2018

WTiN

Digital Transformation Outlook

Global textile and apparel value chain survey 2018

Published by WTiN

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Introduction

Digital Transformation is the agenda to achieve a substantial change in business performance through durable digitalisation techniques

The potential impact of Industry 4.0 on the textile and apparel value chain has been widely discussed. Yet the extent to which this Fourth Industrial Revolution will impact on the market, how quickly it will take hold and who will stand out as the leaders of change remains undetermined.

Still, market movement has commenced. Intelligent technologies are increasingly accessible, new business models are emerging, and key players from other sectors are entering the market. With this digital transformation, manufacturers are seeking higher productivity, reduced labour costs and environmental sustainability, among other business improvements, catalysing the demand for a more automated and connected industry.

The textile and apparel industry of the future is expected to be centred around more agile manufacturing, complete with an evolved supply chain that meets consumer demands for sustainable, personalised and functional apparel. But how do we get there? And where do we find the industry in 2018, on its digital transformation journey?

Global Digital Transformation Survey

To assess the complex and diverse developments in the industry and shed light on the progress that is being made, WTiN – in partnership with CEMATEX, Dornbirn GFC, Gherzi, IAF, ITMF and WFSGI – has carried out the first Global Digital Transformation Survey of the textile and apparel industry.

This publication reports the key findings from the survey as well as providing detailed analysis of current perceptions of digital transformation, strategy developments for change, organisational modifications and investment in digital technologies, tools and methods. Moreover, it reports the overall impact of digital transformation on businesses to date and the challenges the industry faces going forward, providing an insight into the future of digital transformation in the textile and apparel industry.

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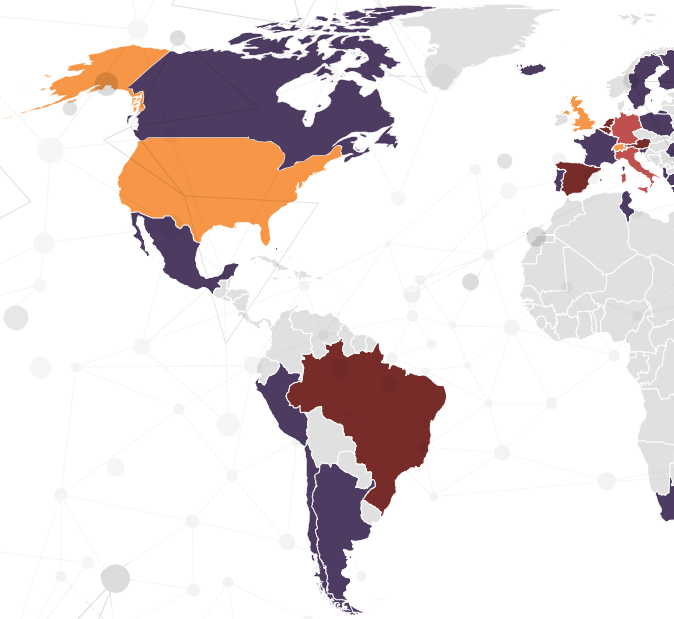
Respondent Profiles

The Global Digital Transformation Survey 2018 was carried out in April-May 2018, over a three-week period, and engaged 325 industry actors from across all areas of the supply chain, covering 57 countries. 248 of these responses came from three key respondent groups: OEMs (technology providers of both hardware and software), Manufacturers (fibre, textile and apparel), and Brands & Retailers. These three groups were identified due to their differing but vital roles in the textile and apparel value chain.

Location



Sector

OEMs
40%

Manufacturers
44%

Brands & Retailers
16%

Supply Chain Area

Man-made Fibres, Natural Fibres, Yarns
75%

Knitting, Weaving
55%

Nonwovens
15%

Dyeing, Finishing, Digital/Screen Printing
69%

Technical Textiles
28%

Technical/ General Apparel, Interiors
54%

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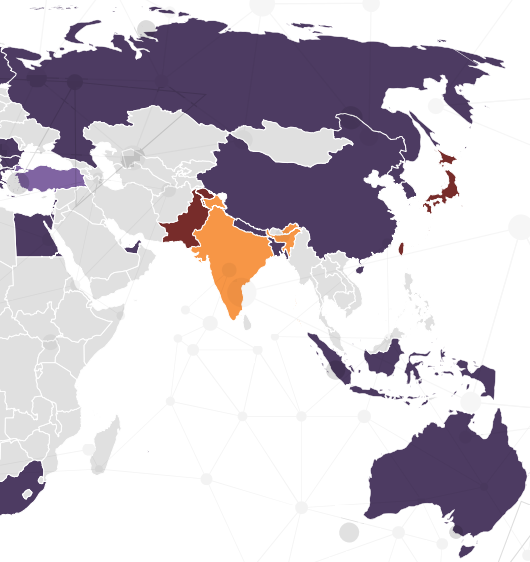
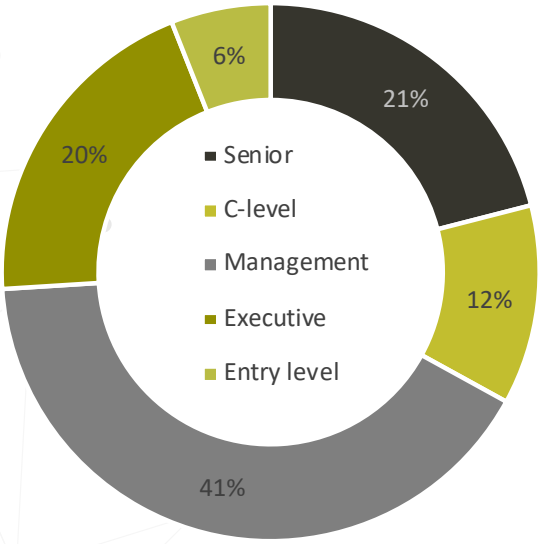
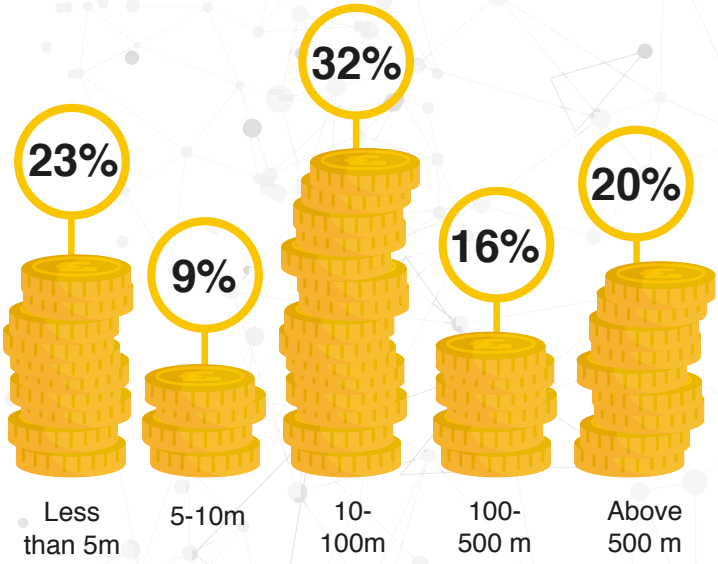


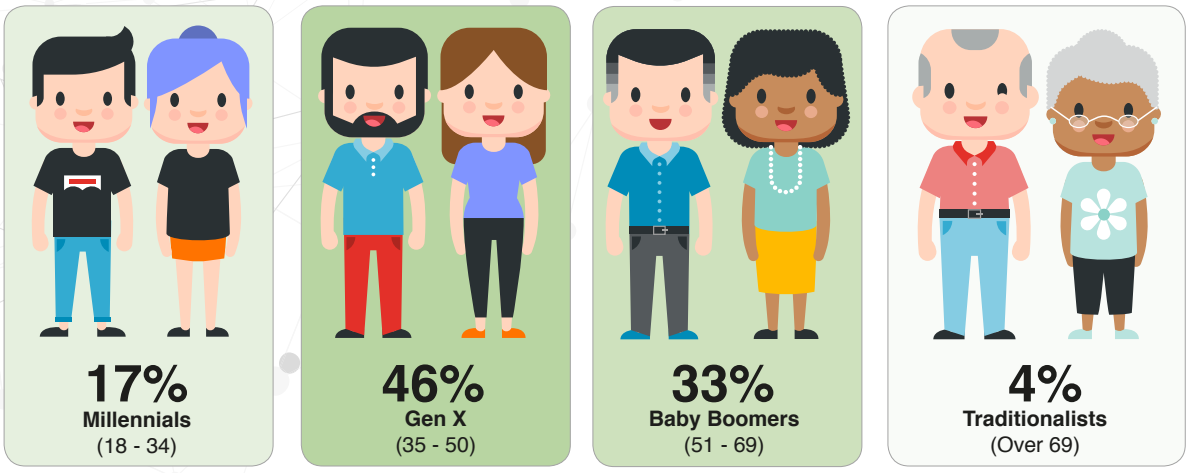
Job Function



Size of business (US$)



Generation



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Key Findings

All surveyed OEMs, Manufacturers and Brands & Retailers are looking to invest in digital transformation in the next 10 years

1. Positive outlook for digital transformation

Digital perceived to be the future of industry

Across all geographies and generations operating in the textile and apparel industry, digital transformation is perceived to be the future of the value chain, considered to be a necessary progression. Sentiment analysis shows a positive industry outlook, at +0.37 on a scale of -1 to +1.

Businesses see tangible gains

Survey respondents report both financial and efficiency gains following investment in digital transformation. Of the 62% of respondents that have invested in digital transformation, 49% report increased revenues and profits. Teams including sales, customer service, research & development, and production/operations have all benefited from implementation of digital technologies, tools and methods.

Leaders emerging

OEMs are the leading business group, with 73% of respondents having started on their digital transformation journeys. Asia is the geographical front-runner in digital transformation, with 71% of respondents from this region having implemented digital transformation initiatives.

Goals support globalised supply chain

Key goals for digital transformation centre around the use of digital channels to interact with customers, creation of new digital products and digitisation of business operations. Reshoring or nearshoring of production is not a priority for any respondent group.

2. Investments made and change starting from the top down

Change management led by senior managers

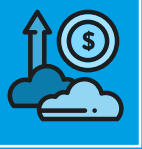
Digital transformation is being led by senior management, with Brands & Retailers also seeing R&D take on a leadership role. Primary modifications to business organisations are being applied through amendments to standard operating procedures, development of cross-functional internal networks and the development of more relational than transactional relationships with customers. To achieve successful change management, 50% of all businesses are investing in internal training.

Data analytics technologies dominate investment to date

Digital investments by textile and apparel businesses have primarily been in four key technologies – the cloud, connected devices, data analytics and connected enterprise and manufacturing software. In combination, these technologies enable businesses to collect, harness, store and use valuable supply chain data to inform business decisions.

Investments in early stages but increasing over next five years

In the next five years, respondents will together invest in the range of US$140-US$216m in digital technologies, tools and methods. In the next 12 months individual respondents are expected to invest an average of US$837k, with European companies (60%) most likely to invest in this period. Businesses based in Asia (59%) are more likely to invest when considering a five-year horizon. ROI expectation is 4.5 years.



3. Challenges to be faced but can be overcome

Investment requirements vary across the value chain

Despite consensus across geographies and generations that digital transformation is the future of the textile and apparel value chain, for OEMs and Manufacturers the pace of change is also perceived to be slow. Survey findings suggest that this is an issue of capital intensity, whereby OEMs and Manufacturers are required to invest in cyber-physical systems in order to digitalise, whilst Brands & Retailers can digitalise successfully through cloud-only solutions.

Skills-gap and lack of access to capital test early adopters

Challenges to digital transformation differ depending on whether a business has or has not embarked on digital transformation. For those who have invested, a lack of skilled professionals, a lack of clear vision and leadership, and necessity for high financial investment are key obstacles. For those who are yet to invest, challenges are mainly posed by the inability of business partners to collaborate around digital solutions and unclear economic benefits of digital investments.

Manufacturers and Brands & Retailers not on the same page

For digital transformation to be successful, all supply chain partners must have common goals. However, whilst Manufacturers indicate that they are most likely to invest in smart sensor technology for capturing manufacturing data, Brands & Retailers require Manufacturers to invest in enhancing their digital communication channels and cloud technology. These different short-term priorities could delay digital transformation.

Perceptions of Digital Transformation

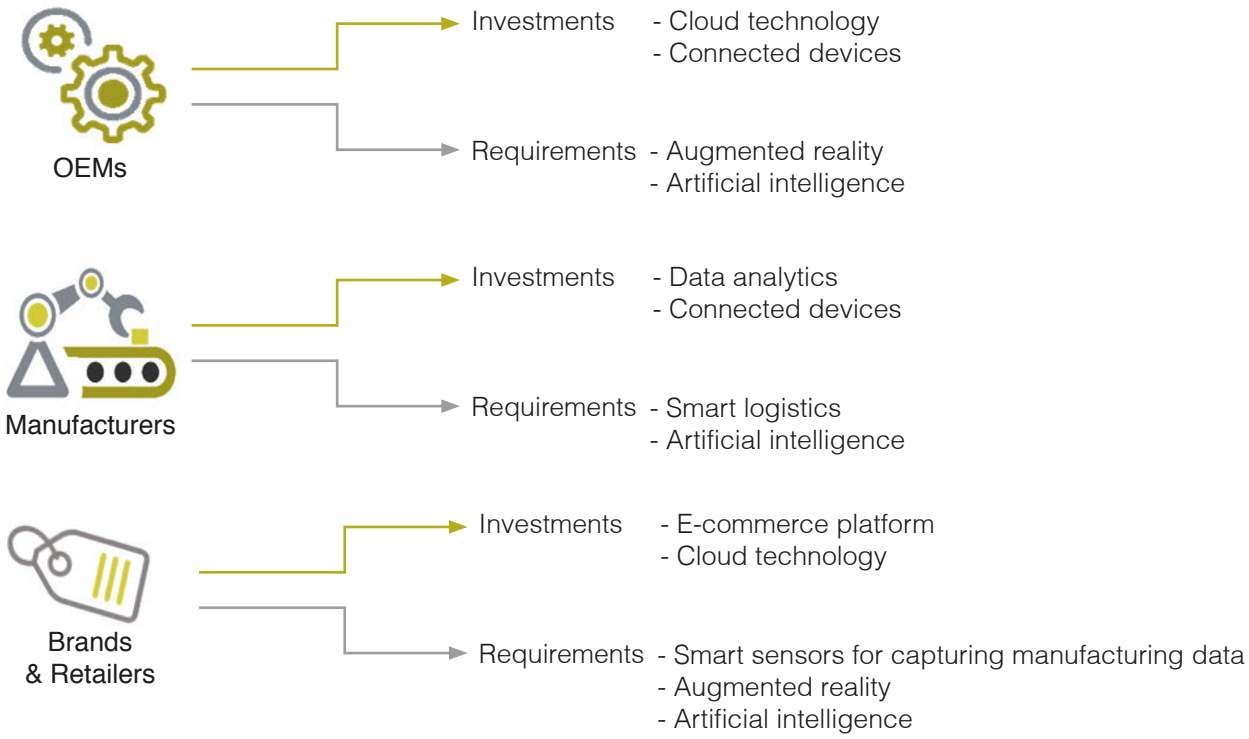
Digital transformation is the future of the textile and apparel value chain. It is necessary but also slow

According to PwC's 21st Global CEO Survey, 81% of people agree that technological progress will fundamentally change their organisation[1]. The prospect of this change prompts a range of responses from industries, businesses and individuals alike, and perceptions of digital transformation are therefore varied across geographies, business types and generations.

