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OFF THE
**BEATEN
TRACKS**

Explore new paths to profitability
through digital levers



CONTENTS

NOW

PROFITABILITY INITIATIVES ARE BACK AT THE TOP OF CXOs AGENDAS – AND THEY REMAIN CRUCIAL TO SURVIVE IN THE FACE OF PREVAILING MACROECONOMIC CHALLENGES

The 2020s may be a time of decisive structural shift brought by the joint effects of major economic disruptions. The immediate impact of unprecedented geopolitical conflict on the global economies, the ongoing after-effects of the pandemic and the fight against climate change are testing the resilience of the Automotive and Manufacturing industry as never before.

Events such as the Ukraine war quickly led to soaring energy prices. Especially the German economy sustained a hard hit being dependent on gas imports to a large degree. In 2020, gas accounted for 31% of energy sources¹. Although great efforts are being made to become less dependent on gas imports from Russia, high production costs remain a major challenge for the manufacturing industry. As for consumers, despite the elimination of the EEG surcharge, prices in 2023 rose to an average of 46.91 cents, compared to 40.07 cents in the first half of 2022².

In addition, the after-effects of the Covid-19 pandemic continue to affect global supply chains and hamper access to components. Semiconductors, for example, which are crucial components for OEMs, remain scarce causing production delays and subsequently a strong negative effect on revenue despite strong consumer demand. The disruption of global supply chains in 2020 and its resulting instability had immediate effects on operations and costs that still prevail and intensified due to the Ukraine war. The German chamber of commerce reports that already in March 2022 six out of 10 manufacturers reported additional disruptions from supply chain pressures as a consequence of the war³.

However, given the high rate of inflation the pressure is high on manufacturers and society alike as consumers are also confronted with ever-higher bills to pay and reduced buying power. Ultimately, the limited ability to pass on increased costs in the form of higher prices limits the potential to optimize top line growth. In 2022 the Deutsche Bank⁴ reported that manufacturing output is predicted to fall by 5% in 2023. In addition to supply chain disruption, OEMs sustain large rises in production costs which puts them under severe operating cost pressure and the need to find ways to sustain a positive margin (see Figure 1 for a collection of structural types of disruption).

Changing demographic developments, consumer demands, structural trends towards digitalisation and electrification, as well as the need to adapt to strict net-zero targets simultaneously require OEMs to undertake profound transformations that impact the operating model and all parts of the value chain, from R&D (research and development) to after-sales. Although profitability initiatives do not let the outlined challenges disappear into thin air, with this publication we argue that a technology-centered approach to increase and sustain cost performance and competitiveness can mitigate the external pressures and help to lower the bar to overcome them. As incumbent OEMs aim to shift towards becoming technology companies and push the digital transformation agenda, we observe that CXOs become increasingly aware of the potential of implementing digital technologies to break silos, streamline operations and harmonize processes. However, they still struggle to implement them successfully and unlock their full benefits.

¹ [https://www.destatis.de/DE/Presse/Pressemitteilungen/2021/12/PD21_551_435.html#:~:text=Wie%20in%20den%20vergangenen%20Jahren,%25%20sowie%20Kohle%20\(16%20%25\)](https://www.destatis.de/DE/Presse/Pressemitteilungen/2021/12/PD21_551_435.html#:~:text=Wie%20in%20den%20vergangenen%20Jahren,%25%20sowie%20Kohle%20(16%20%25))

² <https://www.bdew.de/service/daten-und-grafiken/bdew-strompreisanalyse/>

³ <https://www.dihk.de/de/aktuelles-und-presse/aktuelle-informationen/lieferketten-probleme-haben-sich-weiter-verschaerft-67866>

⁴ https://www.dbresearch.com/PROD/RPS_EN-PROD/PROD000000000524797/German_economy%3A_Out_in_the_cold.PDF

Figure 1 Structural types of disruption that have increased margin pressure



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The initial response to Covid-related supply chain disruptions demonstrates the need for digital levers to drive performance and address structural trends. As outlined in figure 2, manufacturers immediately responded to supply chain disruptions by setting up crisis centers to address vulnerabilities. Furthermore, operations were then aligned with regards to improved forecasts to quickly return to business as usual⁵. Though this reactive approach mitigated negative outcomes to some extent, the next level is now to establish proactive cost-control to be resilient in a continuously volatile market.

Incorporating digital levers does not replace but merely enrich the industry-standard approach to design and execute profitability improvement programs (Figure 3). With OEMs facing the challenge of transforming to technology powerhouses and implementing digital processes and structures, performance levers need to change accordingly, making conventional levers less adequate to enable cost-competitiveness. For example, the “traditional” way of reducing costs by headcount reduction can put the manufacturing company at risk of not being able to recover, re-skill and up-skill the workforce fast enough

especially if it is not geared towards a fluid workforce⁶. International airports showcased this as they were not able to recover the workforce fast enough to be able to serve peak demand. As a result, Heathrow Airport had to cap daily passengers at 100.000 passengers only to maintain operations, compared to 128.178 in 2021 and 219.458 in 2018⁷.

