Miebach

Global Pharma Supply Chain Study 2024

A Miebach survey on current developments in pharma supply chains and logistics

Agenda

Introduction

Dear Reader,

Where have the hot topics from our last pharma study in 2020 taken us? Do we see AI, Digital Transformation, IoT, and robotics/automation after the pandemic with the same importance as before? Have we learned to deal with stock outages through black swan events? While some of the challenges and trends are still relevant and even more important than others (like the digital journey, helpful use of AI, and an increase in automation), there are also many important topics that are either mostly implemented or adapted (e.g. Track&Trace, Brexit, GDP) while others have turned out to be not as promising as expected anymore or only for niche-usage (like Blockchain).

Achim Sponheimer
Director & Partner
Global Head of
Industry Pharma &
Life Sciences

Also, this Miebach study has changed to adapt to the current needs, as it has been conducted every few years since 2005, now for the 6th time. A lot has changed in these nearly two decades, with new questions arising and other ones not being important anymore. The biggest change will be seen in the type of the answers, as it was not possible to rank each topic anymore for itself in the detailed part of the study (from very important to not important), but each participant had to choose and rank their top 5 of each chapter to better differentiate between the important and other topics for the overall results.

We thank all our participants who have taken the time to answer our survey questions. We are looking forward to receiving your feedback and thoughts about this year's results.

With kind regards,
Achim Sponheimer, and the whole team of the
Miebach Global Pharma Practice Group

Executive summary

Executive summary

Get prepared for the resilient and cost-effective digital pharma supply chain.

After the post-pandemic years of "Just-in-Case" stock-piling, the focus remains on mitigating supply chain risks to prevent disruptions, while the pressure on costs has resurfaced.

The need for optimizing the current supply chain network is therefore seen as the biggest challenge at the moment, and the basis for its achievement is the global visibility of the whole network.

One of the current trends is to improve the resilience of supply, particularly for production supply, by exploring inbound optimization and organizational changes. This is also reflected in the increased demand for S&OP and IBP approaches, as well as the need to utilize the complete digital tool-set of Big Data and its analysis using AI-based tools. However, to gain visibility in the typically outsourced pharma supply chain, a collaborative approach for adequate forecasting is necessary. The typical starting point for achieving real-time visibility in a single control tower is through a globally integrated data lake, where partner-based approaches often yield the best results.

What to do

The good news? The tools for the next steps are already there. From a technical perspective, and due to the need for validated approaches, the pharma industry is always following other industries. From our knowledge of other industries, it is hard to understand why the adaptation within Pharma & Life Sciences is not as far as it could be.

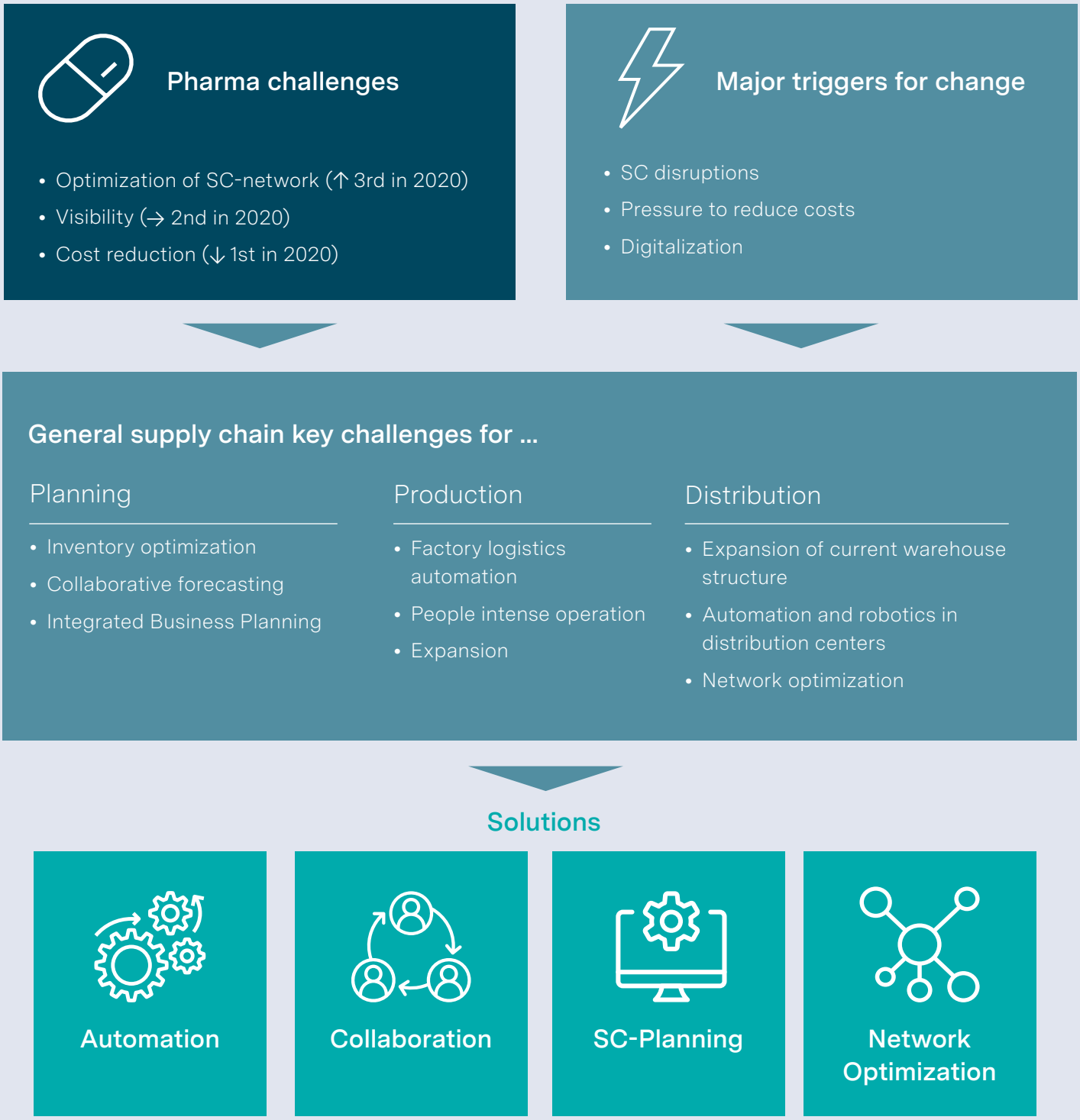
Automation, starting collaborative partnerships, looking into your supply chain planning status with S&OP and IBP as well as the analysis for network optimization seems to be the easiest way to start the supply chain optimization journey.

Establishing genuine collaboration with partners is a mid-term approach that can improve supply chain resilience. This can include implementing the findings of network analyses, such as creating new set-ups for different countries and regions. Additionally, incorporating AI-based modules is already possible and can further enhance supply chain resilience. The long-term approach could include "real" AI into planning and truly living the continuous optimization approach of your supply chain, as we think this will be the only way to stay ahead of your competitors.

This leads to the conclusion: the regular optimization of the network with thorough network studies as well as the multi-echelon inventory optimization cannot be overstated, and the collaborative forecasting and planning enables end-to-end optimization of supply chain processes (including organizational structures). The tools for these are mostly based on AI modules and big data approaches, but the outcome is most helpful only after gaining global visibility through the integration of control towers globally.

It is hard to understand why the adaptation within pharma & life sciences is not as far as it could be.

FIGURE 1:
Challenges and solutions regarding pharma supply chains



Industry overview

Real-time data integration improves management and visibility while digital adoption and innovative techniques reinforce resilience.

The global medicine industry is on track for significant expansion, with spending projected to reach $1.9 trillion by 2027, according to IQVIA Market Prognosis. This impressive growth does not account for COVID-19 vaccines and therapeutic expenses, which are analyzed separately. The disruptions caused by the pandemic will have a moderating effect on growth trends, but it is expected to return to familiar patterns by 2024. Key driving factors include the introduction of innovative products, patent expirations, and the growing importance of biosimilars. Payers in developed markets may face budget pressures and implement strategies to manage drug spending, considering the ongoing pandemic costs.

Eastern Europe may also face hindrances to growth as a result of the regional impacts of the Russian War in Ukraine.

