

# Digital Transformation Trends

Global Retail Industry







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# Foreword



## Global Retail Digital Transformation trends

We are living through a time of unprecedented disruption and loss in our personal, domestic and professional lives. Owing to the COVID-19 pandemic, societies across the world are facing a period of significant change and adjustment to new ways of living and operating.

The retail industry, already subject to significant transformation via the introduction of new technologies and processes, is right at the forefront of this development. To help illuminate a way forward, Fujitsu has partnered with independent research and advisory firm *DataDriven* to survey close to 200 ICT leaders in nine countries on their thoughts and attitudes towards technology in the industry. In this report we are delighted to share our findings and conclusions.

## Technology is revolutionising the way we do retail

Fujitsu provides business and ICT solutions and services to many of the world's high-performing retailers. Working with our customers, we see every day how that technology is applied to people and process, to revolutionise the way we shop, run stores, provide mobile services and manage complex back office operations. For us, Digital Transformation, enabled by mobile, Artificial Intelligence (AI), Internet of Things (IoT) and cloud technologies, is the outcome of this journey for all involved, including shoppers, store colleagues and operations managers.

## The first part of this report covers Retail in general

- Meeting overall business objectives
- ICT objectives and challenges
- ICT Budgeting and staffing
- ICT infrastructure, communications and networking

## Specific Retail topics include:

- Impact of COVID-19 and natural disasters on Retail
- Cloud, Cybersecurity, IoT, AI/ML, Enterprise applications
- Retail in DX impact, drivers, progress, challenges
- Implementation vs investment in Retail ICT
- Marketing automation and back office systems
- Drones and autonomous vehicles
- Workplace innovation and mobility
- Satisfaction with partners and digital co-creation

## Covid-19 is accelerating DX trends

We hope the results of this survey will shed some valuable light on what actual ICT decision-makers across many retailers and countries are thinking and doing to maximise the benefits of technology in their businesses. COVID-19, in our view, is accelerating trends which were already advancing. These include online/offline shopping, automation, digital customer experiences, and mixed in-house and offsite data processing. No doubt, the current disruption will give rise to new concepts and trends. Listening to the voices of the decision-makers through the findings of this survey will, we hope, help determine the speed and future direction of these developments.



**Richard Clarke,**  
*Executive Director,  
Global Retail, Fujitsu*



# About the DataDriven Report:

## *"Key ICT Trends & Digital Transformation in the Global Retail Industry"*

### Real insights from real business leaders

Business decision makers, especially those responsible for ICT decision making, have a very difficult job. Budgets are tight, and management demands more accountability and greater ROI from their ICT investments. In addition, ICT professionals need to maintain and improve the current mission critical systems, whilst simultaneously driving Digital Transformation to compete in the market.

### Read the views of ICT decision makers in the Retail sector

To shed light on these challenges we went to the ICT Decision Makers themselves – people like you who can provide real insights grounded in real experience. DataDriven is an ICT research and advisory firm with a focus on global demand side research. After an extensive respondent selection and survey fielding process, DataDriven was able to collect high quality, valid completed responses from 197 ICT decision makers in the Retail sector across nine countries generally representative of global trends.

### Balancing existing systems and advancing DX

Unlike many other recent ICT reports focussed specifically on the digital economy and digital transformation, this report also paints a comprehensive picture of the relative strengths and weaknesses of the current state of global ICT implementation and investment. This is important for ICT decision making as the majority of ICT budgets are spent on 'keeping the lights on' and maintaining/upgrading infrastructure and applications, and other investments need to be made within that context.



### ICT decision makers need clarity

However, the need for Digital Transformation (DX) is increasing and ICT decision makers often don't have time to cut through multiple, confusing, conflicting and biased sources of advice. Importantly, to provide some clarity, this report provides detailed analyses of the ICT Decision Makers' Business Strategies and associated ICT Strategies, Staffing and Budget intentions and Sourcing considerations.

### DX drivers, challenges and investment plans

In addition, the report covers Digital Transformation Drivers, Challenges and Implementation and investment directions for key digital transformation technologies or strategies including: AI, IoT, Cloud, Cybersecurity, Workplace innovation, Mobility, Enterprise applications and related topics.

### A unique report

We believe this to be the first survey of this scope and size conducted globally. Almost every aspect of current and future ICT plans and issues in Retail have been covered. Many questions are related, cross-referenced, and compared. Taken in their totality they build a comprehensive picture of the issues and challenges faced by ICT decision makers in the Retail sector during the past year and what they face now and for the next 12 months..

### DX Technology Matrix (DXTM) and methodology

Complete details of the DataDriven Digital Transformation Technology Matrix (DXTM) which was used as the framework for development of this research, and the research method and approach are contained at the end of the report.

# Introduction & Key Findings

In February 2020 (in the midst of the COVID-19 Pandemic) DataDriven conducted an extensive global survey of ICT leaders in Retail.

DataDriven applied seven levels of exhaustive selection, screening and validation questions, then conducted intense data scrubbing and removal of non-representative data and outliers.

The result is a highly qualified and reliable set of complete responses from 197 ICT decision makers in the Retail sector across nine countries.

## Retailers operate in a very competitive environment

More than half of the respondents say their organizations operate in an extremely competitive (11.9%) or very competitive (40.3%) environment. Only 2.0% say their environment is not competitive. Strong competition, in conjunction with the industry's historically low margins and high turnover, make for a challenging environment.

## Financial objectives are by far the most important

Retail is the most transactional of all industries. More so than in any other sector, success is measured by the bottom line. All high priority objectives in Retail are financial – making budget targets (65.2% extremely high or very high importance), increasing productivity (66.7%), making sales targets (65.2%) and reducing costs (62.7%). In Retail, financial success is everything.

## Digital Transformation is revolutionizing Retail

Digital Transformation (DX) is a global phenomenon across many industry sectors. It is very important to Retail, where operators are constantly looking to optimize business processes and service delivery. More than two thirds (70.7%) of respondents agree that DX is an essential part of Retail technology.

Most retailers are well advanced with their digital transformation programs. The most mature areas are finance, where 63.7% have a mature implementation or are well underway. This is closely followed by sales (62.2%), customer service (59.7%) and their frontline Retail operations (59.2%).



# Key Findings (continued)

## Times are tough, but ICT budgets are increasing

Many more Retail organizations are predicting an increase (39.8%) in their overall ICT budget than are predicting a decrease (17.9%). Increases greatly outnumbered decreases in every area of budget expenditure. Other major areas of increase include Digital Transformation (39.8%), communications and networking (37.8%), and cloud services. End user hardware and part-time staff and contractors have the largest decreases, but even in these areas the number of increases is substantially higher.

## Online sales are growing

Retailers are increasingly moving online. More than one third (34.3%) now sell the majority of their products and services online. Many operate a hybrid online/physical model relying on such techniques as buy online purchase in-store (BOPIS). Nearly two thirds (64.2%) believe that online and physical retailing are moving closer together.

## Many retailers are adopting a hybrid cloud/in-house strategy

Cloud is an increasingly important component of ICT processing in Retail. SaaS is the most popular type of application source, preferred by one third (32.3%) of respondents. But many retailers are sticking with in-house processing (24.9%) or using off-the-shelf enterprise applications (18.4%).

## Artificial Intelligence is increasingly important in Retail

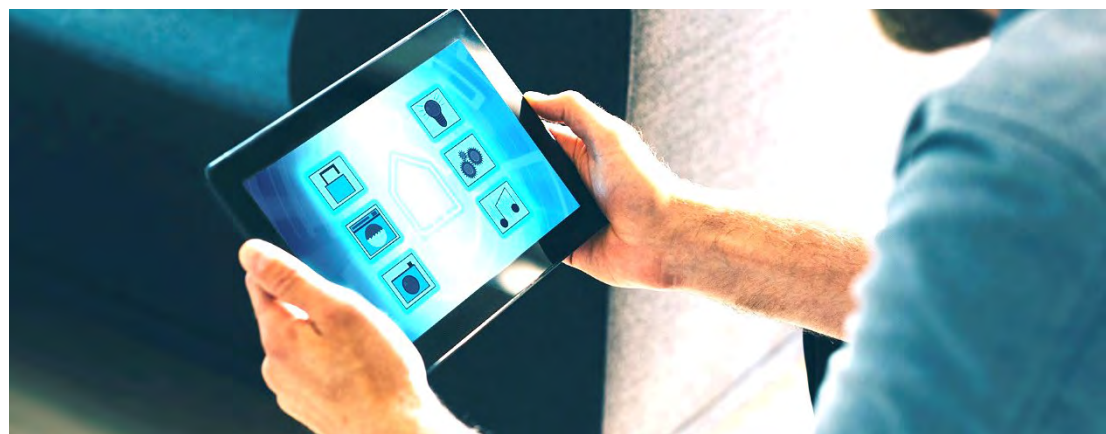
Many more retailers see Artificial Intelligence (AI) as an opportunity (69.7%) than believe it is a threat (9.5%). Three quarters (73.6%) believe that AI will fulfil some of the tasks currently performed by humans, and at the same time two thirds (66.7%) believe it will result in a better quality of life and allow for the creation of new jobs.

## Retailers are generally satisfied with their ICT providers

Just under half of retailers are very satisfied or highly satisfied with their ICT providers in a range of areas. Very few are dissatisfied. The levels of satisfaction do not change significantly for different products and services. They are most satisfied with their cybersecurity (48.9% highly satisfied or very satisfied) and business continuity providers (48.3%), and least satisfied with their applications management (41.0%) and enterprise applications (41.2%), though the differences are not significant.

## The Internet of Things will be important for Retail – but not just yet

Technologies associated with the Internet of Things (IoT) have many applications in Retail, from improving the customer experience, the tracking of delivery fleets, through to industry optimization. Adoption is slow at the moment, but more than two thirds of respondents (69.2%) believe that IoT will eventually revolutionize Retail.



# Key Findings (continued)



## **The major ICT strategic challenges are security based**

Network security (57.2%), web security and database security (both 55.7%) and fraud prevention (55.2%) are all in the top ten ICT strategic challenges. Other security factors rate highly as challenges with data privacy (53.2%) and regulatory compliance (50.3%) also regarded as challenges by more than half of all respondents.

## **The customer experience is increasingly important**

Most retailers have embraced the concept of enhancing the Customer Experience (CX). The great majority of survey respondents are using or planning social media (79.1%), digital marketing (79.1%), and smartphone apps (68.0%) to enhance the Customer Experience.

A range of DX technologies are being applied. Three quarters (73.1%) have implemented or are moving towards giving customers the ability to buy online and pickup in-store (BOPIS). The majority are also looking at delivering real-time in-store recommendations via smart phones (77.1%).

## **Retailers are agnostic about their ICT suppliers**

Generally speaking, retailers have no strong preferences for whether their ICT suppliers are local, regional or global. They prefer local for things like training and maintenance and are happy to go with global suppliers for enterprise applications. They will buy the best product or service from the best supplier, regardless of origin.

## **Retailers are technology optimists**

Retailers strongly believe (71.1%) that digitalization will make the world a better place. But they also realize they must prepare for it. More than three quarters (76.1%) say that people must prepare for a digital future by embracing lifelong learning and skills development, while two thirds (68.2%) believe that they themselves have the necessary skills.

## **Retailers are not concerned about technology hype**

More so than in many other sectors, retailers have a realistic view of technology and are unlikely to be overly swayed by fashionable trends.



## Key Findings (continued)

### Coronavirus (at this time) is having both a positive and negative impact

Respondents were asked about the effect of COVID-19 (Coronavirus) on their industry. Two thirds believe it will have significant (21.6%) or minor (44.8%) negative impact. Note that the survey was conducted in mid to late February 2020 when the effects of the pandemic were already being felt in most countries.

Since that time the impact on the Retail industry has been both positive and negative, with dramatically increased sales of food and grocery items and pharmaceuticals, but reduced sales at many Retail outlets such as clothing and jewelry stores

### Retailers are not technology leaders – but nor are they laggards

Only one in ten (9.5%) of retailers say they are very early adopters, with another quarter (26.9%) saying they are somewhat early. One third (36.8%) say they are neither late adopters nor early adopters. The remainder are technology laggards. These numbers are similar to those found in other industries, indicating that ICT leaders in Retail are not significantly more or less innovative than those in other sectors.

“The Retail market is extremely fluid and many important technology trends are yet to be felt”

In these extremely uncertain times the Retail industry is facing many challenges. While it shares many of these in common with other industries, retailing is not one monolithic industry. There are many sectors, many channels to market, and many products for sale.

Some Retail sectors are booming, while others are languishing. Some have gone totally online, others remain wedded to the concept of the physical store, and most are somewhere in between. There are large retailers and small retailers, early adopters and technology laggards, and economic circumstances differ by country or even by region within countries.

But virtually all retailers have one thing in common. They use technology. Their industry is more competitive than most, with low margins the norm. There are many commercial imperatives driving them to constantly seek an advantage, no matter how small, over their rivals.

The survey shows the many challenges confronting retailers in the 21st century, and the many technologies and techniques they are adopting to move their businesses forward. New technologies like Artificial Intelligence and Internet of Things have arrived but are not yet mainstream. Digital Transformation (DX) has become a byword across all aspects of Retail. The Customer Experience is becoming a more important factor.

The use of ICT in Retail is in a healthy state. Though times are tough, ICT budgets are growing, because retailers cannot afford to get left behind. The market is extremely fluid and there are many important technology trends whose effects are yet to be felt.

# Coronavirus, Disasters, Business Objectives, ICT Challenges and Budgets

Most retailers operate in a high turnover and low margin environment.

This means they are very focused on the bottom line – it should be little surprise that their objectives are mostly based on financial metrics. The survey methodology allowed a range of objectives to be compared – financial, competitive and process-related, and softer objectives such as those to do with sustainability and corporate social responsibility.

## Challenges

Retail leaders tend to think of their challenges in financial terms, though security issues also rate very highly. Regulatory and compliance challenges are also significant. The survey asked about a wide range of potential challenges, many of them to do with technical issues and specific technologies. All are important, with the survey methodology clearly showing their relative significance.

## Budgets and impacts on spending

As with other industries, ICT budgets in Retail are under pressure. But more respondents are predicting budget increases than are predicting budget decreases. The survey also asked questions about key impacts on spending. Concerns about budgetary constraints are important, but more Retail leaders are looking at the role of new technologies as a positive driver for budget growth.

**“Low margins and high turnover  
mean a strong focus  
on financial objectives”**



# The Retail Competitive Environment

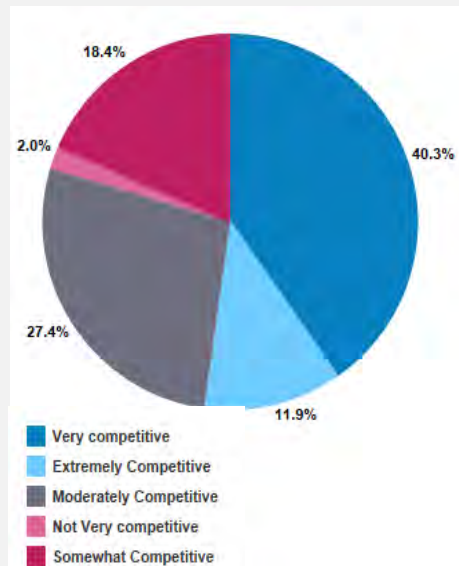
## Retail is among the most competitive of industries

Respondents were asked a number of questions about the competitiveness of their industry and the source of their competition. More than half of respondents say that they operate in an extremely competitive (11.9%) or very competitive (40.3%) environment. Very few (2.0%) say their environment is not very competitive.

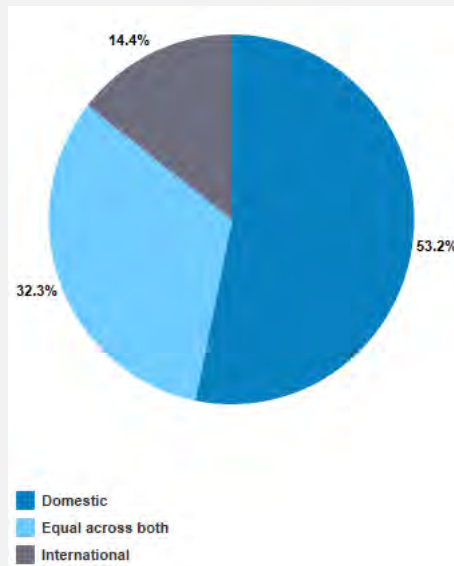
More than half (53.2%) said their competition was from domestic sources and 14.4% said it was from international sources. The remainder was a mix of both. Most (61.2%) report most of their revenue from domestic sources.

More than one third (34.3%) report most of their business from online sales.

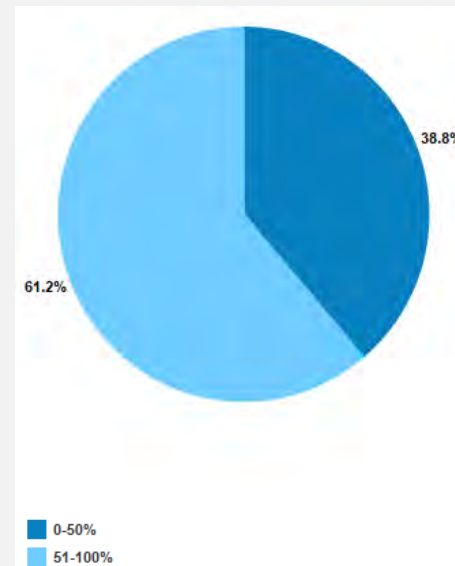
GLOBAL RETAIL – Competition Level



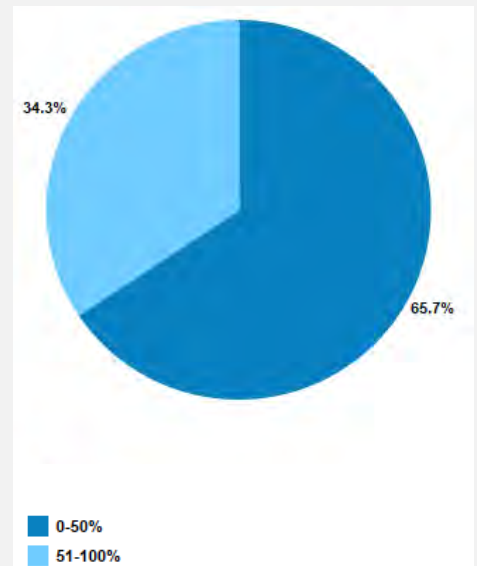
GLOBAL RETAIL – Competition Source



GLOBAL RETAIL – Domestic Revenue

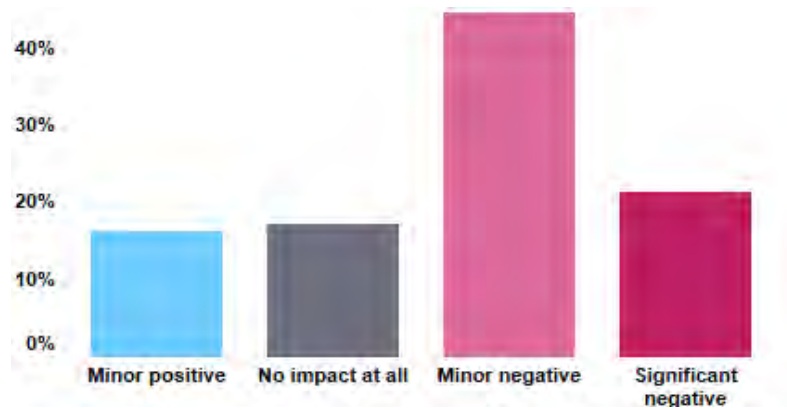


GLOBAL RETAIL – % Trading Online



# Impact of COVID-19 and Natural Disasters on Retail

GLOBAL RETAIL – Impact of Coronavirus on ICT budgets next 12 months



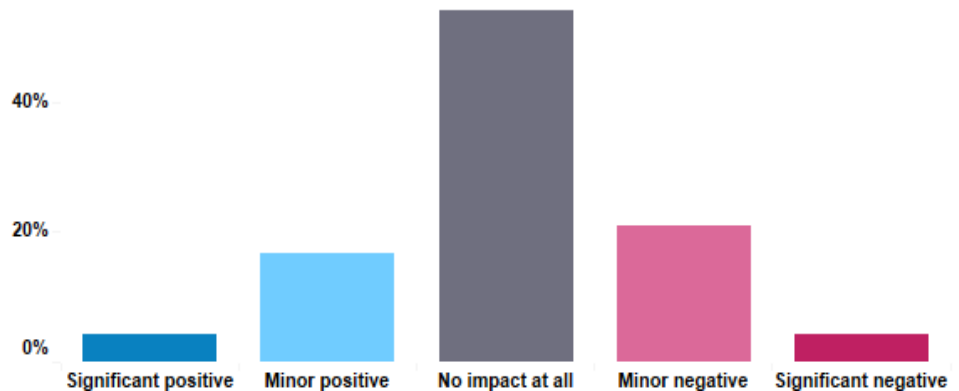
## Coronavirus will significantly affect the industry

Respondents were asked about the effect of COVID-19 (Coronavirus) on their industry. Two thirds believe it will have significant (21.6%) or minor (44.8%) negative impact. Note that the survey was conducted in mid to late February 2020 when the effects of the pandemic were only just starting to be felt in most countries.

Since that time the impact on the Retail industry has been both positive and negative, with dramatically increased sales of food and grocery items and pharmaceuticals, but reduced sales at many retail outlets such as clothing and jewelry stores.

