

# Sectors Team Insights – Acceleration of Technology

July 2021



**Bank of  
Ireland**

Classification: **Green**



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# Introduction

The pace at which technology advances is continuously gathering speed. The COVID-19 pandemic somewhat accelerated the assimilation of some technologies into our everyday lives by catapulting nascent trends like working from home and online shopping. Technology continues to unveil new ways of doing business and new economic opportunities, presenting both challenges and opportunities across all business sectors. These trends are set to continue, transforming the economy, jobs and our way of life.

The Irish government has long recognised the need for SMEs to embrace new technologies and has expressed a clear ambition to “drive a steep change in the adoption of digital and other new technologies” as detailed in the Economic Recovery Plan released in May 2021. Embracing technological advances can improve productivity

and help companies transition into more nimble organisations able to thrive into the future.

The speed at which technology is adopted has not been even across economic sectors in Ireland, not only because of consumer behaviour but also because of the ease of implementing change. Bank of Ireland’s own ambition to become a leading Digital Relationship Bank is a clear and evident response to changes in consumer behaviour which favours efficiency and ease of access.

As we look ahead, technology will continue to disrupt and challenge markets as it perpetually seeks to improve the way we do business. In this publication, the second in our current series, we examine the impact and acceleration of technology across key sectors in the Irish economy, and reflect on the impact this trend may have.



# Agriculture sector



# Agriculture Sector

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Ever since the creation of the plough, technological innovations have shaped agriculture allowing farmers to grow more food while becoming more efficient and more environmentally friendly.

The COVID-19 pandemic put greater emphasis on the sector's future sustainability and long term resilience. This is accelerating the role technology will play in making the sector more profitable, more efficient, safer, and more environmentally friendly in order to survive disruptors such as COVID-19 in the future, while meeting the demands of feeding 10bn people globally by 2050.

But does this mean new technologies will replace the expertise of farmers? No. In contrast, technology will augment rather than replace the intuition and know-how of farmers as no two farms are the same and farming differs greatly around the world.

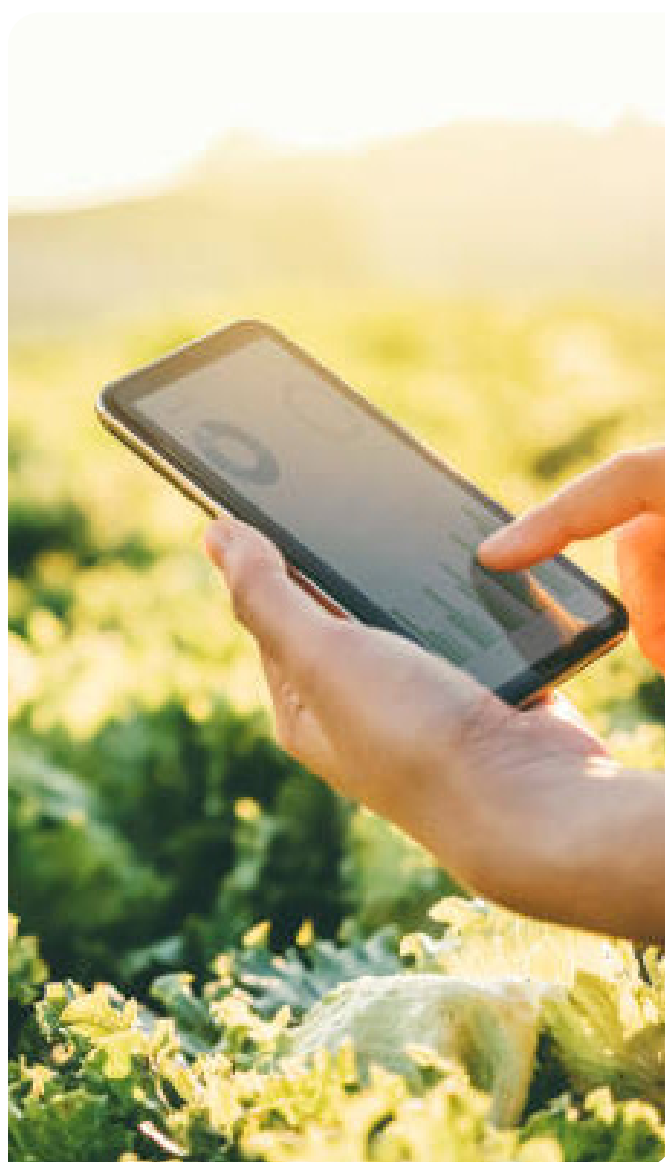
### Precision agriculture will reduce sector's environmental footprint

One of the key challenges facing the sector is to produce more food using fewer resources. At farm level, technology such as precision agriculture can improve the management of crops and livestock, while agricultural robots and auto-steering equipment accelerate operations while reducing labour requirements and the environmental footprint. Typically these technologies include things such as remote sensing, big data analytics, artificial intelligence, and GPS-based variable-rate technology.

For example, farmers no longer have to apply water, fertilizers, and pesticides uniformly across entire fields. Instead, precision technologies allow specific areas to be targeted, or even treat individual plants differently. In addition, robotic technologies enable more reliable monitoring and management of natural resources, such as air and water quality. This results in greater efficiencies, safer growing conditions and safer foods along with reduced environmental impact.

In the livestock sector, sensors or smart ear tags and collars allow improved monitoring of diets, diseases, and fertility, while 3D cameras can be used to monitor livestock movements and track animal weight. Another area where data analytics is coming into play is genomics which enables selection for particular traits in animals. For example it could improve the overall environmental performance of beef production.