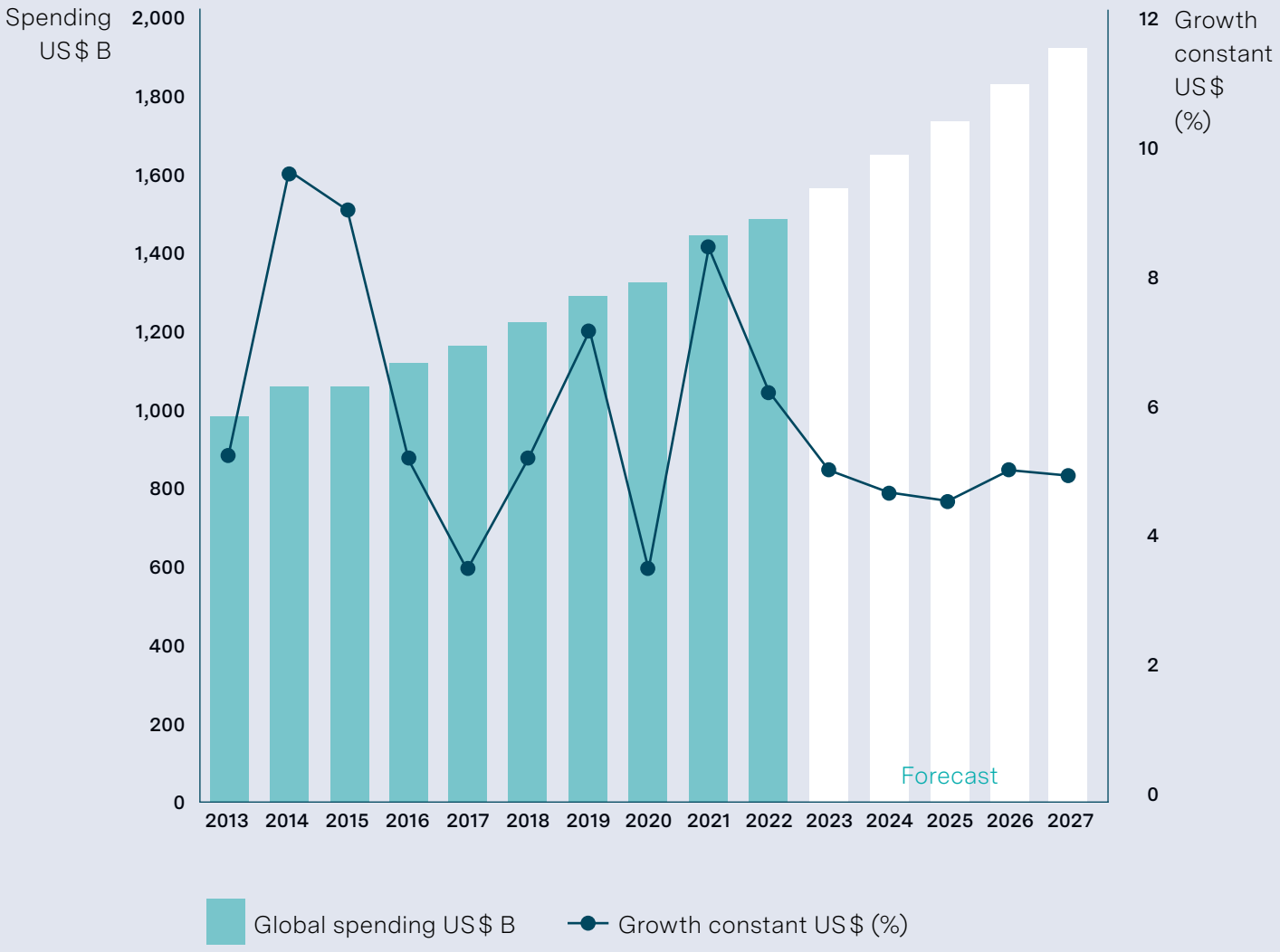
As the global economic growth landscape diversifies, it's becoming increasingly evident that different regions are displaying unique trends. Some regions are experiencing increased volume, while others are driven by innovative practices. Latin America, Asia-Pacific, Africa, and the Middle East are predicted to witness volume growth exceeding 10 % and a remarkable surge in spending, linked to population-driven expansion and the use of higher-cost products. China, as the second-largest pharmaceutical spender globally, expects modest volume growth of 8 % and a 19 % increase in spending, reflecting a commitment to enhancing access to novel medications. Eastern Europe is set for significant spending growth but limited volume expansion due to regional disruptions.

North America and Western Europe anticipate stagnant volume growth but a substantial increase in spending. Meanwhile, Japan's spending growth will remain stable, driven by evolving price controls that encourage innovation and promote savings.

In the dynamic landscape of the pharmaceutical supply chain, global trends such as AI, process automation, and supply-demand analysis are prevalent. Real-time data integration improves management and visibility, while digital adoption and innovative techniques reinforce resilience. Embracing these advancements and customer-centric practices empowers pharmaceutical companies to lead in an evolving market, ensuring the smooth flow of critical medications to those who need them most.

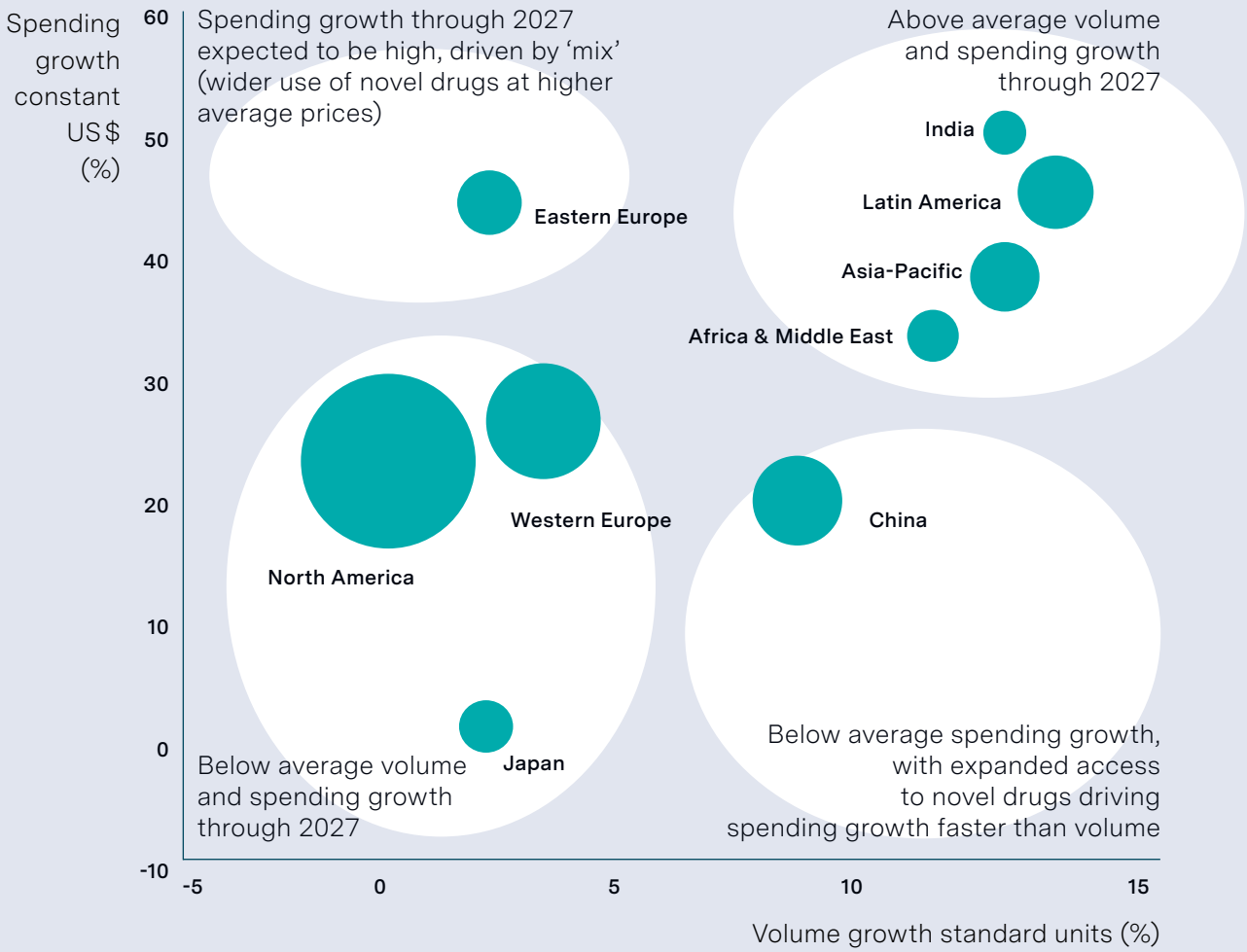
The disruptions caused by the pandemic will have a moderating effect on growth trends, but it is expected to return to familiar patterns by 2024.