They were also asked about the impacts of recent natural disasters. The great majority (94.5%) said there was no great impact, with just a few experiencing positive (1.5%) or negative (3.0%) effects.

GLOBAL RETAIL – Impacts of fires, floods and other disasters on my business



“One in five retailers believe Coronavirus will have a positive effect on their business”



# Retail ICT Trends and Technologies: Key Business Objectives

## Financial objectives are the most important

Retailers, like all businesses, have multiple objectives. The study found that the most important are financial. Two thirds (67.2%) of Retail ICT leaders say that making budget targets is an extremely high or high priority. Next on the list, only a short way behind, are increasing productivity (66.7%) and making sales targets (65.2%)

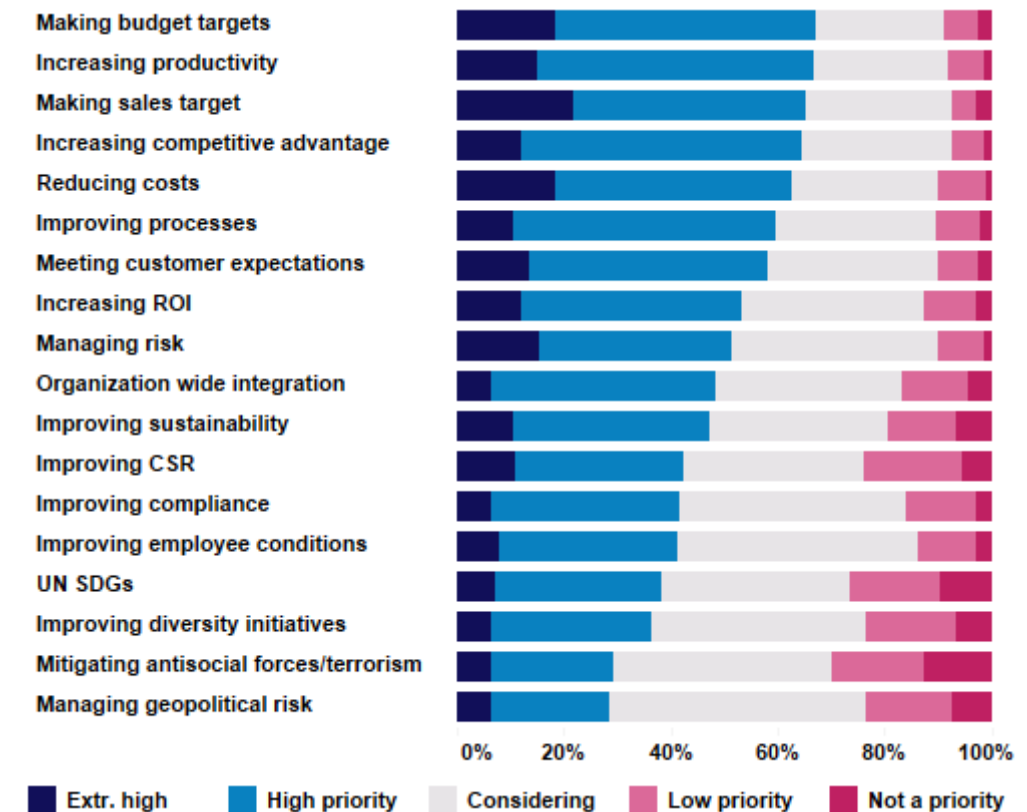
Other important objectives are increasing competitive advantage (64.7%), reducing costs (62.7%) and improving processes (59.7%). In Retail, financial success is everything.

These are mostly financial objectives. Softer objectives, such as managing risk and improving sustainability are much less important, in part because they are more difficult to measure. Most Retail organizations live in a world of low margins and strong competition and must maintain constant attention on the bottom line.

CSR (corporate social responsibility) and attention to such things as the United Nations SDGs (social development goals) are seen as worthwhile goals by many but are relatively unimportant overall.

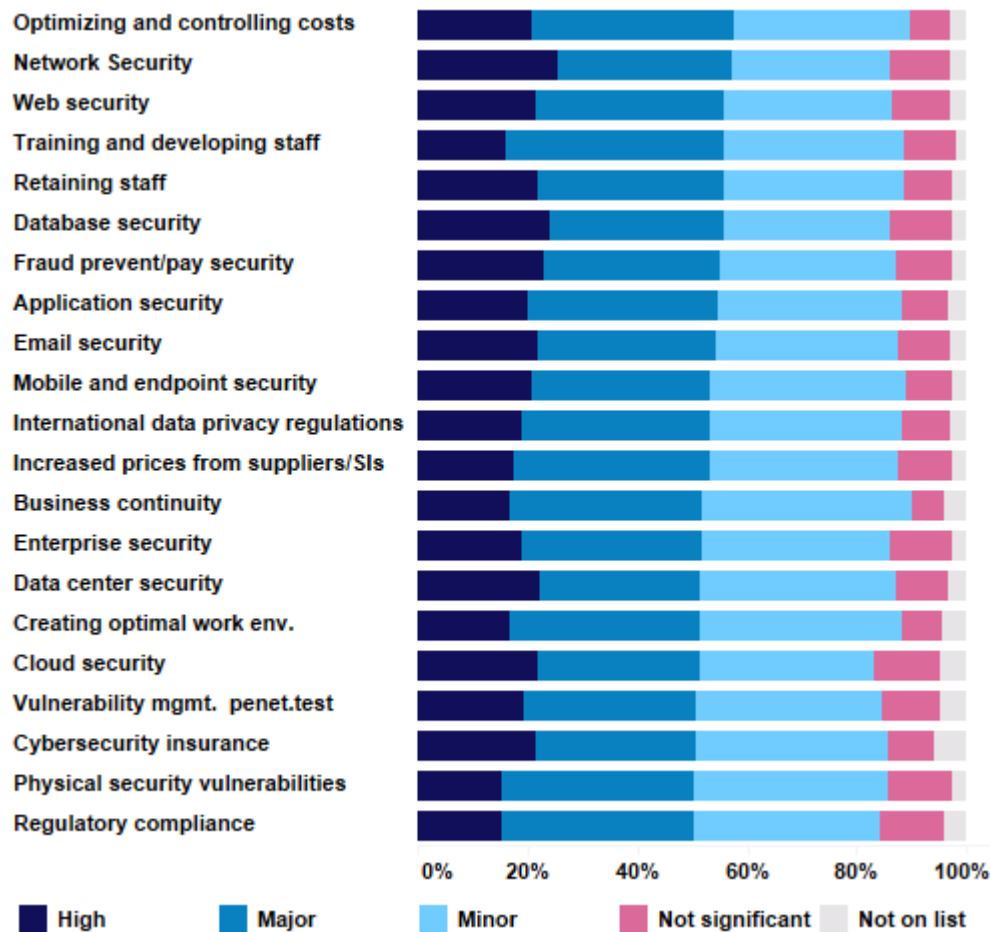
**“In Retail, financial and competitive advantage objectives dominate all others”**

## GLOBAL RETAIL – Key Business Objectives



# Retail ICT Trends and Technologies: Top ICT Strategic Challenges

## GLOBAL RETAIL – ICT Strategic Challenges (above 50%)



### Security challenges feature strongly

Just as the most important objectives in Retail are financial, so is the biggest challenge. At the top of the list is optimizing and controlling costs, rated a high or major challenge by most (57.7%) retailers.

The chart shows all challenges regarded as high or major by more than half of all respondents. Network security (57.2%), web and database security (both 55.7%) and fraud prevention (55.2%) are all in the top ten challenges.

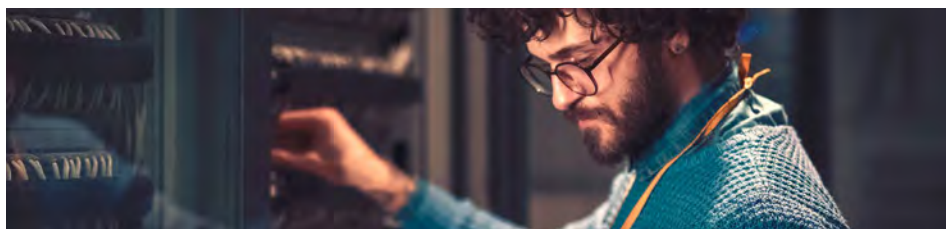
Training and developing staff and retaining staff (both 55.7%) figure very prominently. Note that recruiting staff (49.3% - featured on the next page) is not regarded as seriously.

Other security factors rate highly as challenges, with data privacy (53.2%) and regulatory compliance (50.3%) also regarded as challenges by more than half of all respondents.

“Security, in all its aspects, rates as the biggest challenge for most retailers”



# Retail ICT Trends and Technologies: Other ICT Strategic Challenges



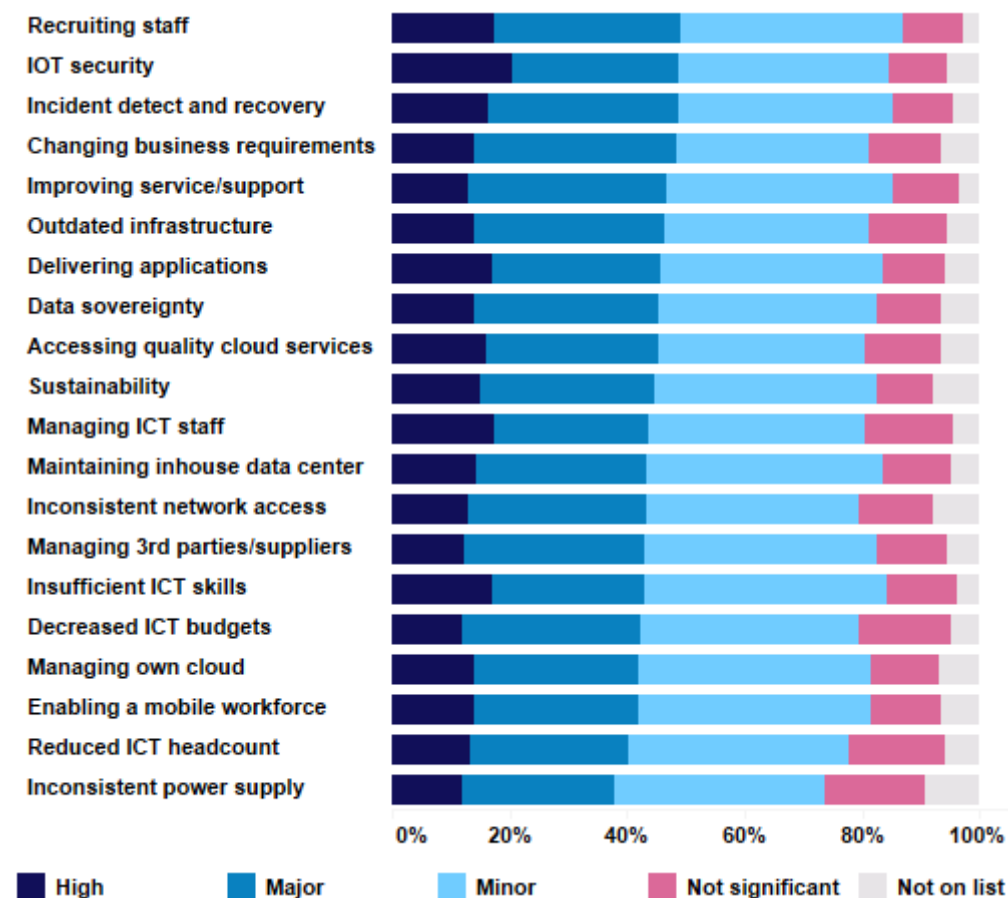
## Retailers face a multiplicity of ICT challenges

The chart shows all challenges regarded as high or major by less than half of all respondents. While many of these remain serious challenges, they are regarded by most retailers as less important than those in the previous page. There are fewer security challenges in this group, though those that are included are towards the top – IoT security and incident detection (both 48.8%).

Most challenges on this list have to do with ICT operations and infrastructure. No such challenges appeared on the previous list, indicating that they are less serious issues to most retailers. Nevertheless, problems posed by outdated infrastructure (46.3%), delivering applications (45.8%) and assessing the quality of cloud services (45.3%) are still serious challenges to nearly half of the respondents.

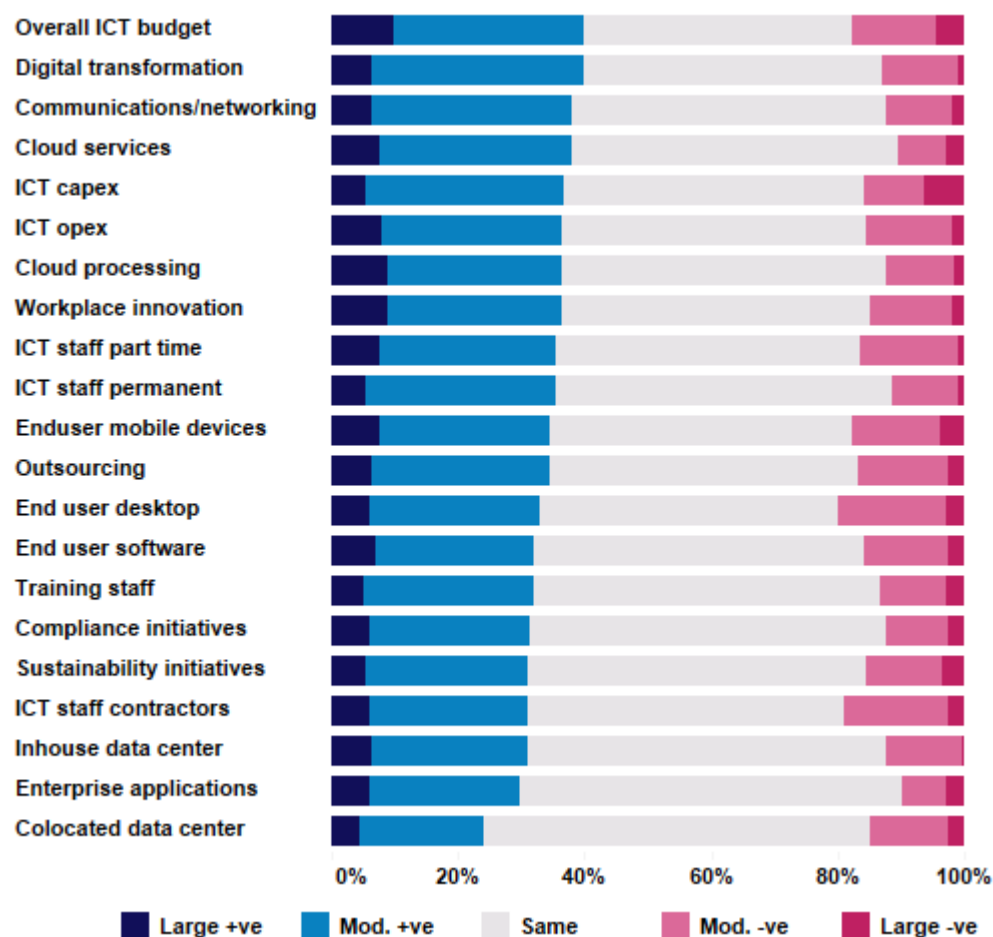
“ICT infrastructure can be a serious challenge, but it is less important than financial, security and staffing issues”

## GLOBAL RETAIL – ICT Strategic Challenges (below 50%)



# Retail ICT Trends and Technologies: Planned ICT Budget Change

GLOBAL RETAIL – Planned ICT Budget Change



## ICT budgets are generally increasing

Times are tough, but many more Retail organizations are predicting an increase (39.8%) in their overall ICT budget than are predicting a decrease (17.9%). Increases greatly outnumbered decreases in every area of budget expenditure.

Other major areas of increase include Digital Transformation (39.8%) and communications and networking (37.8%). End user hardware and part-time staff and contractors have the largest decreases, but even in these areas the number of increases is substantially higher.

Note the small increase in expenditure in co-located data centers (23.9%). Expenditure on both in-house data centers (30.9%) and cloud services (37.8%) and processing (36.3%) will grow much more quickly – colocation is a halfway house that is becoming less popular.

The consistency with which Retail ICT leaders are predicting increases in their budget indicates a general optimism for the future, and an understanding that investment in technology is an important part of future success.

“Times are tough, but Retail ICT budgets are generally increasing”



# Retail ICT Trends and Technologies: Impacts on ICT Spending



## Technology is the biggest driver of ICT spending

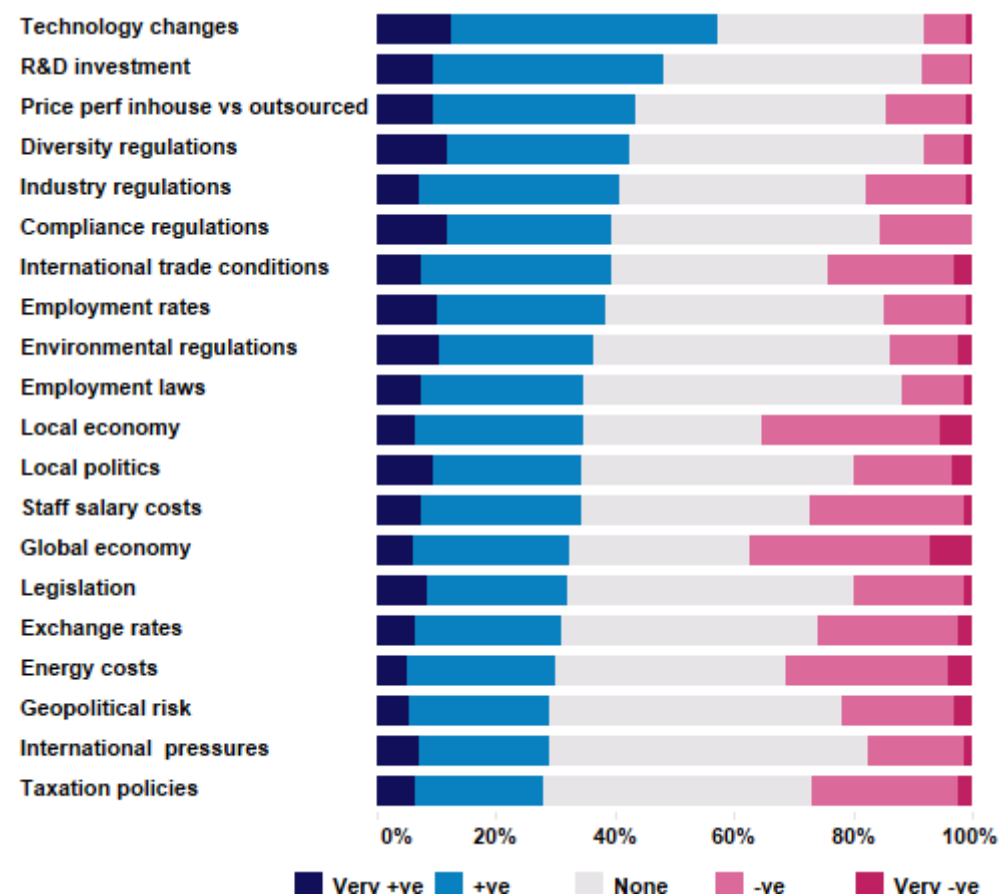
Retail ICT leaders see many factors impacting their ICT spending. Most important of these by far are technology changes, seen as a positive force driving ICT spending by most (57.2%) respondents.

Other important positive forces that will impact ICT spending are investing in research and development (48.3%) and an increased understanding that increased price performance may be better achieved with in-house processing (43.3%). Cloud is no longer seen as necessarily offering the best processing platform.

The global economy will have an important impact, both negative (37.3%) and positive (32.3%). The local economy (36.3% v 34.8%), inflation (34.8% v 24.9%), cost of living (30.9% v 27.9%), natural disasters (34.8% v 19.9%) and energy costs (31.3% v 29.9%) will also have both negative and positive effects.

**“Technology changes are a key driver for increased ICT spending in Retail”**

## GLOBAL RETAIL – Impact on ICT Spending



# Digital Transformation in Retail

Digital technology is transforming the world.

The world is changing. Digital technology, in all its forms, is transforming business and society. Virtually every area of human activity is being profoundly altered.

The most successful people and organizations are those embracing Digital Transformation (DX) to build new products and services based on innovative business models enabled by the many technologies that comprise the trend.

## The Retail sector and Digital Transformation

DX in Retail covers all phases the retail process, from marketing, through sales and purchase, to delivery and consumption. All aspects of the process have been revolutionized. The survey asked about the usage of a number of technologies important for Digital Transformation, and also asked about 'DX Overall' to gauge the level of implementation of a DX strategy.

## Bricks and mortar meets online

Increasingly, the boundaries between online retailing and physical retailing (often called 'bricks and mortar') are being blurred. All retailing involves marketing to consumers, decisions to buy made by those consumers, the purchasing and payment processes, and the delivery of a physical product. No matter how the product is purchased, it must still be put in the hands of the customer.