Novel genetic engineering methods such as bio-pesticides which are biological or biologically derived agents with the ability to manage pests in an environmentally friendly way are expected to transform how crops are grown.



## Robotics and automation will overcome challenge of finding skilled labour

In an economy with high employment levels where skilled farm labour is difficult to find, robotics and automation will be essential in cost reduction, quality enhancement and environmental performance.

A few decades ago, the idea of tractors driving themselves on the farm was implausible. Now, tractors equipped with GPS technology coupled with automatic steering systems are used to improve the placement of seeds, prescribe the precise quantity of fertiliser required for a particular area and improve harvesting operations to reduce wastes and costs. This also reduces the need to perform repetitive tasks, improving the health and wellbeing of the operator. Robotic milking has already gained a foothold in the dairy sector while many other routine farmyard tasks are being automated.

## Technology could improve transparency and fairness along supply chain

Distributed ledger technologies (DLT) such as Blockchain show potential to dramatically improve the transparency of transactions and the inclusiveness of Agri-food value chains. Both producers and buyers can gain from more transparent transactions. For example, producers can avoid intermediaries and connect directly with retailers, food

service operators, and even consumers, thereby receiving a fairer price for their products. Moreover, faster and easier transactions reduce the food losses that occur when, for lack of a buyer, perishable products remain too long in the field or in storage.

## Vertical farming allows food to be grown closer to consumers

This is the practice of producing food in vertical layers within a dedicated structure (such as a building, warehouse, or shipping container) using indoor farming techniques combined with technologies that allow for the control of environmental factors such as light, humidity, temperature, atmosphere, and nutrition. There are three main types of vertical farming; hydroponics, aeroponics, and aquaponics.

Vertical farming uses only a tiny fraction of the amount of land and water required for traditional farming. Furthermore, these 'farms' provide a clean and controlled environment that can easily be isolated, allowing for chemical (pesticides/herbicides) free production in a climate-resilient context.

Finally, since vertical farming facilities can be located in urban areas, the products do not have to be transported long distances to reach the final consumer, which implies significant savings on agri-logistics costs as well as lower greenhouse gas emissions.



# Food and Drink Sector



# Food and Drink Sector

## Roisin O'Shea



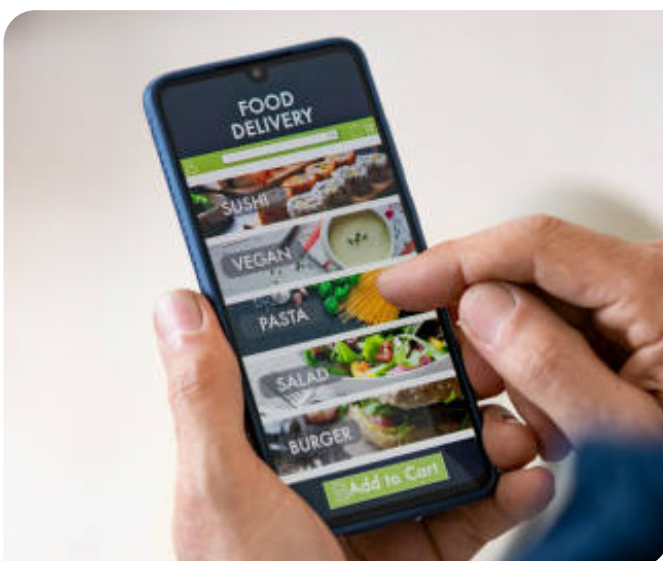
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While technology had been playing an increasing part in driving the growth of the Food and Drink sector, COVID-19 has accelerated its use in a number of areas including the facilitation of shorter supply chains, online ordering and process automation. COVID-19 has also increased awareness of the growing threat of climate change and technology is playing a key part in the acceleration of the industry's response.

### Technology accelerating the move to online shopping for food and meal occasions

COVID-19 led an acceleration of online ordering for a range of food options, both prepared for ready consumption and for eat later. In the longer term, online ordering may be further accelerated by the use of drones. Drone technology has been increasing in popularity due to its use in a number of real life scenarios, such as in China where it was used to monitor quarantine adherence. Nearer to home, trials have also taken place in Ireland for food delivery in a pilot programme between Just Eat and Manna Aero, however further regulatory approval will be needed before a widespread roll out happens.



The move to online is changing the relationship between the food producer and the end consumer. Food producers now have the potential to establish a direct relationship with their end consumer. While still at a small scale, this trend has been evident in both small start-ups and within larger food multinationals for example Heinztohome.ie. During COVID-19 many retailers cut their core range in order to maintain stock on shelf and this in turn accelerated online ordering of traditionally more niche products. However, the skill sets to be successful in this new direct to consumer world are very different to traditional sales via a grocer and suppliers have to be sure that direct consumer relationship adds value rather than distraction given their business model.

In addition to the direct model, the acceleration of online ordering has resulted in a proliferation of new potential customers and intermediaries. Amazon has increased its presence in grocery via its prime delivery service, its new physical store format and its ownership of Wholefoods. In the UK there are also a number of rapid delivery start-ups, such as Getir, promising delivery of grocery orders (based on a limited range) within as little as ten minutes. Unlike Deliveroo, these new players are basing speed of service on vertical integration and so are setting up to buy product directly from suppliers themselves. Food and drink suppliers will need to ensure that they incorporate their online pricing and promotions strategy into their main business model in order to ensure they maintain their brand reputation, presence and margin.