FIGURE 2:
Pharma Industry Overview – Spend and Growth



Source: IQVIA Market Prognosis, Sep 2022; IQVIA Institute, Nov 2022.
Notes: Does not include estimates for COVID-19 vaccines and therapeutics.
Report: The Global Use of Medicines 2023: Outlook to 2027. IQVIA Institute for Human Data Science, January 2023.

FIGURE 3:
Spending and volume growth follow diverging trends by region (2023-2027)



Source: IQVIA Market Prognosis, Sep 2022; IQVIA Institute, Nov 2022.

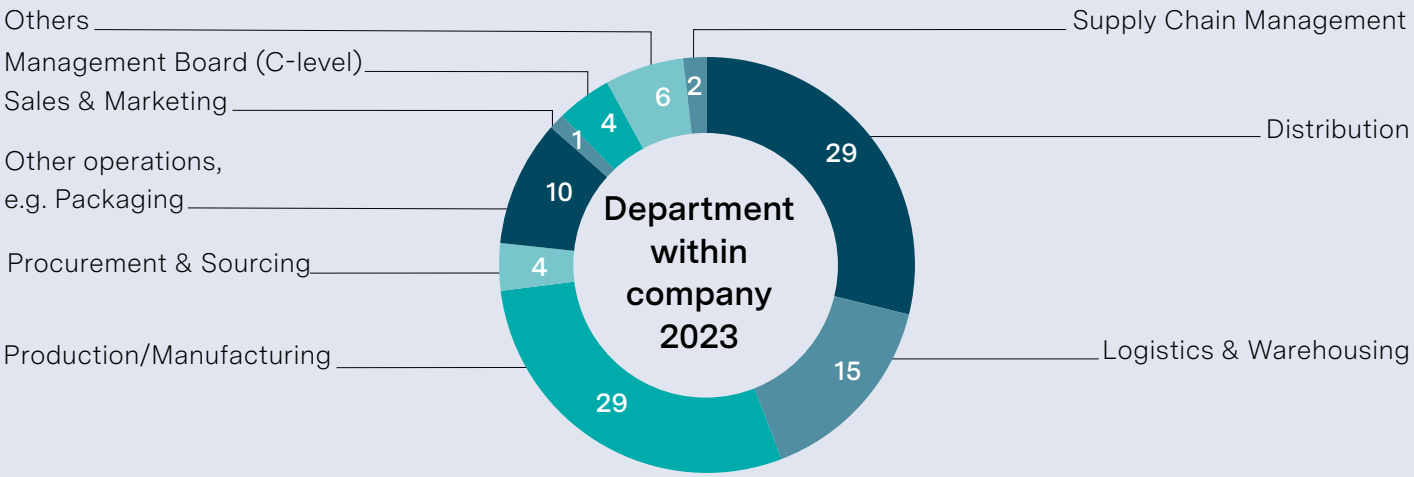
Study *design & participation*

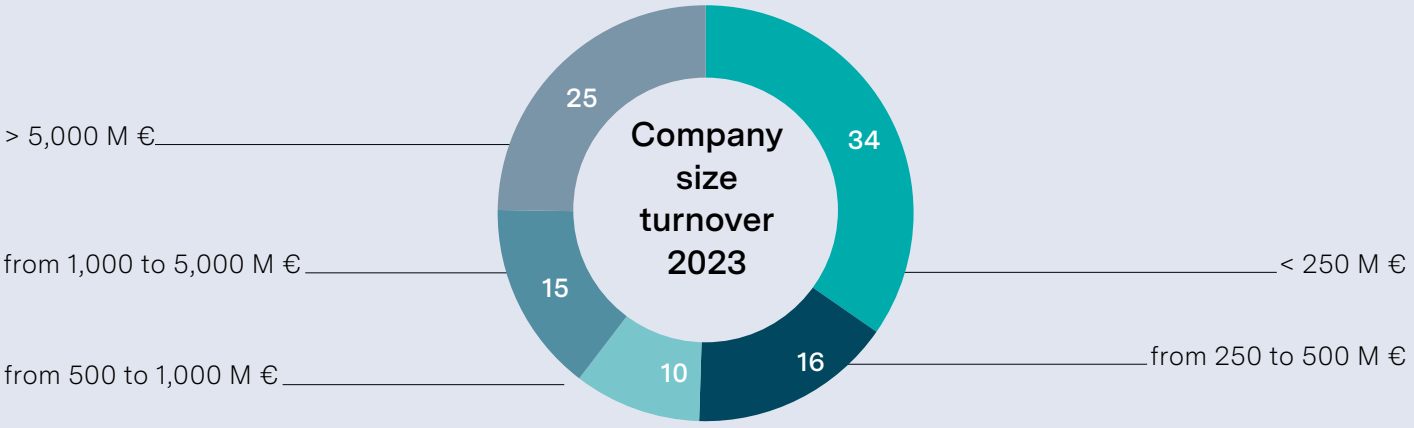
The Global Pharma Study was conducted from November 2023 to January 2024. We conducted a survey using an online questionnaire which was published globally on internet portals, social media, and in the press. Over 300 participants across the globe actively contributed to the study, representing a diverse range of Pharma & Life Sciences companies. This wide-ranging participation ensures an accurate depiction of the current state of supply chains, encompassing their evolution, challenges, and future trends. The majority of participants hail from supply chain and logistics roles, with a notable 10 % in purchasing and 6 % in executive positions.

While the participating companies primarily operate in the manufacturing sector, they also include pharma retail, wholesale, and service providers. These companies span a broad spectrum, varying from medium-sized enterprises to large-scale multinational corporations within the thriving pharma and life sciences industries.

Over 300 participants across the globe actively contributed to the study.

FIGURE 4:
Company sector, department within company and company size turnover (%)





Analysis of results

Main *challenges and priorities* over the last years

The results of the primary challenges were largely anticipated, as the optimization trend for the supply chain network had been consistently increasing and has now nearly reached 100 %. Additionally, there has already been awareness about the need for visibility. The "new" topics are either related to changes driven by the pandemic or more general shifts.

In recent years, unexpected and unprecedented events, also known as "black swan" events, have occurred more frequently than anticipated. Examples include the COVID-19 pandemic, the Suez Canal blockage, and the Russian war in Ukraine. While these events have become the "new normal," they still have a significant impact on the outcomes they affect, despite not being mentioned as frequently as a single isolated event.

Supply chain network optimization now clearly ranks first (after being only third in 2020-results) but what we see as an additional factor in client demands within our projects is that the focus has shifted from "cost reduction" (first in 2020) much more to "supply chain disruption & resilience" (please see also chapter "triggers for change"). In addition, almost all network studies now take into account the carbon footprint of sites and networks to produce sustainable results.

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Cost reduction still plays an important role in pharma and life-sciences supply chains.