While technology implementations were mainly used to support business operations, nowadays technology is the driving force for business operations and strategy. Digital levers thus offer a pathway off the beaten tracks to optimize and enable sustained cost-control. This in turn provides OEMs with the opportunity to reduce corporate inertia and adapt quickly to changing market circumstances.

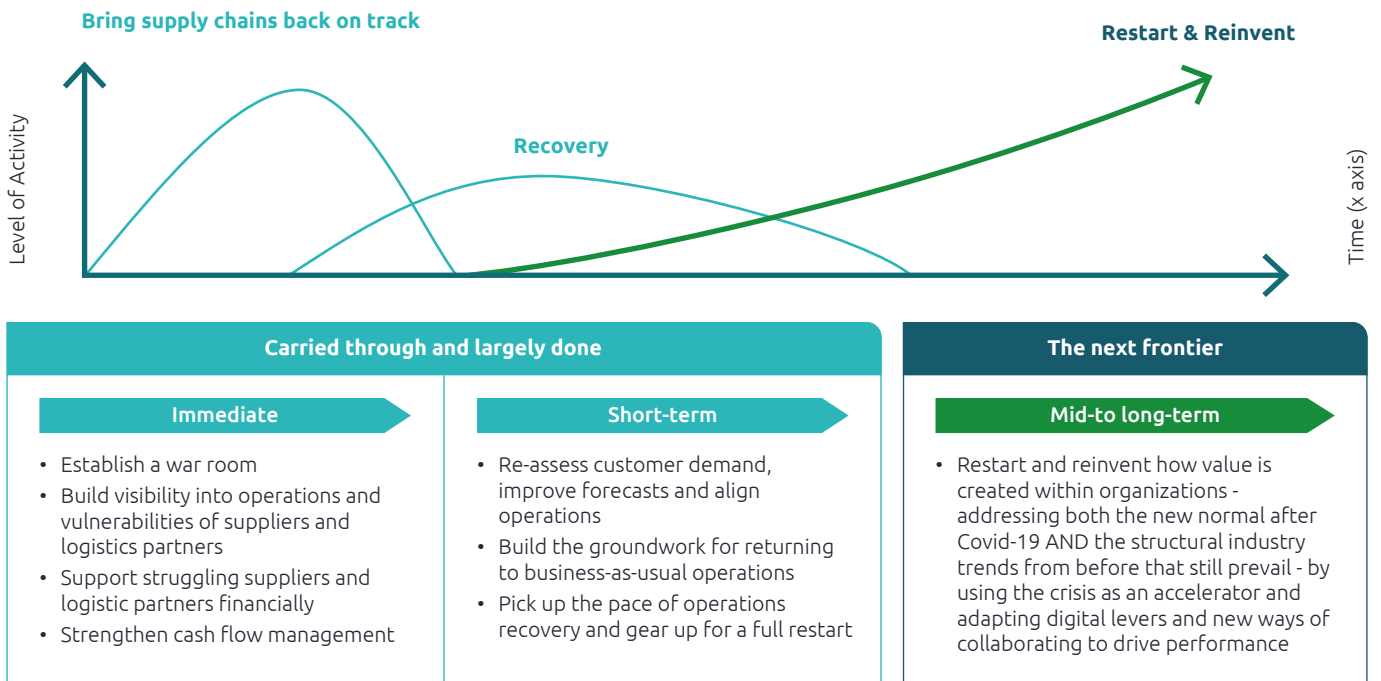
Hence, this publication provides leading companies in the Automotive and Manufacturing industries with a selection of important digital levers to increase their cost competitiveness. To address this pressing topic, we seek to embark on an exploration off the beaten tracks, based on a shared narrative that is underpinned by a short series of examples that outlines Capgemini’s market-leading expertise.

⁵ <https://www.capgemini.com/wp-content/uploads/2020/04/COVID-19-Supply-Chain.pdf>

⁶ <https://www.capgemini.com/de-de/wp-content/uploads/sites/5/2020/07/CRI-Fluid-workforce-3.pdf>

⁷ <https://www.heathrow.com/company/about-heathrow/facts-and-figures>

Figure 2 From crisis to long-term cost transformation



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Figure 3 Industry-standard approach to design and execute a profitability improvement program



2

YESTERDAY

CONVENTIONAL COST CUTTING LEVERS FAIL TO FIT THE PURPOSE OF DELIVERING SUSTAINED PRODUCTIVITY IMPROVEMENTS

The unique competitive position of a company and the specific market environment shapes the ambition and configuration of any profitability initiative. These factors also influence whether short-term improvements to stabilize cash flow or long-term improvements to increase asset performance and collaboration models must be prioritized.