<sup>1</sup> <https://www.marketwatch.com/story/food-automation-market-growing-at-a-cagr-of-95-from-2020-to-2027-2021-02-12?siteid=bigcharts&dist=bigcharts>

<sup>2</sup> <https://ourworldindata.org/food-waste-emissions>



## Process Automation

Technology has also looked to address labour shortages in the food industry. Labour practices were put under pressure by COVID-19 due to the need for increased social distancing and limitations on the use of migrant workers due to travel restrictions. Warehousing and automated goods vehicles have been the initial focus of investment however, increasingly, this is spreading to production lines. As a result, the food automation market globally is due to grow by 9.5% Compound Annual Growth Rate (CAGR) in the years out to 2027<sup>1</sup>.



## Technology shortening the supply chain

COVID-19 highlighted the vulnerability of global supply chains. Travel restrictions resulted in a decrease in passenger travel and in turn this increased air freight

charges. Hence there has been an explosion of interest in solutions to shorten supply chains, for example growing food closer to the end user in urban population centres. However this is difficult in high density areas.

## Technology supporting development of meat and dairy alternatives

As part of a response to climate change, there has been exponential growth of plant based alternatives to everything from beef to milk. Silicon Valley investment has poured into companies such as Impossible Meat. The development of these products has been accelerated by the use of artificial intelligence to predict how ingredients will combine, making the process of experimenting and prototyping much faster.

## Technology driving food waste reduction

Almost a third of all food produced is thrown out/wasted. More so, an estimated 6% of global greenhouse gas emissions comes from the production of food that is never eaten (food waste)<sup>2</sup>. As COVID-19 related queues lengthened in supermarkets, consumers increasingly focused on reducing waste and this focus on waste is likely to continue due to heightened awareness around climate change. Technological solutions are proliferating in this area. *Food cloud* allows retailers in Ireland upload a description of food about to be wasted to an app that connects them with charities that will use the food. In the US, *Winnow solutions* help restaurant staff log food waste via a modified bin station and produces reports to identify savings.

## Looking forward

The role of the Chief Technology Officer CTO will become increasingly pivotal in food production as technology's ability to change the playing field in the competitive world of food production becomes more evident. As technology becomes more prevalent, so too do the risks of cyber-crime, the demonstration of acceptable cyber security standards is likely to play an increasing part in quality audits.

<sup>1</sup> <https://www.marketwatch.com/story/food-automation-market-growing-at-a-cagr-of-9.5-from-2020-to-2027-2021-02-12?siteid=bigcharts&dist=bigcharts>

<sup>2</sup> <https://ourworldindata.org/food-waste-emissions>

# Hospitality Sector



# Hospitality Sector

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The COVID-19 pandemic has further accelerated an already enhanced rate of tech-adoption in the hospitality industry. Some “intelligent” capacities and services that might have been considered add-ons to the guest experience may soon become requirements as we come out of lockdown. The health and safety risks of the virus combined with lockdown restrictions and the proliferation of food/drink delivery forced operators into immediate action. Up until twenty years ago managing the guest experience was mostly a person to person occurrence, technology was mostly limited to tills and reception desks; many operators historically resisted technology on the basis that the sector is based on “high touch” rather than “high tech”. Human interactions are still an essential component, but with the incredible growth of the internet, smartphones and an “always-on” lifestyle, people are no longer willing to wait very long for their desired outcome.

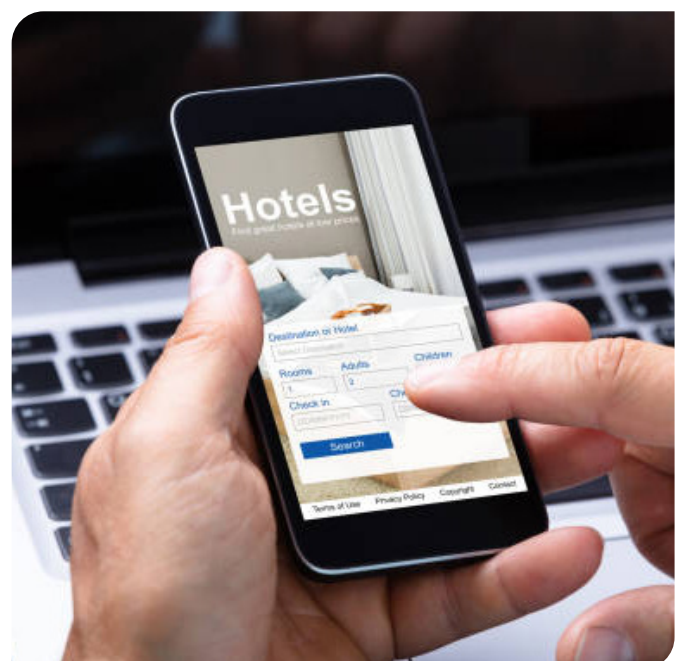
Technology like service bots, mobile keys and self-service kiosks were all being slowly embraced by the market before the pandemic. COVID-19 brought much swifter adoption of those technologies, motivated by

a combination of safety requirements and a change in consumer behaviour and expectations. Now that we have online check-in, mobile keys, and other mobile services in place, there are also platforms to collate this information which can be used to personalize the customer experience. Technology also allowed many hotels, bars and restaurants to keep their teams engaged during the lockdown through the use of e-learning platforms that are likely to become more prevalent in the future particularly as operators are constantly looking to improve on staff satisfaction and retention.

Over the next 5 years, the government will drive a step change in the adoption of digital and other new technologies by Irish businesses, as a critical driver of enterprise productivity and competitive advantage as indicated in the National Recovery and Resilience Plan. Separately, Fáilte Ireland is in the process of developing proposed supports to enhance online trading and digitalisation across the tourism and hospitality sector in the medium term.