The textile & apparel industry is no exception. As shown in Figure 1, survey respondents offer a variety of terms to define digital transformation in the industry, from 'primitive' to 'integrated' and 'emerging' to 'absent'. However, where the majority of respondents agree is in the assertion that digital transformation is the 'future' of the textile and apparel value chain, that it is 'important' and 'necessary', but also 'slow'.

Figure 1 – Global perceptions of digital transformation

Figure 2 – Top technology investments and requirements across respondent groups



All three key respondent groups – OEMs, Manufacturers, Brands & Retailers – equally perceive the necessity of digital transformation. However, more OEMs and Manufacturers note that digital transformation is 'slow', compared to Brands & Retailers. If we consider this in relation to the digital technologies that have been invested in by these respondent groups and are required at each stage in the supply chain, we find that Brands & Retailers have primarily invested in cloud-only technologies whilst Manufacturers and OEMs have invested in cyber-physical systems in order to digitalise (Figure 2). Cloud-only technologies are arguably easier and quicker to adopt than cyber-physical systems, as intelligent hardware, such as smart sensor technology, is not required.

Brands & Retailers' top technology investment for digital transformation to date has been e- commerce platforms (75%), which only operate in cyber-space. However, for OEMs and Manufacturer respondent groups' the second most prominent investment to date has been 'Machines communicating with mobile devices', following cloud technology and data analytics,respectively. 63% of Manufacturers have invested in cyber-physical systems and 64% of OEMs have also invested in this technology.

However, Brands & Retailers do highlight that 'efficiency' is an integral part of digital transformation in the textile and apparel industry. Whilst efficiency can be achieved through application of intelligent online POS systems and integration of smart logistics, greater efficiency gains can be achieved if those systems are connected to the supply chain. Positively, 67% of Brands & Retailers indicated that they do require 'Smart sensors for capturing manufacturing data', with 25% of those respondents stating that they will invest in this technology in the next five years.

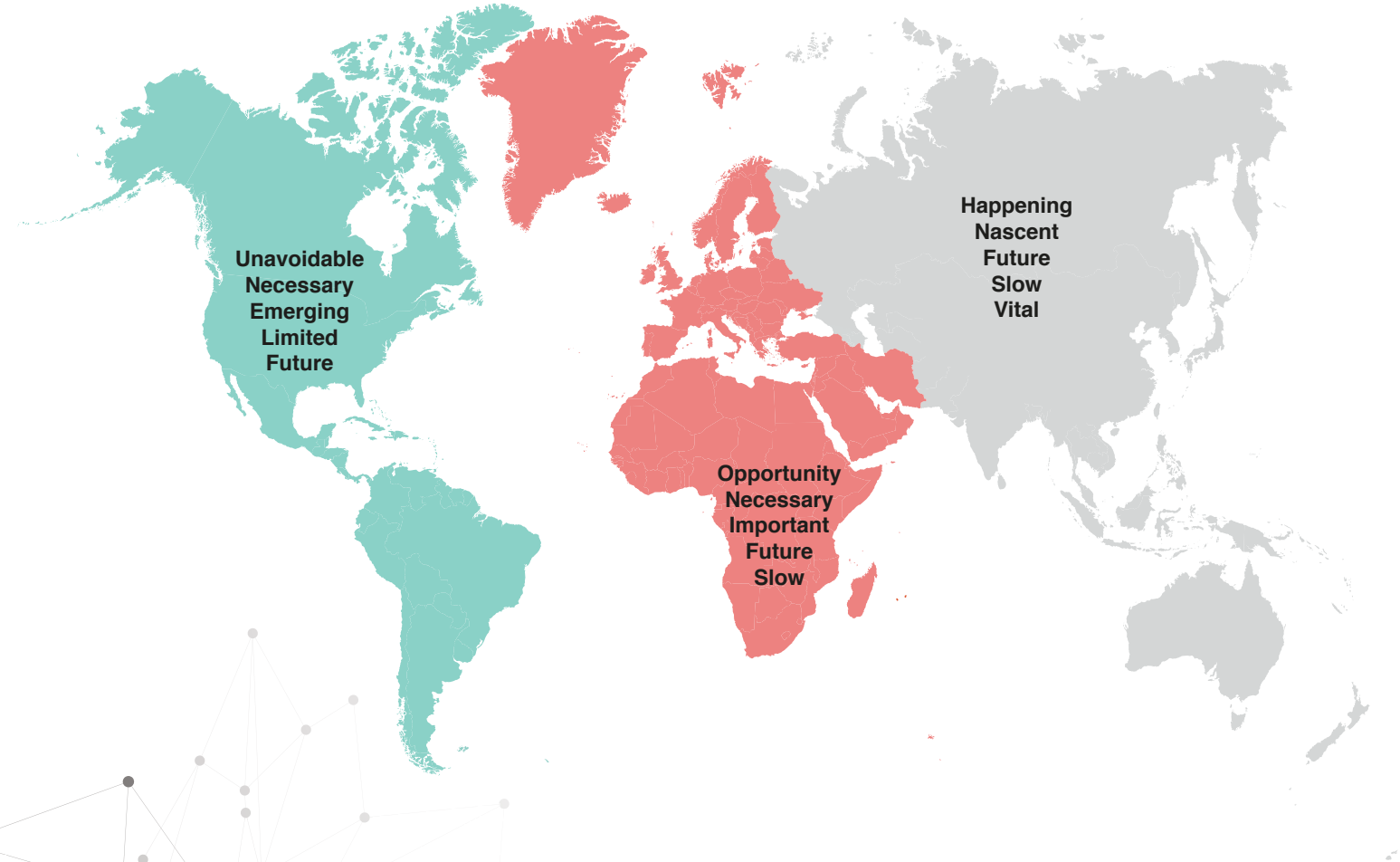
Geographies and generations

As with the three respondent groups, across geographies, survey respondents identify digital transformation as the 'future' of the textile and apparel industry, with respondents from Asia stating that it is 'nascent' (Figure 3).

Respondents from all regions also note that digital transformation is 'necessary' but still 'limited' and 'slow', highlighting parity in perceptions of digital transformation across the globe. The same can be said of different age group respondents, where variation in opinion is limited.

These perceptions may diversify in the coming years as the impact of new digital technologies on key analogue parts of the supply chain – apparel manufacturing, for example – become more apparent.

Figure 3 – Sentiment across geographies



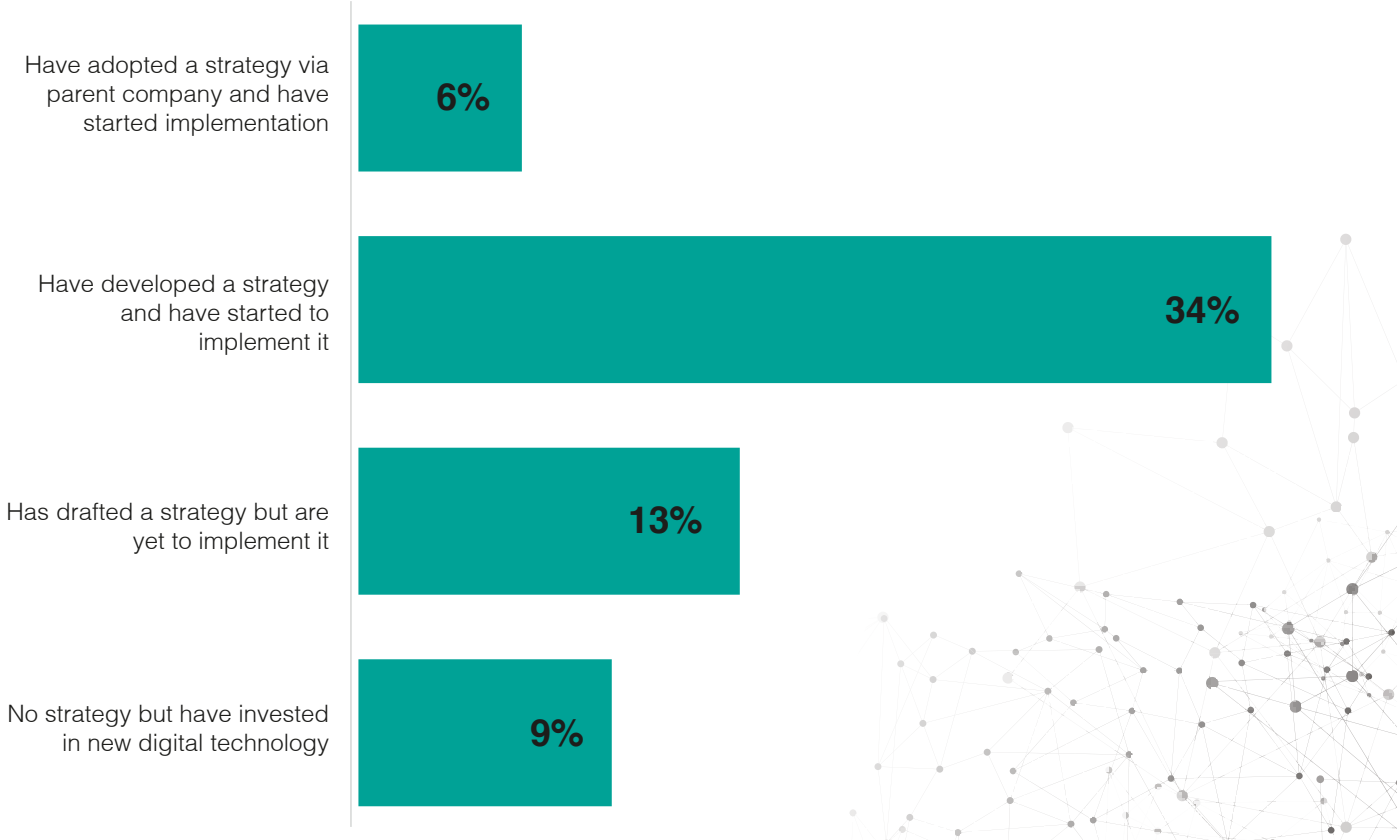
Strategy Creation and Implementation

Almost two thirds of respondent businesses currently engaged in digital transformation

Whilst perceptions of digital transformation suggest that it is slow to develop, 62% of survey respondents' businesses have taken steps towards digital transformation, through either strategy creation and implementation or through investment in advanced digital technologies (Figure 4). More than half of those respondents have developed a strategy for digital transformation or have adopted a parent company's strategy and have started implementation. This suggests that 40% of all textile and apparel value chain businesses are currently engaged in overall digital transformation, whilst a further 22% are on the cusp of taking this step forward, having started to devise a plan or make digital investments.

> "If we fail to catch this bus, it will never come back for us again and we will lose our way." - Abul Kasem Khan, president of Dhaka Chamber of Commerce and Industry

Figure 4 – Share of respondents which have digital transformation strategy/invested in new digital technology



Global movers

Regions leading in digital transformation of the textile and apparel value chain – based on those who have made digital investments or are in the process of strategizing – are Asia, Europe and the Americas. Asia comes top of this list, with 71% of respondents having embarked on digital transformation. This likely stems from increasing governmental support and initiatives in the region for smart manufacturing. Industry digitalisation strategies have been established at a government level by a number of countries, notably including China, Japan, India, Malaysia and Thailand.

Taking India as an example, according to the India Brand Equity Foundation (IBEF) the Indian government is aiming to increase the manufacturing sector's share of the country's GDP to 25% by 2022, from 16% in 2018.[2] Industry 4.0 is also firmly on the agenda for other key markets in this region, such as Pakistan and Bangladesh, with Abul Kasem Khan, president of Dhaka Chamber of Commerce and Industry, having commented to local media this year: "If we fail to catch this bus, it will never come back for us again and we will lose our way."[3]

Asia's engagement with digital transformation initiatives is a threat to the reshoring agendas set out by the US and many European countries. However, textile and apparel value chain players in these markets aren't far behind on their digital transformation journeys, with 57% of North American respondent businesses having made investments or created a strategy, and 62% of European respondent businesses having also taken these same measures.

All surveyed OEMs, Manufacturers and Brands & Retailers will have embarked on digital transformation within in the next 10 years

Businesses leading transformation

The foremost group adopting a digital transformation strategy is the OEMs, with 73% of businesses having embarked on their digitalisation journey, and 56% having already created and started implemented a strategy. This dominance is unsurprising as the main business priority for most, if not all OEMs, is to create new intelligent technologies for the supply chain.

Meanwhile, 57% of Manufacturers have taken steps towards digital transformation, with 45% having created a strategy and 30% having begun implementation. These statistics are encouraging, particularly as Manufacturers are often those that suffer most the impact of raw material price increases and end-product price reductions, and therefore have the least amount of capital to invest. This correlates with the perception of many manufacturer respondents that digital transformation is 'slow'.