Across decades of cost cutting efforts a structured and consistent approach to design profitability improvement programs has helped to avoid blind spots in the search of optimization potentials as well as helped to realize productivity enhancements.

The first Covid-19 wave in spring 2020 required an immediate focus on short-term initiatives that circle around cash control – i.a. slowing payments to suppliers, speeding the collection of receivables, extending bank credit lines or utilizing the full spectrum of financial government aid⁵. Nevertheless, downstream activities again followed the standard cost savings script: Creating a cost baseline and benchmarking it, augmenting the analysis with implications from corporate strategy, identifying efficiency levers and breaking them down to measures, planning the implementation and finally rolling out the measures as well as tracking the progress (see Figure 3). Yet, we observe that companies which execute this approach in traditional fashion end up with a selection of the same decade-old portfolios of levers that seemingly have already worked out for them in the 1990s and 2000s⁸.

These legacy levers include optimizing headcount, centralizing resources instead of decentralizing them, purchasing parts of the value chain instead of producing them or shifting

labor to low-cost countries rather than hiring domestically. In view of the changing geopolitical environment, it is doubtful, especially for the latter lever, whether companies can really keep pulling these classic levers and hope that they will predictably keep reducing their cost structures - and for longer than just the short term? Moreover, have these levers really been successful in the past?

Many of these activities still hold true and can be an effective and sometimes also comparatively fast response to changing market requirements. Yet, to a vast extent these classic cost-cutting efforts fail to sustainably transform a company into a cost competitive industry frontrunner⁹. Instead, they manage to narrow the margin gap to the cost leader for merely 3 years, before the organization falls back again to old cost levels.

This argument is also reflected in the ongoing discussion about bringing offshore production plants back to the Western markets as geopolitical tensions intensify forcing businesses to reduce dependencies as well as complexity along the supply chain. Moving production to low-cost countries buys time, but it does not transform operations towards more effective and efficient ways of producing and delivering the product in a sustainable manner especially if customer centricity is a key enabler for growth¹⁰.

⁸ <https://www.capgemini.com/insights/expert-perspectives/cost-optimization-and-reduction-remain-a-constant-focus-in-the-manufacturing-sector/>

⁹ <https://www.capgemini.com/insights/expert-perspectives/making-the-cut-sustainable-it-cost-reduction-in-a-pandemic-era/>

¹⁰ https://www.capgemini.com/de-de/wp-content/uploads/sites/5/2020/05/Intelligent_Supply_Networks_brochure-3.pdf

3

TOMORROW

MOVE OFF THE BEATEN TRACKS AND START YOUR SMART COST TRANSFORMATION WITH HIGH IMPACT DIGITAL LEVERS TO LEAP-FROG TOWARDS MAXIMUM PROFITABILITY

We experience that classical profitability levers are often overemphasized compared to those that create sustainable productivity improvements through heavily harnessing technology to transform a company into a light and nimble cost champion¹¹.

An effective approach that unlocks new areas of profitability potential focuses on transforming a business using a digitally enabled operating model. It spans across the entire value chain - from the way a product is designed cost efficiently and quickly validated in the marketplace at the R&D department to how associated customer requests are being flawlessly processed at the service department¹¹.

We at Capgemini Invent help our clients discover new savings potentials as part of our daily business. Running at the forefront of digital transformation our best practices include the latest and most effective digital tool-based profitability levers which we continuously enhance with respect to their impact potential and implementation complexity. This thereby provides you with a jump start not only into addressing lacking cost competitiveness in the short run, but into quickly finding the most appropriate levers to create and sustain cost leadership in the long run.

While classic cost-cutting levers such as lifting synergies through combining organizational entities, optimizing headcount, reducing compensation and benefits, or streamlining product portfolios are still part of most comprehensive profitability improvement programs, they are likely to unlock only a fraction of the whole cost reduction potential.

The digital efficiency and profitability levers in Figure 4 represent a selection of high impact digital levers derived from successfully implemented projects, top performing organizations, and research. These levers make the difference between a mediocre cost-cutting effort and a sustainable profitability improvement program that lifts a company's competitiveness for the long run. The lever matrix shows the five most relevant digital profitability levers per value creation stage. The transparent pillar indicates the cumulated savings potential through digital efficiency levers in the respective stage of the value chain. The single horizontal bars show the potential of specific levers (see appendix for a brief description of each lever). Thereby the matrix gives a comprehensive overview about specific profitability improvement potentials and serves as a basis for a more in-depth company-specific analysis of the most powerful individual levers.