### Property management & point of sale systems.

Integrated online booking platforms can not only reduce the administration burden for staff but also improve the customer journey, particularly as bookings over smartphones are becoming the norm rather than the exception. Booking systems are frequently integrated to the Property Management/ Point of sales systems which reduce the possibility of human error when taking down reservations. Further integration to Customer relationship management (CRM) systems can prompt reminders like food allergies, birthdays, anniversaries, etc. For larger operations like hotels, the booking technology can be integrated to other platforms that allow for the booking of food and beverage services, to request assistance or to get a notification that the room is cleaned/ready for check-in. The systems can also support the back of house allowing for better use of resources in housekeeping, help with maintenance logs and control of inventories among other things.



## Payroll

As with any other customer facing sector, wages are among the biggest costs for the hospitality businesses. Historically the sector had already embraced a number of solutions like biometric technology "Time Point" for signing in and out of shifts but more recently these technologies have been integrated with software technology like "Alkimii" used by groups like Dalata, which can in turn be integrated to other systems to deliver "predictive payroll management".

## Stocks/Purchasing

Food, beverage, crockery, laundry, cleaning products and other stocks are an expensive resource for the sector that ideally should be closely monitored and managed. A number of stock control and purchasing systems like "Procure Wizard" have been embraced by hotels, bars and restaurants moving away from spreadsheets to more intelligent and comprehensive systems. From ordering to invoice processing and payments these systems save time on a number of tedious tasks.

## Loyalty programs

The COVID-19 disrupted market will present opportunities to new products and services and open the door to new entrants into the market looking to capitalise on the displaced demand.

The analysis of information collected across different platforms can allow for more appropriate/tailored offers to repeat/loyal customers. Further integration to CRM platforms can then allow for uniquely tailored customer experiences.

## Online Food/Drink

With on-premises customers staying away, a trend amplified by the pandemic, more and more venues are entering the online food delivery market; online food delivery orders have grown by over 40% in the past 5 years in the UK<sup>3</sup>. There are a number of technology options for connecting with customers online, either directly or through delivery platforms such as "Deliveroo" and "Just Eat" which can have menus available online within days. The online food market moves fast and artificial intelligence solutions integrated to point of sales systems can help operators to optimise their menu offering.



## Security

The more that guests are able to be tracked and recognized, the greater the obligation to keep their data safe. Most hotel owners have invested in physical safety with sanitation stations, touch-free technology, outside seating, and layouts that promote social distancing. Cyber security is perhaps an equally urgent priority as we've seen recently from the rising number of ransomware attacks.

<sup>3</sup>Rethinking Hospitality Kitchens for the age of delivery, white paper KBox Global.

# Manufacturing Sector



# Manufacturing Sector

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In the spirit of agility and continuous improvement, the acceleration of tech and digital transformation of Manufacturing is the next big disruptor and continues to be a game changer for the sector.

From the 90's on, lean practices have been widely adopted with great productivity benefits. The next big change is adoption of digital smart technologies as businesses seek greater productivity gains and look to provide their stakeholders (suppliers and end users) with an enhanced customer centric experience.

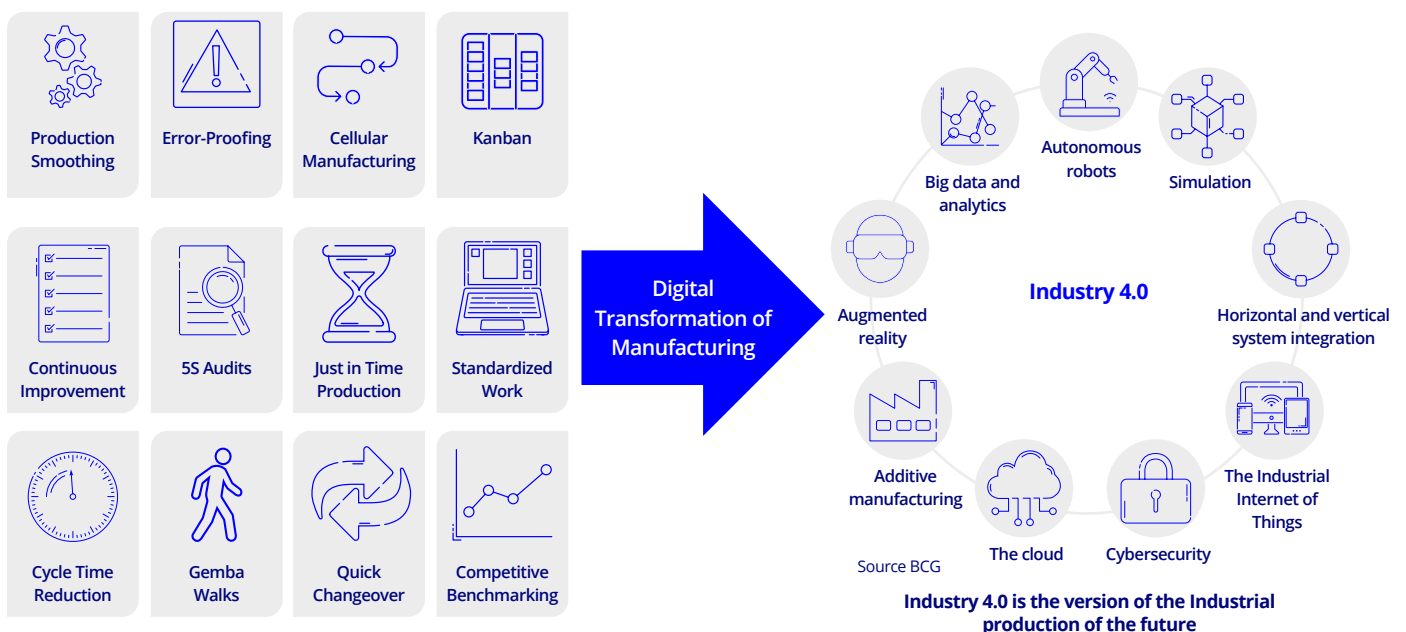
The internet of things gathers pace as more and more products become smart and connected. Everything from cars, industrial equipment, smart utility meters to training shoes, toothbrushes and even barbecues are all becoming connected to create an enhanced customer centric experience and give industries sharper insights

