DIGITAL OUTLOOK
CONSUMER PACKAGED GOODS INDUSTRY

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INTRODUCTION

These are tough times for the Consumer Packaged Goods (CPG) industry. Consumer populations in mature markets such as North America and Western Europe are falling, or staying the same at best. The consumers in these markets are also spending less because their incomes haven't changed in years. With growth that was expected to be a measly 1.2 percent in 2017, the packaged food business in the United States had one of its worst years in recent times. Even "growth" markets, such as Brazil, Russia, and China, were hit hard by economic woes.

Amidst all this gloom and doom, there are a few pockets of growth and opportunity which stand out. Sales of clean labels – basically, natural, organic, additive-free foods – and wellness products are up. E-commerce, though small, is growing strongly and is expected to take 10 percent of all CPG sales by 2022, compared to 1.4 percent in 2015.

Everything is getting customized – from products and customer journeys to promotions and pricing strategies. Industry observers say that in the next few years, the way CPG companies generate and fulfill demand will tilt massively towards individualization. Digital technology, including predictive analytics, agile supply chains, social media, and the Internet of Things (IoT), will be the prime mover of this change.

How will CPG companies address these challenges and opportunities within the next three years? Do they have the right structures, processes, and digital technologies to do that? Specifically, what are the digital technology trends on their radar, given that digital technologies are inseparable from business today? To understand what was top of mind in the CPG sector heading into the New Year, we surveyed 1,000 senior decision makers from business and IT, from large organizations (with 1,000 employees or more and annual revenue of at least US$500 million) in nine industries, including 109 respondents from the CPG industry.

While identifying the key digital technology trends was the most important objective of the study, it was not the only one. The survey also sought to understand which digital technologies were in use within CPG companies and the broad purpose for which they had been deployed – improve existing operations, solve new problems, or create new opportunities.

It then reviewed these findings against current and immediate investments in digital technologies to understand where the money was actually going.

The research findings were supplemented with our own perspective on the CPG sector and anecdotes about the happenings in the industry to produce this short but incisive report

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EXECUTIVE SUMMARY

- According to the CPG industry survey respondents, investing in technologies for automating the manufacturing process (61 percent), digital asset management (52 percent), improving supply chain visibility (49 percent), and deep product personalization (49 percent) are the most common trends which will make a positive impact on their organization within the next three years.
- Cyber security (69 percent), big data analytics (68 percent), and enterprise cloud (65 percent) are the three digital technologies being utilized the most by CPG companies today.
- CPG manufacturers plan to invest in digital technologies in the coming 12 months. Automation of manufacturing, workforce management platforms, and back office automation currently receive investments from most enterprises who consider them a trend for the coming three years.
- CPG respondents said that their organization could improve both existing skills and technologies in preparation for implementing the top trends of 2018 and beyond.

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TOP CPG TRENDS FOR THE NEXT THREE YEARS

1 AUTOMATED MANUFACTURING PROCESSES

2 DIGITAL ASSET MANAGEMENT

3 TRANSPARENT SUPPLY CHAINS

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Given that digital is a universal theme in business today, the trends that entered the conversation with the 109 CPG respondents in the survey come as no surprise. Digital technologies, singly or in combination, underlie each of these trends. At least 30 percent of the respondents expected the following trends to make a significant positive impact on their organization in the next three years:

a. Investment in technologies, such as robotic process automation, to automate the back office.

b. Investment in technologies for workforce management in particular, to speed up product delivery, while lowering cost.

c. Supply chain investments, taking them closer to consumers. The investment will go towards things like dynamic warehousing, nimble transportation nodes, and even the last mile delivery functionality to enable the supply chain to serve individual customers.

d. Participation in a digital ecosystem of connected and smart products linked to value-added services.

e. Using analytics and artificial intelligence (AI) technologies to get greater returns on advertising and marketing dollar investments.

On average, each CPG respondent named four items in their list of trends that will make a significant positive impact on their organization in the next three years. But the three trends receiving most mentions – cited by 61, 52, and 49 percent of the respondents, respectively, as making a positive impact on the business – show that CPG companies believe that the technologies were implemented to improve existing operations rather than to experiment with new opportunities.

Investment in technologies to automate the manufacturing process took the top spot, and was named by 61 percent of the CPG respondents. Next came investment in technology for digital asset management and for increasing supply chain visibility, named by 52 and 49 percent of the respondents, respectively.

Which of the following trends will have the most positive impact on your organization within the next three years?