Bernhard von Patow,
Head of Business Turnaround
Capgemini Invent, DACH



While many of these digital profitability levers are generally known, we usually see within one stage of the value chain at most 50% of those levers executed at their fullest potential.”

¹¹ https://www.capgemini.com/wpcontent/uploads/2020/02/SimultaneousTransformation_InventiveIT_FINAL2020.pdf

For each lever the exact potential is influenced by a range of surrounding factors like supplier-base, plant network, client base, sales structure

and, often most importantly, a companies' size and ability to amortize the digital solution through as many produced units as possible.

Digital Lever "Data-Driven Complexity Management"



Impact on Profitability



Cost Challenge



Benefits

Example



Degree of Implementation

Rising customizing demands let product portfolios increase, but **associated costs** are **not known** nor are old products **terminated**

Provides **algorithm-based transparency** on product variant costs as well as recommendations on **streamlining product parts** and portfolios towards **profitability**

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While many of these digital profitability levers are widely known, we typically see no more than 50% of these levers reaching their full potential within any one stage of the value chain. In many Automotive and Manufacturing organizations, a lot of these levers have been in a phase of planning for a long time, but never been rolled out, or the levers have been piloted, but never been scaled across the whole organization. Likewise, some companies and departments have rushed into trying out as much digital levers as possible, but their implementation yields only below-industry average returns¹².

May it be for the wrong selected technology tools supporting the lever, the wrong chosen processes and use cases on which to apply the levers, or inadequate training and change management to engage employees and to reap the benefits of the implemented levers.

The matrix serves as a first starting point for benchmarking these levers against one's own organization configuration. In light of the current challenges, the evaluation and implementation of these digital levers plays an even more critical role for Manufacturing and Automotive organizations in order to build a steadfast future resilience of their operations. The vast majority of these digital levers address either the supply chain or plant and back-office operations. While data insights, predictive analytics and innovative technologies such as blockchain enable supply chain transparency and optimized steering, robotics and automation enhance flexibility and the capacity to run critical processes remotely¹³. Its these attributes of digital levers towards resilience that makes putting them into practice even more paramount for manufacturing and automotive leaders¹⁴.



Olivier Hervé,

Vice President, Growth Strategy
Capgemini Invent, DACH

The vast majority of companies within the Automotive and Manufacturing industry face increased profitability pressure, especially caused by the need to invest in emerging trends like e-mobility, autonomous driving or connected services. While we see that most companies continuously engage in the broad suite of classical profitability and process improvement levers, we see a lack of a company-specific analysis of the most impactful, often digital-tool based, profitability levers as well as a rigorous and accelerated end to end roll-out of these initiatives.

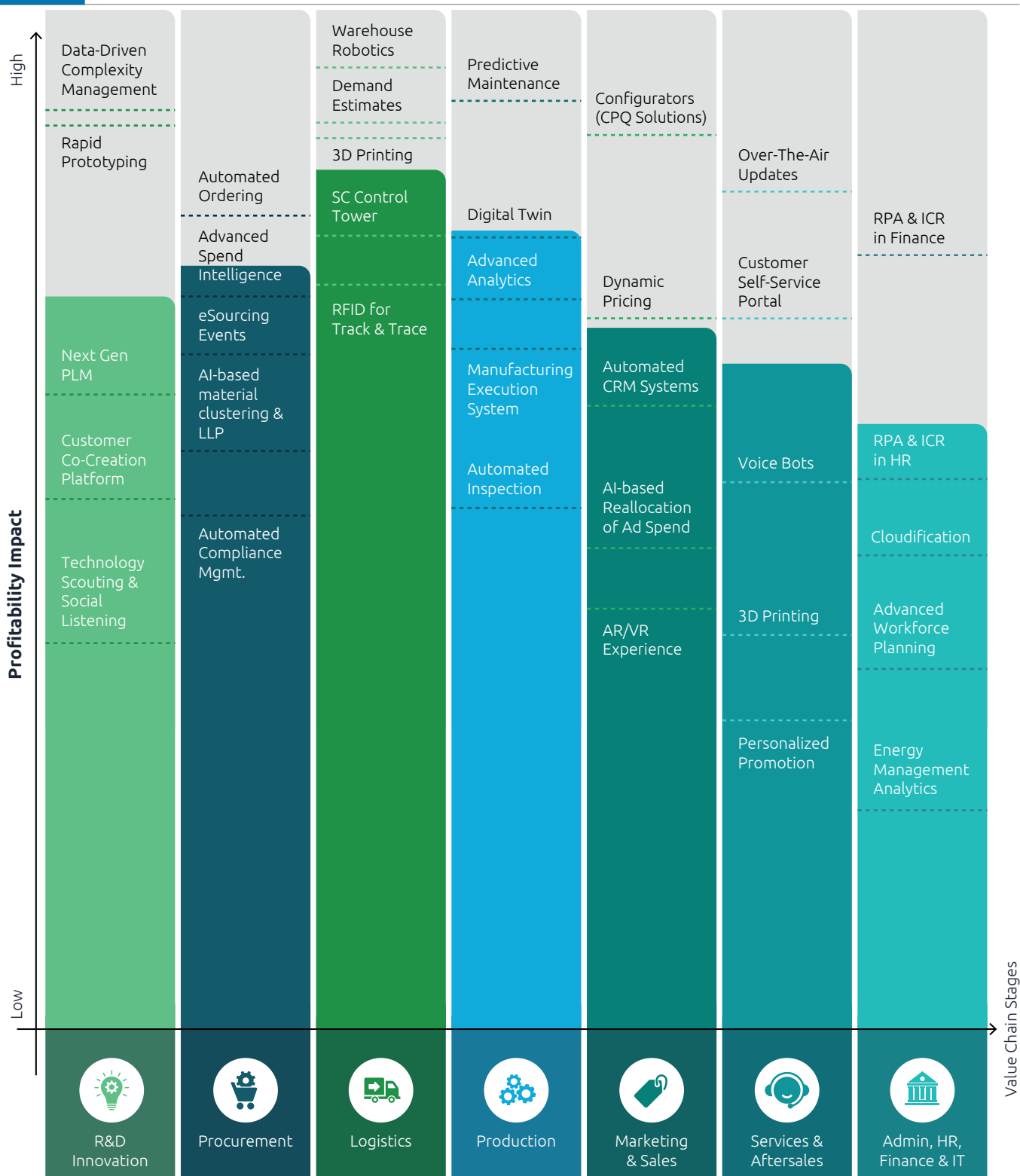
¹² https://www.capgemini.com/wp-content/uploads/2018/03/IoT-in-Ops-Research_Digital.pdf