into customer trends and needs. Industry 4.0, the fourth industrial revolution is upon us, coming after that of steam, followed by oil and electricity and thirdly computers. The big difference with 4IR (4th Industry Revolution) compared to earlier disruptor events, is its speed, scale and impact on our lives. As computers and Artificial Intelligence (AI) dominate more and more of our physical environments, the opportunities are boundless. In concrete numbers, smart devices which connect objects to each other and within the internet will more than double globally from 22 billion units in 2018 to 50 billion units in 2023<sup>4</sup>.

COVID-19 has been a remarkable catalyst for change with estimates that in 2020, more than 70% of companies have accelerated their digital roadmaps having pivoted many aspects of their business in an online and digital direction.

### Industry 4.0 Building Blocks for Manufacturing

Whereas lean methodology represents a toolkit of best practices including 5S<sup>5</sup>, and Kaizen, Industry 4.0 is about 9 related digital technologies which provide the next steps in productivity and real time connection with both ends of the supply chain.



<sup>18</sup> <https://aib.ie/fxcentre/resource-centre/aib-ireland-pmis>  
<sup>19</sup> <https://www.markiteconomics.com/Public/Home/PressRelease/85d000d867c4c2ab2d4e36ae851847f>

As Manufacturing companies adopt these different technologies in ways appropriate to their business and customer needs their ways of working will transform including:

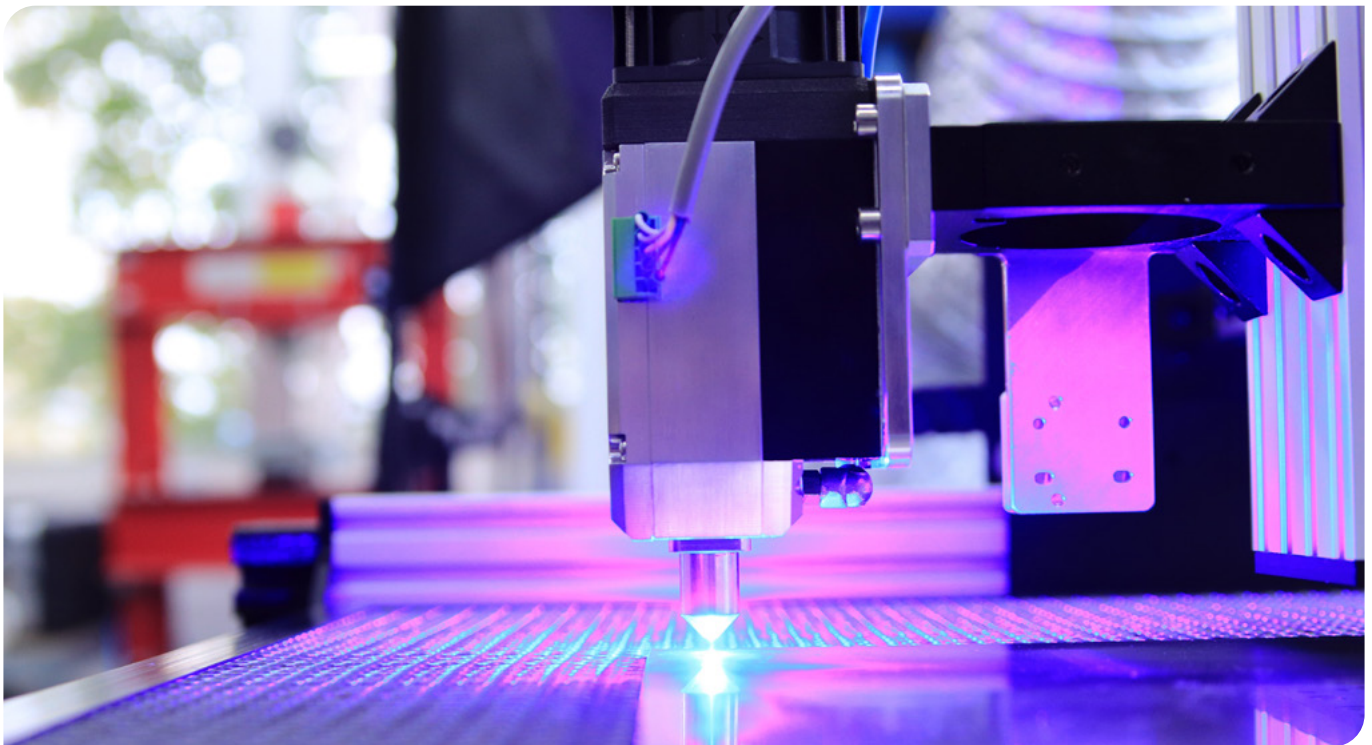
- Data driven solutions using cloud technology, solving problems quicker and in ways that enhance customer experience.
- Digitised supply chains which provide real time information and a seamless end to end raw material to end product conversion. There will also be a greater migration from linear to circular supply chains.
- Additive manufacturing, 3D printing, rapid prototyping, shortening product development cycles.
- Shop floor automation, with AI and ML (Machine Learning) driving repeatable outputs. Move from production lines to production eco systems.
- Autonomous/Green material transport solutions including freight for finished products.