Brands & Retailers are the furthest behind in digital transformation with only a third of respondents having created a strategy for digital transformation, and only 26% of this group currently in the process of implementation. However, it is important to note that there have been key technology investments made by this group. 75% of Brands & Retailers participating in digital transformation have invested in e-commerce platforms and 58% have invested in cloud technology. Combined with the survey finding that digital transformation of businesses in this segment is taking place mainly in the marketing and sales departments, the evident main driver of change for Brands & Retailers is enhancing the point of interaction with the consumer rather than with the supplier.

Goals of digital transformation

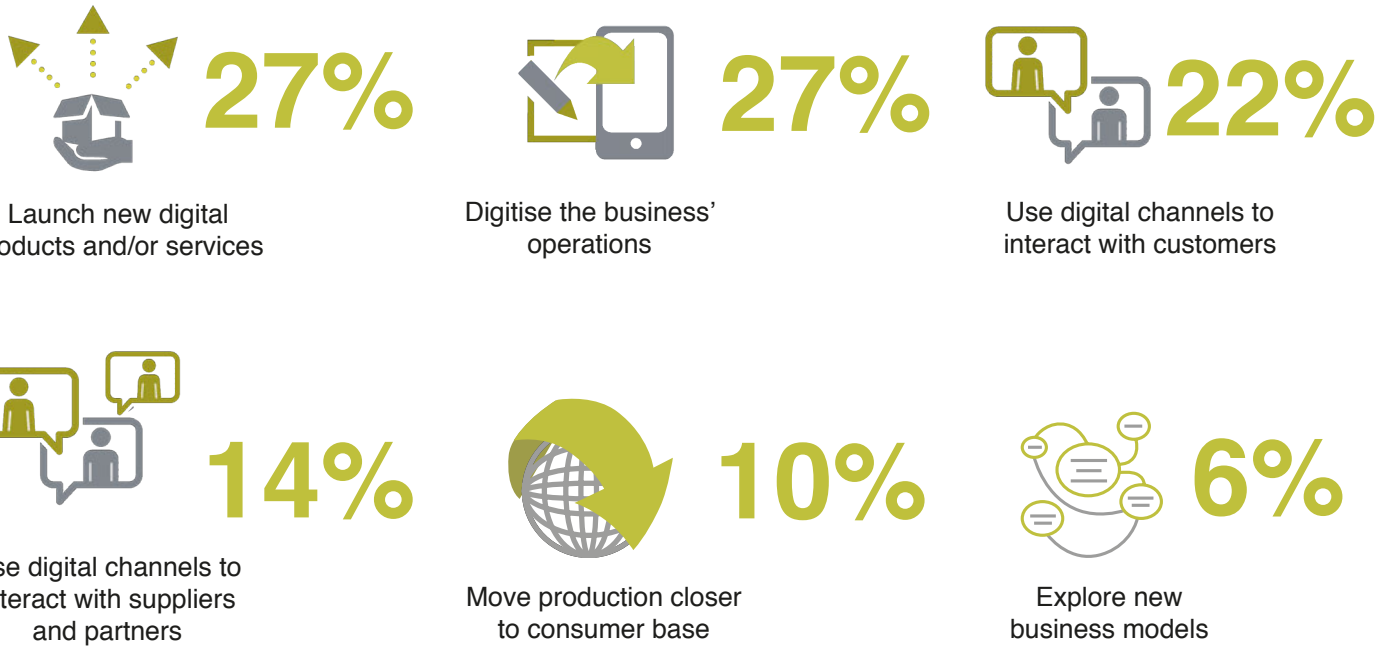
This is supported by respondents' stated goals for digital transformation. The primary goal for Brands & Retailers is to use digital channels to interact with customers, which 56% of respondents in this group selected. According to Deloitte, Brands & Retailers need to further explore omni-channel strategies and prioritise e-commerce.[4] This suggestion is advanced by Internet Retailing's calculation that more than US$187bn of retail sales are influenced by digital channels and that retailers whose services do not meet customers' expectations could lose more than US$15bn a year.[5]

In contrast to Brands & Retailers' clear focus on consumer sales channels, respondents in the OEMs and Manufacturers groups prioritise creation of new digital products and digitisation of business operations (Figure 5).

The main driver for OEMs is to launch new digital products and/or services, with 45% of respondents in this group identifying this development as a business goal. New technology launches in the past year corroborate this, focused on connectivity and automation across all supply chain sectors.[6]

Whilst Manufacturers have a broader set of priorities, their main focus is on digitising business operations, with 37% of respondents selecting this option. It has been found that digitisation of manufacturing business operations can result in optimisation of production processes and ultimately reduce operating costs.[7] As referred to in the previous section, price pressures in the

Figure 5 – Goals of digital transformation



supply chain often impact most significantly on the 'manufacturer' group; this is likely to be a motivating factor behind their digital investments.

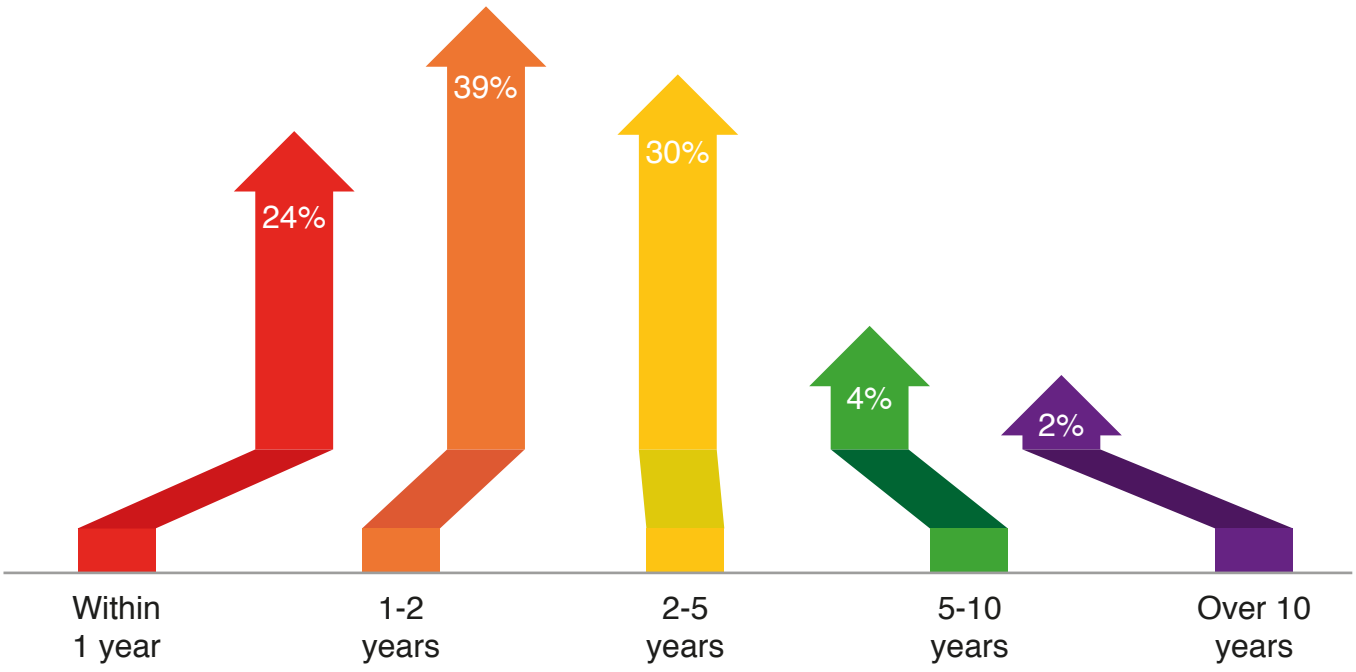
Interestingly, the option to select 'Move production closer to consumer base' was not a popular choice with any survey respondent group. Relating to reshoring and nearshoring of production, trends that are much discussed in the industry, it is provoking that only 17% of Brands & Retailers identified this as a goal for digital transformation, and even fewer Manufacturers selected this option (8%).[8] The focus of supply chain initiatives is thus on digitalisation of the current supply chain rather than a reorganisation or redistribution of it.

Next movers

Of those who have not invested in digital technologies or created a strategy for digital transformation – 38% of respondents – more than half said that they intend to look at digital transformation in the future, with 93% of these respondents looking to develop a strategy for digital transformation within the next five years (Figure 6).

Of the Brands & Retailers that do not currently have a digital transformation strategy and have not invested in digital technologies, all respondents are aiming to achieve a digital transformation strategy within the next five years. OEMs and Manufacturers won't be far behind, with 96% of OEMs looking at a strategy from 2018-2023 and 85% of Manufacturers doing the same. Remaining respondents all said digital transformation would feature in their long-term plans (5-10 years).

Figure 6 – Strategy creation timeline for those currently not in the process of digital transformation



Organisational Changes and Developments

Senior management drives change and invests in upskilling of staff

To successfully undertake digital transformation, companies are required to transform their organisations. Leadership, people management and changes to both business structure and procedures need to be managed carefully.

Respondents identified that senior management drives a vision for digital transformation in the textile and apparel industry (30%), while Research & Development departments also take on a leadership position (Figure 7). This is certainly the case for Brands & Retailers where 33% of respondents identified R&D teams as the leaders in digital transformation, surpassing senior management, which was only identified by 17% of respondents.

Senior management is the predominant initiator of digital transformation for most Manufactures (29%) and OEMs (33%), however. This is expected to increase the likelihood of digital investments by these businesses, but it could equally put digital transformation strategies at risk if that strategy is not communicated effectively across a business' hierarchy.

> "Jobs will be changed, new skills and capabilities must be developed, and employees will be uncertain and resistant […] A formal approach for managing change should be developed early."
> - Jones, Aguirre and Calderone, '10 principles of change management'

Figure 7 – Business department that initiated digital transformation

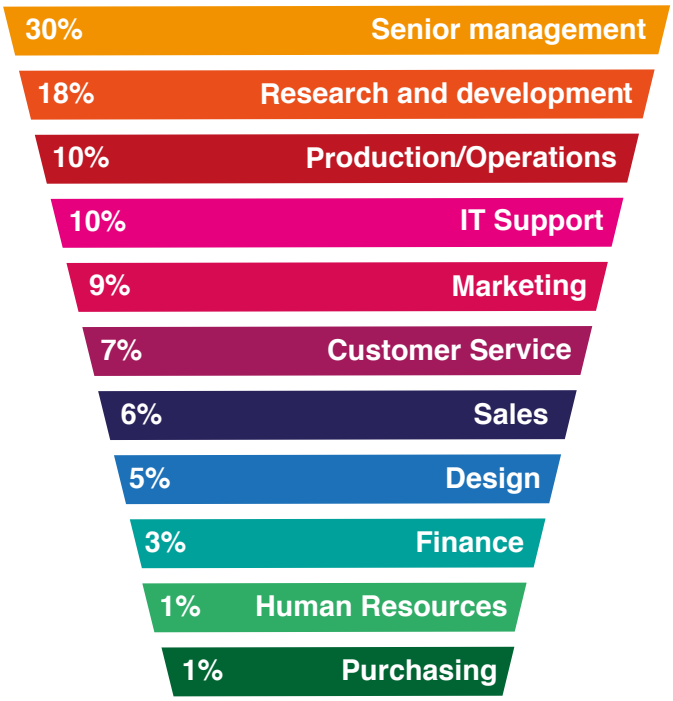
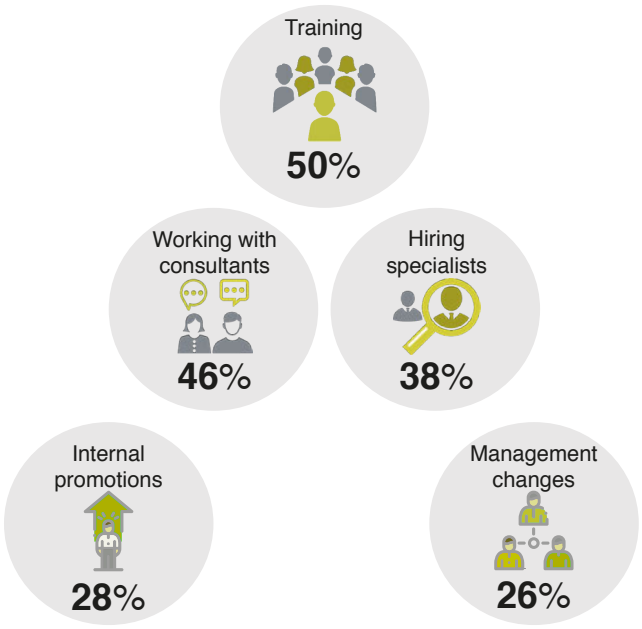


Figure 8 – Investments made in people for digital transformation



Change management

Change management is therefore critical, with a key element of such change being people management. As Jones, Aguirre and Calderone note in '10 principles of change management': "Jobs will be changed, new skills and capabilities must be developed, and employees will be uncertain and resistant. Dealing with these issues on a reactive, case-by-case basis puts speed, morale, and results at risk. A formal approach for managing change – beginning with the leadership team and then engaging key stakeholders and leaders – should be developed early and adapted often as change moves through the organization."[9]

As part of a change management strategy for digital transformation, many organisations are therefore investing in upskilling employees (Figure 8).

50% of all respondent businesses are investing in training for members of staff, an upskilling initiative that correlates with the efforts of industry associations to assuage concerns around loss of jobs whilst encouraging digital transformation initiatives. For example, German research group SozioTex aims to establish a methodology for reconciliation of the aging skilled population of workers with an unskilled younger generation that are tech savvy. 50% of employees in the German textile manufacturing sector are currently aged 50 or over and, whilst it is predicted that overall staff requirements in textile manufacturing facilities will not change substantially in the near future, job roles are set to change significantly in line with digital transformation.[10]

Manufacturers and OEMs are also investing in internal promotions and restructuring of management. However, respondents from Brands & Retailers indicate that businesses operating in this area prefer to work with consultants (50%) or hire specialist (50%).