¹³ https://www.capgemini.com/wp-content/uploads/2018/12/Predictive_Asset_Maintenance_with_Edge_Compute.pdf

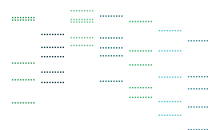
¹⁴ <https://www.capgemini.com/ca-en/resources/automotive-smart-factories/>

Figure 4

Top five digital levers for each stage of the value chain of Automotive and Manufacturing organizations that lastingly transform the cost structure



Height of pillars indicates the average cost optimization potential of the top five digital efficiency levers in the respective value chain stage



Height of dotted lines indicates the lever-specific cost optimization potential; see appendix for a brief description of the levers

4

HOW KEEP IN MIND FIVE KEY SUCCESS FACTORS IN ORDER TO EXECUTE THE DIGITAL COST REDUCTION LEVERS AND UNLOCK THEIR FULL TRANSFORMATION POTENTIAL

Designing and executing digital levers compared with classical cost-cutting levers requires its own set of crucial success factors outlined below.



Balancing investments in digital cost transformations with investments in growth options and customer centricity

Embarking on a journey to profoundly transform the cost structure of an organization using digital levers tends to require more upfront investments compared to solely utilizing traditional cost cutting levers. Also, the implementation of digital tools might require a longer time horizon due to its technical complexity than those of classic cost cutting initiatives. Thus, it is essential for leaders of any organization to recognize that these investments in productivity levers must be balanced with investments in strategic bets for future growth opportunities. A powerful example of a one-sided and failed transformation is the cost obsession of food company Kraft Heinz spurred by its partial owner 3G Capital. The strict company-wide cost reduction paradigm was

letting Kraft Heinz lose track of their customer's needs. It turned a blind eye on the rising demand towards healthier and more organic food as opposed to convenience food and high calories snacks.

With its focus on cost reduction Kraft Heinz had initial successes and managed to increase gross profit margin from 31.4% (in 2015) to 37.0% (in 2017). However subsequently, Kraft Heinz saw its share price declining between the end of 2017 to the end of 2019 by -59.2% (while the S&P 500 was up +20.5%)¹⁵ as it failed to innovate its brands and products towards its customer needs while it put all its resources in reducing costs until 2017¹⁶.



Careful implementation planning with dependency management and quick wins

When implementing different digital cost levers within a cost transformation program it is central to thoroughly plan the "Go-Live". First, detailed planning is vital for implementing digital levers to be able to manage technical and functional dependencies. Dependencies can arise to (1) legacy IT systems and tools, (2) to adjacent digital levers within the program and to (3) different implementation workstreams within one digital lever.