Ultimately Irish manufacturing need to rethink its products offerings as full service offerings which are customer centric providing the end user with an experience better than the next best alternative.

## Ireland and the Manufacturing Digital Revolution

Ireland with its high tech, high value and highly productive manufacturing base is well placed to proactively embrace digital technologies. With Irish manufacturing contributing 1/3 of the country's GDP, its importance is well recognised. A digital transformation roadmap "Ireland's Industry 4.0 Strategy 2020-2025 - Future Jobs" has been published with concrete actions to support manufacturing and SMEs. Linked to this is the opening of an Advanced Manufacturing Centre (AMC) in Q1 2022. This centre of excellence will provide latest manufacturing best practices to a wider industry audience. There is also a great ecosystem of state bodies and supports and Research Technology Organisations (RTOs) all providing networks, grant assistance, and exemplars for manufacturers to proactively take their operations to the new digital era.

To stay competitive and retain our strong manufacturing base, investment in digital and associated new skillsets is crucial. Ireland has a recognised strong track record in innovation and will no doubt embrace the opportunities presented with Industry 4.0 transformation.



<sup>4</sup> Statista.com

<sup>5</sup> The 5S system (lean manufacturing methodology): Sort, Set in Order, Shine, Standardise, Sustain



# Retail Sector





# Retail Sector

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Many commentators believe that 2020 and 2021 will be seen in time to come as formative years in modern, 21st century retailing. COVID-19 disrupted the status quo and became the instigator and accelerator of change in a sector that needed to adapt both structurally and technologically. Digitisation and the acceleration of technology will act as a catalyst for change across a range of areas within the retail sector. In a competitive market, Irish retailers will need to be proactive in exploring technology driven advancements and embedding same within their proposition. Digital advancement needs to be a key element within progressive retailers' strategy and business plan to capitalise on evolving consumer trends and expectations.

### Online shopping

Online retailing and services have found a new, wider audience over the past year whose discovery and adoption of this new way of shopping will become ingrained in their future routines. Retailers will need to ensure that they meet their customers' expectations consistently and that this captive audience is retained. While technology has provided good solutions for the transactional aspects of online shopping (displaying products and payment platforms), in many cases it has failed to deliver a great experience. The online journey needs to be as frictionless as possible for the customer – eliminating out of stocks, efficient/flexible delivery and return options and personalisation of the offering for recurring customers, will all support enhanced customer acquisition and more importantly, retention. Technological advancements will be an integral element in eroding these customer pain-points. Retailers will need to deliver a “New Retail” model, combining the best of digital and physical to produce a genuine, valuable omnichannel experience for the consumer. Carraig Donn and Elvery's Sports are two prominent Irish retailers that have embedded a strong customer experience element within their online offering leading to high customer satisfaction and importantly repeat business/traffic to their website and stores.

### Interactive Physical stores

Immersive, “Instagrammable” experiences, a.k.a. “retailtainment,” can bring a retailer's brand alive in a way that an online store can't. Retailers are utilising an array of digital capabilities; virtual reality, interactive signage, brand messaging/video highlighting charitable causes and

exclusive in-store discounts via loyalty apps when you enter the store, to drive customer engagement. Nike's Time Square flagship store, for example, which has a basketball court with cameras to record shots and treadmills with screens mimicking famous running routes, has become a huge tourist attraction that boosts brand engagement and awareness. Meanwhile, Marvel found a valuable promotional tool in their touring Avengers S.T.A.T.I.O.N., an immersive exhibit that has pulled in huge crowds all around the world. Through interactive displays and real-life movie props, the franchise invites fans to step into the cinematic world that's delighted them for years. The newly launched Happy Pear installation within Supervalu Blackrock, Co Dublin demonstrates how a vibrant, in-store delivery can bring a brand to life and create a unique differentiation for a store in a competitive market place.

### Social Commerce

Providing a shopping outlet on a social media platform has become more prevalent and it offers shoppers an even more seamless way to shop online. Instead of clicking through to a third-party website, users can make purchases right from the social media app or website. This is referred to as “social commerce” and it is a growing trend. In 2020 alone, Tik Tok developed a partnership with Shopify, Snapchat expanded its Native Stores for brands and Facebook Stores was released to the market. Irish athleisure brand Gym+Coffee have grown their brand significantly through clever use of social media and connecting with the societal issues (sustainability, healthy living etc.) that matter to their core target market.



## AR powered shopping experience

Augmented reality (AR), machine learning, and artificial intelligence (AI) are here to stay. According to a Nielsen global survey from 2019, consumers listed Augmented and Virtual Reality as the top technologies they're seeking to assist them in their daily lives, with 51% saying they would be willing to use AR technology to assess products. While international brands like IKEA have proprietary AR shopping experiences, AR-powered commerce can also be used on a smaller scale. Shopify recently introduced Shopify AR, an easy-to-use toolkit for businesses to create their own AR experiences to showcase their products to customers. Shopify reports that interactions with products having AR content showed a 94% higher conversion rate than products without AR. During 2020, EZ Living furniture launched an AR powered app that enabled Irish customers to view their furniture/home furnishings catalogue in 3D on their mobile device.