Brands & Retailers hiring specialists may also look to create a chief digital officer (CDO) role in their organisation, a trend that has emerged from digital transformation change management across industries.[11,12] As McKinsey's recent article 'Transformer in chief: The new chief digital officer' explains: "The CDO is now a 'transformer in chief,' charged with coordinating and managing comprehensive changes that address everything from updating how a company works to building out entirely new businesses. And he or she must make progress quickly."[13] McKinsey goes on to outline the role of the CDO as being someone that: makes digital integral to strategy; obsesses over the customer; builds agility, speed and data; extend networks; and ultimately guide and enact change.

With an ambiguous title and clear but vast goals, recruiting for the CDO role can be challenging. However, it can be simplified, as Ian Rogers, CDO of LVMH, owner of the Louis Vuitton brand, commented in a recent interview for Wired UK: "Having a chief digital officer is like having a chief electricity officer. […] you're using this somewhat technical term to mask the fact that your customer's behaviours have changed. You need to elevate technology inside of your organisation."[14]

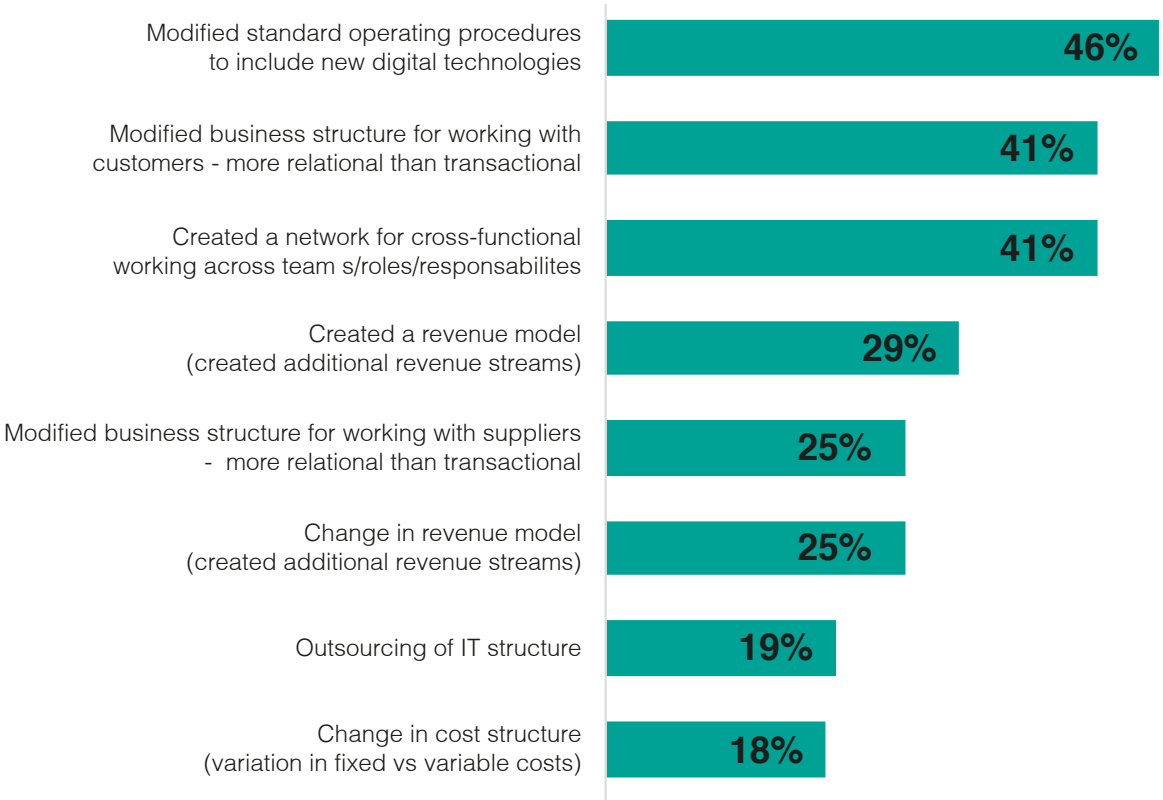
Structural changes

In an effort to elevate technology inside an organisation, modification of standard operating procedures (SOPs) is necessary. This is principle requisite of organisational restructuring as a result of digital transformation, affecting more than 45% of all respondents (Figure 9).

Manufacturers (40%) and OEMs (58%), specifically, rate the modification of SOPs to include new digital technologies as the most prominent structural change they have made. SOP amendment can be used to increase process efficiency, ensure quality output, and reduce communication errors. The same can be said of cross-functional internal networks, which 52% of OEMs, 31% of Manufacturers and 33% of Brands & Retailers identified as a change in their organisation since digital transformation was initiated.

The most significant internal business modification that has impacted on external business relationships as a result of digital transformation so far has been the development of more relational than transactional relationships with customers. This is true for all respondent groups but particularly crucial for Manufacturers (34%), whose customers are often Brands & Retailers. This is supported by a recent comment from Martijn Hagman, CFO of Phillips Van Heusen (PVH) Europe, who said: "Digitisation has huge potential to transform the industry, but it's impossible to achieve this completely independently. You have to invest in stronger vendor collaboration models."[15]

Figure 9 – Operational changes made following digital transformation initiation



Digital Technology Investments

Ventures driven by need for data analytics

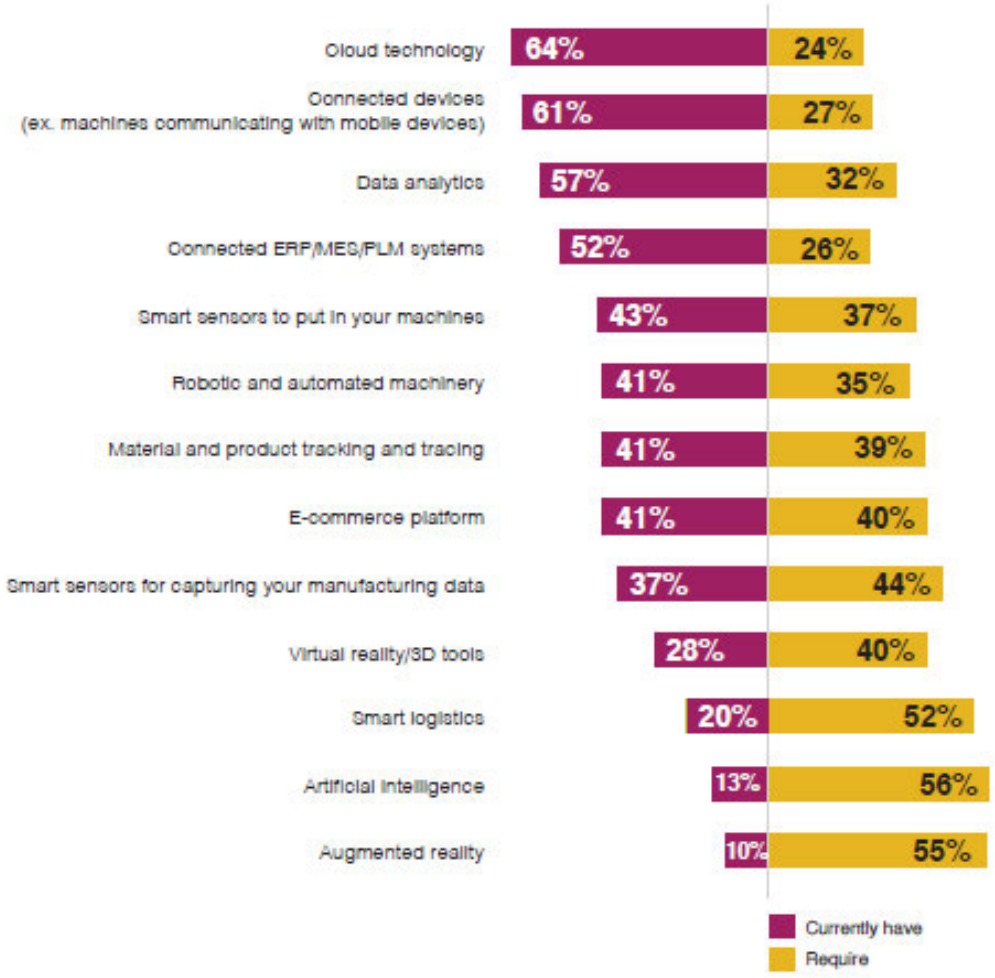
For collaboration to be seamless across the textile and apparel industry, strategic investment in new digital technologies, tools and methods, is essential. To date, textile and apparel value chain businesses have primarily invested in four key technologies: the cloud, connected devices, data analytics and connected enterprise and manufacturing software (Figure 10). In combination, these technologies enable businesses to collect, harness, store and use valuable supply chain data to inform business decisions and enhance working relationships.

Data analytics is the most desired digital technology across the textile and apparel industry

Whilst only a small percentage of respondents' businesses have invested in artificial intelligence (AI) and augmented reality (AR), across all respondent groups these are the two technologies that the industry most requires.

Gartner's Hype Cycle for Emerging Technologies, 2018 (see Figure 23 for more detail) shows AR technology to currently be stalled in the 'Trough of disillusionment,' with 5-10 years until the technology reaches the 'Plateau of productivity', a point at which the technology has matured and been widely adopted.[16] This correlates with respondents' reluctance to invest in AR

Figure 10 – Digital technologies, tool and methods that organisations have invested in and require



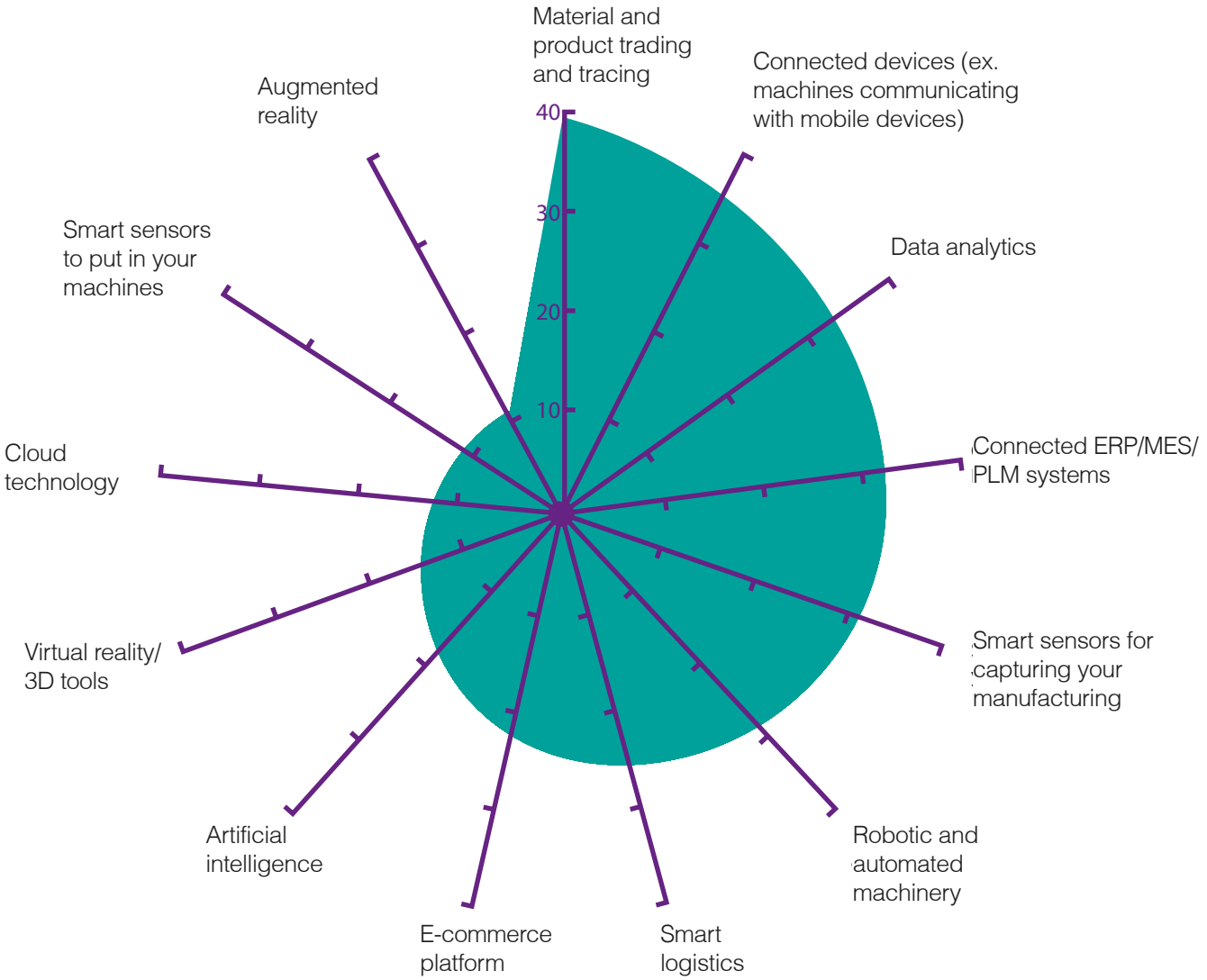
technology in the short term, with only 11% of those who indicated they require AR technology intending to invest in the next five years (Figure 11). Technology maturity and investment decisions can therefore be seen to be closely aligned.

This lack of investment in a required but still emerging technology is mimicked by respondents' likelihood to invest in AI. Only 21% of those who require AI are looking to invest in the period up to 2023.

According to PwC's Global Digital Operations Study 2018: Digital Champions, even among Digital Champions, 52% say they lack the people skills to broadly implement AI systems and many are hesitant about full-scale investment because they are uncertain about the maturity of the technology.[17]

However, if technology companies can devise workable, cost-effective, useful AI solutions, with examples of practical applications, investment plans could change. A small proportion of companies are experimenting to quantify the value of AI in the textile and apparel industry – with 10% of survey respondents having invested – and Gartner suggests that PaaS (platform-as-a-service) AI will reach the 'plateau of productivity' in the same time frame as AR, despite PaaS AI currently sitting in the earlier 'innovation trigger' segment, at the start of the Hype Cycle curve.