Second, due to the longer implementation horizon of digital levers compared to traditional classic cost cutting activities, detailed planning is particularly important

to keep employee morale and stakeholder trust high. To facilitate this, it is key to realize quick wins early on and to map out a sequence of constant successes over the course of the transformation. Effective cost transformation programs will support this by setting up their own quick win workstream to safeguard that the profitability initiatives yield the desired bottom-line results right from the start. While the technical and organizational implementation of the digital cost cutting levers often stand in the spotlight, the employees that use them must not be forgotten to be involved in the process¹⁷.

¹⁵ <https://finance.yahoo.com/quote/%5EGSPC/history?period1=1419984000&period2=1577750400&interval=1mo&filter=history&frequency=1mo>

¹⁶ <https://finance.yahoo.com/quote/KHC/history?period1=1451520000&period2=1577750400&interval=1d&filter=history&frequency=1d>

¹⁷ <https://www.cappgemini.com/de-de/solutions/digital-core-transformation-with-sap-s-4hana/>



Upskilling and training of employees

Personnel is not only to be mentally but also practically prepared for the new work environment, for example through re-skilling and upskilling programs, trainings and tool introductions¹⁸. This can range from self-service online trainings to 1 on 1 trainings for critical roles.

The change management and upskilling of employees to meet any new job requirements is of utmost importance and must be the cornerstone of the implementation of digital levers, rather than being one in many factors to consider as often done in a classic cost cutting initiative.



Christian Kreil,

Senior Manager, Business Turnaround
Capgemini Invent, Germany



.....
We believe that the people who are at the forefront of the digitized processes and have the relevant expertise are a comparably important asset as the digital tools used.”
.....



Safeguarding and - if necessary - building up IT infrastructure and data security

Digital cost cutting levers harness existing data as much as possible while being a new source of abundant data at the same time – and their interplay is often the defining driver to realize the digital levers’ maximum P&L effect. Therefore, the implementation of digital levers relies on both a stable IT infrastructure and

a solid framework for data security as backbones. If one or both capabilities are not available to the necessary extent at the beginning of the cost transformation, they can also be built up successively in parallel with the implementation – if evaluated and tackled right from the beginning.



Hand in hand of strategy and technology expertise in analysis, design and implementation

Finally, we have found that the most important factor for a successful digital cost transformation program to realise its full potential and achieve the targeted cost savings is a mixed team of strategy and digital/IT experts. It is central that this interdisciplinary team guides the whole program - from as-is analysis over the design of the most effective digital levers to the implementation of these levers all the way up to the end. For instance, harnessing the existing data together with the newly created data from digital levers for the optimal design of products and processes requires an often underestimated amount of data

preparation and harmonization. It is therefore essential to accurately assess the impact of the required data harmonization (alongside any additional investments in IT infrastructure and data security required) on the business case for each digital lever to ensure that the targeted improvements in the P&L are achieved - both in size and in time. Only a team with the necessary technology and strategy skill set can safeguard the correct estimation of the implementation cost and the associated benefits of a digital lever, while at the same time tailoring it to the unique competitive set-up of the company at hand.

¹⁸ <https://www.capgemini.com/insights/expert-perspectives/skilling-your-workforce-for-whats-next/>



Bernhard von Patow,
Head of Business
Turnaround,
Capgemini
Invent, DACH



.....

The optimal selection of digital levers helps to significantly advance the collaboration across functions and thereby creates additional value.

.....

QUESTION:

Bernhard, you have advised leading firms for nimble cost optimization projects and led cost transformation programs of global organizations. Why is it so central to fully leverage the potential of digital productivity levers for leaders within the Automotive & Manufacturing industry?

BERNHARD VON PATOW

Organizations within the Automotive industry and most of the Manufacturing subindustries are shouldering investments in e-mobility, new IoT applications or completely new business models around platforms and data monetization. At the same time, we are observing high pressure from shareholders and leading competitors to improve short-term product margins. Especially technology-savvy start-ups challenge the incumbent firms as these neither have to manage a difficult transition towards emerging trends, nor towards a lean organization and automated processes as these features are already the backbones of their operations and products right from the very beginning.

QUESTION:

How can the digital levers support the incumbents towards higher profitability?

BERNHARD VON PATOW

Fully scaling digital levers enables companies to significantly increase the efficiency of their processes and assets. Additionally, it boosts the impact and decision-making capabilities of their employees. And by doing so, digital levers can help alleviate the shortage of skilled labor that incumbents are already struggling with, e.g., within the R&D organization.

QUESTION:

What do you recommend to leaders, who think about analyzing how these digital levers could help them to increase profitability?

BERNHARD VON PATOW

My single biggest advice is to not view the specific corporate functions along the value chain as silos when implementing digital levers. The opposite is true: It is essential in profound cost transformations to analyze and optimize the impact of changes on the business model, on processes and on ways of working across the whole value chain. The best selection of digital levers accounts for the interdependencies and by doing so creates additional value by significantly advancing the collaboration across functions.