## The Final mile: Same-day delivery

In the age of instant gratification, shoppers want their orders delivered as soon as possible. Same-day, store-fulfilled orders are seeing more traction with many consumers willing to pay extra for same-day or faster delivery. The physical store will need to evolve to be both a showcase for the brand and an efficient micro-fulfilment hub – facilitating improved click and collect offerings, faster home delivery and cost effective product returns. Customers will expect a seamless multi-channel offering. This requires alignment and investment across all elements of the retailer's framework – ordering, stock management, online and physical store platforms. It is a pivotal area for retailers and one that is constantly evolving. With Amazon developing "Prime Air" which uses drone technology to deliver shopper's orders in 30 minutes or less and the rise of delivery robot start-ups, delivery is only getting faster. In Ireland, drone delivery firm Manna has piloted partnerships with Samsung, Camille Thai, Tesco and a number of local retailers in Oranmore, Co Galway. A second pilot town is expected to be announced during the summer/autumn 2021.

## The Future

Retailers with no existing online or delivery channel will struggle to survive in a competitive landscape in the future. Companies now need to be good at not just buying and selling products, but also at things like online fulfilment, home delivery, data analytics, AI, machine learning and process automation. A multi-partnership platform model may help deliver some of those important capabilities into the future. This may involve a partnership structure between retailers driving mutual benefits, whether through shared distribution channels, shared sales space (in-store and online), or shared customers. Partnerships with specialists from outside of the sector will also prove essential if retailers are to realise their digital potential particularly from data analytics. Irish shoppers have high standards; to meet these expectations, our retailers will need to consistently invest in their stores, their people and technology to deliver excellent customer service and a sustainable foundation for their business.



# Technology, Media and Telecoms (TMT) Sector



# Technology, Media and Telecoms (TMT) Sector

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Digital acceleration and digital transformation are often used interchangeably. Transformation refers to the use of digital technology to revolutionise an organisation's business model, strategy, customer experience, and every other facet of the business. Acceleration on the other hand, is more about the speed at which companies embrace, integrate, and use technology, in parallel with upskilling and training of their staff and employees to support a seamless adoption of technological solutions and tools.

While wider society has been on the digital transformation journey for some time, COVID-19 hasn't so much initiated the journey, rather it is the catalyst for speeding it up. Video conferencing/collaboration tools were being used well before the pandemic, but a lot more people are using them now than before, the same can be said for contactless payments, food deliveries and even telehealth.

### Importance of technology

The terminology around new and emerging technologies often becomes clichéd before the technology itself becomes ubiquitous. Cloud technology for example, has been around for several decades, yet its true agility, flexibility and accessibility was only recognised during the pandemic, as it provided organisations with scalable computing power that enabled remote working, continued communication and collaboration, which became essential during the period. Similarly, mobile technology and applications became increasingly important, powering everything from entertainment to wellbeing to social interaction. The importance of telecommunications services and infrastructure was never more apparent than in recent months, as various providers flexed their network to meet unprecedented demand and keep society connected.

### Some emerging technologies that will likely become more commonplace post-COVID-19

**Expansion of Artificial Intelligence (AI):** the Irish government will shortly publish a National Artificial Intelligence strategy to drive the adoption of AI across indigenous businesses. This strategy will provide a high-level direction to the design, development and adoption of AI in Ireland, under the working title of "AI - Here for Good", giving direction for the steps needed to ensure that Ireland's use of AI will benefit society.

- **Increased robotic automation:** we are going to see more widespread adoption of AI technology to perform tasks that originally required some form of human interaction, being replaced by RPA (Robotic Process Automation), undertaking day-to-day work, removing mundane and

repetitive tasks; freeing up employees to engage with and add-value to customers. Sectors expected to see adoption of these technologies include financial services, healthcare, manufacturing, and supply chain management. Also, likely to find more expansive use of robots from areas such as sanitation services food processing and remote surgery in the time ahead.

- **Artificial intelligence (AI) of everything:** growing use of AI, from helping process large swaths of data at pace to creating a COVID-19 vaccine to helping brands learn a little bit more about what's relevant to their customers. In short, wherever there is data, there is opportunity to derive insights and deliver products or services that people want, which is evidence-based. Likewise, from a government point of view, AI can assist in the delivery of societal opportunities; enterprise development, RD&I, data, digital and connected infrastructure and public sector use of AI.

**Telehealth:** we witnessed patients turning to telemedicine as a safe alternative to in-person visits over the last year. Many across the healthcare space have for some time been advocating this approach pointing to the potential to lower costs, and the potential to ease pressure on overextended healthcare systems. In 2018, 18% of American doctors reported treating a patient via telemedicine. During the pandemic, almost half (48%) of all US physicians said they had treated patients virtually. We have also seen similar adoption of virtual visits and the use of technology for remote self-monitoring of patients in Ireland which will inevitably expand over the coming years.



**The Internet of Things (IoT):** The Internet of Things refers to the connection of sensors and everyday devices to the internet. These devices can include everything from wearable devices to home appliances to sensors in medical devices. Real-time data from those sensors can then provide insights, automate various functions, and more; supporting everything from improved healthcare provision to the roll out of smart cities to enhanced visibility across supply chain management. While much of this evolution is reliant on expansion of 5G technology, we are seeing an increase in infrastructural investment to support its roll-out, which suggests we will soon see the benefits of hyper-connectivity in the short term; bringing with it unprecedented levels of data, insights and the creation of new products, services and solutions for customers.

**Cybersecurity protection:** as the working from home model evolves over the coming years, so too will the need to proactively protect employees, data, and networks; necessitating businesses to increase budgets to cover the costs. According to CB Insights, Cybersecurity spending hit an all-time high in 2020 at \$11.4B, nearly 50% increase from 2018. It is important to note that protection against cybersecurity is not an end state, rather a continuous journey and therefore businesses must establish stringent corporate security and compliance structures to facilitate the likely increase in remote workers, while also providing adequate protection. This will inevitably lead to further growth and consolidation of the sector in the time ahead as cyber protection is a critical necessity for safe business operations.