Figure 11 – % of respondents investing in digital technologies, tool and methods in the next 5 years



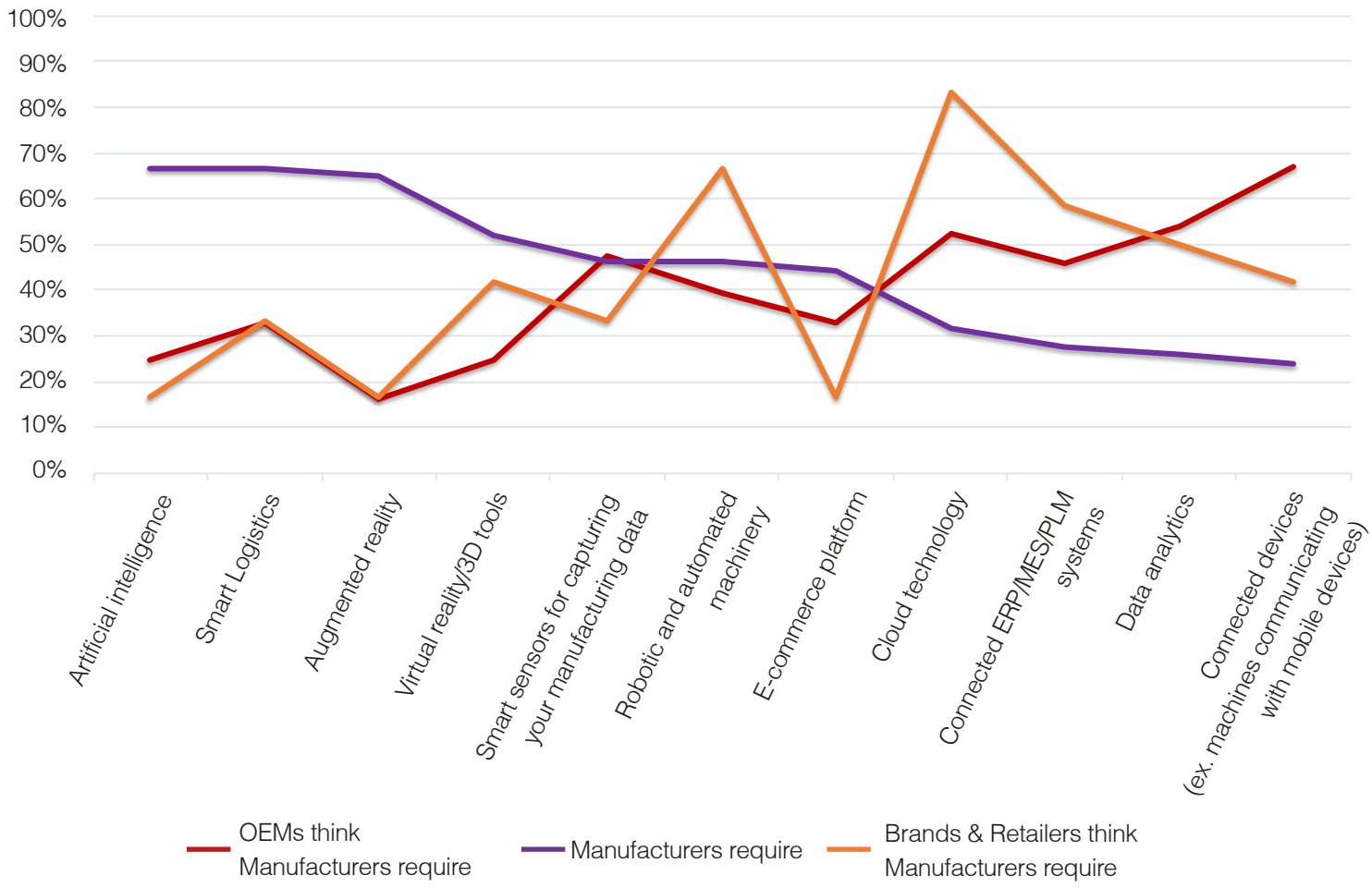
Perceived requirements

Brands & Retailers are most likely to invest in data analytics to analyse customer behaviour and trends (50%). OEMs are also planning to invest in data harnessing capabilities with connected devices (44%), to both improve their inhouse operations and meet their customers' requirements.

As well as stating their own technology requirements, Brands & Retailers and OEM groups were also given the opportunity to note the technologies that they require Manufactures – respectively their suppliers and customers – to invest in (Figure 12). Manufacturers themselves indicate that they require AI and smart logistics technologies and are most likely to invest in smart sensor technology for capturing manufacturing data, with 48% of respondents in this group intending to invest. However, Brands & Retailers would prefer Manufacturers to enhance their digital communication channels and therefore prefer Manufacturers to invest in cloud technology.

OEMs providing technology to Manufacturers, on the other hand, think that their customers need to invest in connected devices. What all three groups' investment priorities for the Manufacturer group suggests is that there is a data chasm in the middle of the value chain. OEMs want Manufacturers to invest in connected devices so that machinery data can be gathered and analysed. This would enable technology providers to develop new products, predict machinery maintenance and thus enhance their service offering. Likewise, Brands & Retailers that are consumer focused require manufacturing data to be captured and shared in the cloud in order to better inform their sourcing and product development decisions.

Figure 12 – Perceptions of digital technologies, tools and methods required by Manufacturers



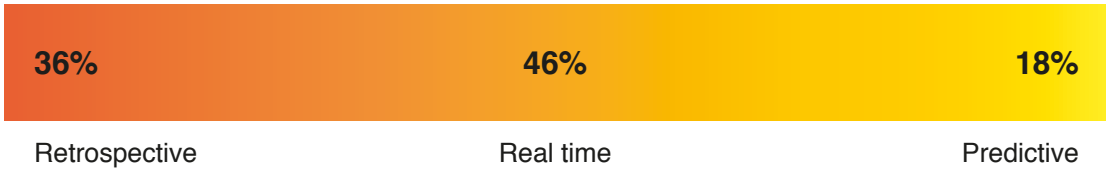
Big data analytics

Most of the technologies, tools and methods currently invested in and required by companies across the value chain centre on collection, monitoring and analysis of data, whether that is collected from e-commerce platforms or production environments.

This data poses a series of challenges to businesses as well as bringing benefits. When an organisation size is large and complex, for example, and part of the established supply chain, data becomes extremely difficult to manage; especially with the use of unintegrated software. In addition, regardless of the size of an organisation data consistently comes in different formats and from multiple sources, which means garnering valuable analytics can be difficult. Data analytics lies at the heart of the Fourth Industrial Revolution, but the flow is limited without the right infrastructure to support it.[18]

Those respondents that have invested in data analytics capabilities can be divided into three categories: those who have retrospective analytics, those who have real-time analytics, and those who have predictive analytics capabilities. Businesses that have progressed the most in their digital transformation journey will have access to predictive analytics capabilities. This currently sits at 18% of those respondents who have invested in digital transformation (Figure 13).

Figure 13 – Data analytics capabilities of businesses



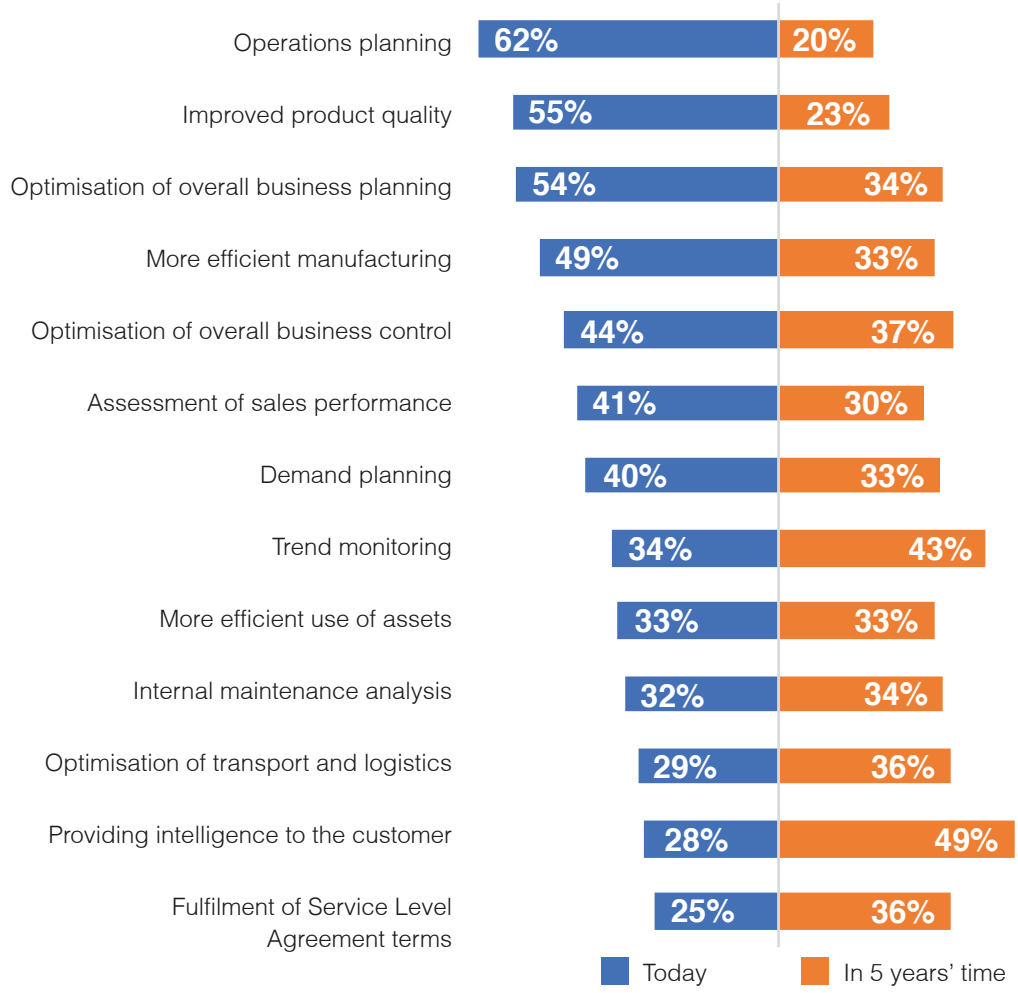
It could be considered that manufacturers are the most digitally advanced respondent group, with 69% of those who have invested in data analytics harnessing real-time and predictive datasets. 65% of OEMs that have invested in data analytics also have access to real-time and predictive analytics, but the least advanced are the Brands & Retailers with most participants only using retrospective data analytics (58%).

Across all respondent groups, data analytics capabilities are currently being used for operations planning, to improve product quality, to optimise overall business planning, and for more efficient manufacturing (Figure 14).

In contrast, the areas where businesses are aiming to use data analytics capabilities in five years' time are: providing intelligence to the customer; trend monitoring; optimisation of overall business control; optimisation of transport and logistics; and fulfilment of service level agreement terms. Overall, business planning also remains an important use of data analytics in the next five years.

Whilst demand planning is not a top priority for respondents, it is important to note this application area. The correct use of data analytics in demand planning can provide business benefits including increased customer satisfaction, lower stock requirements, more accurate budgeting, and reduction of inventory. Operations planning is the area of highest use at the moment, but a lack of data analytics for demand planning may negatively impact operations planning; demand planning and forecasting are the major drivers in operations.

Figure 14 – Areas where data analytics capabilities are employed today, and in 5 years' time



Total investment and ROI

In the next five years, respondents will together invest in the range of US$140-216m in digital technologies, tools and methods. In the next 12 months individual respondents are expected to invest an average of US$837k (Figure 15), with overall investment reaching US$55-86m. European companies (60%) are most likely to invest in this period compared to businesses headquartered in other regions. However, businesses based in Asia (59%) are more likely to invest when considering a five-year horizon.

ROI on digital investments is expected to be seen within 4.5 years

The average expected payback period across Brands & Retailers, Manufacturers, and OEMs is 4.5 years (Figure 16). According to the 2016 PwC report 'What's your digital ROI?', the key to ROI on digital investments lies in balancing and measuring digital investments across six strategic focus areas: customers; employees; operations; safety and soundness; infrastructure; and disruption and innovation.[19] Each focus area has associated key performance indicators (KPIs) that allow companies to track and measure the impact of their digital initiatives, reset the implementation process when necessary, and make teams accountable for their roles in achieving the desired transformation goals. Metrics for measuring digital ROI, both quantitatively and qualitatively, need to be developed and linked clearly to the company's overall strategy and goals.