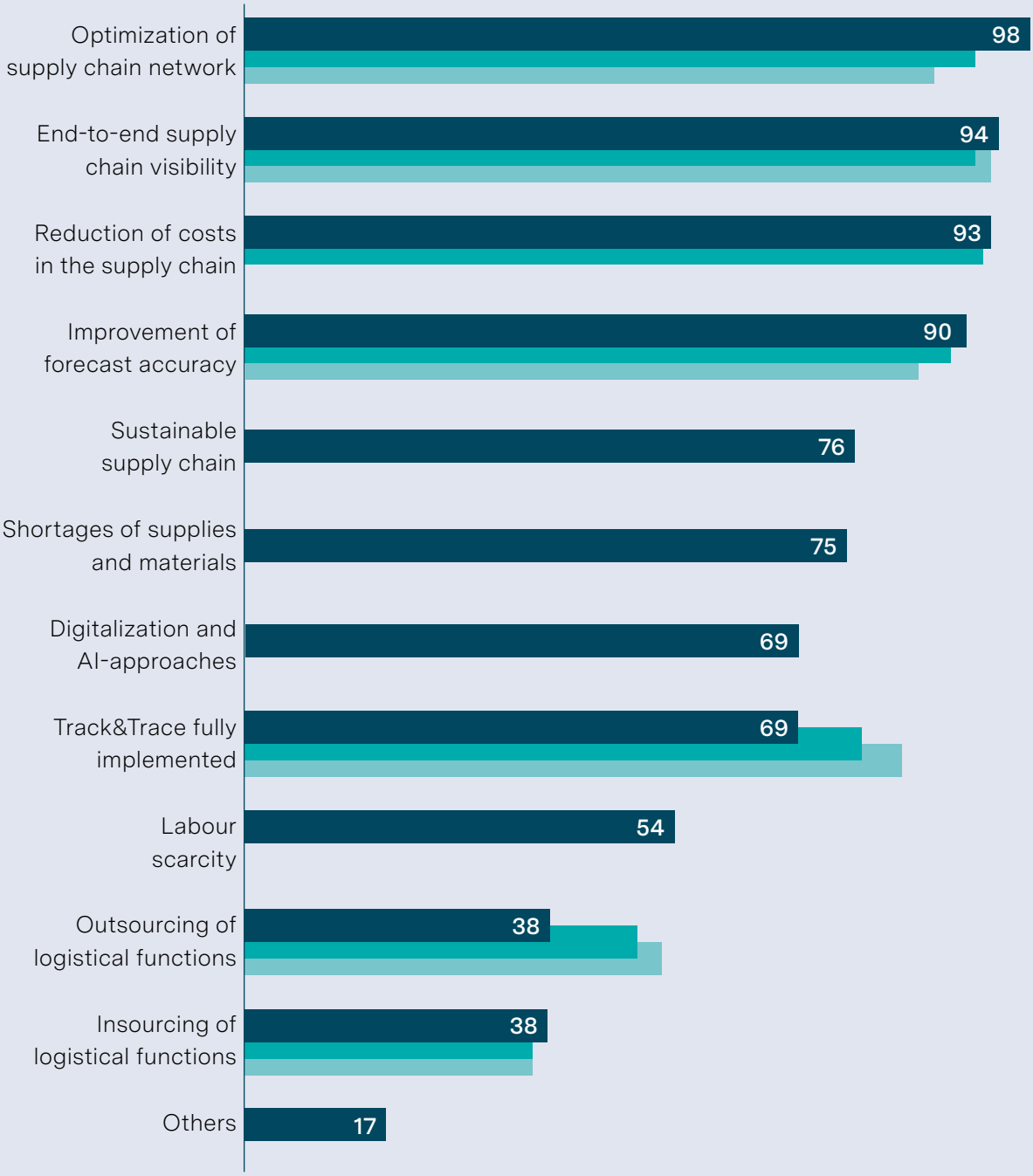
It is worth noting that visibility still remains a second priority, the same as in 2020. The challenges faced in this area are not only due to scattered IT systems but also due to their separation between clients and 3PL (or even 4PL) IT infrastructure. This division often results in the inability to create a global data lake for achieving true visibility. Overcoming this challenge is quite challenging but achievable, as we have seen in many similar projects so far.

The former No.1 "SC-cost-cutting" from 2020 was surpassed by the two new ones but still ranks third, indicating that cost reduction still plays an important role in pharma and life-sciences supply chains.

An interesting trend is also visible in places 7 (Track&Trace) as well as 8 (outsourcing). We explain its low rank with successfully implemented T&T processes and logistical outsourcings in many companies. The 3PL relationship between manufacturers and their logistics service providers seems to have stabilized in the last years, but 4PL stories are sometimes not as successful as they look at first sight. The details for this can be found in our outsourcing study **(→ link to our latest outsourcing study).**

This might also be one of the reasons that insourcing (although ranked last of the proposed answers) is tending upwards.

FIGURE 5:
Main challenges for pharma supply chains (in %)



Challenges for *planning*

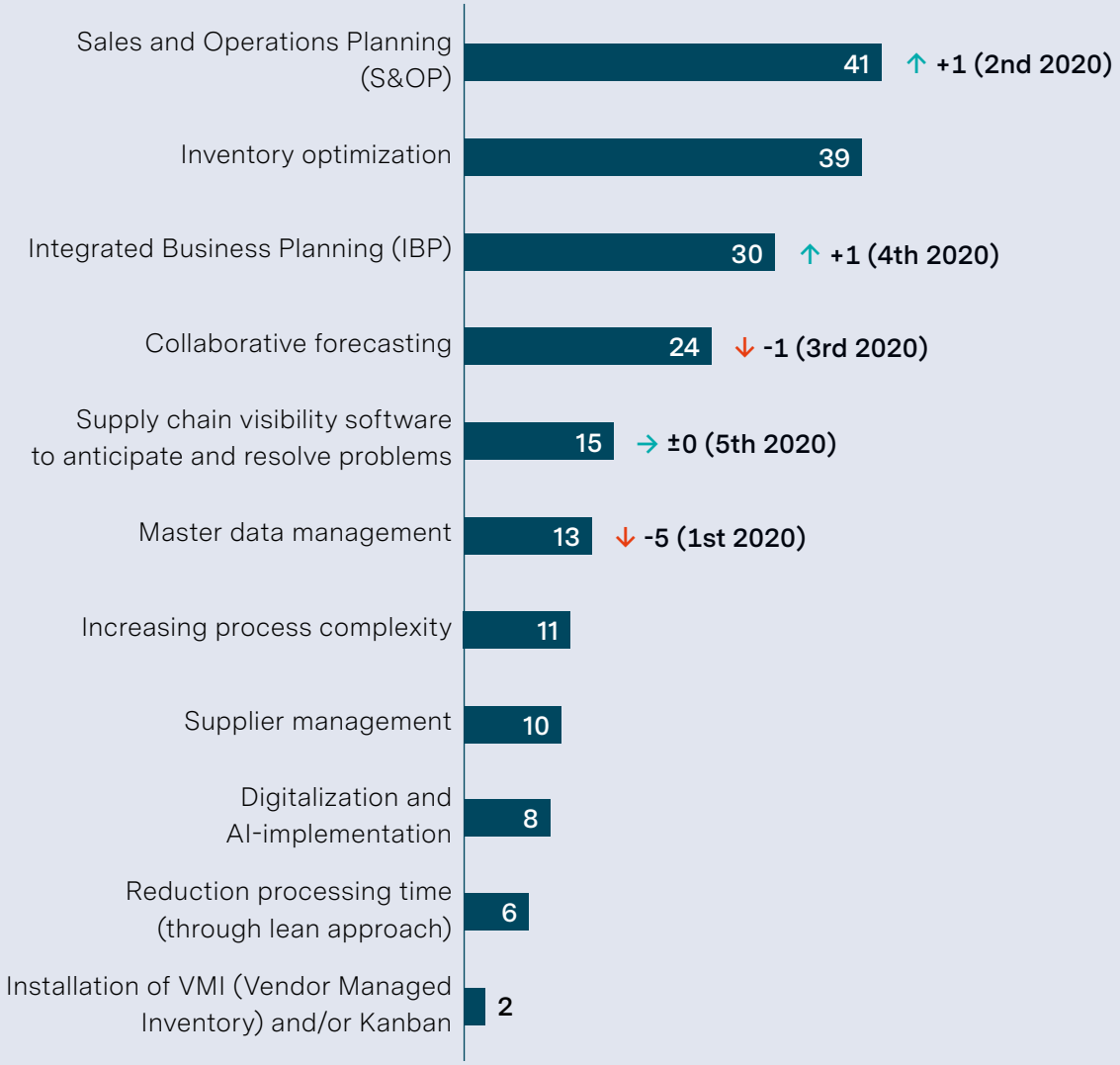
It seems that master data management is now "under control", or at least on its way. It ranked first in 2020 but now dropped to 6th place while S&OP/IBP is leading the challenges together with inventory optimization.

When looking closer into the details of the challenges in supply chain, we see that the highest-ranked topics in later chapter "potentials for improvements" are all from this planning area.

S&OP is ranked as the first topic here (most votes in "very important and important"), while inventory optimization is only second, but seen with more "improvements" potential in the following chapter. As you can also see in figure 6, inventory optimization is mentioned the most in this part of the survey of all of the "top 5", even more often than S&OP. This can be explained through pharma companies building up stock in the last years since COVID-19. This resulted in more resilience but increased costs. The solution for this and the challenges in IBP (No. 3) is hidden in the next: collaborative forecasting. Although collaborative forecasting only comes in 4th, it is especially important to get the information for visibility also from suppliers. This need was not foreseen in the past and in the contracts of the past, and therefore some of the 3PL/CMO/CDMO contracts are not ready for "sharing more information than absolutely necessary" – which avoids visibility from the start and should be overcome with a more partner-based approach.

It is especially important to get the information for visibility also from suppliers. This need was not foreseen in the past.

FIGURE 6:
Challenges regarding planning and sourcing (in %)



■ very important & important 2024
↑↓ in comparison to 2020 ranking

Challenges in *production logistics*

The high occupation of manufacturing and packaging areas is – and has been – the outstanding No. 1 in the challenges of pharma production logistics.

Logistics in pharma has always been an enabler for production, sometimes not for the production process itself, but definitely a crucial help for increasing the overall equipment efficiency (OEE).

