

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