Figure 15 – Average investment rate in the next five years

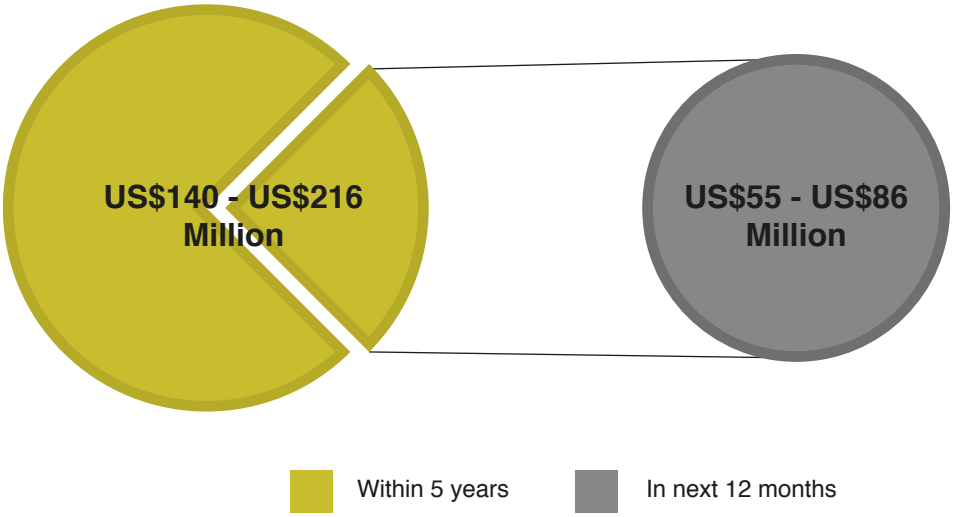
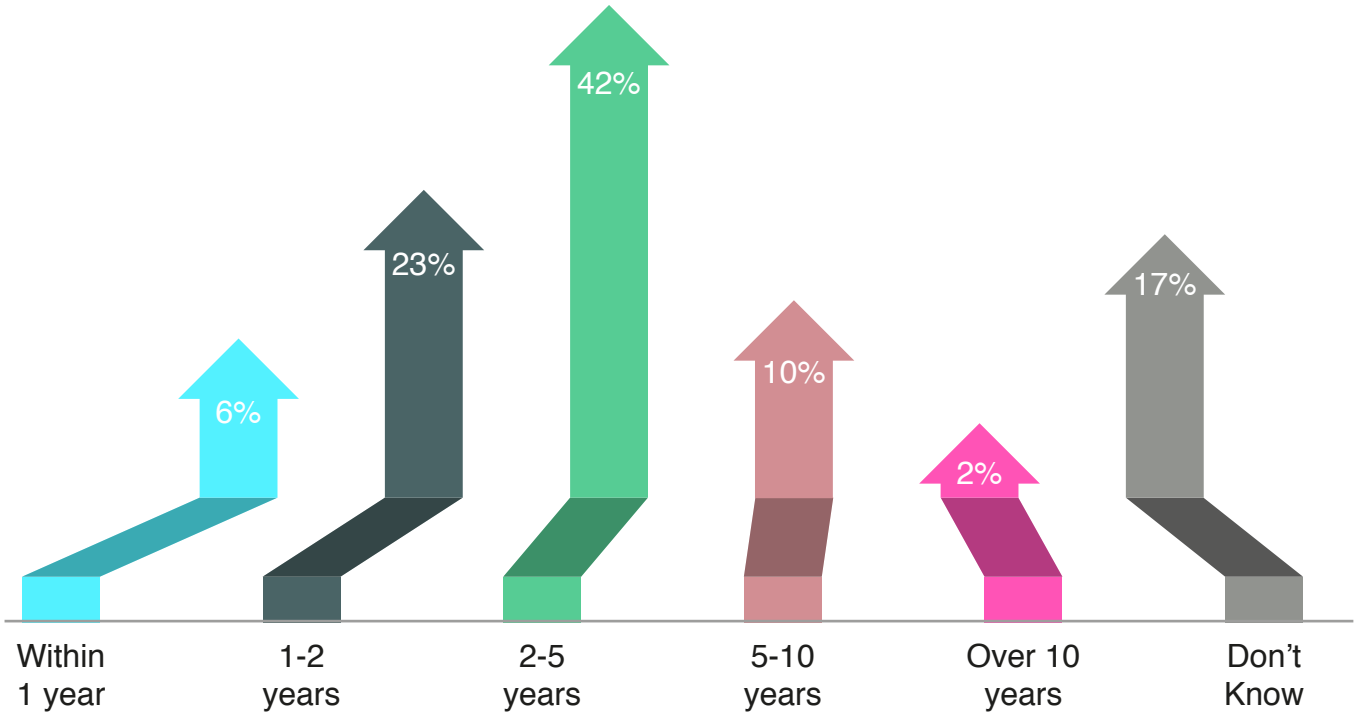


Figure 16 – Expected ROI time on digital technologies, tool and methods



Assesment of Current Impacts

Almost half of all respondents have noticed financial gains in both revenues and profits from digital transformation

Digital transformation can provide many business benefits. It can transform the customer experience, provide data-based insight, encourage collaboration across departments and across the supply chain, increase agility and enable innovation.

Efficiency gains have been seen by businesses that have invested in digital technologies, tools and methods across departments; sales, customer service, research & development, and production/operations have all benefited (Figure 17).

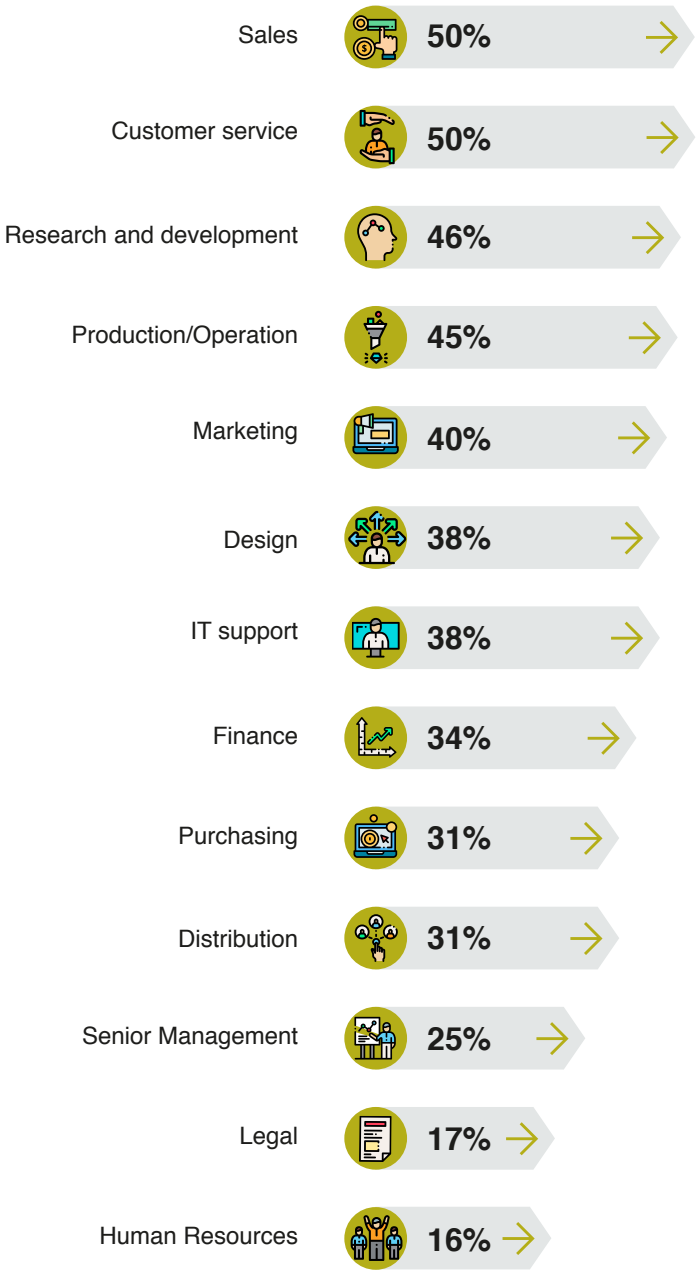
Across all respondent groups, increased customer satisfaction, increased efficiency of business processes and cost savings have been recognised as the most measurable improvements since beginning digital transformation (Figure 18).

Increased customer satisfaction for the OEMs and Manufacturers highlights that Manufacturers and Brands & Retailers, as customers of OEMs and Manufacturers respectively, have already reaped several benefits from digital transformation elsewhere in their value chain.

Brands & Retailers (67%) and Manufacturers (57%) have also seen significant improvement in product lead times, as well as improved quality of new products, improved flexibility in catering to customised product demands and decrease in environmental impact.

Yet, expected efficiency scores in 5 years' time do not mirror this (see p.30). Whilst there could be a number of reasons to explain this misalignment, the most probable cause is that measurable improvements are hard to classify. For example, if digital transformation reduces a process time by 50%, this could be recorded as a cost saving or as increased efficiency of the business processes. But depending on the process and

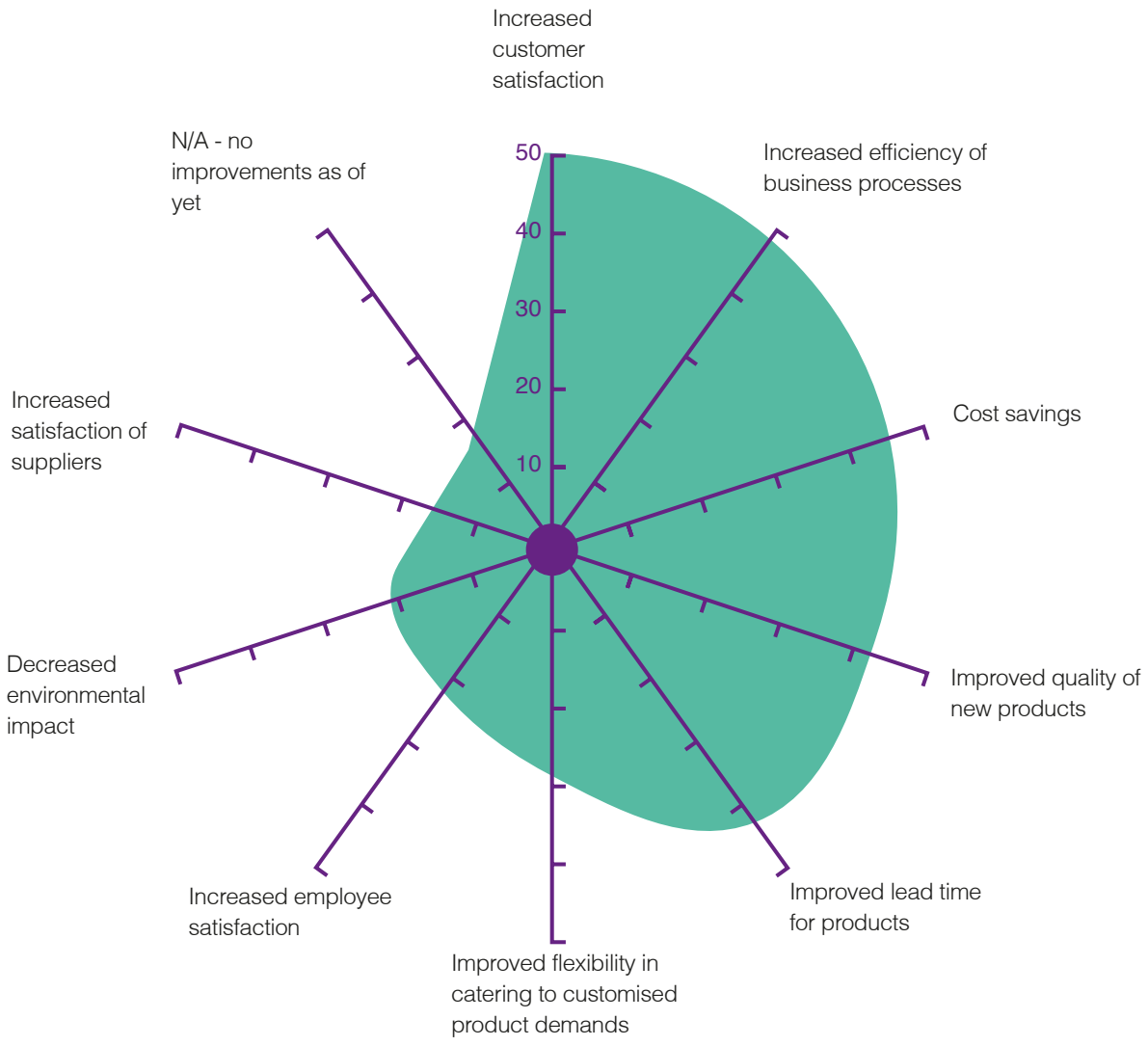
Figure 17 – Efficiency gains from digital transformation



depending on specific departments for which time was saved, the most tangible improvement might be improved product lead times, improved flexibility in catering to customised product demands, or increased satisfaction of suppliers.

Textile and apparel business have increased efficiency of processes and customer satisfaction since beginning digital transformation

Figure 18 – % of respondents seeing measurable improvements from digital transformation



Bottom-line benefits

It is therefore extremely important for organisations to learn how to monitor business benefits properly in order to highlight successful and failing areas of a business, and to properly evaluate areas of investment to establish whether ROI is being achieved.

49% of OEMs, Manufacturers, Brands & Retailers respondents have noticed financial gains in both revenues and profits from digital transformation (Figure 19).

The impact of digital transformation on the financial aspect of the business is always one of the fundamental reasons for a thorough risk assessment throughout implementation. Even though digital investment is transforming company ecosystems and the overall economy, and is rewarding 'first movers', a small number of textile and apparel industry respondents reported negative effects from digital investment. The high-cost of initial investments and short-term disruption to business operations are likely to have caused this negative impact.

Figure 19 – Financial impacts of digital transformation

Challenges of Digital Transformation

Companies face leadership, recruitment and partnership challenges

In order to capitalise on the true potential of investing in digital transformation, businesses need to first overcome a number of obstacles. All respondent groups noted that a lack of skilled professionals is the key barrier to businesses embracing digitalisation (45%).

The second key challenge relates to lack of clear vision and leadership (44%). As previously mentioned, findings indicate that senior management is the initiator of digital transformation for most Manufacturers (29%) and OEMs (33%). It follows that it is incumbent on these leaders to establish a clear vision and strategy roadmap.

The third highlighted obstacle to digital transformation is the inability of business partners to collaborate around digital solutions (43%). Collaboration difficulties can be explained by variance in business priorities, a lack of technical understanding of digital solutions and, in some circumstances, a lack of innovative solutions. However, moving beyond the transactional type of business partnership and establishing close and flexible relationships must be best practice for companies that want to successfully undertake digital transformation.

Requirement for significant capital investment is also a challenge of note (41%). Although not all innovation investments are costly, as mentioned previously, in general digital technologies, tools and methods are not cheap solutions. Taking the example of cut-piece fabric gripping and handling technology, emerging solutions to automate this process can cost millions of US$.[20]

Companies digitally transforming vs businesses yet to start

Notably, different challenges are recognised by the companies that have embraced the digitalisation journey compared to those businesses that have not yet embarked on digital transformation. This indicates that the interpretation of challenges differs depending on how risk averse a company is with regards to digitalisation.