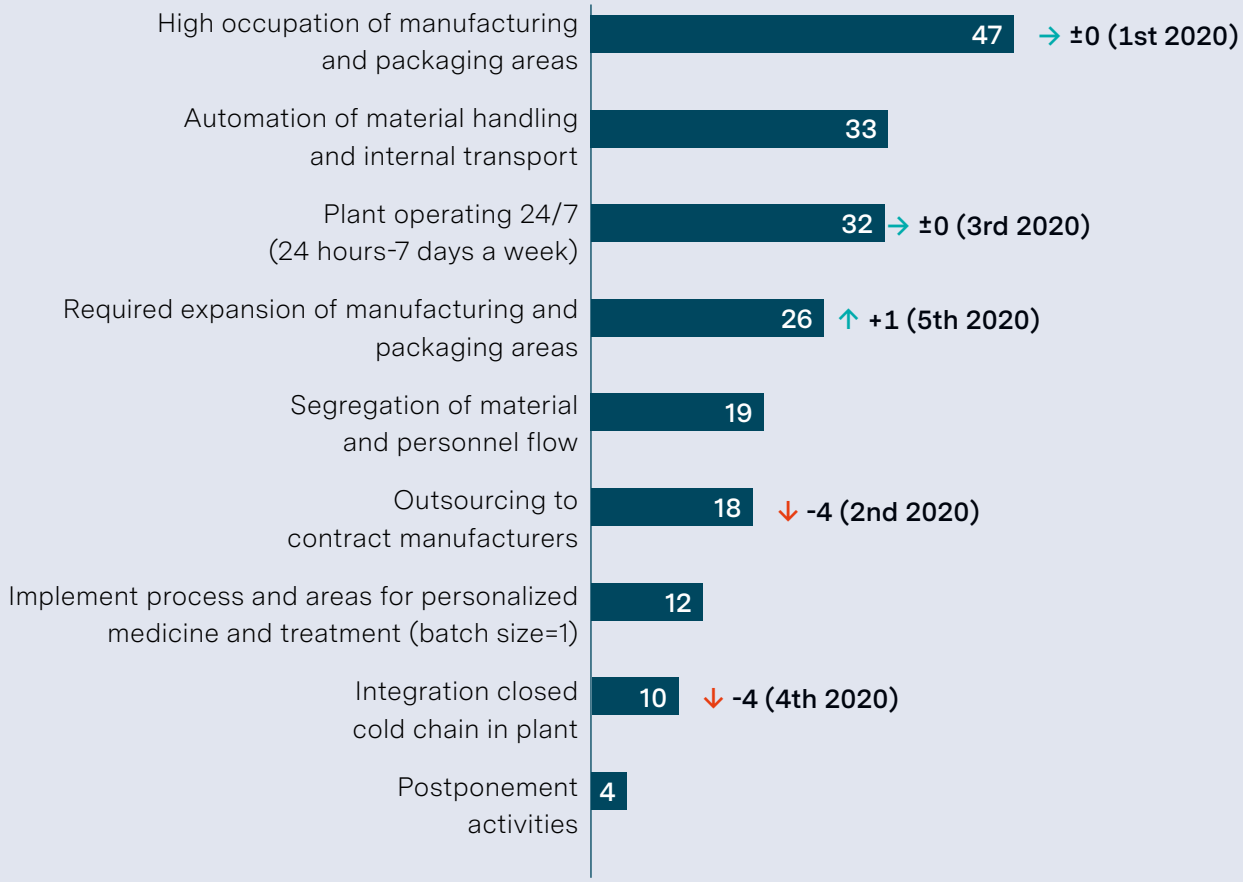
This is seen in the top-mentioned "high occupation of manufacturing and packaging areas" which has not changed since the last survey in 2020.

In 2020, outsourcing to Contract Manufacturing Organizations (CMOs) was ranked second. However, due to disruptions and dependencies from third parties, such as in logistics or production, which have caused outages and revenue loss, manufacturers are required to expand their own premises. As a result, the topic of outsourcing to CMOs has dropped to number six.

Additionally, the work-life balance has become a major concern for workers at all levels, particularly in metropolitan areas where competition between companies is high.

These expansions usually go hand in hand with the third-mentioned "automation" (already third in 2020) as well as the 24/7-plant operation (No. 4). In our Miebach projects, we have noticed that the demand for 24/7 automation is increasing not only due to the rise in volume but also because of other factors such as labor scarcity. It has become difficult to find skilled people who are willing to work in 24/7 systems. Additionally, the work-life balance has become a major concern for workers at all levels, particularly in metropolitan areas where competition between companies is higher than in rural areas.

FIGURE 7:
Challenges regarding production logistics (in %)



■ very important & important 2024
↑↓ in comparison to 2020 ranking

Challenges in *distribution & warehousing*

It is now typical to challenge the structure of the supply chain much more often.

We can see some changes in the area of logistics in distribution and warehousing.

The biggest surprise of the study was realizing that the No.1 from 2020 (introduction of audits and KPI) has dropped to the last topic. We assume that although the approach is increasingly implemented and standardized, it just has lost its challenge-character and is now part of the normal process.

The new No.1 topic “expansion of current warehouse structure” is explainable due to the huge amount of stock that was built up as a JIC-scenario (just-in-case thinking after the pandemic and disruptions). However, together with the No.3 of the overall SC-challenges (cost-cutting!), we assume this trend will shortly become less important, especially as the high levels of stock are not only increasing storage cost, but capacities are sometimes “just not available” and it can lead also to e.g. shorter shelf life of finished products.

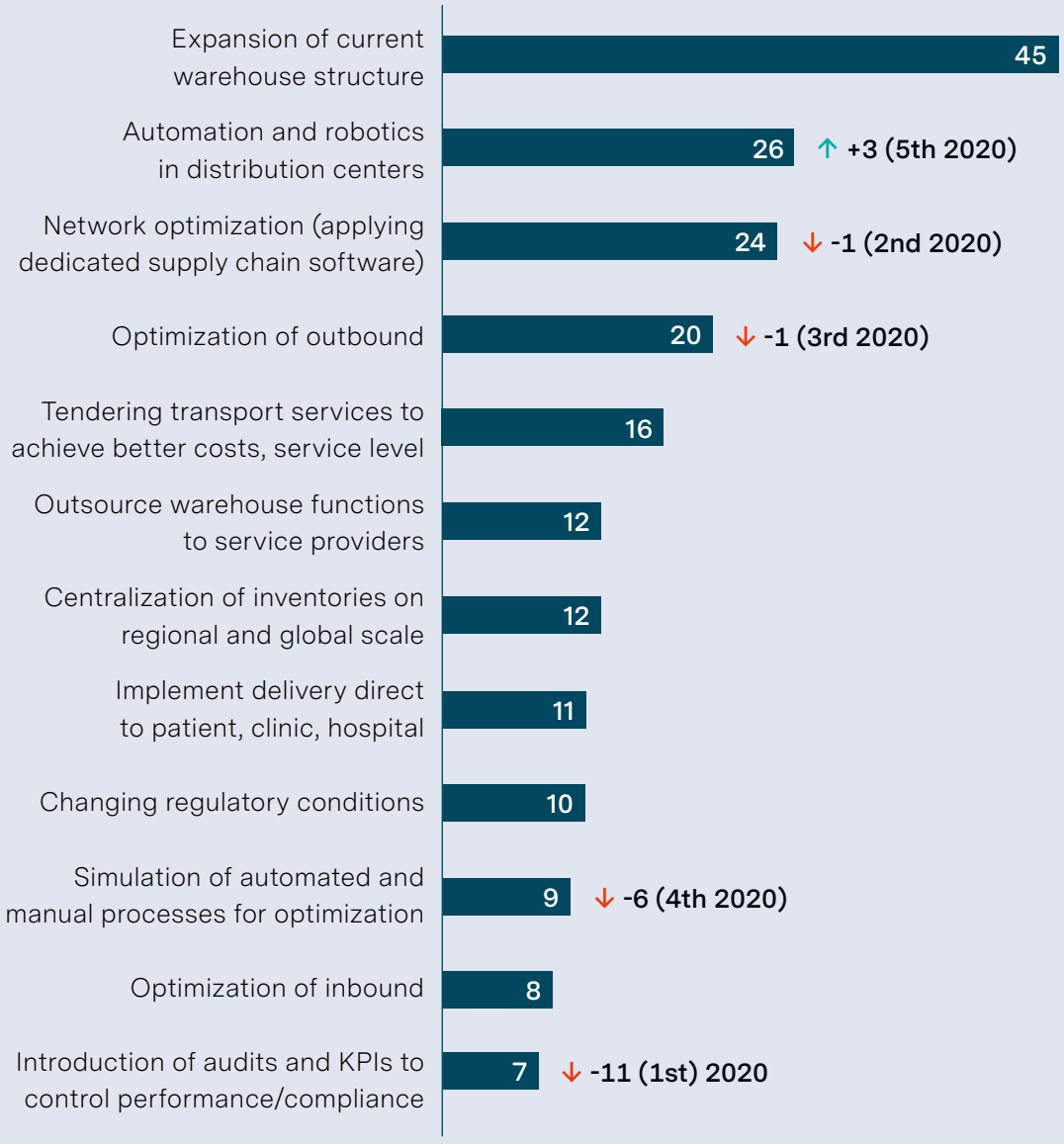
The second-placed “automation” seems to have a similar background as the challenges in the production area are based not only on the increase of volume but also strongly influenced by other upcoming topics, such as labor scarcity and increasing difficulties in finding skilled people willing for working in “low profile” jobs. Again: the topic of work-life balance is becoming increasingly aware and demanded by workers on all levels (especially in metropolitan areas).