**Blockchain:** while the technology is still relatively new and has not yet matured, the potential uses are numerous. As cybercrime continues to expand, the potential for Blockchain to protect against and arrest many of these attacks is enormous. Blockchain also has the potential to minimise transaction time from days to minutes and reduce the level of bureaucracy and inefficiency often associated with the financial services sector.

**Cashless society:** Is this the final death knell for cash? Consumers in their thousands ceased using cash to pay for goods and services and replaced it with various contactless payment applications. This also necessitated the adoption by businesses, retailers, and companies of every kind to facilitate these payments, which has become ubiquitous and is here to stay. Possibly the most interesting opportunity that will come from this adoption is the level of data and insights that the various payment platforms could offer back to their customers. Visualisation of data has been around for some time and we are seeing more examples of it in everything from wearable technology to various mobile applications. What is interesting here is how we have become immersed in data presented in dashboards, which is adding to our expectations from a customer point of view. This trend is going to expand further, and data will be something that customers will both pay a premium for and have an expectation of receiving in relation to contextually rich, personalised offers based on our data.

**eGovernment:** the program for government is committed to ensuring that digital transformation forms part of enterprise policy to drive adoption of digital and emerging technologies among Irish businesses as a driver of productivity and competitive advantage. To this end, Enterprise Ireland's Strategic Framework for 2021 and in the SME and Entrepreneurship Growth Plan, includes the establishment of a digital transformation scheme for SMEs. This top down approach from central government and its agencies highlights the emphasis being placed on digital engagement in the time ahead and the need for businesses to do likewise.

**Digital skills:** underpinning the various plans that government are putting in place to support Ireland's Digital Economy must also be the reskilling and upskilling of citizens to take advantage of new employment opportunities presented either through remote working or new career pathways that will evolve and new job roles that will be created. To this end, the government is supporting digital upskilling initiatives through its funding of Skillnet Ireland and the roll out of a suite of programs that enables citizens to embark on a pathway to digital literacy and enhanced skills set, funding or part-funded through government assistance, depending on the candidate's employment status.



# Motor Sector



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The motor sector welcomed consumers back into motor showrooms for the first time this year in May following the remote delivery of c. 77,000 new vehicles in the first five months of 2021. Compared to pre-pandemic levels, new passenger car registrations this year are running at c. 77% of registrations in the first five months of 2019. New van registrations are c.10% ahead of the same period in 2019 largely due to increased demand for delivery vehicles that we see calling daily to our neighbours homes as many office workers continue to work from home.

This has to be called out as an outstanding performance by Irish motor dealers as, under Level 5 COVID-19 restrictions, motor facilities could only physically open for vehicle maintenance until restrictions were eased in May. New and used vehicle sales were managed by engaging with customers remotely with sold vehicles then being delivered directly to customer's homes.

### Video Engagement

Motor dealers invested in technology to enable the continuity of vehicle sales during level five restrictions. Video engagement with potential customers was a key enabler as was upgrading web presentation of vehicles and investment in CRM systems. Typically, the remote sales process involves an initial expression of interest in a new or used vehicle. The motor dealer will then send a personalised video of the car to the interested party. The customer can also send a description along with photos of their own car to trade in and if both parties are happy to proceed, a holding deposit secures the new car. Vehicle finance can then be arranged remotely and, once an approval is confirmed, the salesperson can arrange for documents to be signed remotely (e.g. using Docusign) and for the car to be delivered directly to the customer's home. Using these and similar methods, 77,000 new vehicles were delivered in the first five months of 2021.

### Evolving customer journey

July is an important month for new car sales historically accounting for c. 21% of annualised demand (compare June @ c. 1%) and begins the second peak of new car sales in Ireland. The full reopening of motor showrooms is timely to enable motor franchises and motor dealers to build order banks for July and August. The pandemic has brought about changes to the customer retail experience with increasing and enhanced online shopping journeys. Many consumers, however, now want to get back onto the high street and it will be interesting to follow how the online experience evolves in the motor sector.

In conversation with motor dealers, many are wondering to what level remote engagement will continue in the future. It is anticipated that many customers will want to return to

visiting motor showrooms to physically experience and test drive their new car. For a moment, consider a scenario of a motor showroom with five potential customers but only one is interested in buying. There may not be a sufficient number of sales staff to speak to everyone in a timely manner and the one customer serious about buying could be lost. Remote engagement however, allows the motor dealer to vet all customers in advance and is positive for both the selling dealer and the buyer. Potentially, hybrid opening hours could be trialled where a dealer has digital "opening hours" and physical opening hours. This may suit some time poor customers where deals can be agreed remotely and the customer can then experience and test drive the car at the dealer before driving it home.

### Electric Vehicles

The demand for electrically chargeable vehicles (ECV's) also accelerated during the pandemic. In Ireland, electric vehicle sales volumes doubled in the first five months (and also exceeded 2020 full year sales) and battery electric vehicles (BEV's) now account for 6.5% of the market<sup>6</sup>. The sector expects EV's to account for c. 8% of the market by the end of 2021. Additionally, plug-in electric vehicle (PHEV's) sales volumes have tripled and currently account for 6.4% of new car sales this year. Overall, ECV's (BEV+PHEV) account for almost 13% of new car sales, if Hybrid cars are included the share of "alternatively fuelled" cars increases to c. 32% of the new car market in the first five months. The growth trend in ECV's is expected to continue as manufacturers are required to meet ever stringent emissions regulations. Manufacturers are developing and producing more new ECV's than ever before and the introduction of these new vehicles will be supportive to further ECV growth in Ireland.

<sup>6</sup> Society of Irish Motor Industry (SIMI).





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