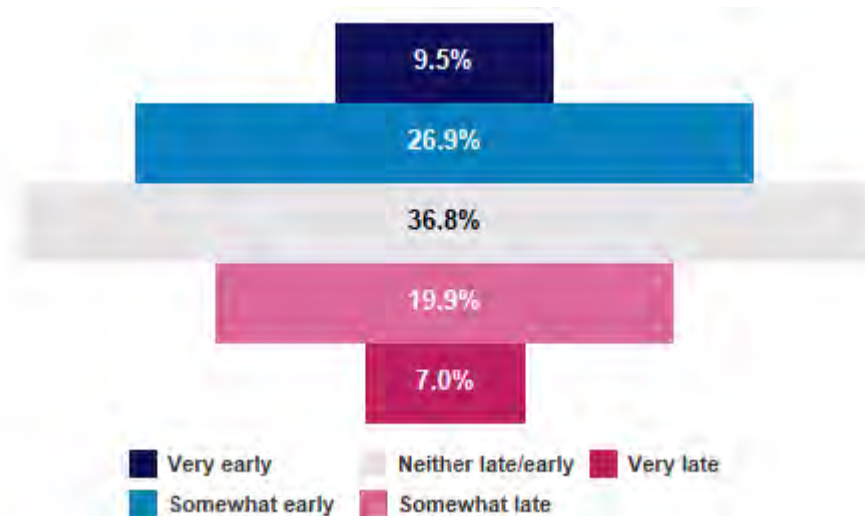
Many retailers have blended an online and physical presence. The increased popularity of BOPIS (buy online, pickup in-store, also known as 'click and collect') is tangible evidence of this. Physical retailers realize that they need an online presence, and many retailers that were previously exclusively online have built physical outlets, which may include pop-up stores.

**"Many retailers have blended an online and physical presence"**

# Technology Adoption Profile for Retail



## GLOBAL RETAIL – Technology Adoption Profile



### Retailers have a similar technology adoption profile to other industries

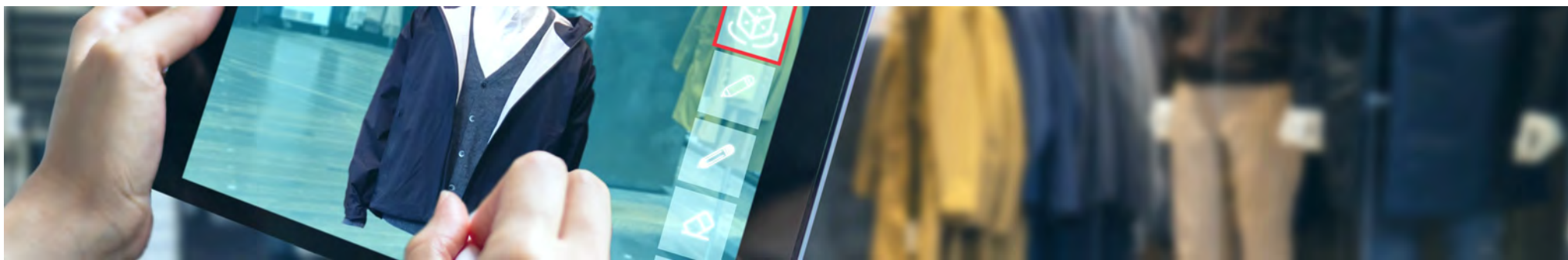
The survey asked respondents to identify where their organizations stand on the technology adoption profile. One in ten (9.5%) say they are very early adopters, another quarter (26.9%) say they are somewhat early.

Fewer say they are late adopters, with more than one third (36.8%) saying they are neither late adopters nor early adopters. These numbers are similar to those found in other industries, indicating that ICT leaders in Retail are not significantly more or less innovative than those in other sectors. This also maps very neatly to a standard distribution curve, indicating a high degree of reliability in terms of responses.

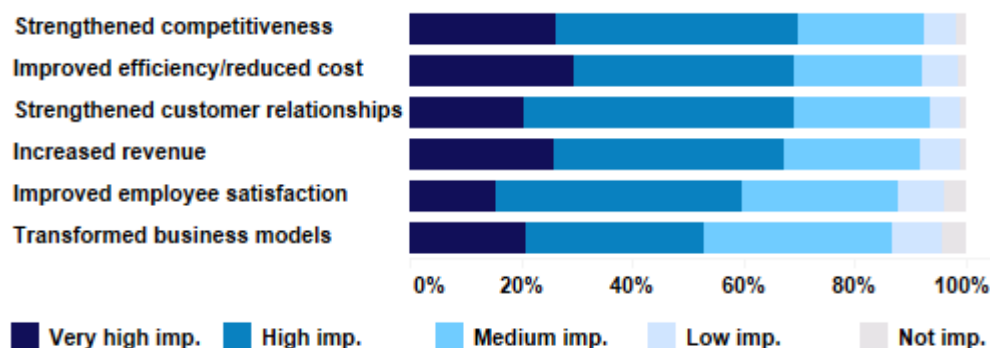
“Roughly, 1/3 are early adopters, 1/3 are late adopters and 1/3 are neither”



# Drivers for Digital Transformation in Retail



## GLOBAL RETAIL – Drivers for Digital Transformation



## Digital Transformation is an imperative for Retail

There are many factors motivating retailers to implement Digital Transformation. Key drivers are strengthened competitiveness (69.7% reporting high or very high importance), improved efficiency and reduced cost (69.2%), strengthened customer relationships (69.2%), and increased revenue (67.2%).

Note the high importance of less tangible aspects with fewer hard metrics, like competitiveness and efficiency. Though difficult to measure, there is a strong understanding that these factors are an essential ingredient to retail success.

Less important, but still significant, are improved employee satisfaction (59.7%) and transformed business models or processes (52.7%).

“Digital Transformation brings tangible benefits through improving intangible processes”

# Retail Progress in Digital Transformation

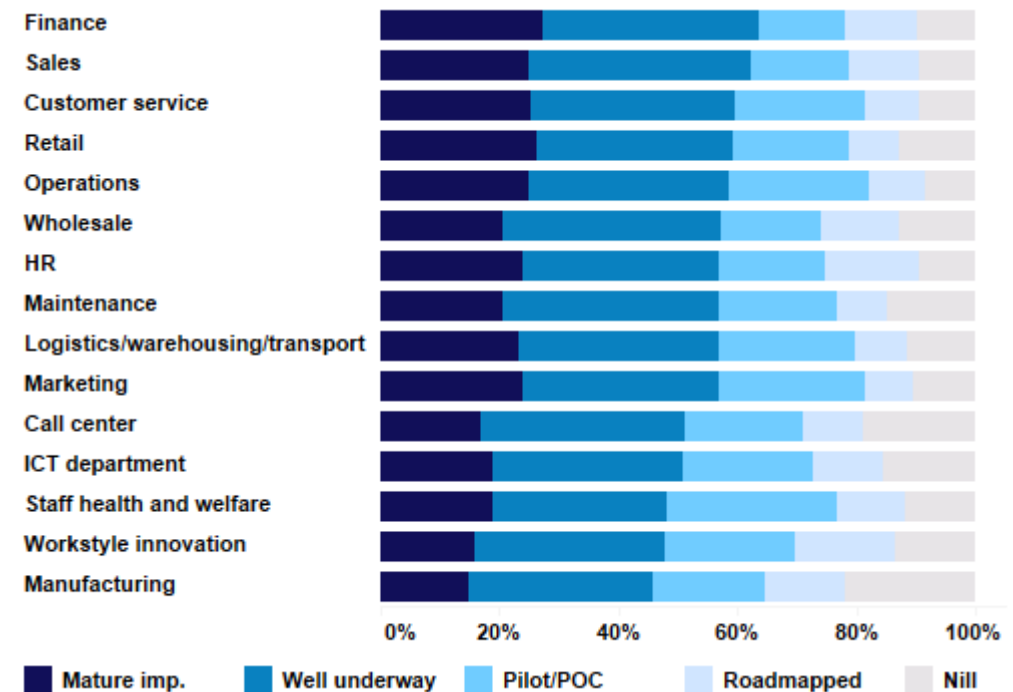
## Digital Transformation is well underway in the Retail sector

Most retailers have a mature implementation or are well underway with Digital Transformation activities, in most areas of their operations.

The most mature areas are finance, where nearly two thirds (63.7%) of respondents' organizations have a mature implementation or are well underway. This is closely followed by sales (62.2%), customer service (59.7%) and their frontline Retail operations (59.2%).

The only areas where less than half of retailers are reporting mature implementation or those that are well underway in staff health and welfare (48.3%), workplace innovation (47.8%) and manufacturing (45.8%). But even in these areas significant activity is underway or is planned.

## GLOBAL RETAIL – Progress in Digital Transformation



“Digital Transformation is taking place at different rates in different areas of Retail, with financial applications leading the way”

# Challenges to Digital Transformation in Retail

## Technology is also the biggest challenge to Digital Transformation

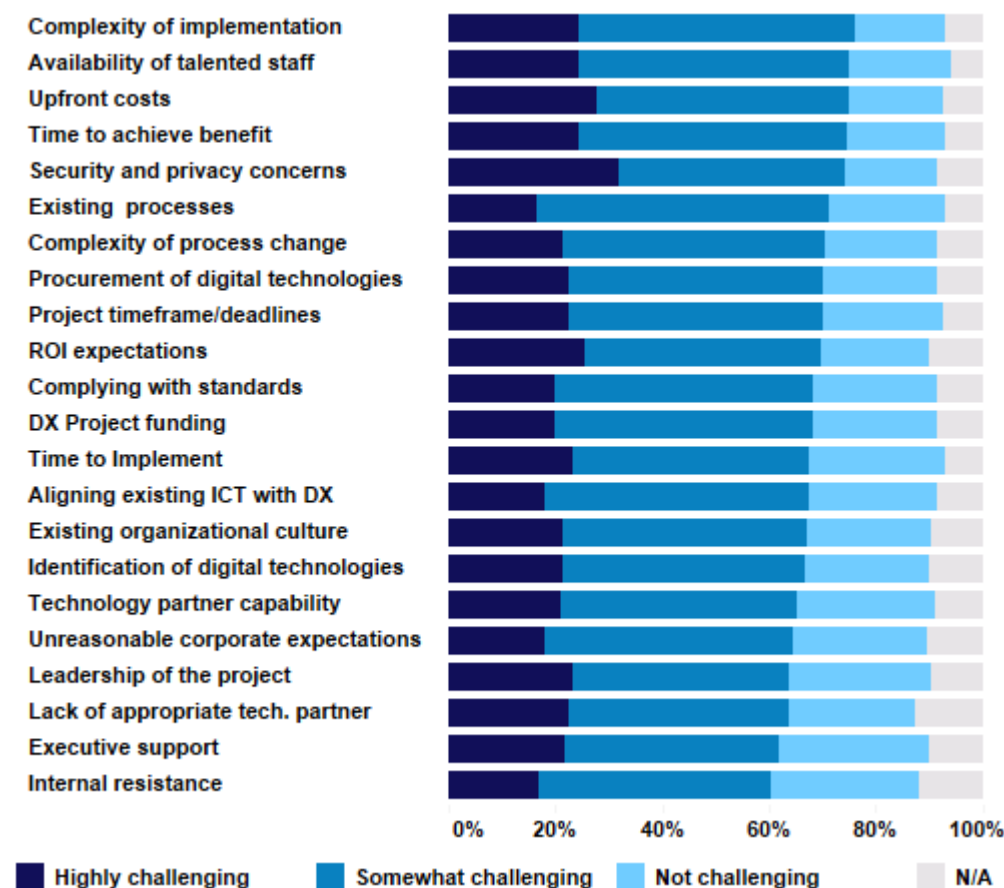
Digital Transformation is a complex process, with many challenges. The biggest challenge overall is the complexity of the implementation, with more than three quarters (76.1%) rating it as somewhat challenging or highly challenging.

Other key challenges are the availability of talented staff (75.1%), upfront costs (75.1%), the time necessary to achieve benefits (74.6%), and security and privacy concerns (74.1%).

There are many other challenges, All of them a concern to more than half of the respondents to the survey. The related factors of internal resistance and the need for executive support are the least important challenges, indicating that cultural issues are becoming less important.

“The biggest challenge to Digital Transformation is the complexity of the technology”

## GLOBAL RETAIL – DX Challenges





# Impacts of Digital Transformation in Retail – Costs and Revenue

## Digital Transformation provides real and measurable benefits to the bottom line

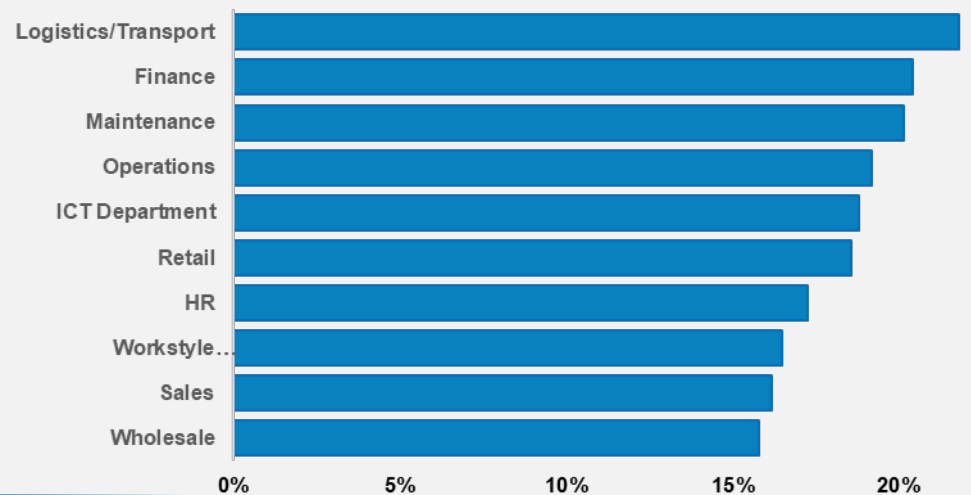
The positive impacts of Digital Transformation ripple through the entire organization. The charts show the Impact DX initiatives on reducing costs and increasing revenues for different functional areas within the organization.

“DX has positive and measurable success reducing costs and increasing revenues”

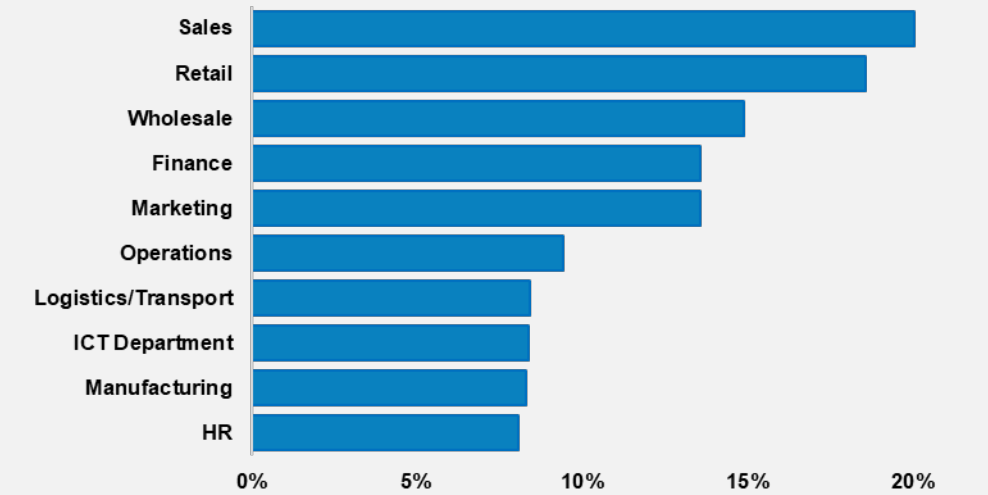
Reduced costs are seen most prominently in logistics/warehouse/transportation, with 21.8% of respondents reporting improvements. Other important areas to see reduced costs are finance (20.4%), maintenance (20.1%), and operations (19.2%). The ICT department (18.8%) and retail operations (18.6%) also show reduced costs through DX.

Revenues are also positively impacted by DX. As might be expected, the biggest area of impact is sales (20.1%) and retail operations (18.6%). Improvements in revenue then drop away, as other areas of operation are not revenue generating centers.

GLOBAL RETAIL - DX impact on Reducing Cost



GLOBAL RETAIL – DX impact on Increasing Revenue



# The Impact of Digital Transformation in Retail – Competitiveness and Business Processes

## Digital Transformation is all-encompassing

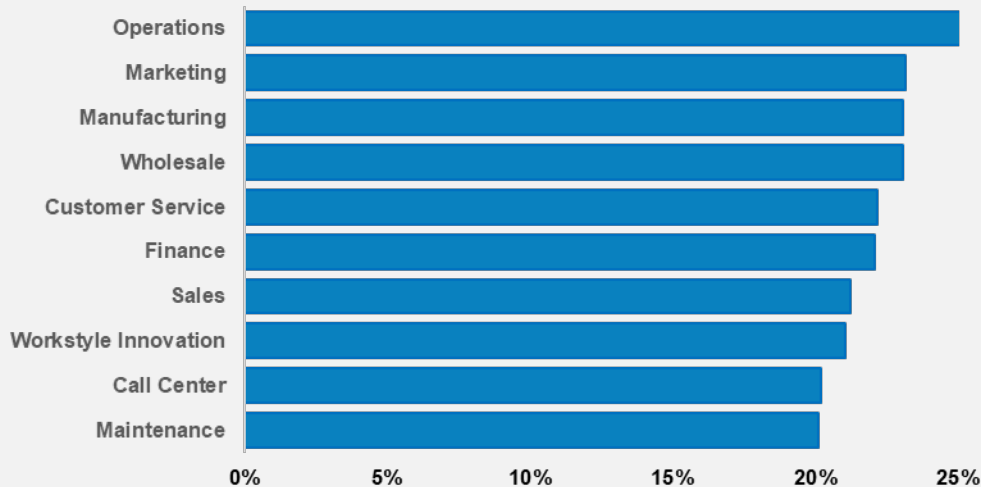
The charts show the Impact of DX initiatives on strengthening competition and improving business processes across the organization.

The greatest area of strengthened competitiveness is operations, with 26.1% of respondents reporting improvements. Other important areas are (23.2%), manufacturing and wholesale (both 23.1%), and customer service (22.2%).

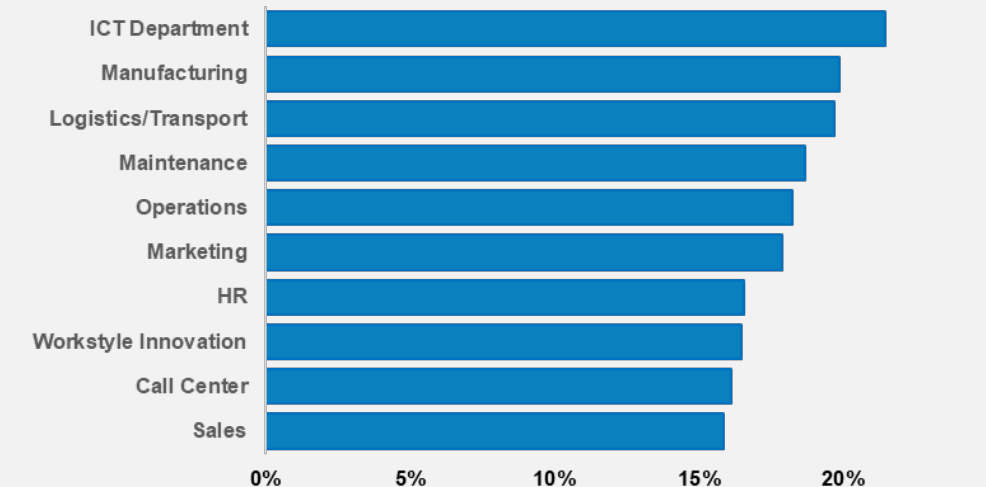
Business processes are also positively impacted by DX. The biggest improvement is in the ICT department (21.5%). Other significant improvements are in manufacturing (19.9%), logistics/warehousing/transport (19.7%), maintenance (18.7%) and operations (18.2%).

**"DX strengthens competition and improve business processes"**

GLOBAL RETAIL - DX Impact on Strengthening Competitiveness



GLOBAL RETAIL - DX IMPACT – on Business Processes



# Impacts of Digital Transformation in Retail – Customer Experience and Employee Satisfaction

## Digital Transformation is also about people

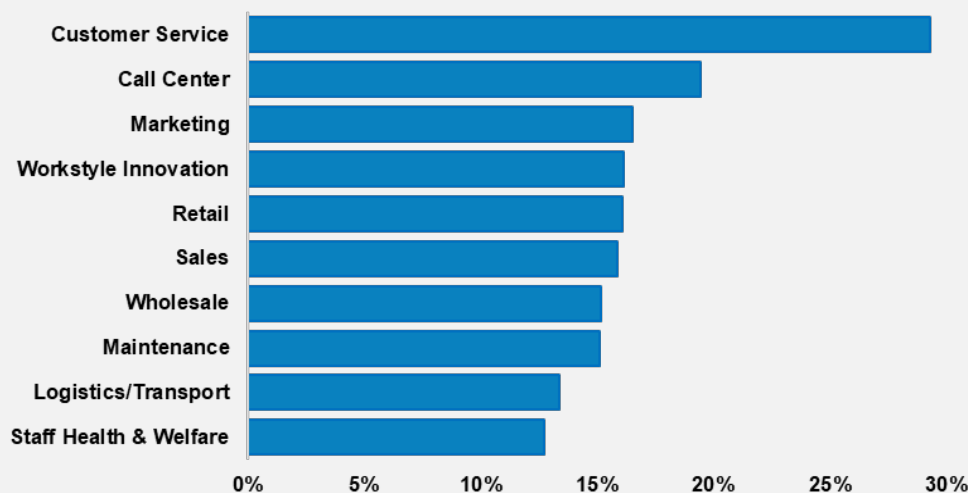
The charts show the Impact of DX initiatives on improved customer relationships and employee satisfactions on different functional areas within the organization.