Investment in technologies to automate the manufacturing process	61%
Investment in technology for digital asset management	52%
Investment in technologies that will enable deep product personalization	49%
Investment in technologies to increase supply chain visibility	49%
Investing in technologies to automate the back office	47%
Investment in technology for workforce management	41%
Investment in technologies that will enable CPG companies to sell directly to consumers	37%
Participating in a digital ecosystem of connected/smart products linked to value-added services	32%
Using analytics and AI technology to get more return on investment from the advertising and marketing dollar	31%
Don't know	1%
Average number of trends that will have a positive impact on respondents' organizations within the next three years	4

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Let us talk a little bit about the most common trends. The automation of manufacturing is taking on an entirely new meaning with digital technologies, especially AI, knitting together the entire value chain from production through delivery to serve the factory of the future. Smart warehouse management solutions bring intelligence and transparency to the flow of goods and ensure deliveries are made just in time for sales. Now, there are robots and robotic automation solutions that can handle every task in the manufacturing chain from picking, sorting, and packing to palletizing and warehousing.

One of the most exciting applications of digital technology in manufacturing is in the area of quality control. A potato chip maker replaced human tasters with infrared sensors to monitor various parameters associated with spiciness. Next, it developed algorithms to process that data to correlate them to the potato chip recipe. Finally, comparing the sensor data with physical tasting results, the manufacturer built a model to predict spiciness and consistency of taste, which brought consumer complaints down by 90 percent.

Digital asset management (DAM) refers to solutions – ranging from a database to a content management tool – that enterprises can use to store, organize, retrieve, and share digital properties, such as photos, creatives, audio and video files, documents, and presentations. The CPG sector – a big user of DAM – is instrumental in evolving solutions to address specific challenges, such as using assets without violating model contracts, customizing content to the formats and schedules imposed by partners, such as Amazon, Walmart, and a host of other e-commerce companies, integrating product information along with brand assets in a variety of channels, and managing upstream and downstream digital asset pipelines in the case of direct-to-consumer sales. Within the next three years, CPG companies believe investing in DAM solutions will have a positive impact on their organization – it could potentially help them overcome these challenges.

Consumer product companies believe investing in the supply chain to improve transparency will be one of the most influential trends within the next three years. Today, the CPG supply chain is a complex ecosystem of supplier, partner, and even customer systems. It uses a variety of technologies – RFID, IoT, AI, blockchain, analytics, etc. – to track every step of the supply lifecycle from raw material procurement to delivery to consumer feedback. The tracking of physical goods (by monitoring various data at each stage) takes about 12 months. That is also the time physical goods take to complete their lifecycle. However, CPG companies don't track information flows in the reverse direction as meticulously – data is contained in retail sales, in consumer feedback, in product returns from unhappy customers, in unsold inventories sent back by distributors, etc. This means they pass up the opportunity to make timely changes, such as adjust production schedules in case a product succeeds beyond expectations, or conversely, make corrections to it based on early negative feedback. That should change over the next three years as the supply chain becomes more transparent, agile, and adaptive with the help of technologies such as big data solutions and integration platforms. Companies following the best practices in customer and channel management are already gathering and acting on data from retailers like Amazon.

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DIGITAL TECHNOLOGIES THAT CPG FIRMS USE – CYBER SECURITY, ANALYTICS, AND CLOUD

CPG companies utilize six digital technologies on average. The most popular technologies are cyber security, big data analytics, and enterprise cloud, in use at 69, 68, and 65 percent of the enterprises, respectively. Then come AI (55 percent), 3D printing (48 percent), and enterprise service management solutions (44 percent).

Which of the following digital technologies does your organization currently utilize?

Cyber security	69%
Big data analytics	68%
Enterprise cloud	65%
AI (machine learning, deep learning, natural language processing, natural language generation, and visual recognition)	55%
3D printing	48%
Enterprise service management solutions	44%
Business process management solutions	43%
ERP and enterprise application implementation/modernization	42%
Internet of Things	42%
Dev-ops and agile	36%
APIs	29%
Blockchain	28%
Mainframe modernization	23%

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While the most important purpose of implementing these technologies is to improve existing business operations, CPG companies are looking at technologies such as cyber security, AI, big data analytics, and enterprise service management to also solve new business problems. When it comes to the IoT, however, the industry is clearly looking at doing new things with it, such as solving a new business problem or creating new opportunities.