The optimization of outbound and network optimization (rank 3 and 4) have been in the top 5 positions for years, but the speed and frequency are increasing: not only every 10 years like in former times, but due to changing demands it is now typical to challenge the structure of the supply chain much more often, around every three years, and of course always before and after mergers, acquisitions and carve-outs, and other changes that influence the supply chain.

In the combination with the above-mentioned topics, the No. 6 (inbound optimization) is also important to think about, especially as the needed stock level of the inbound-side of manufacturing is highly influenced by its need for resilience. We see more and more projects in this area coming up in the last years and it was to our surprise that it didn't rank higher.

The needed stock level of the inbound-side in manufacturing is highly influenced by the need for resilience in manufacturing.

FIGURE 8:
Challenges regarding distribution strategy and warehouse (in %)



■ very important & important 2024
↑↓ in comparison to 2020 ranking

Potentials for improvements

In many of our current projects, we mitigate the risk of conflicting challenges by using a combination of solutions.

Inventory optimization is the most significant area of potential improvements based on the results of the survey.

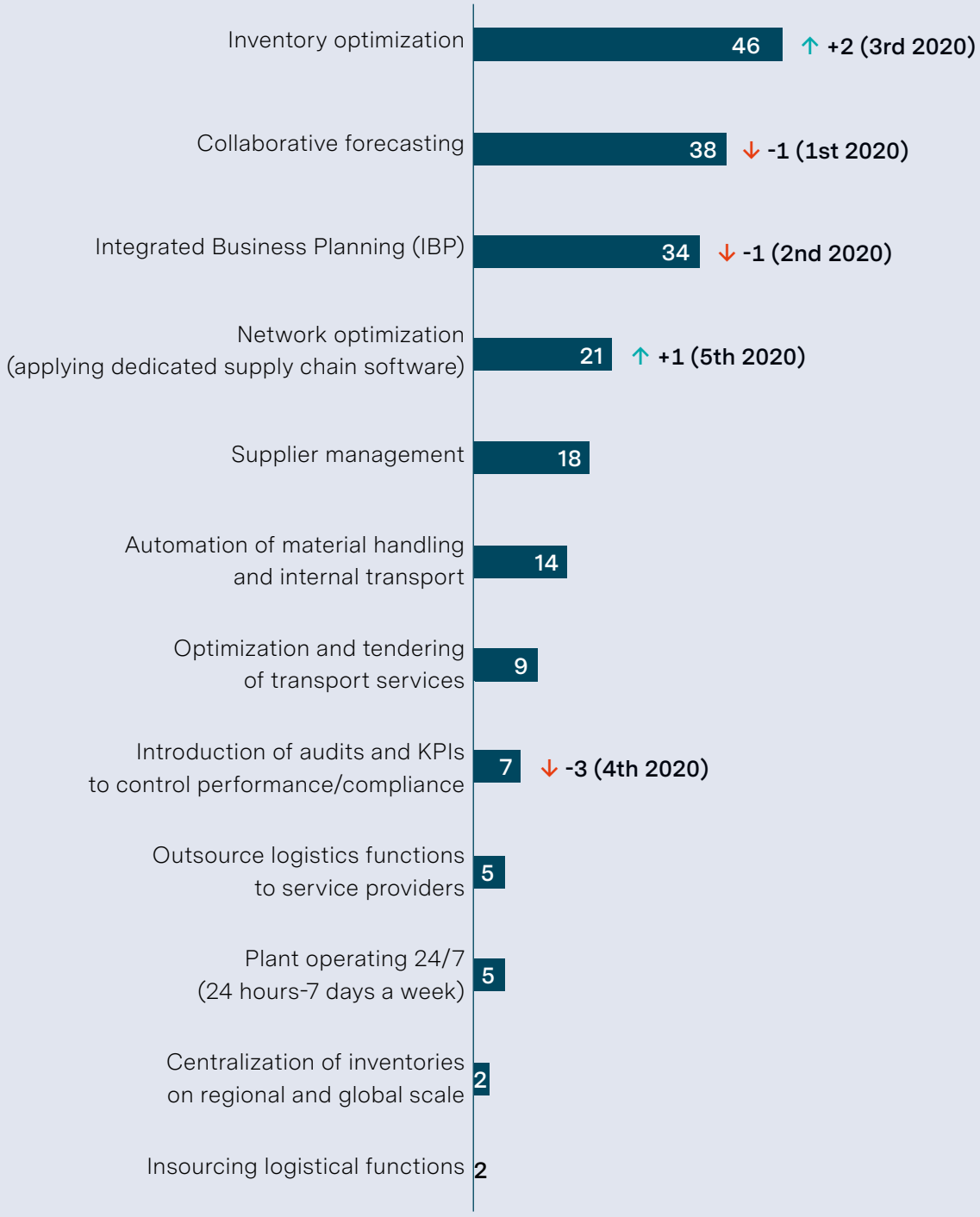
This is not surprising given the challenges we have seen in recent years, as well as the just-in-case approach that has therefore emerged. Optimizing inventory is crucial because it affects not only costs and space requirements but also resilience, OEE, and sometimes the shelf life. Therefore, optimization must be considered at various levels.

In most cases, multi-echelon inventory optimization is mandatory. It is also important not to underestimate the impact of stock level on production supply, especially during disruptions. Ideally, a simulation with a digital twin should be conducted beforehand to get a complete picture. This allows for the testing of different scenarios as soon as supply issues arise.

The complexity of the various solutions is expected to be the main reason for the significant rise to the number one spot. Inventory optimization has overtaken collaborative forecasting and IBP. However, it is essential not to underestimate the importance of any of the top six solutions. They are highly interconnected and cannot function without each other.

In many of our current projects, we mitigate the risk of conflicting challenges by using a combination of solutions. For instance, as 3PLs are highly integrated in logistics, it is crucial to improve both collaborative forecasting and supplier management of CMO and CDMO. This ensures a smooth production flow between different sites owned by different companies for overall processes.

FIGURE 9:
Biggest potentials for improvements in the company (in %)



■ very important & important 2024
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Technologies *to implement*

The names of the technologies we see here have not changed in the last years, but now the importance of some of them become clearer.

The overall picture of the technologies to implement seems pretty much as expected.

The big buzzwords of AI and Big Data are still the "next big thing" on the list. Other IT systems like WMS (Warehouse-Management-Systems) are very well integrated and remain an essential element that needs to be integrated or updated on a regular basis.

Looking at the overall resulting numbers of "planned to implement" and "already implemented," the top 5 are remarkably similar and close to each other, all around 60-70 %. According to Miebach's experience in SC-projects, warehouse automation and the use of control towers are highly in demand, and are often already implemented, at least partially.

Warehouse automation and the use of control towers are highly in demand.

The following graphics show the regional differences in answers about the technologies, but only some interesting examples that were not expected will be displayed here.

It gets more interesting when looking into regional variances: whilst the "planned to implement" of AI goes first in Europe and LATAM, the US and UAE and Asia are keener on using "control towers" in the near future.

The study also reveals that control towers are already operational for a quarter of European participants, whereas data for the USA was not provided in the "already using" category.

Nearly half of the participants in Europe voted that AI is "not relevant for implementing".

This suggests a higher prevalence of control tower implementation in Europe compared to the US among the study participants. However, it's important to note that despite these findings, control towers have emerged as a current topic of interest in the US, with an uptick in companies exploring their adoption.

Another surprise in the study was the discrepancy in the answers about AI within Europe: nearly half of the participants in Europe voted that AI is "not relevant for implementing", while the other half ranked AI as "most important" – with no answers in between, meaning that no answers have been received that "AI is already in use". But of course, this doesn't reflect reality – this is something we cannot confirm from our global experience, as AI is (at least partially) already integrated in many applications. We assume people (mis-)understood the question as having "full AI solutions without human intervention already in operation", and therefore didn't select this answer.