“DX is an important contributor to improving both the customer experience and the employee experience”

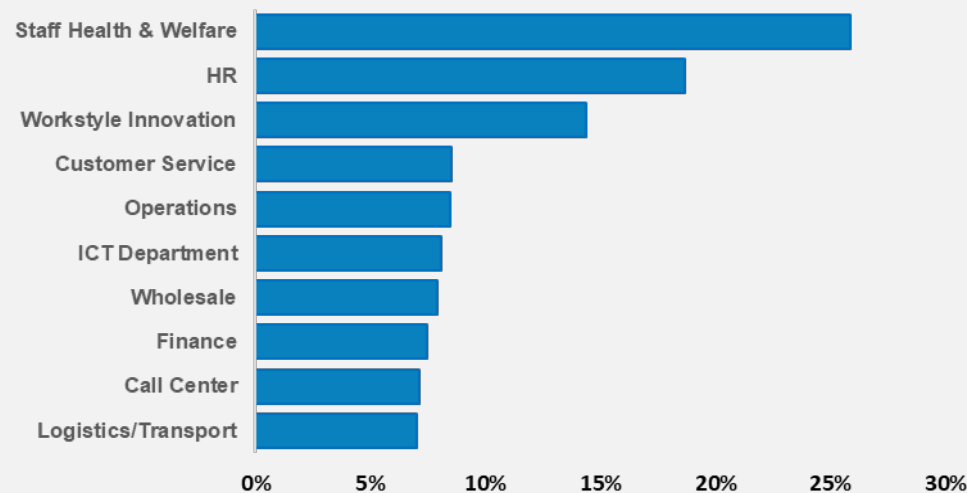
As might be expected larger impact on customer relationships is in the area of customer service, where 29.4% of respondents report an improvement. Other customer facing areas to show improvement are call center (19.5%), marketing (16.6%) and workplace innovation (16.1%).

Internally, digital transformation also has a positive impact on employee satisfaction. More than one quarter (25.8%) of respondents, report that DX has improved staff health and welfare. Other major employee related areas to show improvement in HR (18.7%) and workstyle innovation (14.4%).

GLOBAL RETAIL - DX Impact on Customer Relationships



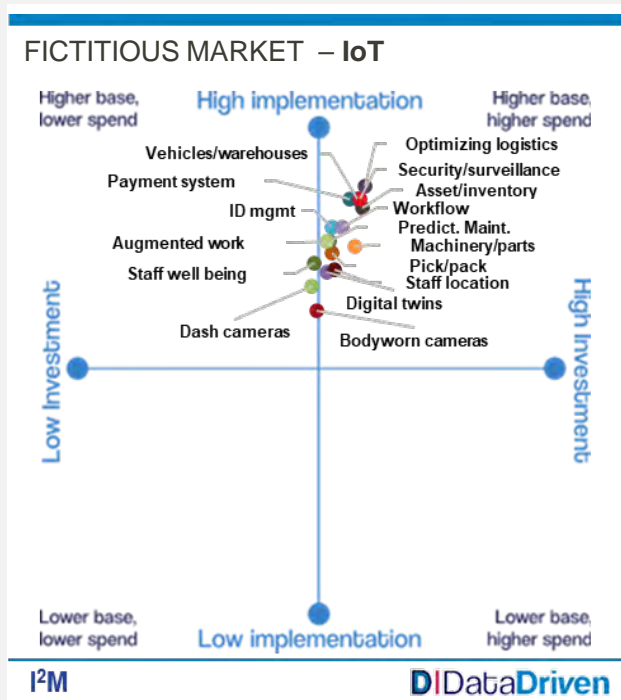
GLOBAL RETAIL - DX IMPACT on Employee Satisfaction





# The DataDriven *Implementation vs Investment Matrix (I²M)*

## What has been Implemented and What is Planned?



### A unique way of visualizing technology usage

When evaluating what technology profile is best for your organization, it is useful to know what other organizations are doing and planning. To reveal the status of your market, we have developed the *DataDriven Implementation vs investment Matrix (I²M)*.

### Directly from ICT decision makers

As an integral part of our extensive research process, DataDriven surveys hundreds of ICT decision makers in specific markets. We ask respondents to indicate the level of current technology implementation (from none to highly mature) and the level of planned technology investment (from none to major investment plans).

### Directly from ICT decision makers

Overall results are analysed and expressed as a matrix which maps actual implementation (low to high) against planned investment (low to high). The positioning of technologies within the I²M shows their status relative to each other, and is not designed to reflect actual market shares.

### DataDriven I²M enables comparison in one place

Traditional research analysis often focus on technology market share, market size and forecasts, but this doesn't allow for a useful comparison of the actual organizational level of technology use, or the maturity of organizations' planned technology use. The I²M allows current and planned implementation and investment for clusters of related technologies to be compared on one chart.

### Example chart for a 'Fictitious Market' and IoT

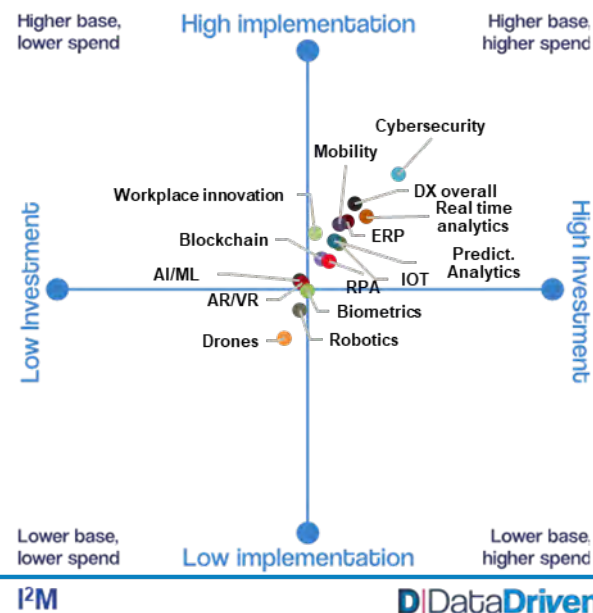
The example chart for IoT shown here (not for any specific market), compares the level of implementation of various IoT related technologies with the level of planned investment.

### Use other DataDriven tools to establish context

The DataDriven I²M should be used in conjunction with other DataDriven tools such as the DataDriven Hype-Dial and other DataDriven charts and graphs. This will assist in establishing the context of these technologies against business and ICT objectives, as well as budget and implementation plans and the associated challenges.

# Implementation vs Investment Matrix For DX in Retail

GLOBAL RETAIL – DX Overall



## Digital transformation involves many technologies and techniques

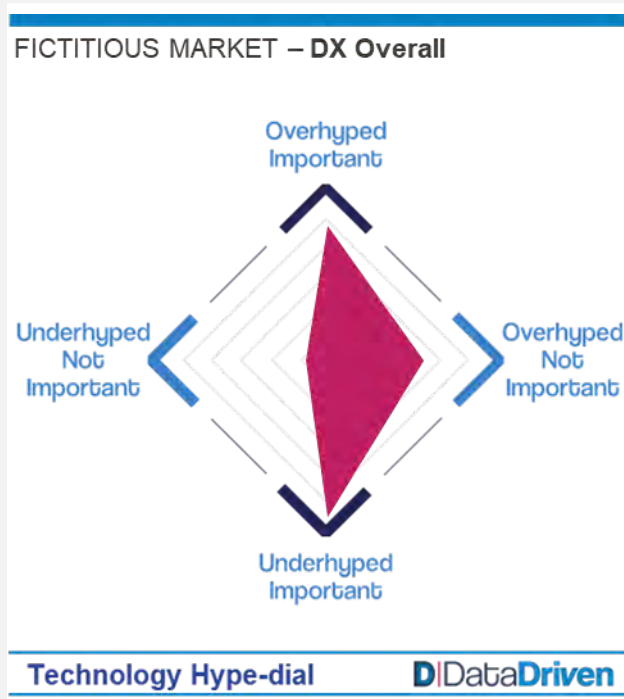
The chart shows the I²M matrix for various technologies involved in digital transformation. The technology with both the highest investment and the highest level of implementation is cybersecurity. This ties in with the high importance given to security technologies elsewhere in this report.

DX overall has high implementation and investment, as does ERP and real time and predictive analytics.

At the bottom of both the implementation and investment axes are drones and robotics, both of which have received significant publicity, but which are not yet significant technologies in retailing.

“Cybersecurity is also an important factor in Digital Transformation and is an integral part of the process”

# The DataDriven *Technology Hype-Dial*: What's Hot and What's Not!



## Separating hype from reality

It is often hard to separate hype or myth from reality in the technology industry. Many technologies are talked about so much that the reality of their importance is lost in all of the noise. To help cut through the disinformation, we developed the *DataDriven Technology Hype-Dial*.

## Overhyped, underhyped, important or not important?

As an integral part of our extensive research process, DataDriven surveys hundreds of ICT decision makers in specific markets. We ask respondents to rate a number of technologies or business trends in terms of whether they believe them to be overhyped or underhyped, and whether they are important or not.

## The shape of the dial indicates the level of reality

Overall results are analysed and expressed as a four-point radar diagram for each technology or trend. The thinner the shape the more important ICT decision makers believe the technology to be. The higher the shape the more the technology is believed to be overhyped.

## The Hype-Dial Evaluates technology based on merit

The DataDriven Technology Hype-Dial allows ICT decision makers to consider or reject a new technology or business trend based on its merits as identified by their peers. ICT decision makers evaluate the benefits of technologies in terms of their enablement of business and ICT objectives, which evolve over time, but which do not change nearly as quickly as technology.

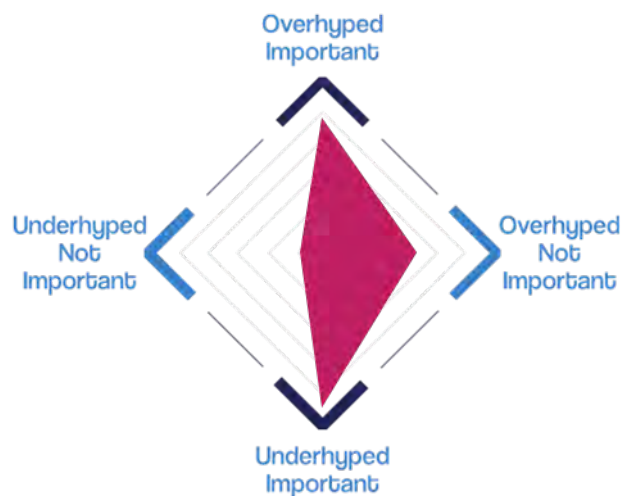
## Use other DataDriven tools to establish context

The DataDriven Technology Hype-Dial should be used in conjunction with other tools such as the DataDriven Implementation & Investment Matric (I<sup>2</sup>M) and other DataDriven charts and graphs. This will assist in establishing the context of these technologies against business and ICT objectives, as well as budget and implementation plans and the associated challenges.



# Hype-Dial for Digital Transformation in Retail

## GLOBAL RETAIL – DX Overall



### Digital transformation is Important

The Hype-Dial for digital transformation overall is mostly vertical, indicating that most people regard it as extremely important. The bulge to the right indicates that many people also believe it to be overhyped, with very few believing it is not.

“The widespread use and even misuse of the term Digital Transformation should not disguise its importance”

Technology Hype-dial

**DI**DataDriven



# Cloud and Enterprise Infrastructure in Retail

Cloud dominates enterprise infrastructure.

The evolution to cloud processing has been one of the major technology trends in the last decade. It is as strong in Retail as in other sectors and is accompanied by similar benefits and challenges.

## **A strong enterprise infrastructure is central to retail operations.**

As a highly transactional and customer-oriented industry, Retail has its own unique technical challenges. The back office is the engine room that ensures that the front of the shop operates efficiently and effectively. Retailers have always been major users of sophisticated information systems which are now, as in many industries, moving to the cloud.

## **In-house processing**

Cloud is a strong trend, but in-house processing remains important. Retailers around the globe are maintaining significant internal processing capabilities. Most are adopting a hybrid strategy incorporating both cloud and traditional processing models. The bottom line is efficiency – whatever works best.

## **Communications and networking**

Retail is a big user of data communications and the networking infrastructure that supports it. This is particularly true of retailers with multiple locations.

**“Despite a global trend towards cloud, retailers are maintaining significant internal processing capabilities”**

# Implementation vs Investment Matrix and Hype-Dial for Cloud in Retail

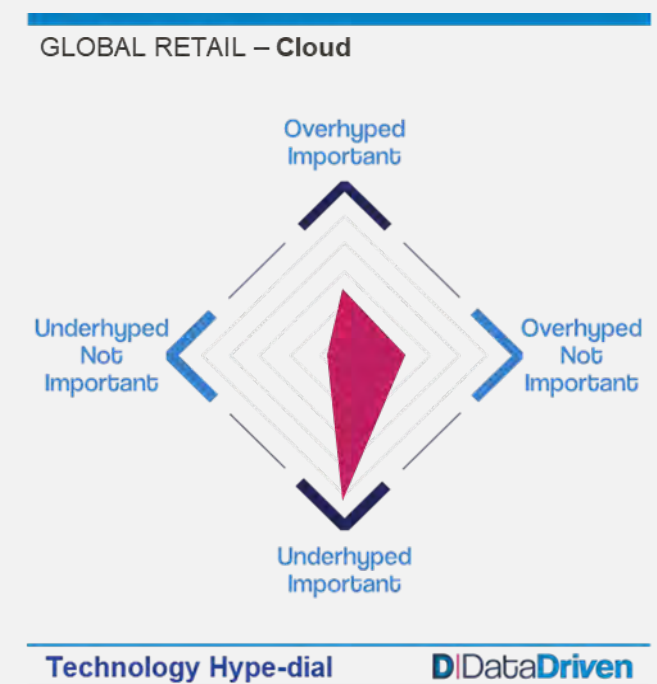
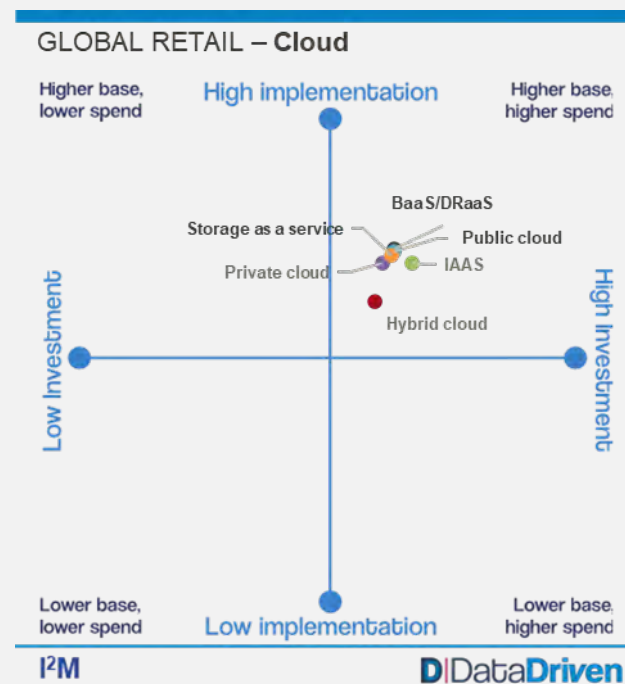
## Public cloud is outpacing private and hybrid cloud

The charts show the I<sup>2</sup>M matrices for cloud computing in Retail. All cloud computing models and technologies are in the high implementation and high investment quadrant of the model, indicating their current high and growing usage and popularity.

## Cloud has moved beyond hype

The Hype-Dial for cloud computing in Retail shows a very important trend. Despite the massive attention given to cloud computing over the last decade, very few retailers believe it to be overhyped. If anything, they say it is not being given the attention it deserves. Those that do believe it to be overhyped are also likely to believe it is not important technology. This group is largely comprised of those who have retained most of their processing in-house

“Cloud for Retail has not yet reached the stage where it is overhyped”





# Implementation vs Investment Matrix for Enterprise Infrastructure, Communications and Networking in Retail

## Cloud and in-house computing will continue to exist side-by-side

The charts show the I<sup>2</sup>M matrices for both Enterprise Infrastructure and Communications and Networking in Retail. The Enterprise Infrastructure matrix shows significant usage of most in-house computing technologies. Note the relative positions of co-located data centers and hybrid IT, indicating that retailers are increasingly looking to a combination of in-house IT processing and pure cloud, both well separated, rather than a mix of the two.

The Communications and Networking matrix shows conventional networking technologies, such as LANs and basic communications infrastructure, have the highest levels of Implementation and investment, while newer technologies such as SDN (Software Defined Networking) and SD-WANs are not attracting as much investment.



“Retailers are increasingly looking to a combination of in-house processing and pure cloud”

# Retail Technologies

Customer Experience is extremely important in Retail.

In recent years the growth of online retailing has challenged conventional retail models leading to the adoption of many new technologies and techniques.

A key change has been an increased focus on the consumer as new technologies enable a range of customer centric applications. Many new technologies are enhancing the customer experience (CX), which has become central to retailing.

## Retail automation

From the invention of the cash register in the 19th century, retailing has been at the forefront of technological change. As a transactional industry, retailing is particularly suited to the use of technologies which can simplify repetitive processes.

## Marketing and back office

The front office doesn't work without the back-office. Technology is involved in the marketing process, analytics and security, and in a range of logistical processes. Much of this is conventional ICT infrastructure, but there are many areas specific to Retail.

## Vehicles and drones

Retailers are very big users of vehicles. Goods must get into the store, usually by road, and even online stores need to ensure the delivery of products to customers. The use of drones and autonomous vehicles is gradually penetrating retail operations.

**“DX is enabling the rapid trend to self-service to reduce costs, and a move to reducing staff in physical stores”**

# The Importance of the Customer Experience to Retail

## CX Technologies in Retail

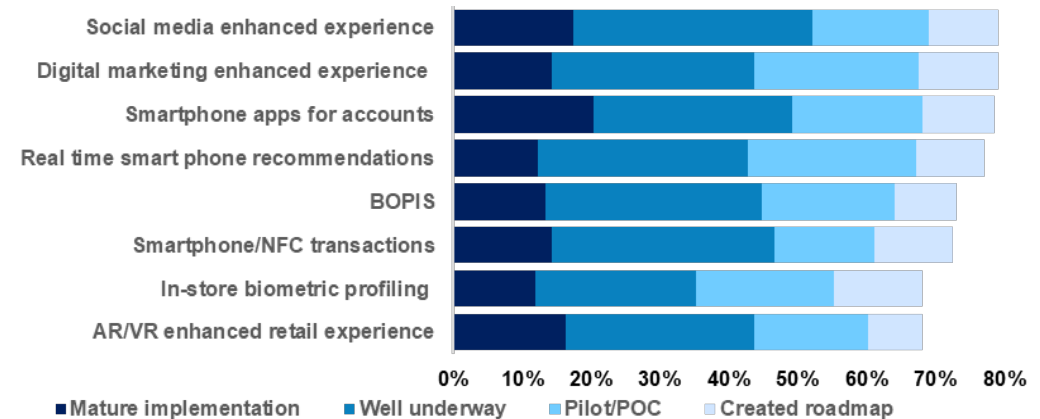
Ensuring a positive customer experience is an increasingly important aspect of Retail. The top chart shows the level of implementation of various customer experience technologies in the Retail sector. Implementation is widespread, with the great majority of survey respondents using or planning social media (79.1%), digital marketing (79.1%), and smartphone apps (68.0%) to enhance the customer experience.

A range of other technologies are being implemented. Three quarters (73.1%) have implemented or are moving towards giving customers the ability to buy online and pickup in-store (BOPIS). The majority are also looking at delivering real-time recommendations via smart phones (77.1%).

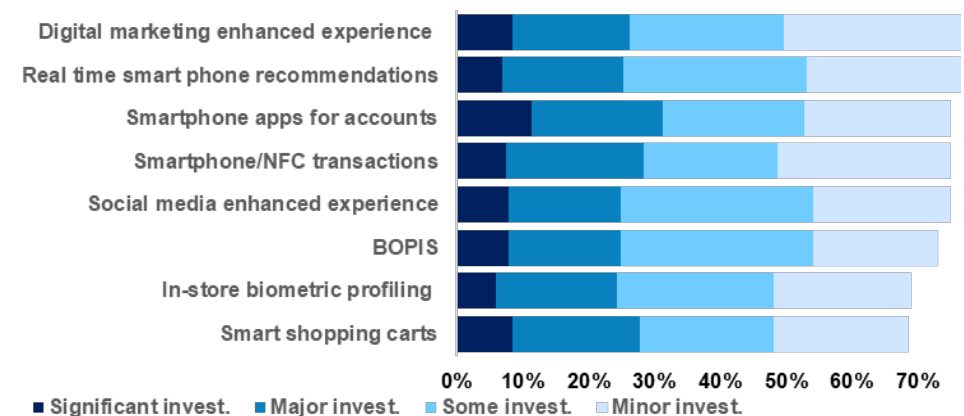
Future investment in most CX technologies will also be substantial. Again, they indicate significant investment in smartphone enablement for Retail. At the top of the list in planned investment is enhancing the customer experience through digital marketing, with planned investment over the next twelve months by more than three quarters (77.1%) of respondents. All other areas show substantial planned investment.