When the following areas of digital technologies and solutions were implemented within your organization, was it to improve existing business operations, solve new kinds of business problems, or create new opportunities?

	Improve existing business operations	Solve new business problems	Create new opportunities	None of these
3D printing	69%	37%	31%	-
AI (machine learning, deep learning, natural language processing, natural language generation, and visual recognition)	58%	55%	45%	-
APIs	59%	41%	47%	3%
Big data analytics	55%	55%	39%	-
Blockchain	57%	40%	37%	-
Business process management solutions	60%	49%	47%	-
Cyber security	55%	57%	27%	3%
Dev-ops and agile	56%	54%	44%	-
Enterprise cloud	63%	52%	42%	-
Enterprise service management solutions	58%	54%	42%	2%
ERP and enterprise application implementation/modernization	74%	63%	33%	-
Internet of Things	50%	59%	54%	-
Mainframe modernization	60%	40%	56%	-

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WHERE CPG COMPANIES ARE INVESTING – MANUFACTURING AUTOMATION, WORKFORCE MANAGEMENT, AND BACK OFFICE AUTOMATION

CPG organizations plan to invest in digital technologies in the coming 12 months. Where are they putting this money? Are they investing in disruptive technologies to bring totally new possibilities to life or only in tried and tested solutions that keep the business running?

Most importantly, are CPG companies putting money into the trends they deem most significant in the next three years? To understand this, the survey asked the respondents whether they were investigating or investing in the top three trends they had named as having the most impact on their organization in the next three years. Here are the findings.

The majority of enterprises were already investing in or planned to invest in the key trends. In fact, the respondents that believe a trend will have a positive impact on their organization also show similar interest in most of the other trends on the list. The only exception was "investment in technologies enabling CPG companies to sell directly to consumers", but even there 65 percent of the enterprises had invested or planned to, 26 percent were in the investigation stage, and only 10 percent were staying away totally.

When it came to the trends that were drawing the most investments, it was technologies for automating the manufacturing process which topped the charts (73 percent of the respondents said they were investing in it).

Next came investment in technology for workforce management (63 percent). CPG companies are using solutions such as a freelance management system to speed up product delivery, at lower costs to boot. Happy with the results of a pilot project, a global CPG giant is planning to invest a lot of money into this technology over the next couple of years.

The CPG respondents (61 percent) who believe that it is a top trend, said their companies were investing in technologies to automate the back office. Besides conventional solutions, AI technologies such as visual recognition are finding application in many back office activities. An example is procurement, where the photograph of an item that needs to be ordered can be used to activate an automated search for the same or an equivalent product.

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Is your organization investing in or investigating any of the top trends?

	Investing in this trend	Planning on investing in this trend	Investigating this trend	Not investing in, planning on investing in or investigating this trend
Investment in technologies to automate the manufacturing process	73%	13%	12%	2%
Investment in technology for workforce management	63%	26%	11%	-
Investment in technologies to automate the back office	61%	34%	2%	2%
Investment in technologies to increase supply chain visibility	51%	42%	7%	-
Using analytics and AI technology to get more return on investment from the advertising and marketing dollar	50%	25%	25%	-
Investment in technologies that will enable deep product personalization	49%	33%	18%	-
Investment in technologies that will enable CPG companies to sell directly to consumers	42%	23%	26%	10%
Investment in technology for digital asset management	40%	43%	17%	-
Participating in a digital ecosystem of connected/smart products linked to value-added services	38%	48%	14%	-

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To the question, "Which of the following technologies or solutions will your organization use in order to realize the promise of all of these trends?" the CPG respondents answered by naming the same technologies being used the most, namely, cyber security (62 percent), big data analytics (62 percent), AI (60 percent), and enterprise cloud (49 percent).

But overall, how equipped are they to implement these trends? When the survey asked the respondents if they had what it took to implement their top trends, the majority said they possibly needed to improve their skills (87 percent) and their technologies further (86 percent).

This is emphasized in the qualitative results, with one respondent saying, "In our company, there are many, many systems here so it's very sophisticated. It can take care of all the business needs, but it also requires the people having enough skills to utilize it…which means the people need to be well trained."

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IN CONCLUSION

For the CPG sector, 2018 will be about improving core operational areas – manufacturing and the supply chain – rather than doing totally new things such as going direct to consumers. CPG companies will use advanced technologies to automate and infuse intelligence into those areas. The industry is making the right technology investments to take advantage of these trends, but also admits that it should improve its technologies and its skills further.

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