The use of IT systems, such as WMS, TMS, etc., is globally seen as either "planned" or "already using" and we tend to think that the 10 % of the people mentioning these as "not relevant" were either misled by the abbreviations in the question, as assuming any "non-relevance" of these topics are hard to understand.

But what seems to reflect the reality is that "Blockchain", the "Internet of Things" as well as the use of "RFID" is still waiting for its breakthroughs for already 10, 20, or even 30 years, instead it has been established only for niche-usage so far.

FIGURE 10:
Technologies to implement (in %)

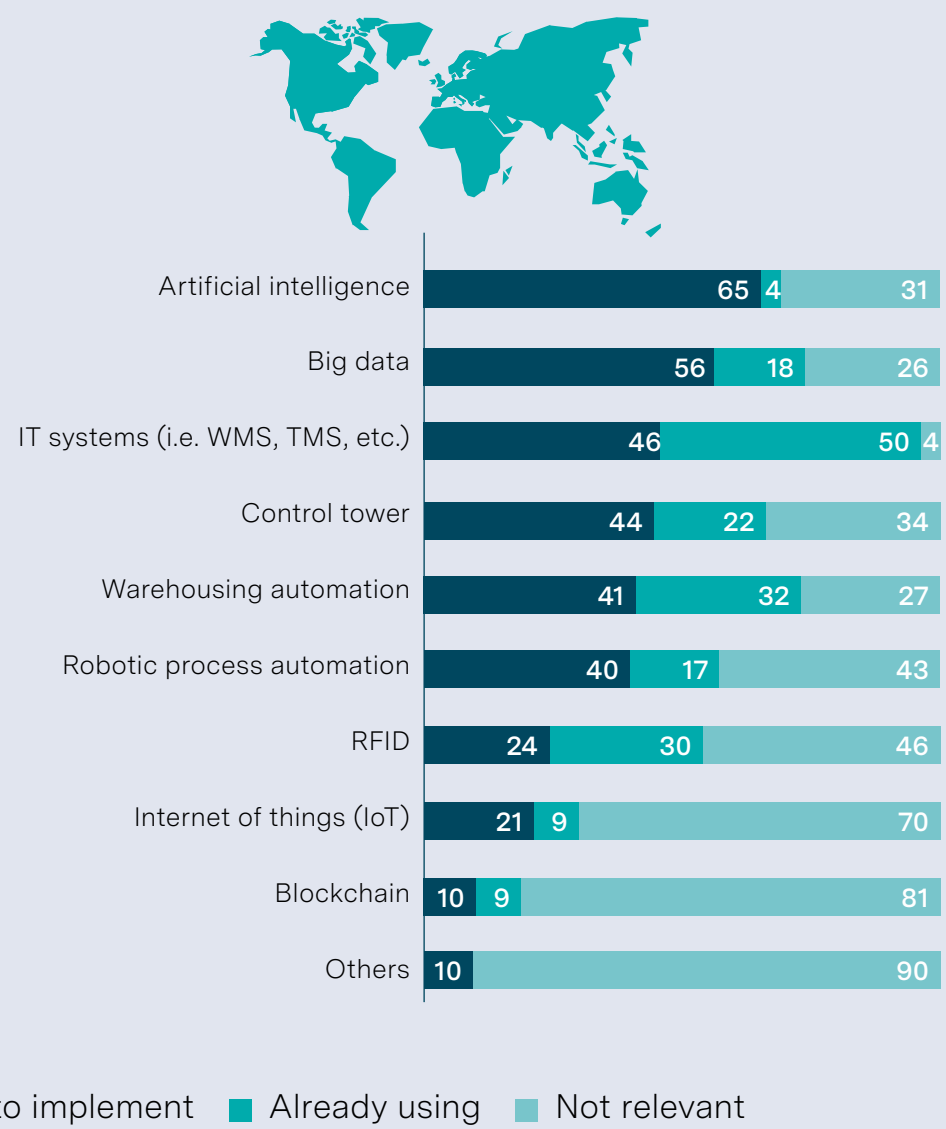
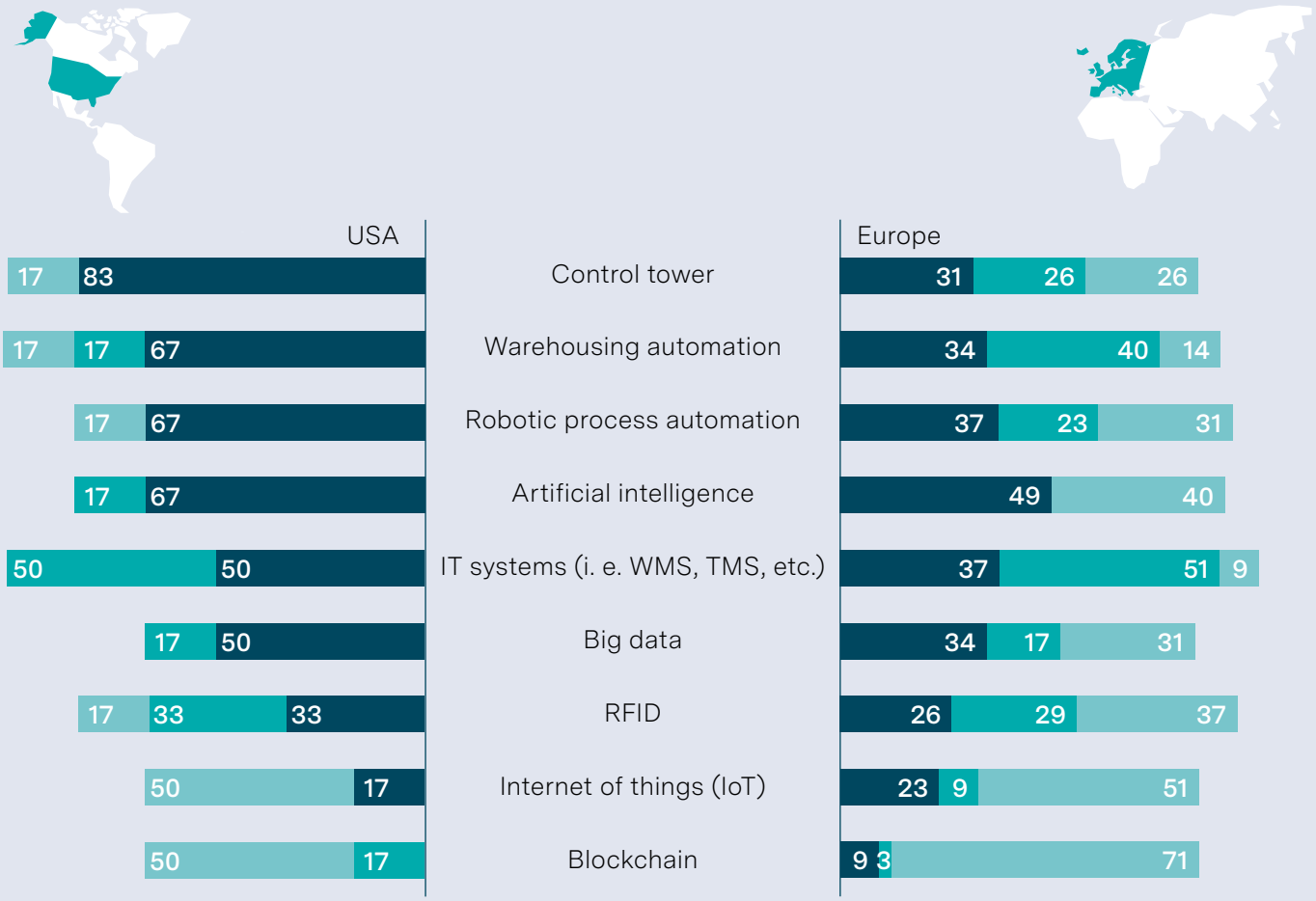


FIGURE 11:
Regional differences in technology implementation: Spotlight USA / Europe (in %)



There was also an option for “no answer”.

Triggers for *change*

Labor scarcity has already affected many regions.