“The use of technology to ensure a positive customer experience is an increasingly important aspect of Retail”

## GLOBAL RETAIL – Implementation of Customer Experience



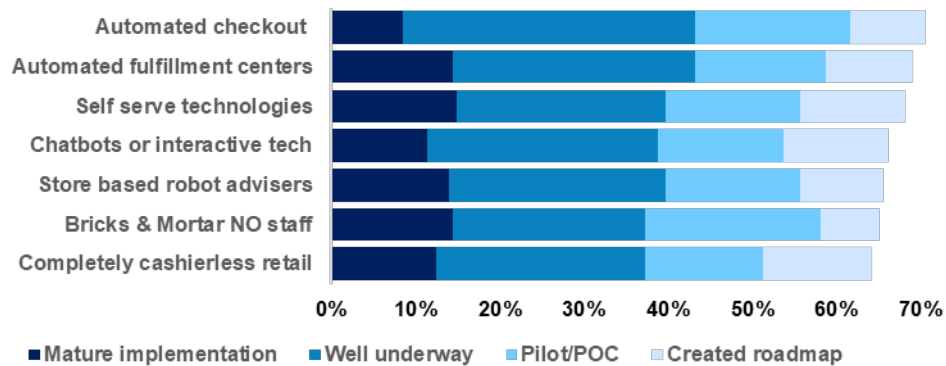
## GLOBAL RETAIL – Planned Investment in Customer Experience



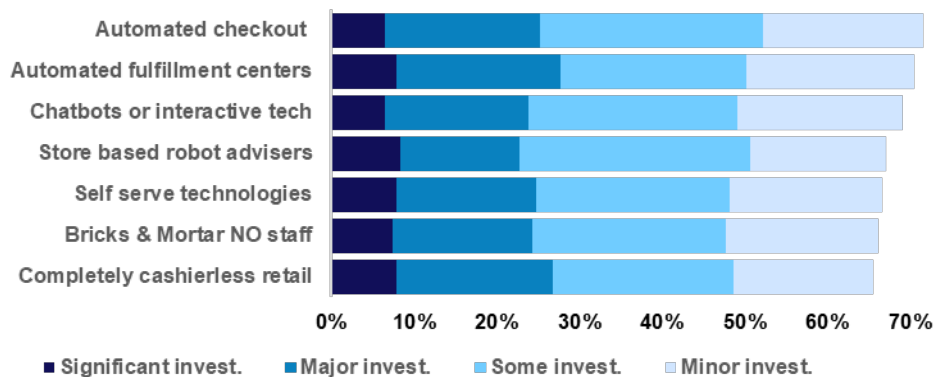


# Automation in Retail

## GLOBAL RETAIL – Implementation of Automation Technologies



## GLOBAL RETAIL – Planned Investment in Automation Technologies



## Automation meets the customer experience

Automation has always been important in retailing. The most popular area of automation is at the point of sale (POS), or checkout. This is the most time-consuming and error-prone part of the retail experience.

Nearly three quarters of respondents have recently implemented a POS automation technology. Approximately the same number will be investing in the technology in the next twelve months - automating POS is a continuous process as new technologies appear.

Many other automation technologies are also popular. There is an increasing trend to self-service to reduce costs, and a move to reducing staff in physical stores, even to the extent where there are none at all.

“As a transactional industry, retailing is particularly suited to the use of technologies which can simplify repetitive processes”

# Marketing and the Back Office in Retail

## Back office is as important as front of store

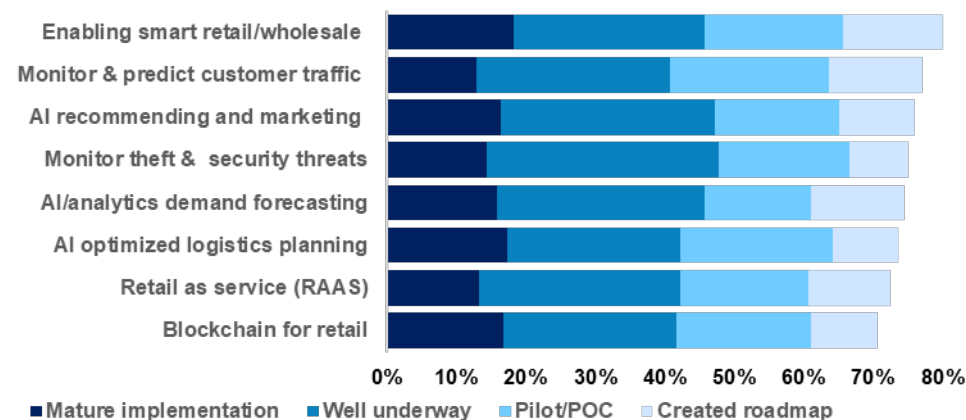
The most visible part of Retail is the transactional process, but behind that a substantial infrastructure is needed. The retail back office makes the front of shop work, and technology is just as important.

The charts show the level of implementation and planned investment in various back-office, analytics and marketing activities in Retail. Second in implementation (total 78.1%) and first in investment (77.1%) is enabling Smart Retail. Other areas of current activity for more than three quarters of survey respondents include digital marketing to Retail (78.1%), monitoring customer traffic flow (77.1%), recommending and marketing products (76.1%) and optimization of logistics using AI technologies (75.1%). Also important are various analytics tools, often using AI techniques.

Technology is also used for such functions as optimizing store layouts and store traffic (70.1%) and various logistics, security, and monitoring functions. This area also includes infrastructure items such as Retail-as-a-Service (RAAS) and cross industry ecosystems.

“The Retail back office makes the front of shop work, and technology is just as important”

## GLOBAL RETAIL – Implementation of Marketing/Back Office

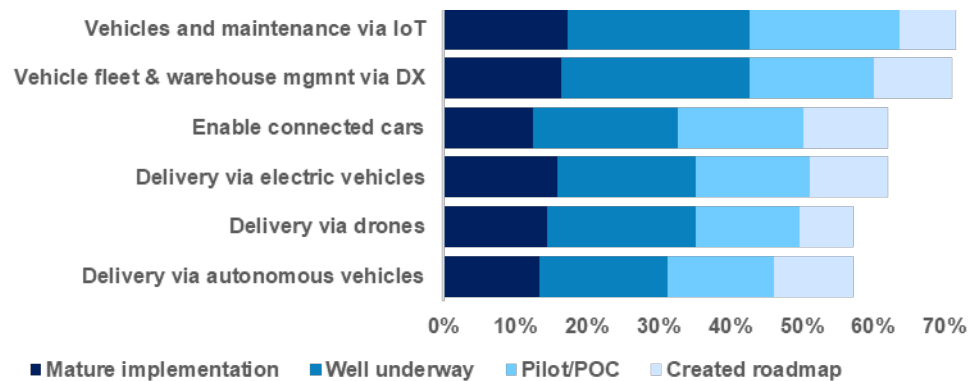


## GLOBAL RETAIL – Planned Investment in Marketing/Back Office

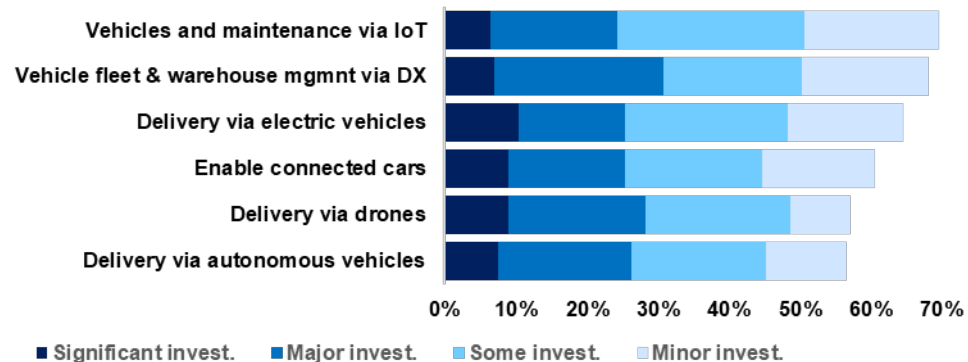


# Vehicles and Drones in Retail

## GLOBAL RETAIL – Implementation of Vehicles and Drones



## GLOBAL RETAIL – Planned Investment in Vehicles and Drones



## Much of Retail is about moving things around

Physical delivery, both into and out of stores, is a very important factor in Retail. Even online stores must get their products to consumers at the end of that transactional process. The charts show the levels of implementation and investment in vehicles and drones in Retail. There is substantial activity across the board, with the use of various technologies to help improve the delivery and distribution process.

The Internet of Things will be important in monitoring and maintaining fleets and individual vehicles (71.6% implementation, 69.1% investment). So will a range of other DX technologies.

There is substantial interest in drones (57.2% and 57.2%) and autonomous vehicles (57.2% and 56.7%), but these are less important technologies.

“Retailers show substantial interest in drones and autonomous vehicles”



# Enterprise Applications in Retail

Enterprise applications are highly critical for Retail.

Enterprise applications sit on top of enterprise infrastructure. These applications include ERP and the whole gamut of financial applications, data and analytics, end user collaboration and support, communications and networking, and any specialist retail applications.

Many of these applications have moved or are in the process of moving to the cloud. This creates challenges for the end user experience, security, data access and the need to ensure a high level of customer experience.

## Data and analytics

Underlying many of the transformations in the retail landscape is the increased use of data and analytics. Data from IoT platforms, customer preferences and customer behavior, social media and other sources are being used in many new applications that provide a vastly increased range of analytical tools that are used to optimize every stage of the retail process.

Increasingly, this data is being shared with consumers to help them navigate the retail process. Retail data was long the sole preserve of the seller, but consumer access to this data enables a customized buying process, and even the delivery of customized products. Retail data is no longer a one-way street – digital technologies are ensuring a paradigm shift from seller-centric to buyer-centric, through increasingly sophisticated and complex ecosystems.

**“The increased prevalence of data sharing via manufacturer-distributor-retailer-customer ecosystems is driving a resurgence in ERP”**

# Important Considerations in Choosing Enterprise Applications for Retail

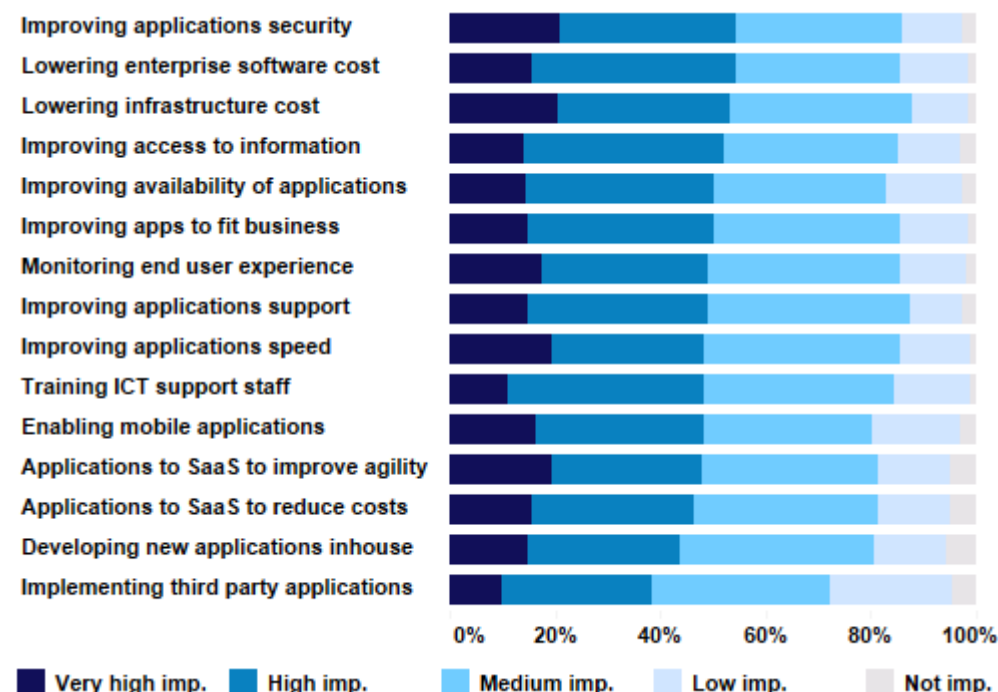
## Enterprise applications are central to retail operations

Once again, financial considerations are most important. Retailers are constantly looking for better value from their retail applications and are looking at ways to lower their cost. More than half (54.2%) say it is the most important consideration. Improving applications security (also 54.2%) and the cost of the underlying infrastructure (53.2%) are also important.

There are many other issues – security and availability, access to information, maintaining support and the user experience. The decision on whether to go in-house or cloud (SaaS), Whether to improve agility (47.8%) or to reduce costs (46.3%) is relatively unimportant.

Note the comparatively low rating given to the development of developing new business applications in house (43.8%) and implementation of third-party applications (38.3%). These were once major issues but have declined significantly in importance as this class of application has matured.

## GLOBAL RETAIL – Important Considerations In Choosing Enterprise Applications



“Retailers are constantly looking for better ROI and increased security of their applications”



# Preferred Source of Smart Retail Applications

## SaaS is increasingly popular

The most popular source of smart retail applications of those implemented under the cloud-based Software-as-a-Service (SaaS) model, preferred by nearly one third (32.3%) of respondents. One quarter (24.9%) prefer to use in-house applications. Others prefer off-the-shelf applications from third parties (18.4%), or they outsource their retail applications either within the country (18.4%) or offshore (6.0%).

“The most preferred source of retail applications are SaaS, but in-house applications and outsourcing also remain popular”

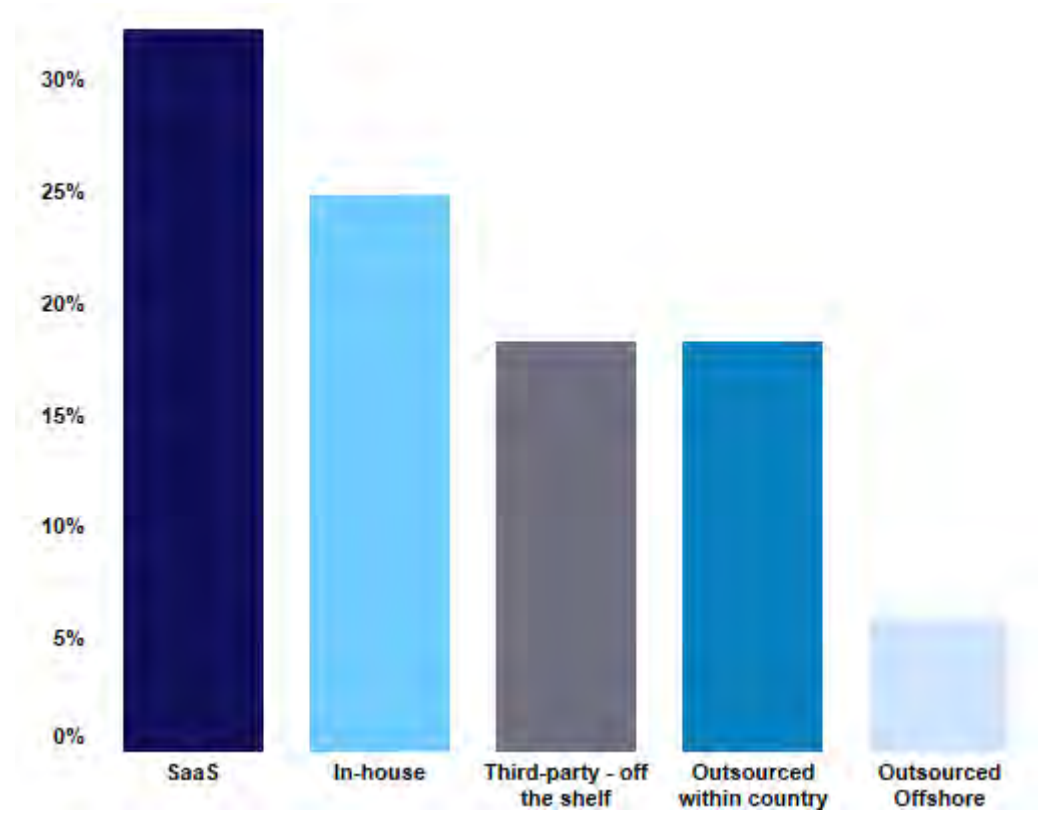




# Preferred Source of Smart Retail Applications

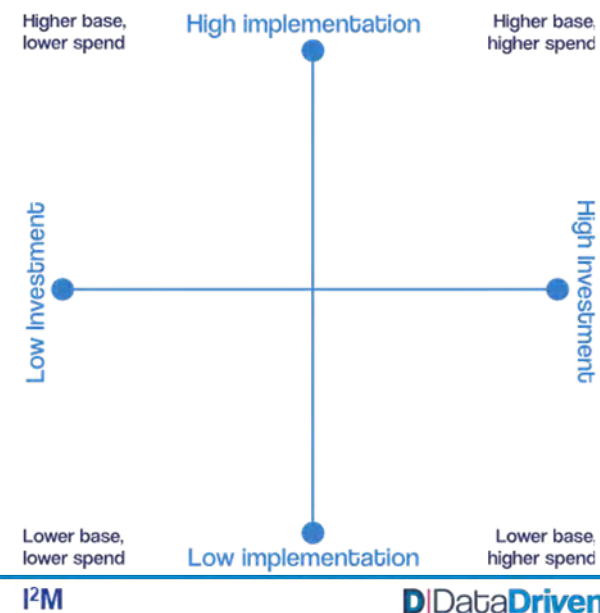


GLOBAL RETAIL – Preferred Source of Smart Applications



# Implementation vs Investment Matrix For DX in Retail

## GLOBAL RETAIL – Enterprise Applications



### Enterprise applications are widely used, with continuing strong investment

The chart shows the I²M matrix for enterprise applications, including ERP. All of which are in the top right-hand quadrant, indicating that they are widely implemented, with continuing strong investment as new applications are released.

Enterprise applications are very closely grouped on the I²M matrix. The sector is very healthy, with a large range of applications that are both widely implemented, and which continue to attract significant investment.

In addition to ERP these include other financial systems, data and analytics and business intelligence, inventory and warehousing systems and supply chain management (SCM).

“ERP, CRM and other enterprise applications for Retail remain a strong growth area, driven by advances in the technology”

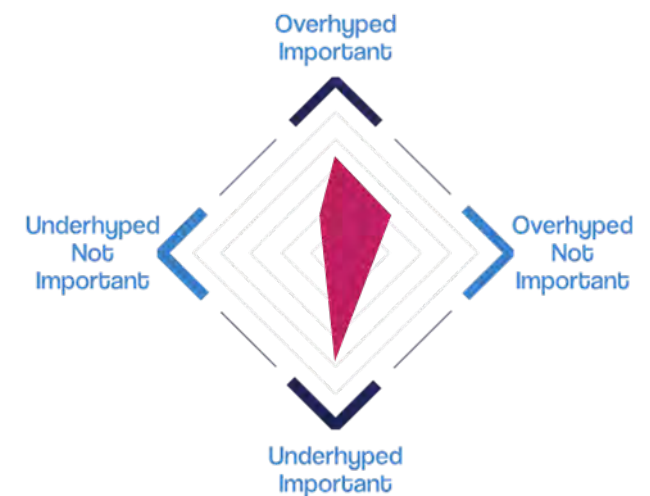
# Hype-Dial for ERP (Enterprise Applications) in Retail

## ERP remains very important

Enterprise Applications or ERP, though employed by virtually all retail operations, currently do not attract a great deal of attention. These applications have a low profile precisely because their use is so widespread, with very few respondents saying that they are overhyped.

The general consensus is that the technology is very important, though a small group of retailers believe that it has declined in relevance.

"In Retail, reports of ERP's death are greatly exaggerated and It remains central to most retailer's operations"



## Technology Hype-dial

D|DataDriven





# Artificial Intelligence and Robotic Process Automation in Retail

Artificial Intelligence and machine learning.

The range of technologies known collectively as Artificial Intelligence (AI) are enabling new ways of working, new ways of analysing data, and new ways of using existing technology. Massive advances in computing power have made possible AI technologies like machine learning, robotic process automation (RPA) and predictive data analytics. These techniques enable us to make sense of the vast amounts of information (often called 'Big Data') generated by the new technologies in the era of digital transformation.

## AI will change the face of Retail

AI has many applications in Retail, many of them only slowly becoming apparent. Retail applications lend themselves well to machine learning and other AI technologies, the usage is still in its infancy.

## Robotic Process Automation (RPA)

RPA is the automation through software of routine business processes, usually using AI and machine learning technologies. It is particularly suited to Retail, which is a very transactional oriented industry with many repetitive processes.

## AR and VR

Augmented Reality (AR) and Virtual Reality (VR) tools have entered retailing, used for such applications as in-store navigation, visualization tools such as 'magic mirrors' (a kind of virtual change room) and the virtual placement of products such as furniture in consumers' homes.

**"AR/VR have entered retailing and are being used for in-store navigation and magic mirroring"**

# Perceptions of Artificial Intelligence by Retail ICT Decision Makers

## AI has a big future in Retail

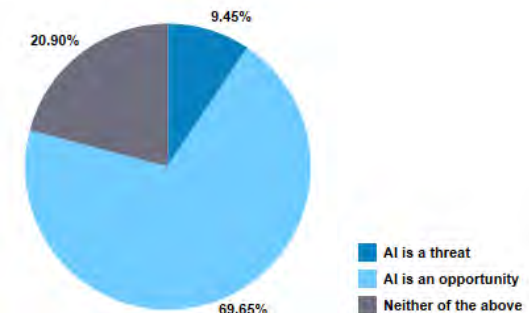
Many more retail leaders believe that Artificial Intelligence is an opportunity (69.7%) than believe it is a threat (9.5%), with the remainder (20.9%) not leaning either way.