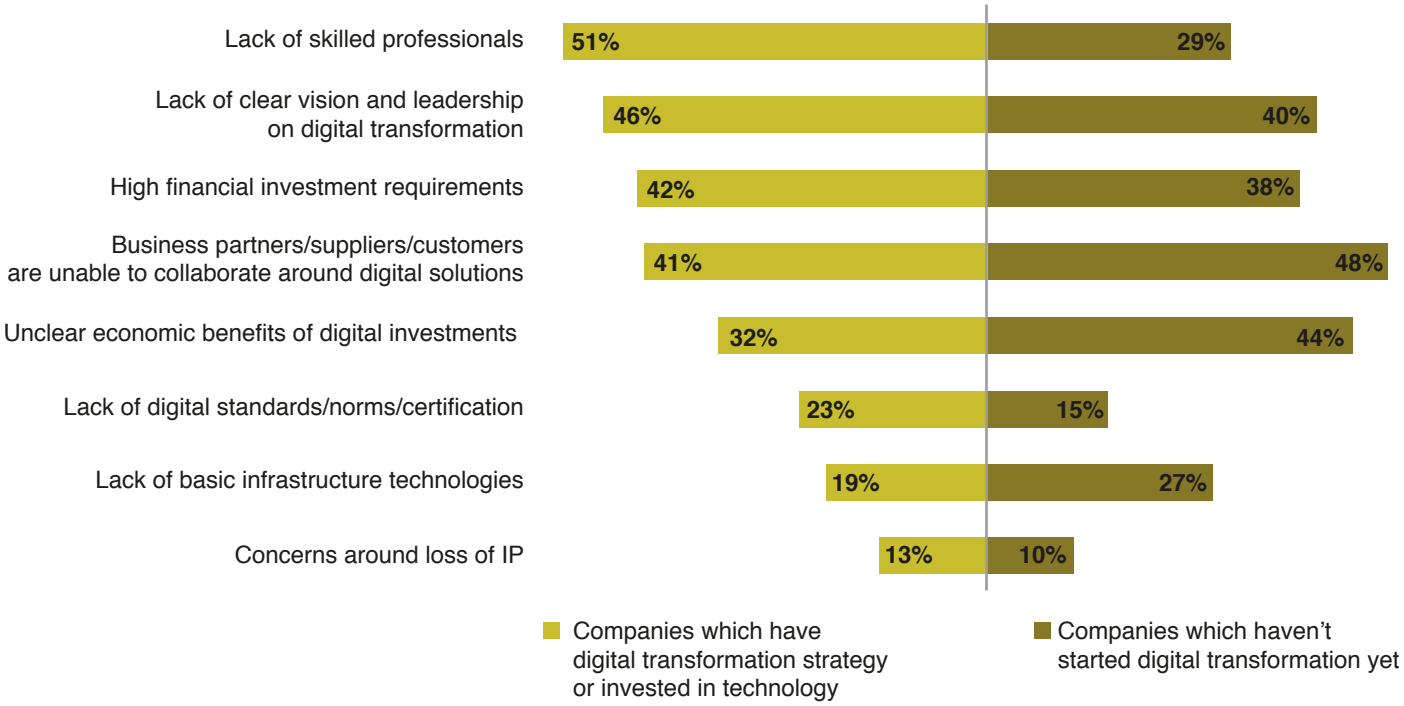
Those who have taken steps towards digital transformation see key barriers to be centred on human resources issues – lack of skilled professionals (51%) and unclear leadership (46%), followed by high financial requirements (42%). Notably, in this group, while both Manufacturers (56%) and OEMs (48%) are primarily concerned about the inadequacy of skills in the industry, Brands & Retailers see both lack of clear vision and leadership (58%) and high investment requirements (58%) as the key obstacles.

In comparison, the key challenges for those who have not begun digital transformation are the inability of business partners, customers or suppliers to collaborate around digital solutions (48%), unclear economic benefits of digital investments (44%) and lack of clear vision and leadership (40%).

The main concerns for Brands & Retailers in this group is the need to invest significantly (60%) and the inability to build successful partnerships (60%). Similarly, OEMs identify business relations as the biggest challenge (46%). In contrast, Manufacturers are more worried about issues around leadership (48%) and unclear economic benefits (48%).

The survey results show that attitudes towards the challenges of digital transformation in the textile and apparel industry are similar to those in most other industrial sectors. For example, the 2016 PwC survey 'Industry 4.0: Building your digital enterprise' identifies a lack of a clear digital operations vision and support/leadership from top management (40%), unclear economic benefits of digital investments (38%) and high financial investment requirements (36%)[21]

Figure 20 – Challenges/barriers to digital transformation amongst companies that have started digital transformation and those that have not

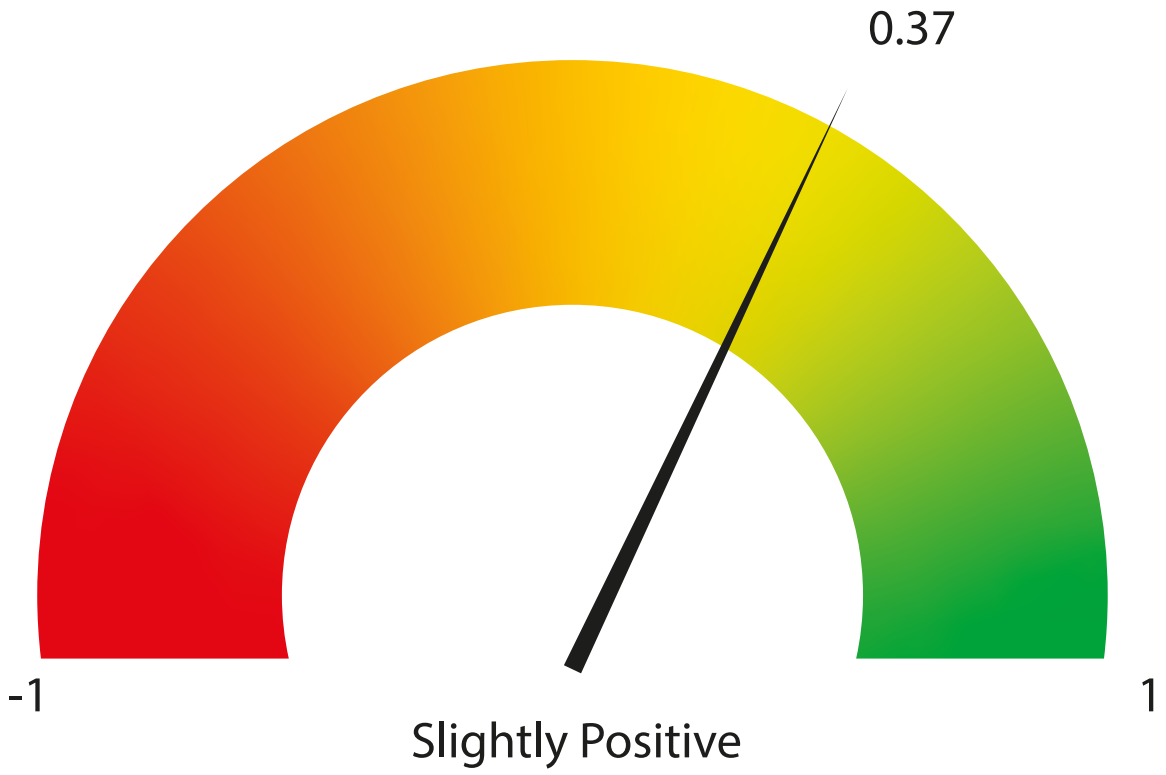


Industry Outlook

Positive outlook for digital transformation of the textile and apparel sector but progress inhibited

Despite its associated challenges, respondent sentiment towards digital transformation can be considered to be positive. Using natural language programming to analyse respondent comments on how they see the industry in the year 2030, the overall industry sentiment concerning digital transformation is slightly positive, at +0.37, on a scale of -1 to +1 (Figure 21).

Figure 21 – Sentiment towards digital transformation to 2030



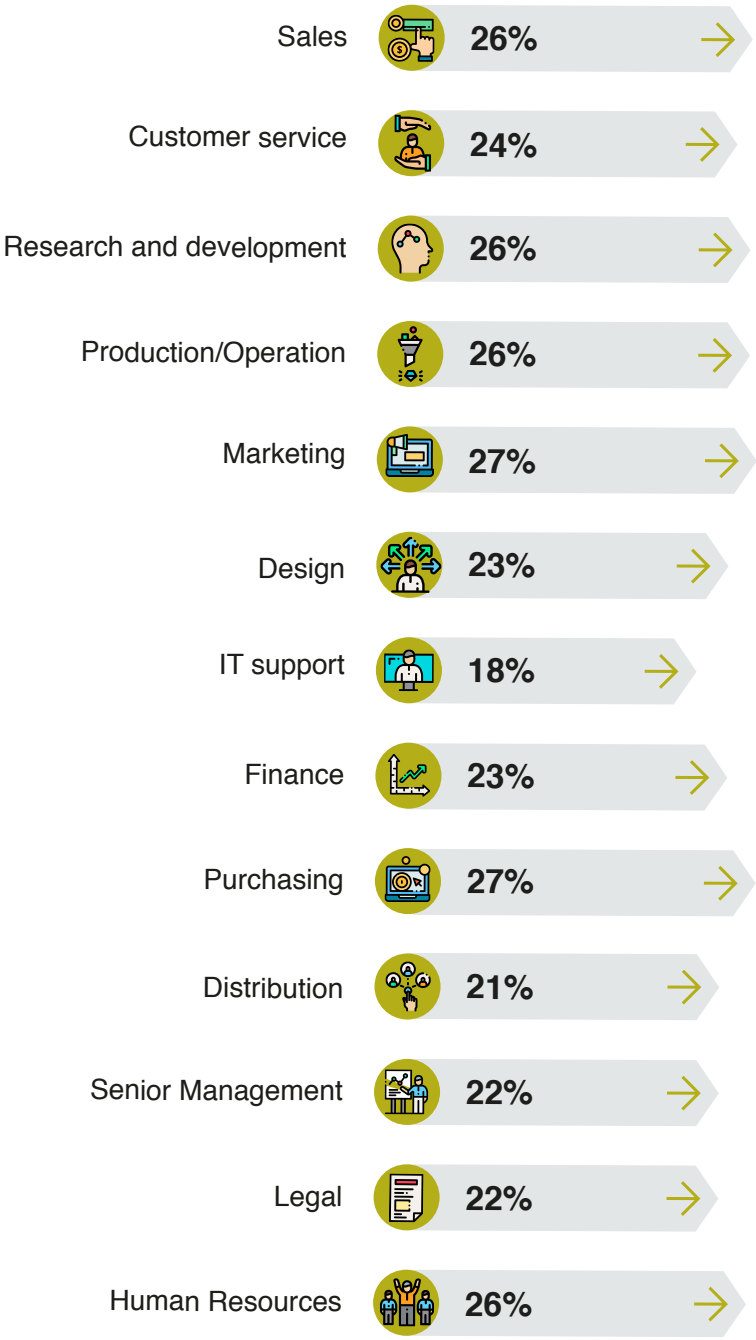
Whilst this may not appear to be a ringing endorsement, it does underscore a generally upbeat attitude towards digital transformation in the textile and apparel industry and provides a starting point from which to monitor sentiment trends, be they positive or negative, in the coming years.

Increased positivity around digital transformation will be achieved by addressing key industry challenges, as outlined in the previous section of this report. For example, as the industry endeavours to address human resourcing issues, we are likely to see the Millennial generation making more of an impact on the textile and apparel sector's digital narrative. Only 17% of 2018 respondents are Millennials; however, this percentage is expected to increase year-on-year as this generation steps into more senior business roles. The US Bureau of Labour Statistics expects that by 2030 Millennials will make up at least 75% of the workforce.

Concern over high financial investment required for digital transformation is also likely to be mitigated by two key factors: proven ROI and recorded efficiency gains. According to McKinsey's 2017 survey of chief procurement officers (CPO) in the apparel industry, more than 60% of respondents believe automation in manufacturing could become the major driver for sourcing decisions by 2025, overtaking labour costs.[22] All other McKinsey survey participants agreed that this would happen, at the latest, by 2030. ROI on capital expenditure by Manufacturers will therefore be easier to achieve, with Brands & Retailers considering automation capabilities in the sourcing process.

Of those in the textile and apparel industry that have invested in digital transformation, efficiency gains are expected to be seen across all business departments in the next five years, with Marketing, Purchasing, Sales, and Research & Development seeing the greatest efficiency gains (Figure 22). This will make digitally focused businesses more competitive in the market, providing a perhaps less tangible but equally critical ROI

Figure 22 – Efficiency gains expected from digital transformation investment in five years



"This survey confirms the commitment of textile machinery OEMs to advancing digital technologies that can take the industry forward into a new manufacturing era. I'm sure next year's ITMA Barcelona will be the launchpad for a new wave of digital innovation that embodies all the exciting possibilities of Industry 4.0." – Maria Avery, Secretary General, CEMATEX

A starting point for the industry

Despite the outlook being positive for the digital transformation of the textile and apparel industry, it is vital to note that even businesses which have embarked on their transformation process are predominantly in their digital infancy. Assessing all Global Digital Transformation Survey responses, we can ascertain that no business has undergone complete digital transformation. Key data sets used for this assessment are: respondent investment and lack of investment in essential advanced digital technologies tools; methods or technologies; and respondents' data analytics capabilities. Essential technologies, tools and methods for digital transformation of the textile and apparel industry are identified as: predictive data analytics; smart connected devices; implementation of robotics and automated machinery; smart sensor integration for capturing manufacturing data; and connected enterprise and production software.

Going forward, we plan to assess the textile and apparel value chain's digital transformation progress by tracking this data and applying it to the Gartner Hype Cycle and Moore's Technology Adoption models (Figure 26).[23,24,25] As both models are related in time, plotting technology adoption patterns – beginning with the data collected in the Global Digital Transformation Survey 2018 – alongside media sentiment analysis will enable us to determine industry progression.[27] Each model to be used is outlined subsequently.

In addition, we will be able to compare emerging technology adoption, and thus digital transformation, in the textile and apparel industry to the adoption of such technologies across industries using the annually published Gartner Hype Cycle for Emerging Technologies assessment (Figure 23). This will enable us to depict the path of the textile and apparel sector through digital transformation.