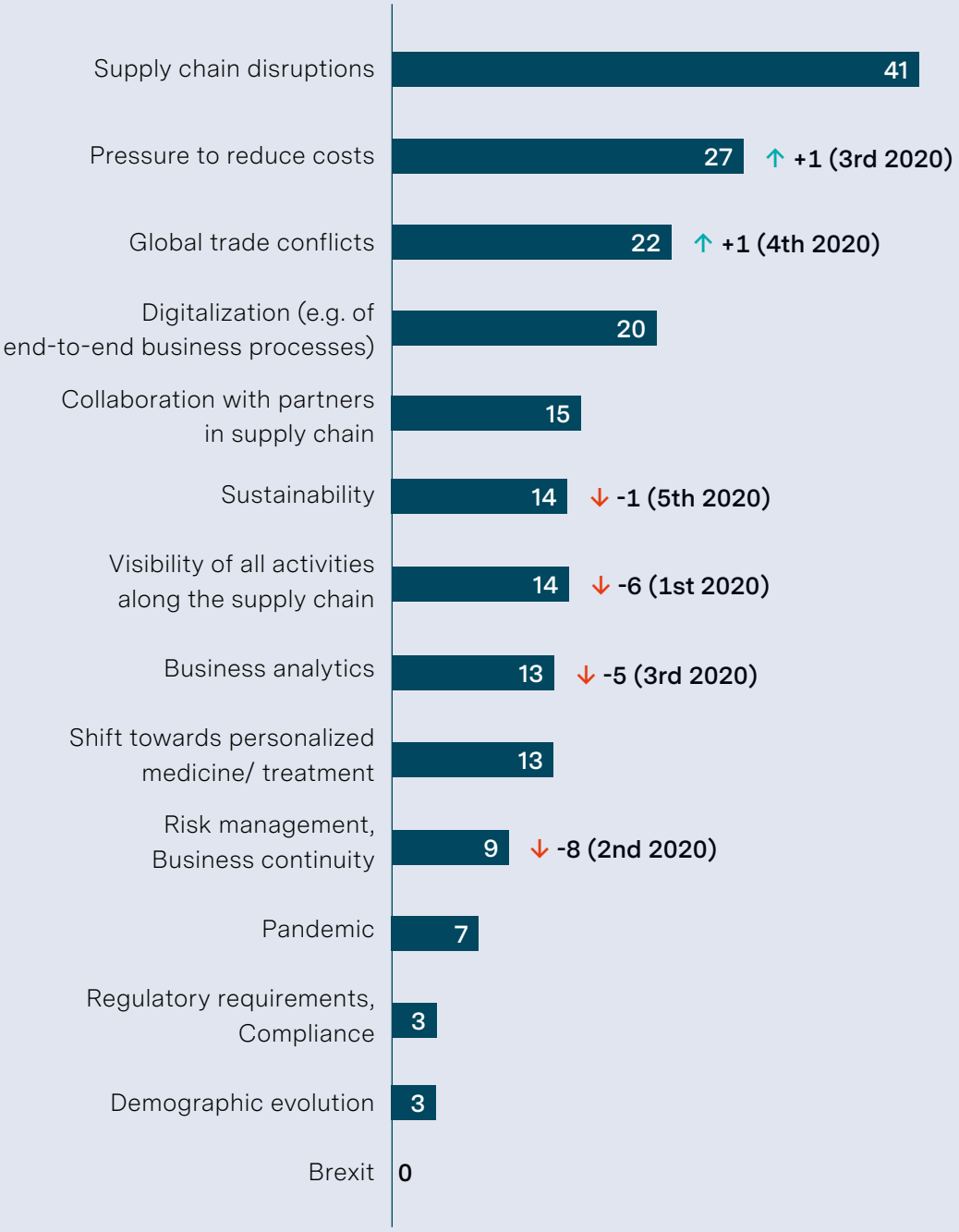
The results in this diagram (figure 12) show very well the changes from the unexpected developments in the last years.

The fact that most of the current changes have been triggered by the disruptions and volatility of the last years is no surprise, also the "pressure to reduce costs" was expected after JIC's "just for safety" measures after the pandemic. Therein we see a clear explanation that "SC-disruption" was not only named as the most important topic, but it is also the most named topic of all.
It is also no surprise that the three least mentioned topics are not assumed to come back soon, at least for "Pandemic" and "Brexit."

But we were surprised by the second to last mention of "demographic evolution". Labor scarcity has already affected many regions, and in many of our manufacturing or distribution logistics projects, a high degree of automation is common, at least as a future possibility in designing new sites. We assume that the reason behind this surprise is that not everyone has yet understood that some of the benefits of automation go hand in hand with overcoming challenges from demographic change.

Regulatory requirements were mentioned not very often as important, but in the general mentioning (all answers, for the top 5) it is ranked No. 3, as there is no way to go without GMP, GDP, and GSP, since it has the same importance like always in all considerations for Pharma-supply chains and Logistics.

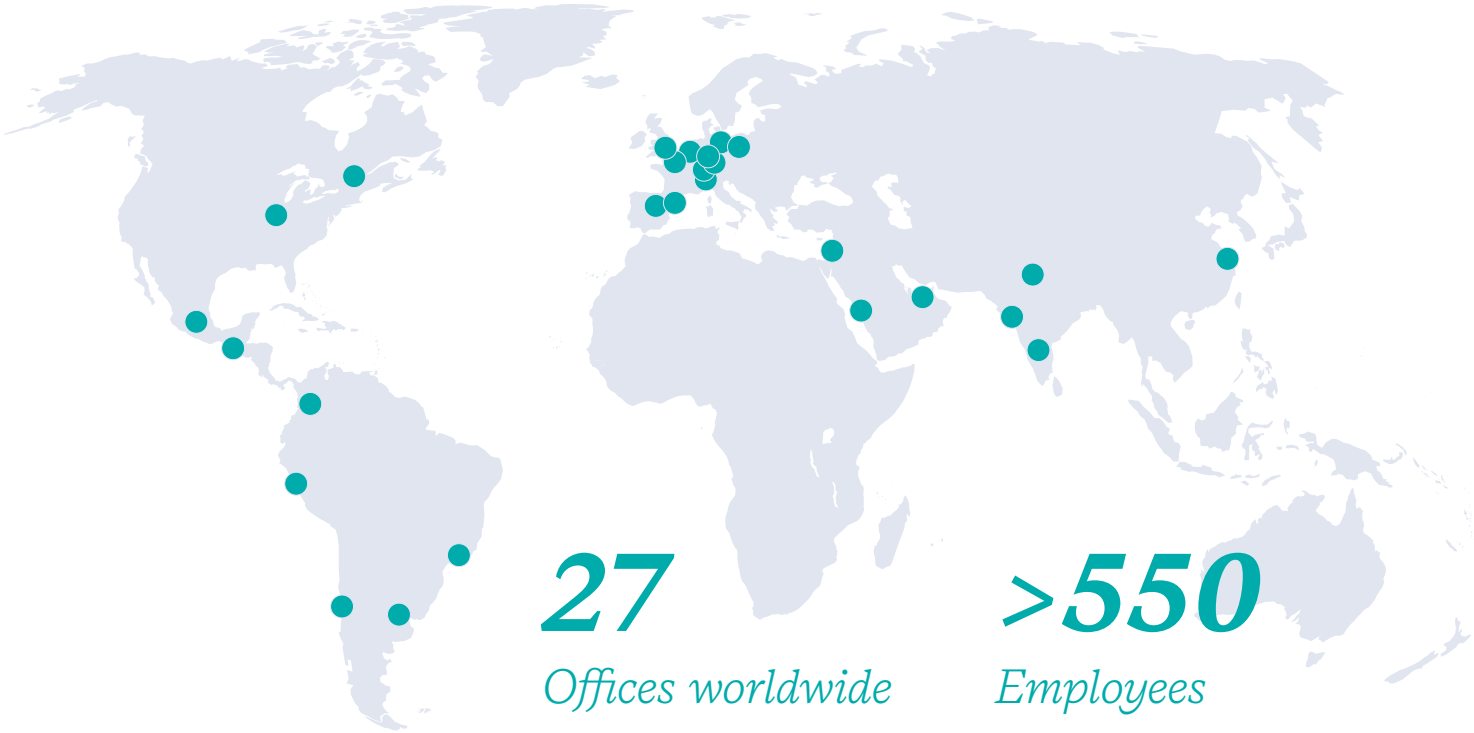
FIGURE 12:
Important trigger points to change company's supply chain in next years (in %)



A similar topic, which is not related to regulatory issues, is sustainability. Although there is no specific regulatory requirement for it, it is becoming increasingly important for pharmaceutical projects. It is one of the top five concerns. Nowadays, almost all pharma projects consider the carbon footprint of their new networks or the sustainability certification of their new sites. This was a relatively new demand, but it has been established for several years now.

Some of the benefits of automation go hand in hand with overcoming challenges from demographic change.

One Miebach around the world



27
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>550
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→ Mexico City
→ Montréal

CASA
→ Bogotá
→ Buenos Aires
→ Guatemala City
→ Lima
→ Santiago de Chile
→ São Paulo

EMEA
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→ Berlin
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Survey period:
November 2023–January 2024

Miebach