AI is overwhelmingly seen as a positive. Three quarters (73.6%) believe that AI will fulfil some of the tasks currently performed by humans, and at the same time two thirds (66.7%) believe it will result in a better quality of life and allow for the creation of new jobs - though they also believe there will be fewer jobs.

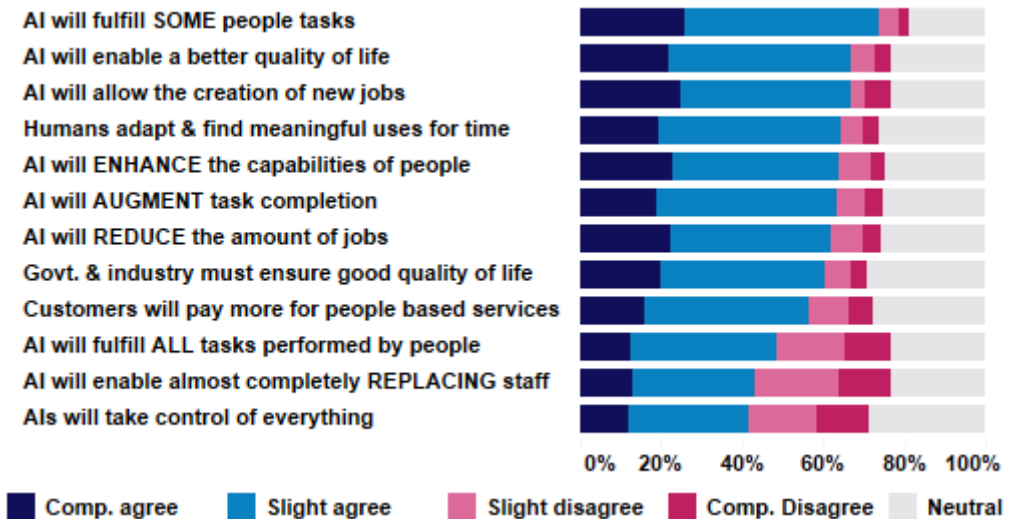
Respondents to the survey agree that government and industry must ensure continuity of good quality of life (60.2%) and that customers will have to pay more to obtain people-based services (56.2%). Opinions are split on whether AI will completely overtake tasks performed by people (48.8% agree, 27.9% disagree), replace all staff (43.3% agree, 33.3% disagree), or that AI will take control of everything (41.8% agree, 29.4% disagree).

“Retailers are mostly positive about AI, and many agree it will augment many tasks currently undertaken by humans”

## GLOBAL RETAIL – ICT Decision Makers Perception of AI



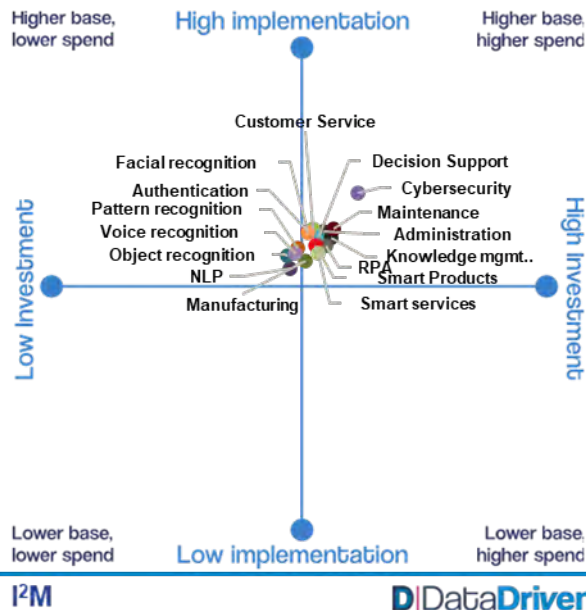
## GLOBAL RETAIL – ICT Decision Maker Views on AI in the Future





# Implementation vs Investment Matrix For AI in Retail

## GLOBAL RETAIL – AI



### AI will happen in Retail, but not just yet

The chart shows the I2M matrix for AI technologies in Retail. They are grouped closely around the middle of the matrix, with a slight bias towards the high end of both implementation and investment.

This and other findings in the survey, indicates a high degree of interest in Artificial Intelligence, but which have not yet been translated into action. There is a strong belief that AI will be important in Retail, but widespread implementation is still a few years out.

“There is much interest in AI in Retail, but actual investment is low”





# Hype-Dials for AI and RPA in Retail

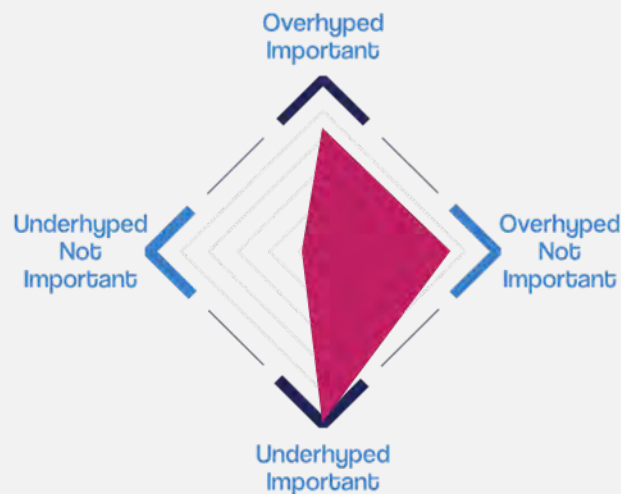
## The reality of AI does not yet match the hype

The Hype-Dials below are for Artificial Intelligence/machine learning and robotic process automation (RPA).

The Hype-Dial for AI/machine learning shows a strong bulge to the right, indicating that many in Retail believe these technologies to be overhyped. The feeling is much stronger with AI than it is with RPA which has a smaller bulge.

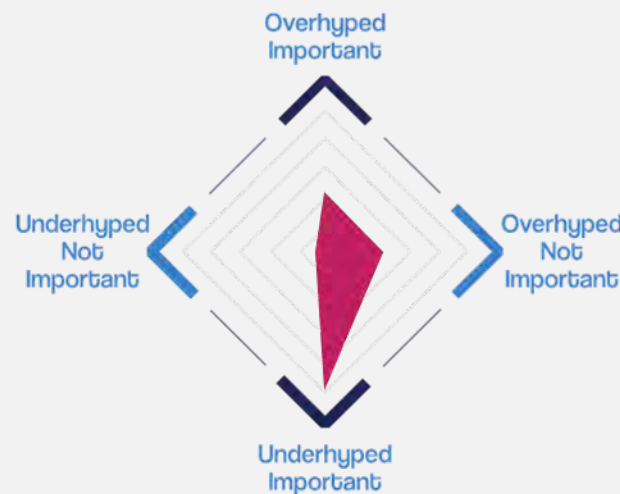
The initial hype over AI has declined a little but many still regard it as an important technology. As the previous I<sup>2</sup>M metric shows, for most retailers AI remains a technology with much promise, but few live uses so far.

GLOBAL RETAIL – AI/Machine Learning



Technology Hype-dial **DI DataDriven**

GLOBAL RETAIL – Robotic Process Automation



Technology Hype-dial **DI DataDriven**

RPA is well suited to Retail, an industry with many repetitive processes"

# Workplace Innovation and Mobility in Retail

Innovation in the retail workplace.

Massive changes are happening all around us. In the workplace, mobile technologies increasingly mean that for the first time in history we are location independent. We are connected anytime and anywhere.

## **Mobility has enabled many new applications and new ways of working**

Mobility and related technologies are driving a whole range of initiatives and technologies, often referred to as Workplace innovation, to improve employee productivity and engagement.

Workplace innovation includes such technologies as greater use of social media, mobile computing and mobile apps, hot desking, and remote working and telecommuting.

## **The importance of mobility**

A key aspect of workplace innovation is mobility – both of the retailer and the customer. Growth of online shopping has made many retail transactions independent of location. Smart phones have transformed many people's lives and have been the most quickly adopted technology in human history.

**“Mobile technologies are rapidly changing the way retailers deploy staff and how people shop”**

# Implementation vs Investment Matrix for Workplace Innovation in Retail

## Innovation in the Retail Workplace

The chart shows the I<sup>2</sup>M matrix for Workplace Innovation. The biggest areas of investment in usage are in conventional end user hardware categories, such as PCs, laptops, tablets and phones. Hot desking and BYOD (bring your own device) are not as popular as they were a few years ago, as the limitations had become apparent. However with the recent COVID-19 related mass move to working from home (WFH) this may change significantly.

The results show continued innovation in the Retail workplace, as technologies evolve and customer expectations change. Retailers are constantly looking for better ways to serve the customer and improvements in the employee experience to help foster this.

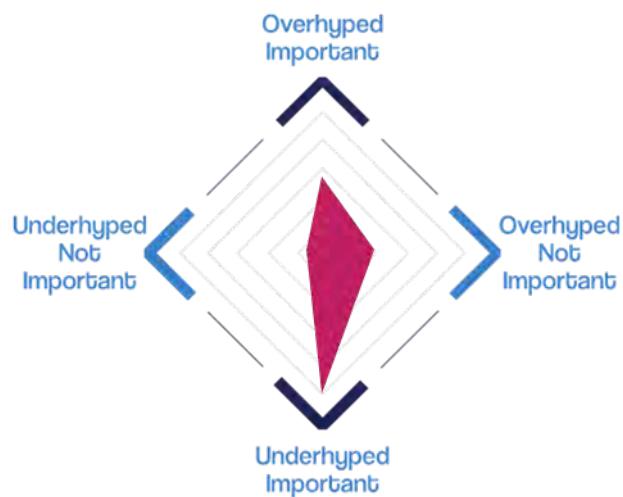
“Even with increased automation, Retail employs large numbers of people. Innovation in the workplace is as important as it is on the shop floor”





# Hype-Dials for Workplace Innovation and Mobility in Retail

## GLOBAL RETAIL – Workplace Innovation



### Workplace Innovation/mobility are important trends

The Hype-Dials for workplace innovation and mobility (next page) both indicate that retail leaders generally believe these technologies to be important, though mobility less so.

There is not a strong feeling that they are overhyped.



Technology Hype-dial

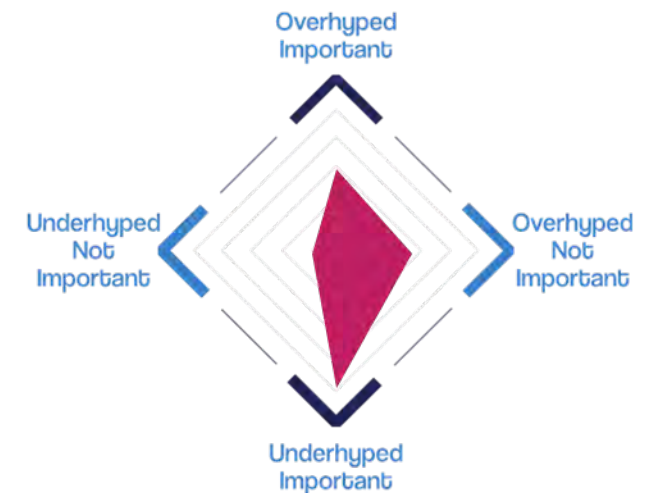
**DI**DataDriven

# Hype-Dials for Workplace Innovation and Mobility in Retail



“Mobility in Retail refers to both improved workforce mobility and also enhancing the customer experience through mobility-enabled applications”

## GLOBAL RETAIL – Mobility Solutions



Technology Hype-dial

**DI**DataDriven



# The Internet of Things and 5G in Retail

## The Rise of the Internet of Things.

The internet of Things (IoT) is a new way of delivering and sharing software and services. In a few short decades the Internet has grown from a limited low bandwidth network connecting just a few computers to a universal high-speed matrix covering the whole planet.

## IoT in Retail

Just as barcodes revolutionized Retail in the 1970s and 1980s, now RFID and related IoT technologies have taken inventory management to the level of the individual item. Sensors on products, within stores and on shopping trolleys, digital price tags and smart displays enable real-time inventory management and targeted in-store marketing and automated checkouts.

## 5G

5G telephony is now becoming available but is not yet in widespread use. Its major applications will be in communications for IoT, where we will provide a level of connectivity not available with current technology. But both IoT and 5G are still in their infancy, and not yet widely implemented.

**“5G’s maturity and availability will be a precondition for the widespread use of IoT in Retail”**



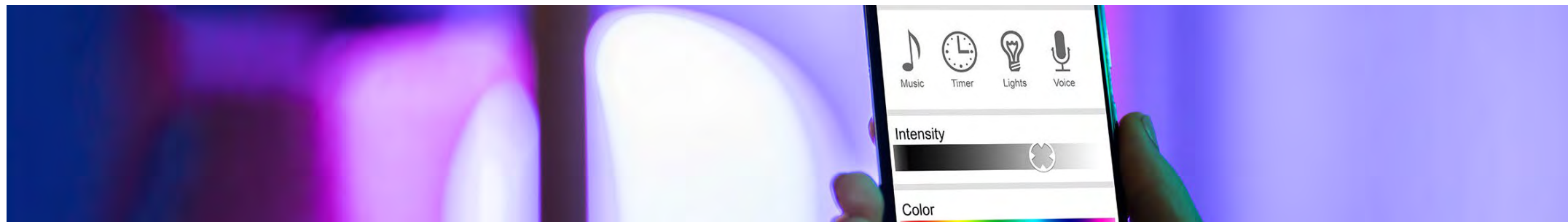
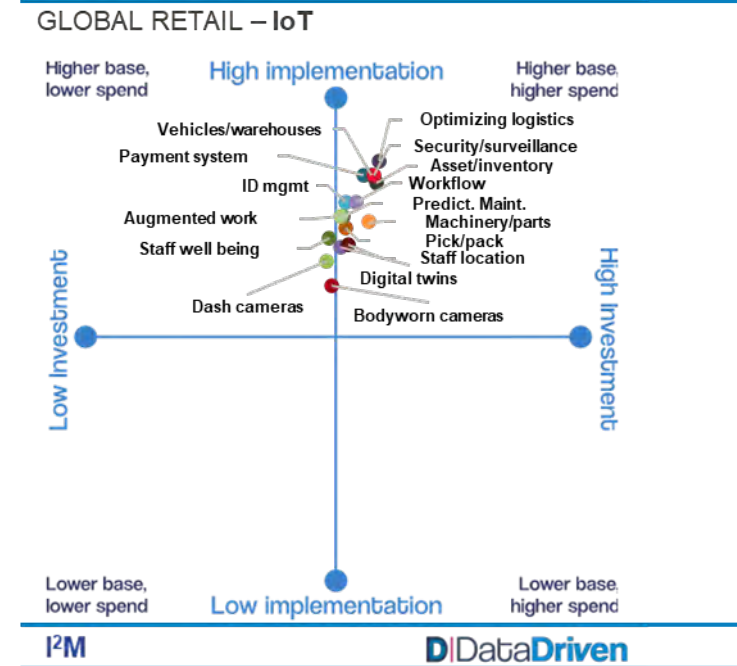
# Implementation vs Investment Matrix for IoT in Retail

## Retailers are starting to look seriously at IoT

The chart shows the I<sup>2</sup>M matrix for the Internet of things (IoT) in Retail.

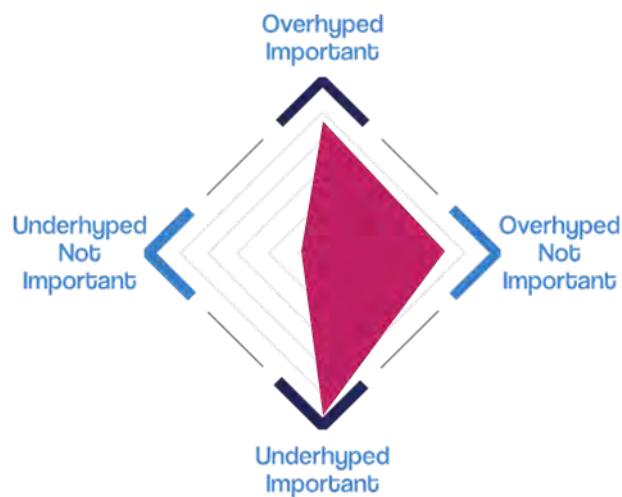
The many points on the matrix refer mostly to different applications for the technology, which is ubiquitous, and show how widely IoT will be used.

“IoT will be ubiquitous in Retail. The many applications on the matrix indicate just how widespread its use will be”



# Hype-Dials for IoT and 5G in Retail

## GLOBAL RETAIL – IoT



Technology Hype-dial

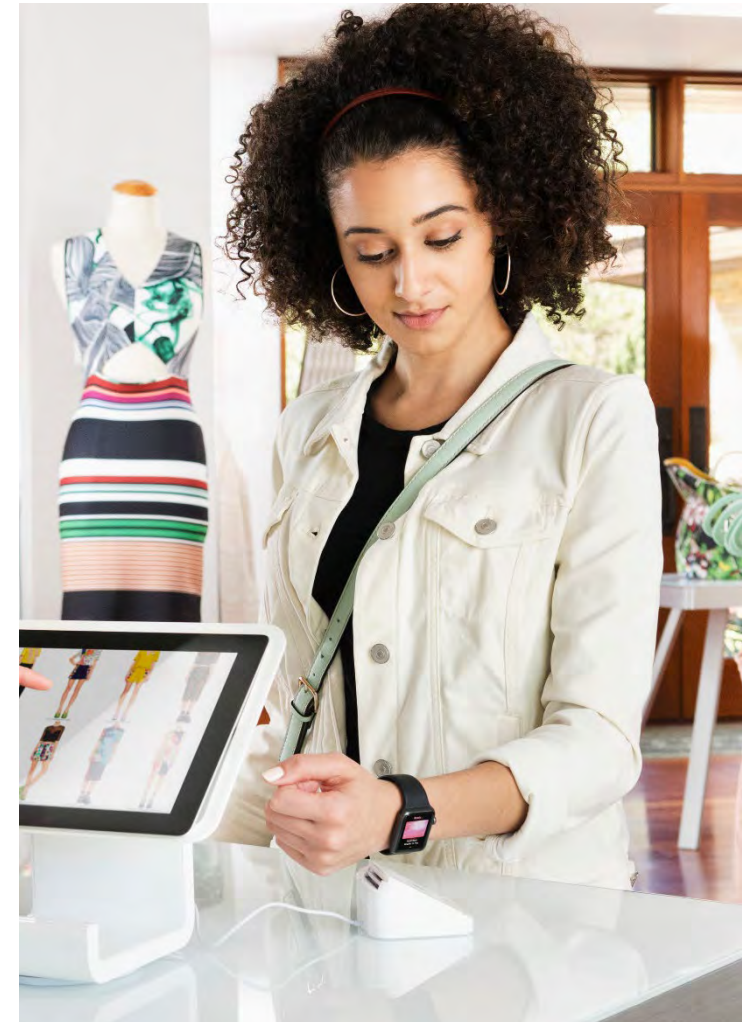
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### Important technologies – just not yet for many

The Hype-Dials for both IoT and 5G (next page) though similar, display widely diverging views.

There is a strong belief that these are important technologies, but little consensus on whether they are overhyped or underhyped. Those who believe they are overhyped are also more likely to believe that the technologies are unimportant.

For relatively new technologies these views are consistent. Although not yet widely implemented there is widespread belief that these technologies will be significant in the Retail industry.

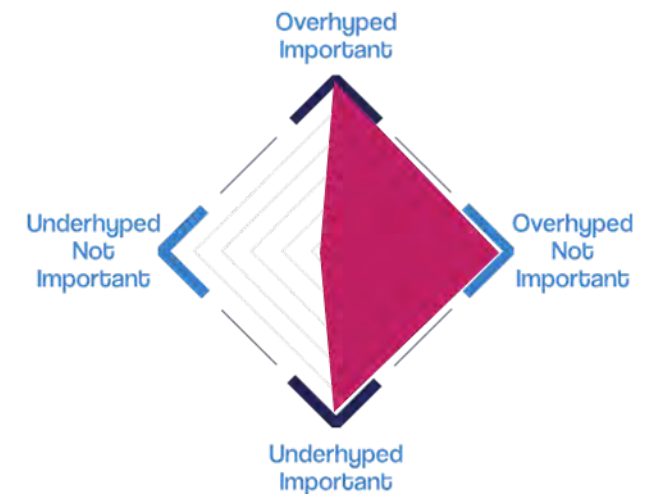


# Hype-Dials for IoT and 5G in Retail



"5G will be an important part of IoT for Retail, forming the transport layer for many applications"

## GLOBAL RETAIL – 5G



Technology Hype-dial

**DI**DataDriven



# Cybersecurity in Retail

Keeping Retail secure.

Retailers are increasingly operating digitally and are opening up their data to third parties to help them develop new information-based services. Retail data networks are larger than ever. But while new technologies bring new opportunities, they can also bring problems.

## In a totally connected world, Cybersecurity has become a major issue

It encompasses a range of technologies designed to protect computers and networks from unwelcome intrusion and to ensure their continued reliability. Threats can come from disgruntled employees, hackers, criminal and even nation states. Many problems arise from employees and suppliers.

## Cybersecurity in Retail has its own issues

Retailers store massive amounts of data about the consumers and their providers, on a range of platforms and devices. The increased use of cloud, IoT and digital transformation technologies is constantly increasing the need for sound security. Retailers are also subject to a range of regulatory and compliance regimes, many of which mandates certain levels of security.