Gartner Hype Cycle

The Gartner Hype Cycle is a visual illustration of progression and adoption of emerging technologies, from conception to mass implementation, through the following five distinctive phases, based on expectation levels:

- Innovation Trigger: Technology breakthrough evokes early excitement in the market. There are only a few early adopters who can be considered risk takers.
- Peak of Inflated Expectations: Market expectations for the technology has peaked and might be over inflated which leads to a gradual slowdown in market interest.
- Trough of Disillusionment: Expectations start to be deflated. The interest in technology and market adoption wanes.
- Slope of Enlightenment: There are clearer and better understood instances of how the technology can be beneficial to the organisation. Application of using technology are being increasingly developed.
- Plateau of Productivity: Mass market adoption begins. There are more clearly defined standards for assessing technology providers.

An adaptation of the Gartner Hype Cycle by Olga Tarkovskiy is also provided in Figure 24 and provides details of activity associated with emerging technology adoption.

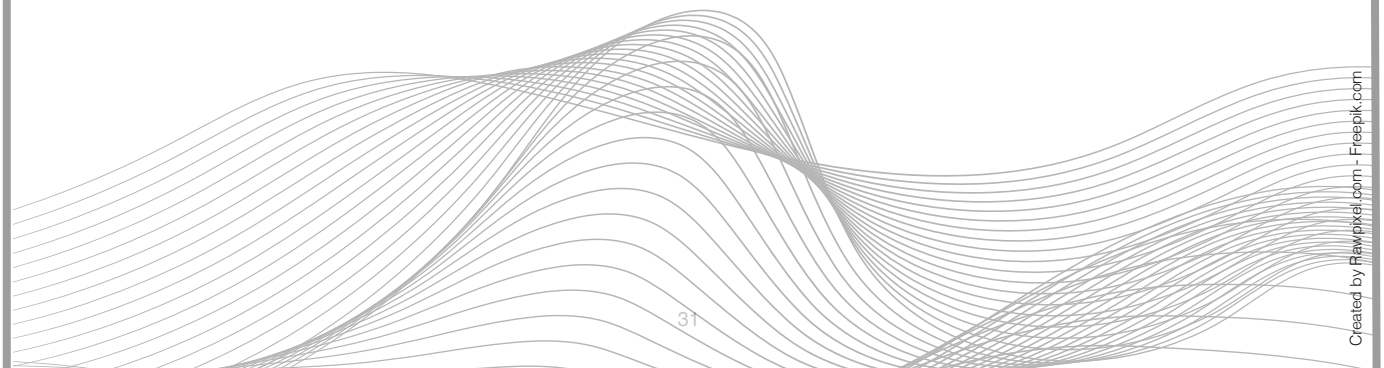
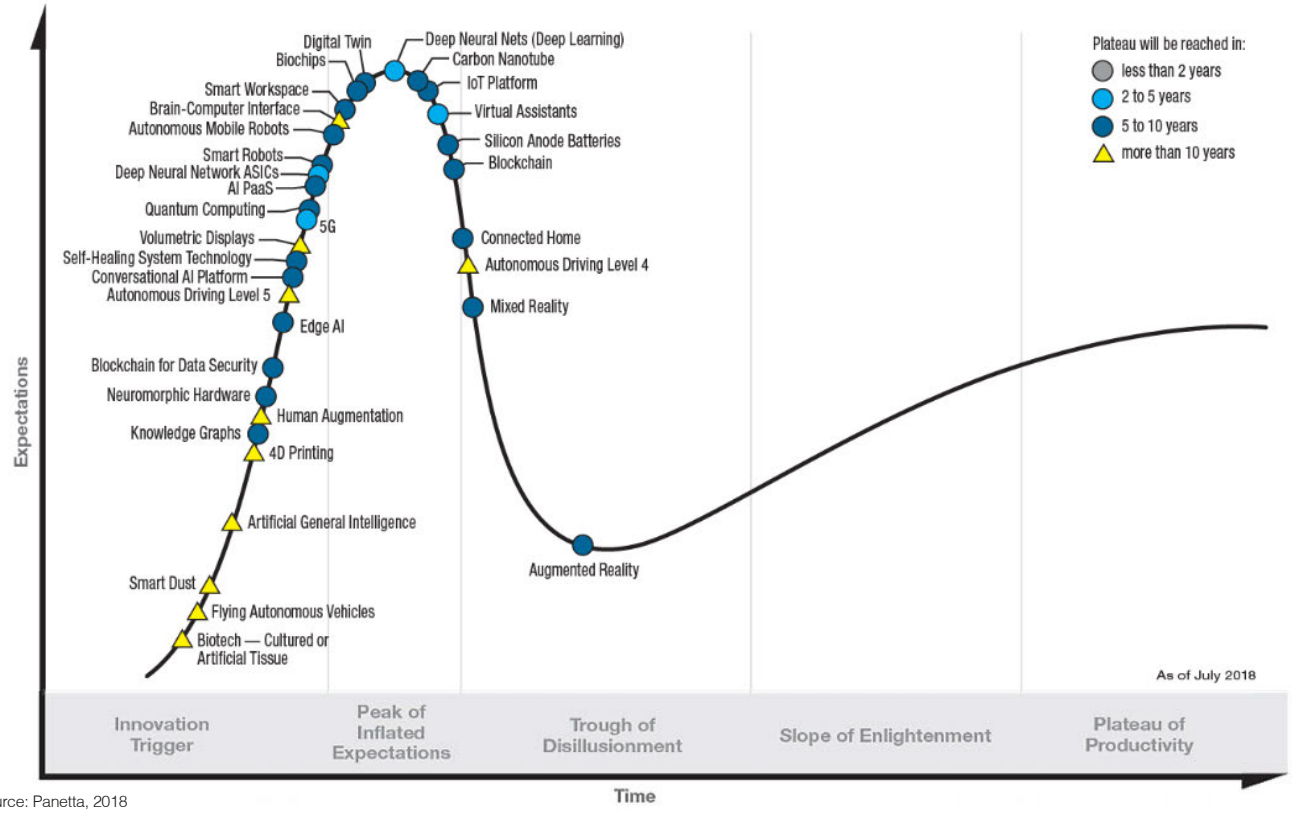
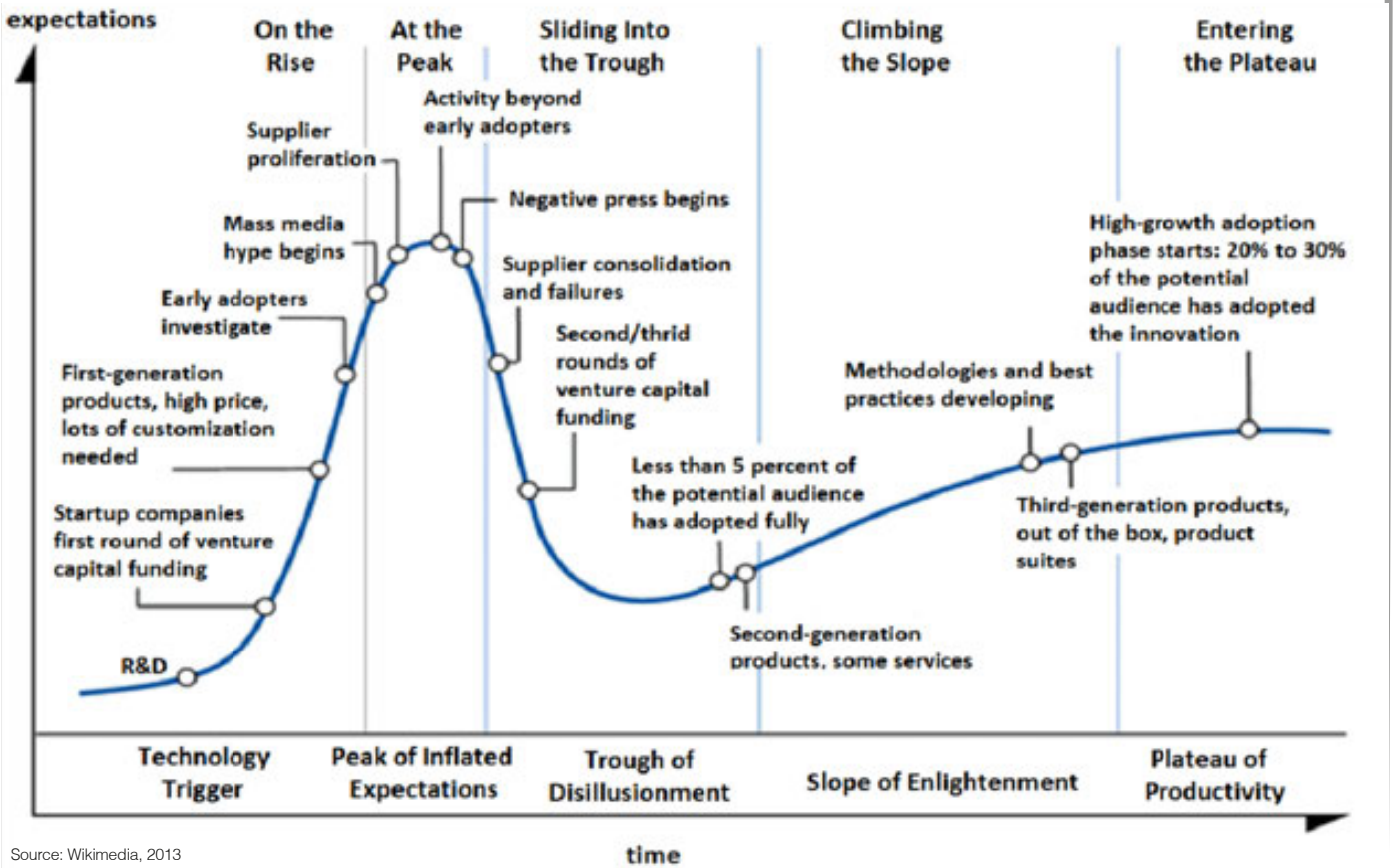


Figure 23 – Gartner 'Hype Cycle for Emerging Technologies, 2018'



Source: Panetta, 2018

Figure 24 – Hype Cycle Diagram, adapted from Gartner, by Olga Tarkovskiy



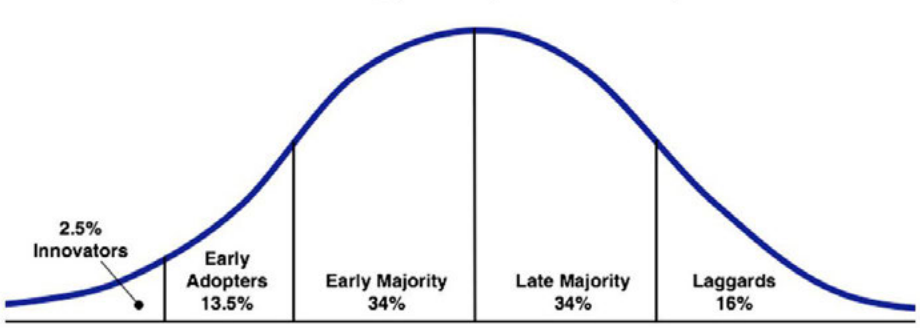
Source: Wikimedia, 2013

Moore's Technology Adoption Model

Moore's Technology Adoption Model (Figure 25) graphically represents adoption and acceptance of a technology based on demographic and psychological characteristics of target groups. It categorises adopters in five different groups, each accounting for a different share of the total potential market:

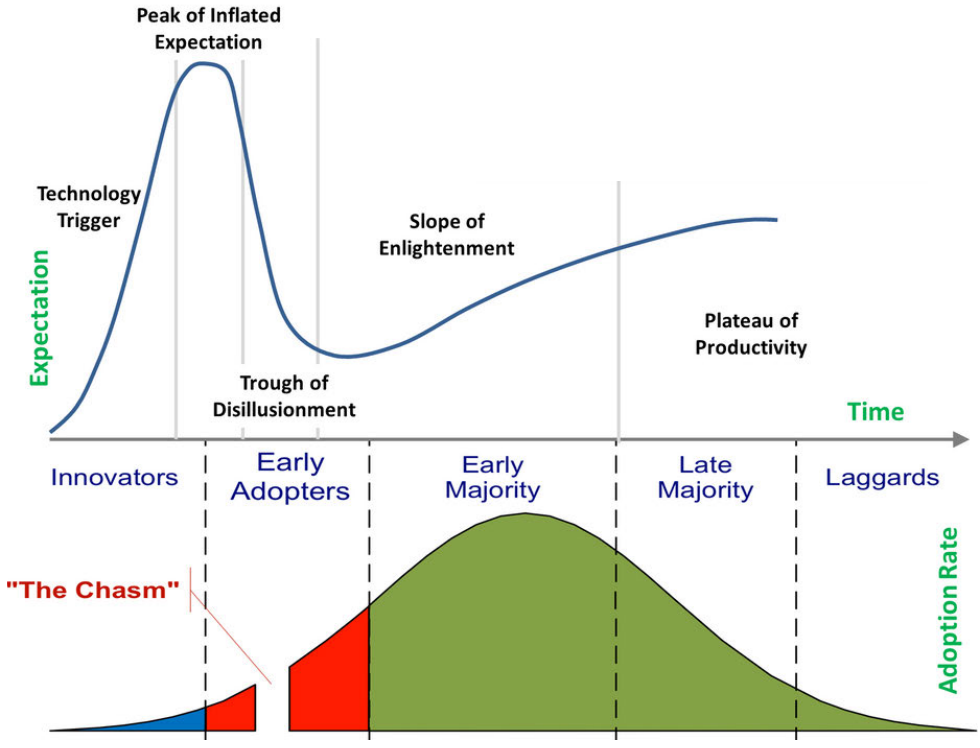
- Innovators: First to adopt innovation. Account for 2.5% of target customer group.
- Early Adopters: Initial adopters who tend to have high degree of opinion leadership. Constitute around 13.5% of the potential market.
- Early Majority: Often referred as pragmatist. Make up around 34% of the potential market
- Late Majority: Tend to be sceptical about technological innovations. Account for another 34% of the potential market.
- Laggards: Last to adopt new technology. Constitute around 16% of the potential market share.

Figure 25: Moore's Technology Adoption Life Cycle



Source: Moore, 2002

Figure 26 – Gartner Hype Cycle and Moore's Curve combined



Source: Banerjee, 2012

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