Figure 5 Pivotal success factors for digital cost-cutting initiatives



Balancing investments in digital cost transformations with investments in growth options and customer centricity



Careful implementation planning with dependency management and quick wins



Upskilling and training of employees



Safeguarding and - if necessary - building up IT infrastructure and data security



Hand in hand of strategy and technology expertise in analysis, design and implementation

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MANAGEMENT SUMMARY

Cost reduction efforts are at the top of the agenda of Automotive and Manufacturing CxOs alike. In this context, the challenges described, such as the aftermath of the pandemic, which continues to disrupt supply chains and access to resources, the Ukraine war and the resulting energy crisis, and the limited ability to pass on higher costs to customers, further exacerbate the structural cost pressures that were already in place during the pandemic peak.

This point of view argues that rather than repeating the same old cost cutting procedures that didn't yield sustained bottom-line results in the past, leaders should instead focus on digital cost transformation levers that increase productivity thoroughly.

The 35 presented digital levers have proven to unlock tremendous value across the whole value chain for both Automotive and Manufacturing organizations and thereby delivering substantial EBIT margin boosts.

A lot of these digital levers might be well-known and even piloted already within organizations. Yet, we often observe that organizations do not implement the most impactful digital levers or that these levers are not scaled to their full potential. The presented digital levers can serve as

a starting point for Automotive and Manufacturing CxOs to challenge their organizations in their efforts towards digitally enabled, efficient and effective operations to boost resilience for a paradigm shift characterized by volatility.

Further, when executing these digital levers leaders should carefully keep in mind to

- balance cost initiatives with growth initiatives,
- set-up an overarching dependency management and plan quick wins,
- upskill and train employees for utilizing these digital levers,
- safeguard IT infrastructure and data security, and
- facilitate the combination of strategy and technology expertise in analysis, design and implementation of the digitally enabled cost transformation.

When following this playbook, Automotive and Manufacturing leaders can prevent costs from creeping back in and instead move off the beaten tracks towards a smart and sustainable cost transformation of their organization in the new "new normal".

APPENDIX - LEVERS AT A GLANCE (I/III)

	Lever	Impact	Description
Research & Development / Innovation	Data-driven Product Portfolio and Complexity Management	★★★★★	Digital platform that provides algorithm-based transparency on the cost of product variants and gives recommendations on streamlining product parts and portfolio towards profitability.
	Rapid Prototyping	★★★★★	Application of RP for physical products by using Augmented Reality, CAD models & 3D printing to decrease development and testing time and costs.
	Next Gen Product Lifecycle Management (PLM)	★★★☆☆	Utilize a next generation PLM to capture real-time customer usage patterns and environmental factors (e.g. temperature) to help optimize product design.
	Customer co-creation platform	★★★☆☆	Enable customers to intuitively submit product feedback and co-create in order to effectively improve product design and optimize product features with regard to their willingness to pay.
	Technology Scouting & Social Listening	★★☆☆☆	Automated analysis of emerging tech, consumer trends and business models (e.g. patents, VC funding, online forums, trade marks) through semantic crawlers to improve R&D effectiveness.
Procurement	Automated Ordering	★★★★☆	Automated demand planning, parts identification and ordering through AI without manual approval / due diligence to boost efficiency (esp. combined with lever "Predictive Maintenance").
	Advanced Spend Intelligence	★★★★☆	Advanced spend intelligence with automated and forecasted spend cubes, KPIs and a direct link into the P&L to improve data-driven category management and streamline operations.
	eSourcing Events	★★★★☆	eRequest For x, eCatalogues and eAuction tools for interacting with suppliers to increase bargaining pressure on suppliers and boost operational efficiency.
	AI-based material data clustering & Linear Performance Pricing	★★★☆☆	AI-based clustering of similar purchased materials to create higher purchasing volumes (thus larger discounts) and to autom. undertake Linear Perf. Pricing (LLP) to identify the best options.
	Automated Compliance Management	★★★☆☆	Data analytics on spend data for automatically detecting abnormalities in the purchase pattern to reduce risk, counter fraud and better manage compliance to free up capacity for staff.
Logistics	Warehouse Robotics	★★★★★	Autonomous logistics transports (supported by smart warehouse route design) to reduce labor costs and increase warehouse turnover.
	Demand Estimates	★★★★★	Precise AI-based customer demand estimates leveraging internal sales history and external data points (from GDP forecasts to weather predictions) to improve capacity, stock and lead times.
	3D Printing	★★★★★	Network of 3D printers for servicing own production plants to decrease own inventory and increase delivery speed of spare parts to shorten production down times.
	Supply Chain Control Tower	★★★★☆	Merging all material flow and master data on suppliers / logistic providers as well as production, product and customer information to create E2E real-time transparency and optimize SC costs.
	Radio-Frequency Identification (RFID) for Track & Trace	★★★★☆	Equipping parts, boxes, or pallets with RFID tags to enable track & trace and thus increases the efficiency of warehouse / operations processes.