Many questions in the survey show the high-profile that cybersecurity has in Retail. Security needs to be built into systems from the ground up, and not regarded as an add-on.

“Retailers are increasingly opening their data to third-parties thus increasing their focus on cybersecurity”

# Implementation vs Investment Matrix For Cybersecurity in Retail and Hype-Dial for Cybersecurity in Retail

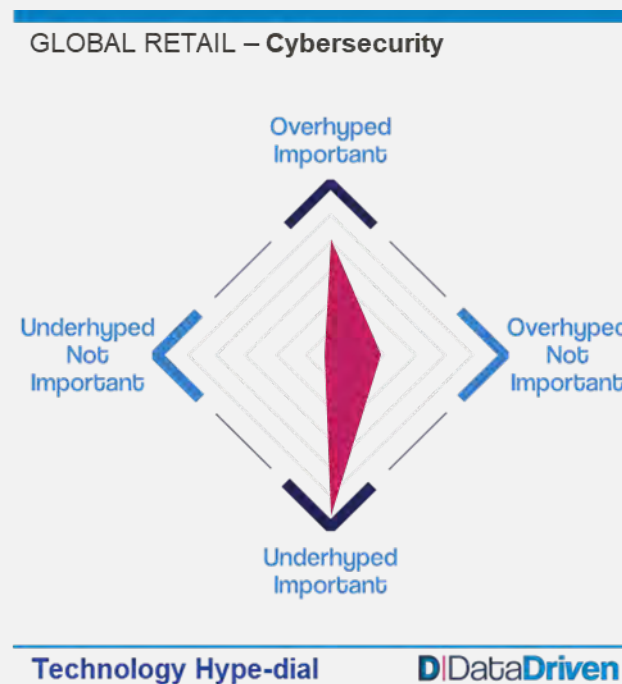
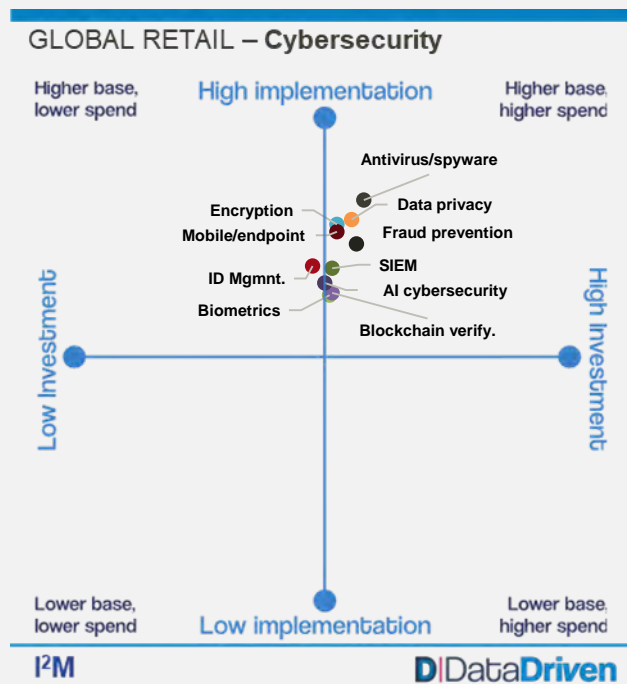
## Retailers need security

Retailers are in two minds about cybersecurity. They know they need it, but implementation for most security related technologies remains lower than it does in many other industries. For many it is not yet a must-have technology.

The I<sup>2</sup>M matrix shows a range of cyber security technologies, with established products like antivirus and spyware most widely implemented, with significant continued investment. Newer technologies like biometrics are yet to attract as much interest.

## Cybersecurity is very important to Retail

The very thin vertical shape of this cybersecurity Hype-Dial indicates that retailers believe the technology to be very important. They also tend to believe that it is a little underhyped despite the publicity given to the technology in recent years. Cybersecurity is an essential part of Retail.



“Most retailers understand the importance of cybersecurity, and they do not believe it to be overhyped”



# Retail ICT Providers and Co-Creation Partners

ICT providers are very important to the Retail sector.

Retailers at all levels rely heavily on software, services and other providers. They are constantly on the lookout for innovative technologies and techniques, often relying on co-creation with others, including their customers and providers.

## Retailers are generally only just satisfied with their providers

The survey asked a range of questions about retailers' ICT providers. In general the data shows that they are generally satisfied with their providers, across all product and service areas, though there is still room for improvement.

## Geographic preferences

They do not have a strong preference for local, regional or global suppliers - they will buy from the supplier who gives them the best product or service.

## Co-creation partners

ICT suppliers and technology consultants, are often important as co-creation partners, helping retailers build applications or systems that may give them a competitive edge. But retailers view customers as the number one partners for co-creation.

**"Customers, technology providers and technology consultants are the top three partners preferred for co-creation"**



# Retail Satisfaction with ICT Providers

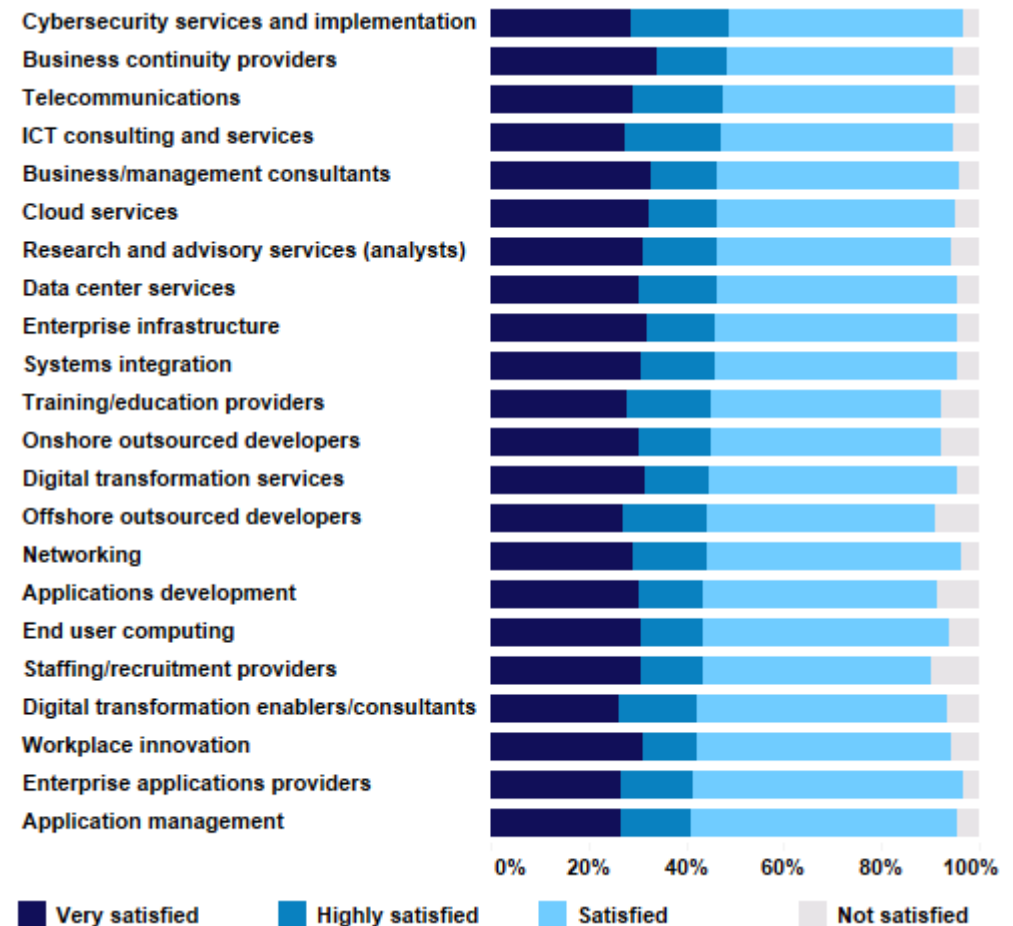
## Satisfaction levels do not vary greatly

Just under half of retailers are very satisfied or highly satisfied with their ICT providers in a range of areas. Very few are dissatisfied. The levels of satisfaction do not change significantly for different products and services.

They are most satisfied with their cybersecurity (48.9% highly satisfied or very satisfied) and business continuity providers (48.3%) and least satisfied with their applications management (41.0%) and enterprise applications providers (41.2%) though the differences are not significant. Results are encouraging indicating a reasonably high degree of service from providers.

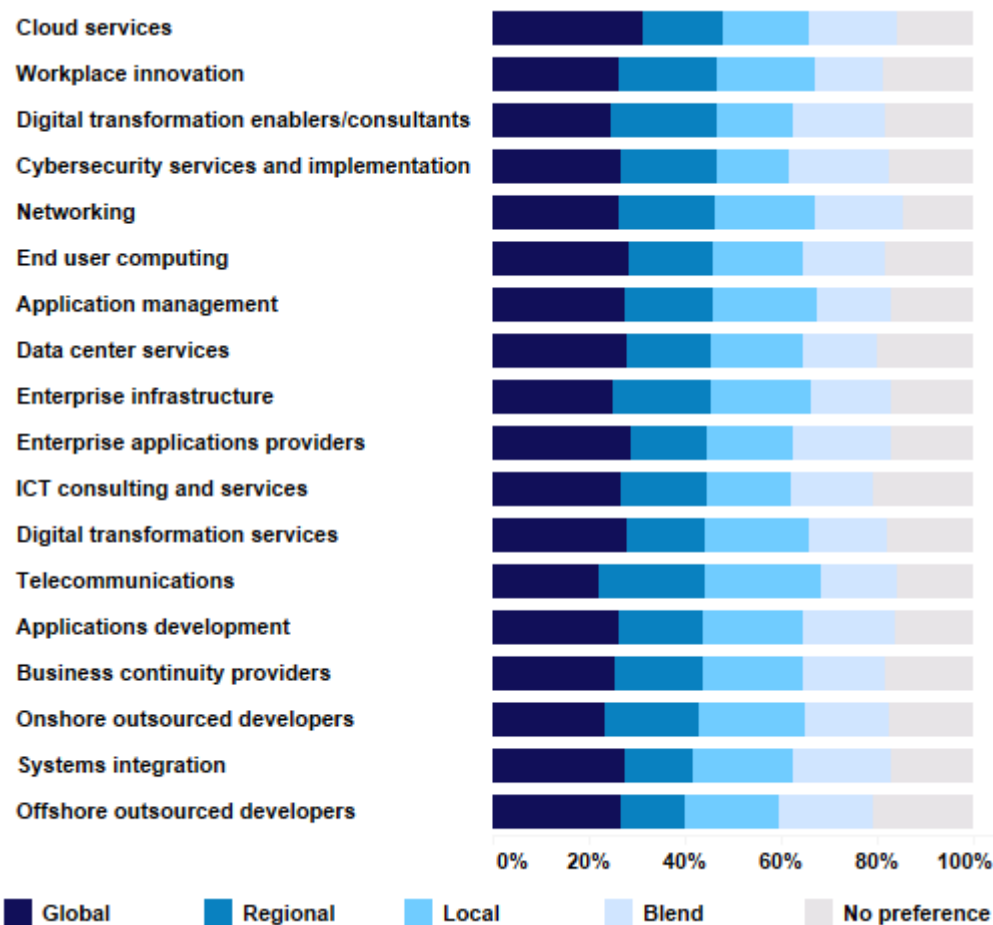
“Retailers are generally happy with their suppliers, but there is room for improvement”

## GLOBAL RETAIL – General Level of Satisfaction with Their ICT Providers



# Preferred Origin of Retail ICT Providers

## GLOBAL RETAIL – Preferred Geographic Origin of ICT Providers



## The place of origin of ICT products and services is not important

There is no strong consensus on where ICT products and services should be sourced, indicating that most retailers do not regard this as a significant factor in their purchasing decisions.

Global providers are preferred for cloud services (31.3%), enterprise applications (28.9%), end-user computing (28.4%) data center services (27.9%) digital transformation services (27.9%) and research and advisory services (27.4%).

Regional providers are preferred for digital transformation enablers and consultants (24.4%). Local providers are preferred for telecommunications (23.9%).

For other products and services, there are no clear winners. The lack of agreement between respondents and the difference between different product and service areas indicates that retailers will generally go for the best product or the best service, regardless of place of origin.

“There is no strong preference for global, regional or local providers, it depends on the product and the user”

# Preferred Co-Creation Partners for Retail

## Customers are the preferred co-creation partners

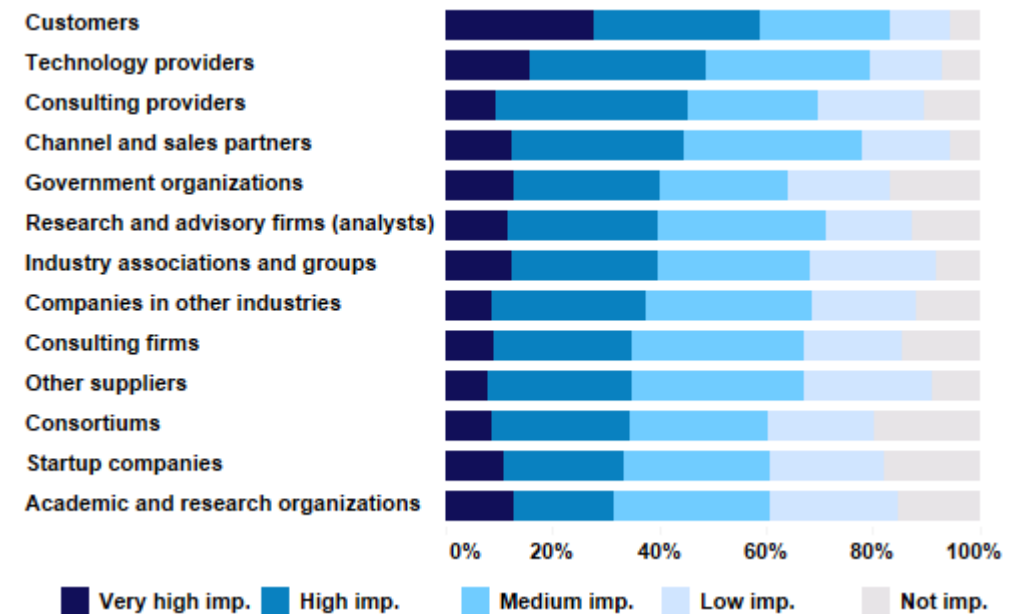
Co-creation refers to the development of applications and processes in conjunction with others. It is particularly important in Retail where many players are looking at innovative ways of creating competitive advantage.

Retailers have a strong preference for co-creating with their customers. More than half (58.7%) say that customers are high or very high in importance as co-creation partners. Next on the list are technology providers (48.8%), consultants (25.3%) and channel and sales partners (44.8%).

Least preferred are academic and research organizations (31.3%), start-up companies (33.3%) and consortiums (34.3%).

“Co-creation is particularly important in Retail where many players are looking at innovative ways of creating competitive advantage”

## GLOBAL RETAIL – Preferred Co-creation Partners





# Retailers on the Future of Retail

Respondents were asked the extent to which they agreed with the number of statements about retailing technology.

More than two thirds of respondents agreed with the top three statements, and only slightly fewer with the other two statements. The strongest level was with the statement that digital transformation is an essential part of Retail technology - 70.7% either agreed or strongly agreed, with only 7.4% disagreeing.

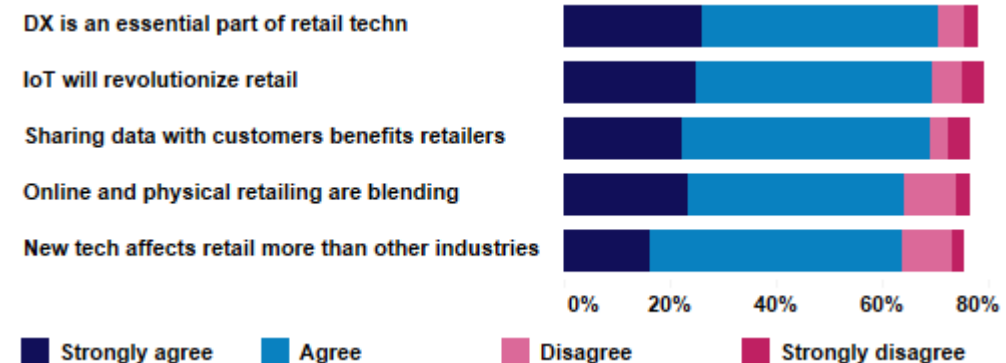
There was also a strong level of agreement (69.7%) with the statements that IoT will revolutionize Retail, that sharing data with customers benefits the retailer (69.2%).

## Online vs. physical

There was not quite as high a level of agreement with the two statements that online and physical retailing are coming closer together (64.2%) and that new technology will affect retailing more than other industries (63.7%), but retailers still generally agreed with these sentiments.

The findings indicate a strong consensus on the importance of digital technology to the Retail sector.

### GLOBAL RETAIL – Sentiments regarding technology and Retail



“Digital transformation is an essential part of retail technology”

# Retailers on the Digital Future

## Retail ICT decision makers sentiments towards a digitalized future in general

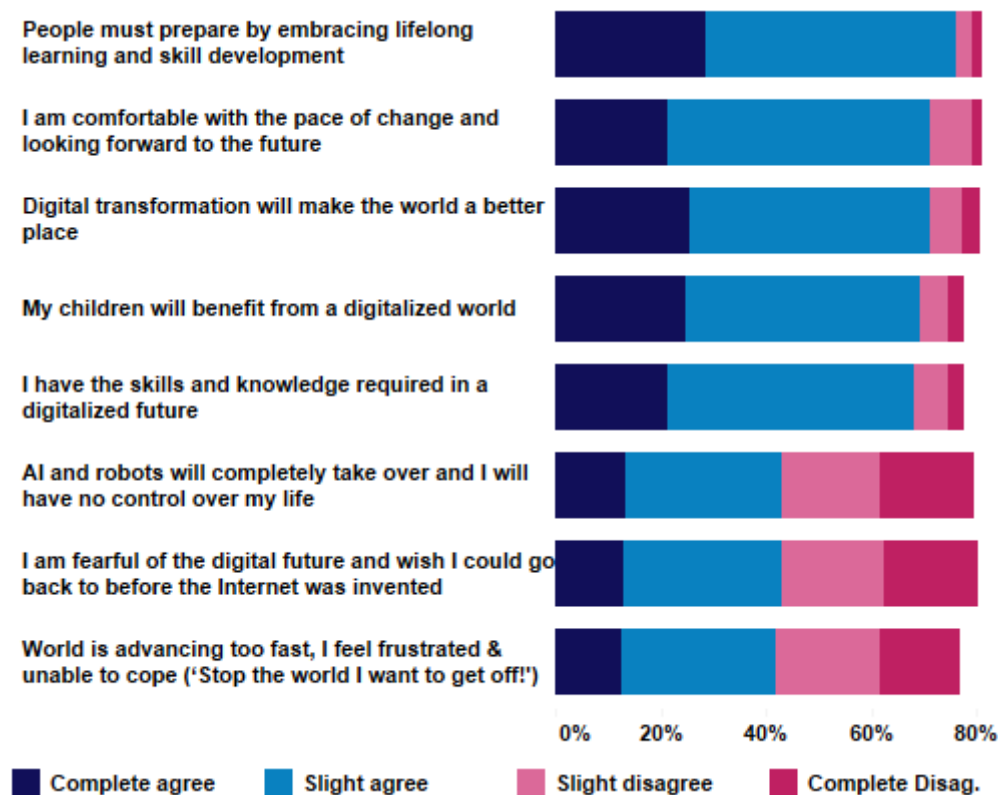
We asked respondents their level of agreement with eight general statements about the broader digital future, not just in Retail. There was a high level of agreement with most statements, with more than two thirds agreeing or strongly agreeing. The top four statements all had to do with the positive role digital technology can play in the modern world, and the fifth concerned the level of knowledge and skills of the respondent.

Respondents agreed or strongly agreed with the statement that people must prepare for a digital future by embracing lifelong learning and skills development (76.1%). They also said that they are comfortable with the pace of change and are looking forward to the future and that Digital Transformation will make the world a better place (both 71.1%).

They agreed that their children will benefit from a digitalized world (69.2%) and that they themselves have the skills and knowledge required in the digitized future (68.2%).

There was less agreement with the bottom three statements, all of which were couched in terms of problems that digital technology may pose. On the subjects of whether AI and robots will completely take over (42.8% agree 36.8% disagree), fear of a digital future (42.8% and 37.3%) and the pace of change (41.8% and 34.8%), opinions were also divided.

## GLOBAL RETAIL – IT Decision Makers Views on a Digital Future



“Retailers are digital optimists”



# Conclusion

In these uncertain times the Retail industry is facing many challenges.

While it shares many of these in common with other industries, it is important to understand that retailing is not one monolithic industry. There are many sectors, many channels to market, and many products for sale, making the selection, implementation and management of ICT quite complex and challenging.

## A challenging role

ICT Decision makers, CIOs and others involved in retail technology delivery and support have very difficult jobs.

They need to handle a fast moving and rapidly evolving retail environment, and a wide range of business issues, whilst simultaneously managing and implementing complex technologies. Meanwhile the organization they support continues to require satisfaction of often conflicting organizational imperatives. They are constantly faced with an enormous range of choices. They must juggle competing priorities, understand new technologies, work within limited budgets, and try to satisfy the existing needs of the business while exploring new opportunities.