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APPENDIX - LEVERS AT A GLANCE (II/III)

	Lever	Impact	Description
Production	Predictive Maintenance	★★★★★	Automated monitoring (e.g. audio, sound, video, temperature, vibration) to reduce downtimes.
	Digital Twin	★★★★☆	Digital representation of production systems to enables remote / algorithm-based optimization of asset performance and utilization to increase productivity.
	Advanced Analytics	★★★★☆	Advanced analytics that uses machine learning to identify root causes for product quality deviations to improve efficiency.
	Manufacturing Execution System (MES)	★★★★☆	MES to allow for improved steering, planning and monitoring of production as well as to automate processes 24/7 to enhance production visibility and efficiency.
	Automated Inspection	★★★☆☆	Automated in-line optical inspection through camera system with algorithm-based comparison of manufactured products to spot quality flaws in order to replace or augment manual inspection.
Marketing & Sales	Configurators / Configure-Price-Quote (CPQ) Solutions	★★★★★	Allows salesforce to configure esp. large B2B products and machines with the customer to their exact requirements and consequently price these requirements a. o. to increase margins.
	Dynamic Pricing	★★★★☆	Real-time AI-driven analytics that takes into account demand, competitor's prices and customer's willingness to pay for pricing products to raise their sales volumes and / or margins.
	Automated CRM Systems	★★★★☆	State of the art Customer Relationship Management system that automatically tracks and amplifies lead generation and conversion to foster product / services sales.
	AI-based Reallocation of Advertising Spend	★★★☆☆	AI-based monitoring of advertising spend and automated reallocation of budget (e.g. across channels, target groups and of content) to improve marketing effectiveness.
	AR/VR Experience	★★☆☆☆	Showcase products / features, while minimizing needed size of exhibition space and amount of products at display, to reduce sales related costs and to increase adaption of optional features.
Services & Aftersales	Over-the-air updates (OTA)	★★★★★	OTA updates for mobile devices, machines and cars to enable fast adoption to changing requirements (e.g. security, regulatory, ecosystem or customer) and to reduce servicing costs.
	Customer Self-Service (CSS) Portal	★★★★☆	CSS Portal for online support without personal interaction (e.g. access of documents / product manuals, change of payment details or help through a user forum) to reduce servicing costs.
	Voice Bots	★★★☆☆	Answering customer requests by voice bots to increase availability of customer service to 24h/7d and to increase efficiency in the customer service.
	3D Printing	★★☆☆☆	Network of 3D printers for servicing sold products for clients to decrease own inventory and increase delivery speed of spare parts to the customers.
	Personalized Promotion	★★☆☆☆	Personalized aftersales product / service offerings for existing customers through mining of consumption patterns to increase loyalty and upselling while reducing customer acquisition costs.

APPENDIX - LEVERS AT A GLANCE (III/III)

Level	Impact	Description
RPA & ICR in Finance Function	★★★★☆	Robotic Process Automation & Intelligent Character Recognition for automating repetitive processes to increase employee efficiency and decrease days-sales-outstanding (e.g. order-to-cash cycle).
RPA & ICR in HR Function	★★★☆☆	Robotic Process Automation & Intelligent Character Recognition for automating repetitive processes to increase employee efficiency, process quality and speed (e.g. hire-to-retire cycle).
Cloudification	★★★☆☆	Moving legacy IT applications into the cloud to reduce IT infrastructure & application costs and improve company-wide efficiency through the ability to easily upgrade applications.
Advanced Workforce Planning	★★☆☆☆	Algorithm supported workforce staffing and headcount planning (esp. across production, logistics, service & sales) to increase worker' or field representatives' flexibility and productivity.
Energy Management Analytics	★★☆☆☆	Software-based analysis and forecasting of energy consumption to avoid peak loads and detect optimization potentials through benchmarking of all facilities / plants to reduce energy costs.

Administration, HR, Finance & IT

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As the digital innovation, design and transformation brand of the Capgemini Group, Capgemini Invent enables CxOs to envision and shape the future of their businesses. Located in nearly 40 studios and more than 60 offices around the world, it comprises a 10,000+ strong team of strategists, data scientists, product and experience designers, brand experts and technologists who develop new digital services, products, experiences and business models for sustainable growth.

Capgemini Invent is an integral part of Capgemini, a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided everyday by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of 360,000 team members in more than 50 countries. With its strong 55-year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fueled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering, and platforms. The Group reported in 2022 global revenues of €22 billion.

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