## Digital Transformation (DX) vs 'keeping the lights on'

DX is a prime example. It has started to be widely discussed and hyped, and this will increase. ICT decision makers believe its high profile to be justified. They believe this because a large number of them have developed roadmaps, conducted proof of concept (POC) projects, and moved onto the delivery of positive outcomes.

Although DX is important in Retail, a lot of investment is still in traditional areas – the core business systems that 'keep the lights on' and keep the organization running. There are many possible areas of technology investment, but a lot of money is still going into established areas, such as core infrastructure, communications and networking systems, desktop/laptop/tablets and other mobile devices.



# Conclusion

## ICT trends in Retail are not ubiquitous across sectors or markets

Some Retail sectors are booming, while others are languishing. Some have gone totally online others remain wedded to the concept of the physical store and most are somewhere in between.

There are large and small retailers, early adopters and technology laggards, and economic circumstances differ by country or even by region within countries.

However virtually all retailers have one thing in common. They use technology. Their industry is more competitive than most, with low margins the norm. There are many external and internal imperatives driving them to constantly seek an advantage, no matter how small, over their rivals.

The survey shows the many challenges confronting retailers in the 21st century, and the many technologies and techniques they are adopting to move their businesses forward. New technologies like Artificial Intelligence and Internet of Things have arrived but are not yet mainstream. Digital Transformation (DX) has become a byword across all aspects of Retail. The Customer Experience and Employee Engagement are becoming increasingly important factors.

## The use of ICT in Retail is in a healthy state.

Though times are tough, ICT budgets are growing, because retailers cannot afford to get left behind. The market is extremely fluid, and there are many important technology trends whose effects are yet to be felt.



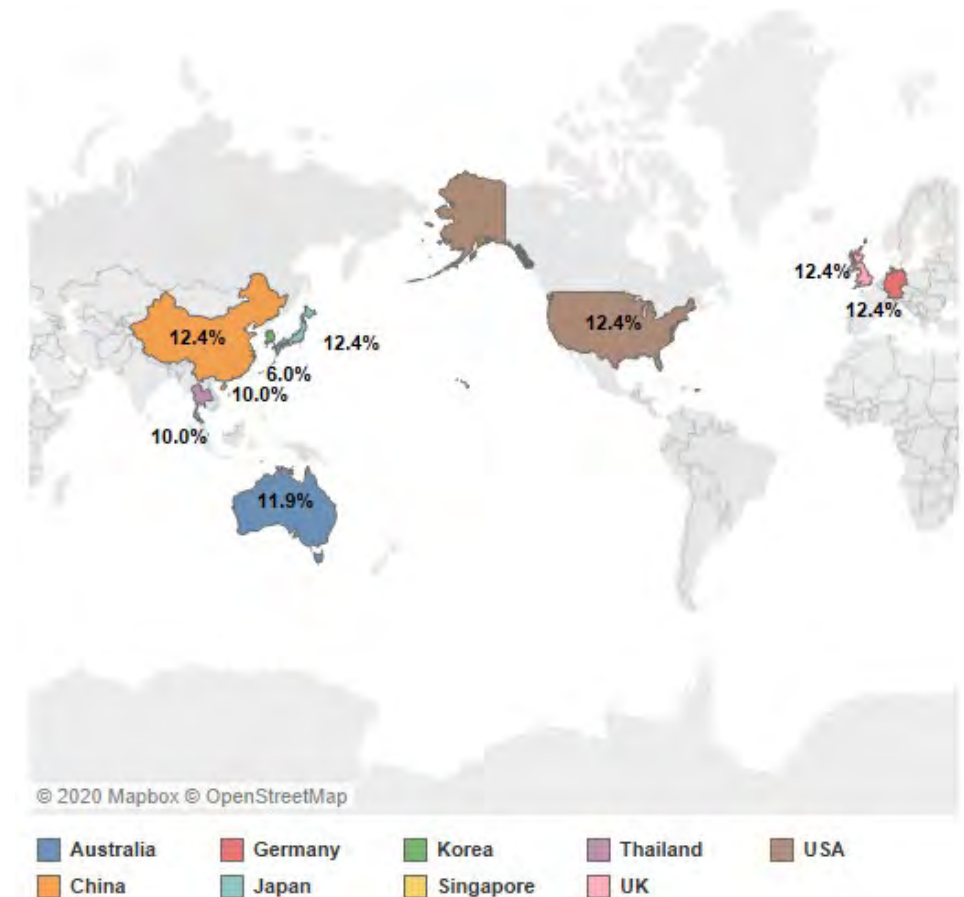
# Demographics

Exhaustive data collection and demographics.

Thousands of potential respondents were contacted in the nine target countries, with the aim of identifying around 200 key Retail ICT Decision makers

DataDriven applied seven levels of exhaustive screening and validation questions, then conducted extensive data scrubbing and removal of non-representative data and outliers using SPSS. The result is a highly qualified and reliable set of complete responses.

GLOBAL RETAIL – Respondents by Country





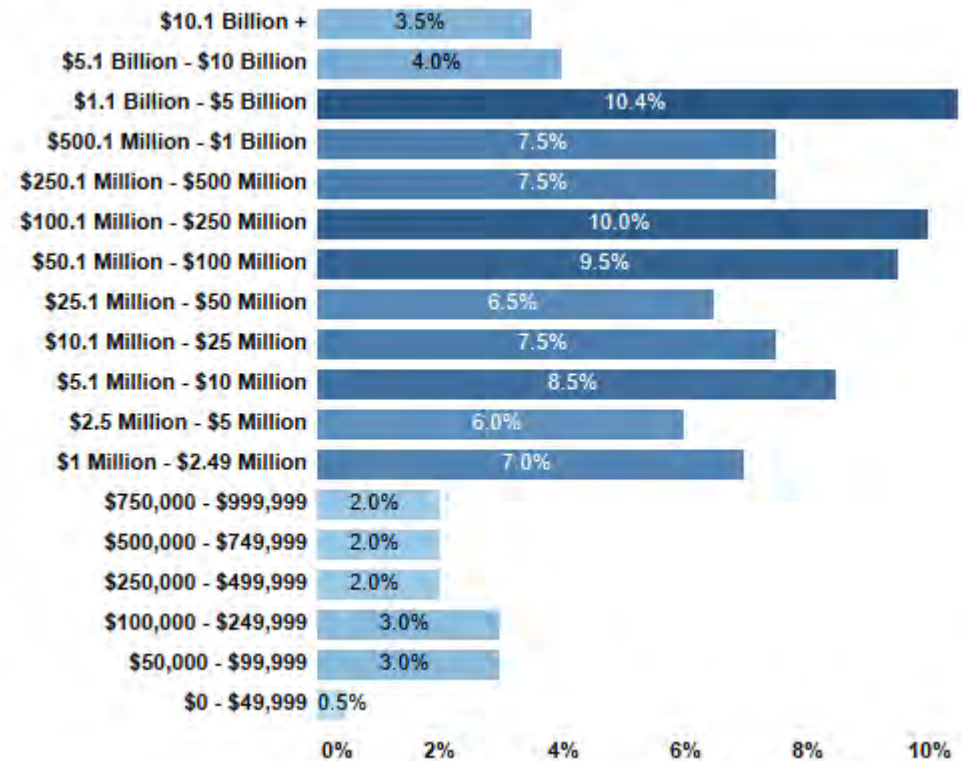
# Demographics

## Respondents by Gross Revenue

Respondents came from all sizes of Retail organization. Two metrics were collected: annual gross revenue and number of employees. By revenue, most of the respondents worked in organizations with between US\$1 million and US\$250 million. Nearly one in five (17.9%) worked in organizations with over US\$1 billion in revenues.



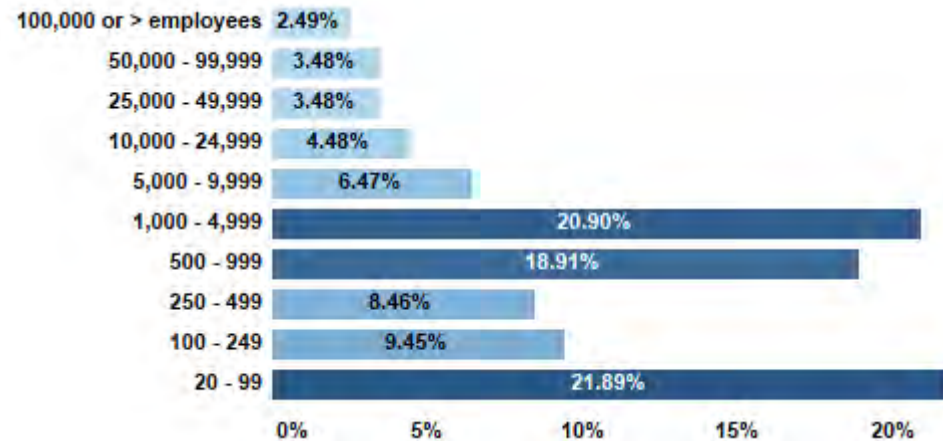
## GLOBAL RETAIL – Respondents by Gross Revenue





# Demographics

## GLOBAL RETAIL – Respondents by Number of Employees Globally



## Respondents by Number of Employees

21.9% of respondents were from organizations with 99 employees or less.

Almost 18% were from organizations with 250-999 employees.

18.9% were from organizations with 500-999 employees, and 20.9% were from organizations 1000-4,999 employees.

20.47% were from organizations with 5000 or more employees.



# Demographics

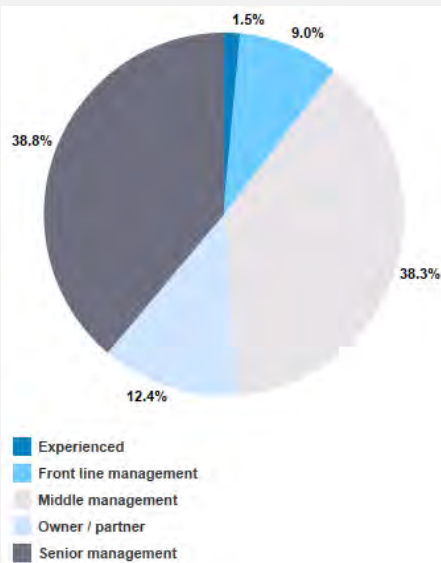
## Respondents by Role, Occupation, Gender and Age

More than half the respondents were owners or partners in the business (12.4%) or from senior management. The remainder were middle (38.3%) or front-line managers (9.0%).

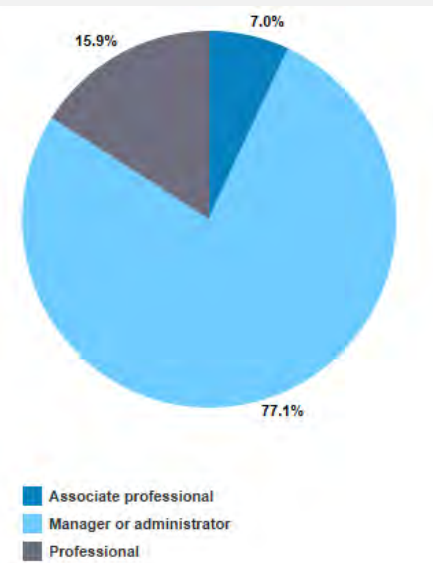
More than three quarters (77.1%) described themselves as managers or administrators.

Just over two thirds (69.2%) were male and just over half in their 40s (31.3%) or 50s (20.4%).

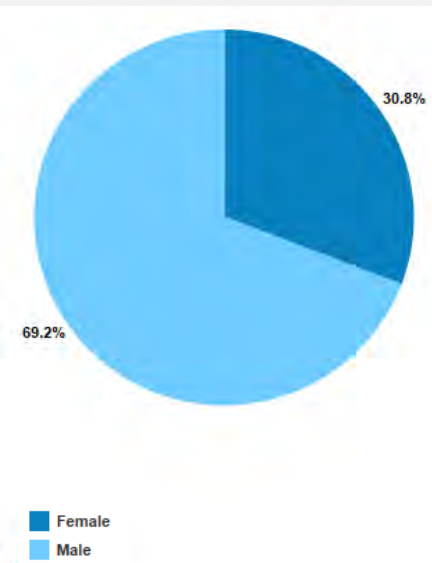
GLOBAL RETAIL – Role category



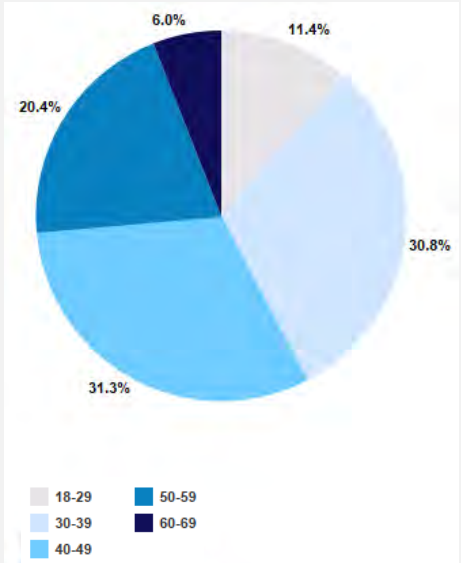
GLOBAL RETAIL – Occupation



GLOBAL RETAIL – Gender



GLOBAL RETAIL – Age





# Research Framework, Methodology and Approach

The DataDriven Digital Transformation Technology Matrix (DXTM) drives all of our research.

DataDriven has developed a proprietary taxonomy of technologies and trends to ensure consistency of terminology. The DataDriven Digital Transformation Technology Matrix (DXTM) provides a comprehensive model for our research focus.

**DXTM comprises five user groups, from individual to the wider society:**

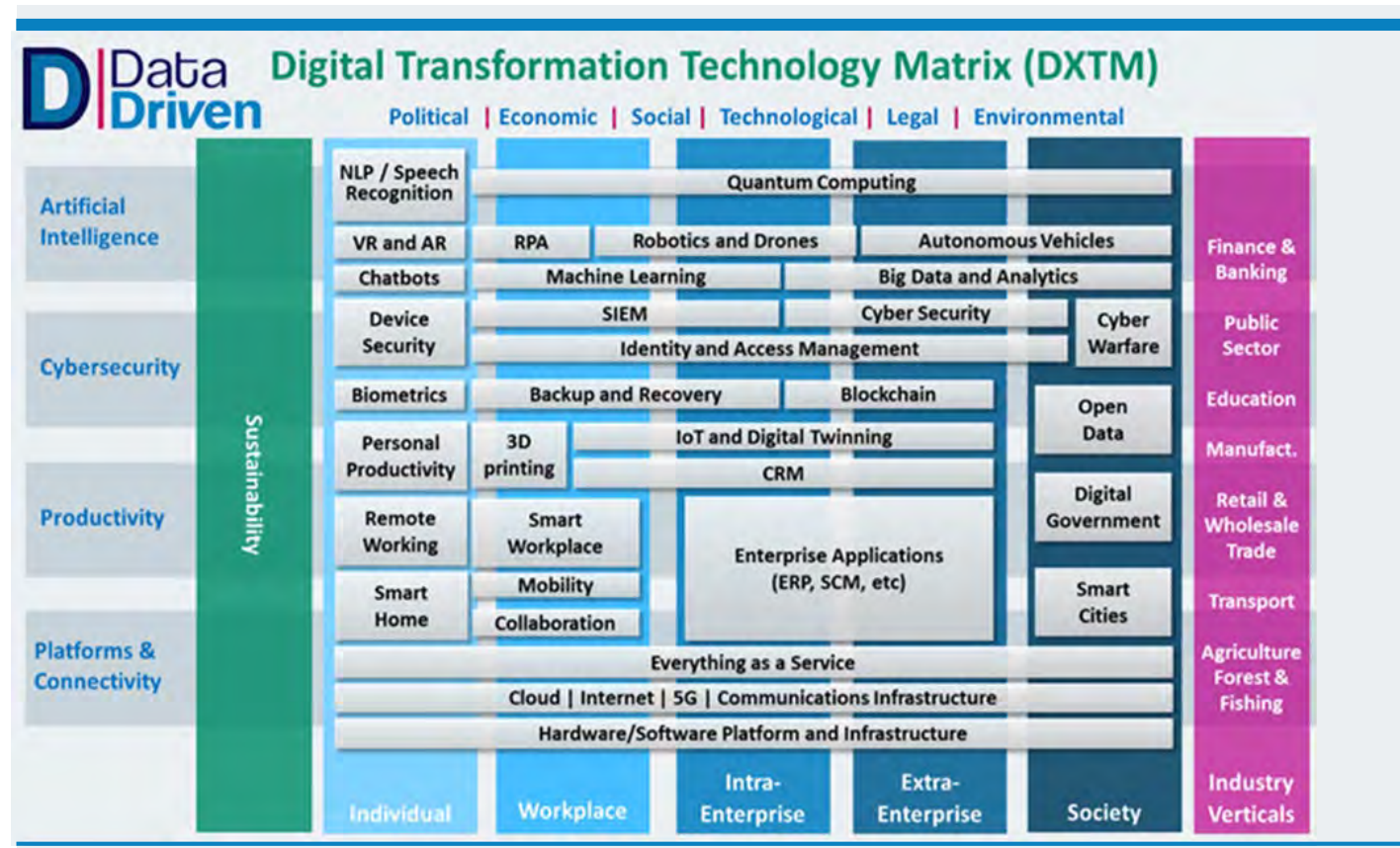
- **Individual:** The effect of Digital Transformation on individuals, at work and in their personal lives.
- **Workplace:** The effect of Digital Transformation on individuals and workgroups within the workplace.
- **Intra-Enterprise:** The effect of Digital Transformation on business practices and business models within the organization.
- **Extra-Enterprise:** The effect of Digital Transformation on the way the organization interacts with other organizations.
- **Society:** The effect of Digital Transformation on the economy, government and the wider community.



# The DataDriven *Digital Transformation Technology Matrix (DXTM)*

Four major classes of application or technology are overlaid on these five user groups. Some of these have their primary effect on only one level, some affect two or more. The four application or technology areas are:

- **Platforms & Connectivity:** Technologies which enable individuals and organizations within each level to communicate and interact with others at their level and beyond. At the base are the underlying connectivity technologies – Cloud / Internet / 5G / Comms infrastructure/Hardware & Software Platforms – which sit across all five user groups and are the key enablers of the interconnected world at every level.
- **Productivity:** Technologies which enable and increase the productivity across functions at every level and across levels.
- **Cybersecurity:** Technologies which prevent unwanted intrusions, and which enable the efficient and continued operation of the other technology areas.
- **Artificial Intelligence:** Machine based technologies which enable new applications through the simulation of human reasoning.



**Sustainability/Corporate and Social Responsibility (CSR)** are increasingly critical considerations at all levels, and this aspect also overlays the four major classes of application and technology.

**Industry Verticals** have differing levels of technology uptake and maturity and are therefore specifically included in the research focus. For this report the focus was the Retail sector.

# The DataDriven Research Approach Based on DXTM

The **DataDriven Digital Transformation Technology Matrix (DXTM)** enables us to clearly and consistently identify key technologies and the groups they affect.

We discover the trends in each area through primary research – comprehensive and intensive large-scale surveys of ICT decision makers across major industry sectors and geographic markets.

Extensive demographic grouping and analysis then allows us to measure and compare the effect of each technology in each industry sector and also to compare their impact across different sizes of organization and different markets.

Primary research of this nature is based on what the **users** of the technology are thinking and doing.

This quantitative analysis is complemented by qualitative research based on interviews with key players in the user and vendor, industry and government communities and secondary research from reputable and peer reviewed sources.





# Fact-based Research is Highly Credible



## Our research is based on highly reliable and valid facts .... not opinion

Our proven methodology offers insights simply not available with secondary research.

It is the users of technology that ultimately determine the success and speed of its implementation.

When predicting futures there is no substitute for asking the users of the technology about their attitudes, behaviours and intentions.

“The users of technology are the final arbiters and the ultimate source of truth for understanding the global ICT market”



## GLOBAL ICT TRENDS SERIES

# How to contact us

### Acknowledgement to ICT Decision Makers

DataDriven would like to thank the many hundreds of people and organizations involved in the production of this report. We would particularly like to thank the ICT decision makers/CIOs and senior IT managers who responded to the survey upon which it is based.

### About Fujitsu

Fujitsu is the leading Japanese information and communication technology (ICT) company, offering a full range of technology products, solutions, and services. Approximately 132,000 Fujitsu people support customers in more than 100 countries. We use our experience and the power of ICT to shape the future of society with our customers. Fujitsu Limited (TSE: 6702) reported consolidated revenues of 4.0 trillion yen (US \$36 billion) for the fiscal year ended March 31, 2019.

For more information, please see [www.fujitsu.com](http://www.fujitsu.com)

### About DataDriven

DataDriven is a global research and advisory services company specializing in the areas of ICT Strategy for technology users and providers, Research-based thought leadership, market and competitive intelligence, and marketing and technology strategy consulting projects. DataDriven is also highly experienced in the area of cross-cultural communications and leadership, managing virtual teams across multiple geographies and runs training and workshops in these areas. In addition DataDriven associates are skilled at the delivery of presentations at events ranging from facilitation of small C-level roundtables, through to 'big-tent' major keynotes with audiences in the thousands. With a combined ICT market experience of over 120 years, DataDriven associates have supported hundreds of ICT providers and other private and public sector organizations. DataDriven has successfully executed projects globally, but has a particularly strong focus on Asia/Pacific and Japan.

For more information, please see [www.datadrivenservices.com.au](http://www.datadrivenservices.com.au)

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