

digital ● efficiency INDEX



The economic outlook will force companies to re-focus on the bottom-line – digitization intensifies the pressure but also offers the solution

Economic outlook



We're going to end up in recession: Guggenheim Partner's Scott Miner



German **recession** fears after big decline in industrial production

The Guardian - vor 21 Stunden

Europe's economic engine, which has increasingly relied on factory output, was left teetering on the edge of **recession**

'Scary' German output figures raise **recession** fears Aljazeera.com - 07.08.2019

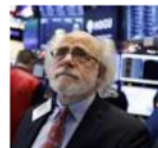
German industrial output fall exacerbates fears of **recession** Financial Times - 07.08.2019

Germany was Europe's economic growth engine. Trade wars could ... Washington Post - vor 22 Stunden

Growing fears of world **recession** haunt global markets; Bank of ... Irish Examiner - vor 20 Stunden



CEO Jeffrey Gundlach predicts recession within 15 months



Is a US **recession** coming? Yield curve flashes dire warning

Fox Business - 07.08.2019

's favorite indicators of an impending **recession** — the spread between the three-month and 10-year Treasury yields — just flashed the highest ...

US yield curve sends strongest **recession** warning since 2007 Financial Times - vor 15 Stunden

Digitization

Challenge - to continuously reinvest in competitive business models during the recession period with reduced budgets








Solution - to improve operational efficiency with the means of digital technologies > **Digital Efficiency**

Overview: Digitization opens opportunities in every industry to increase efficiency and support competitive advantages



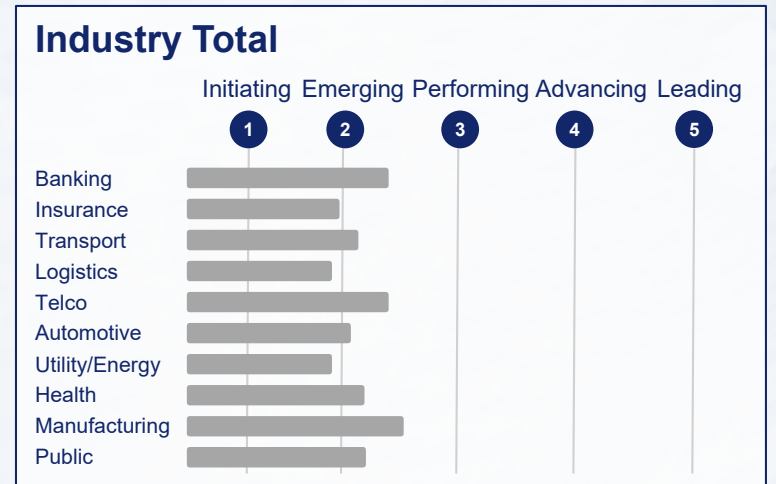
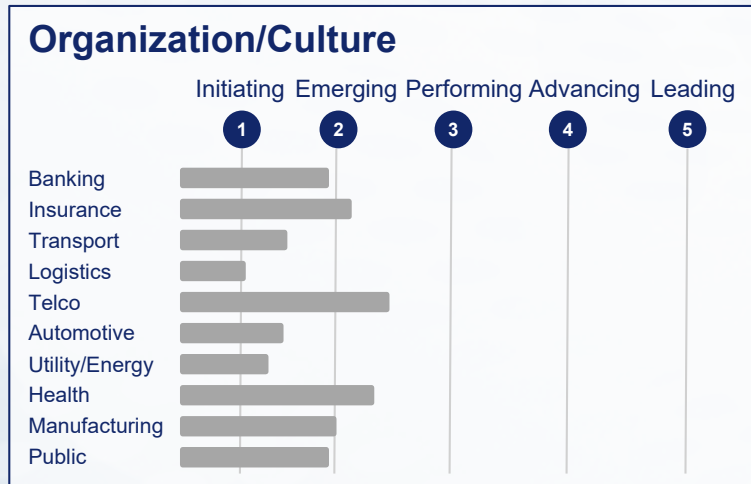
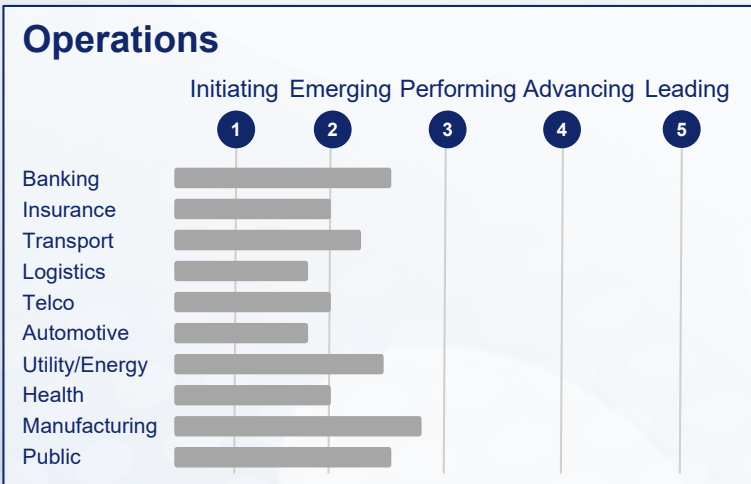
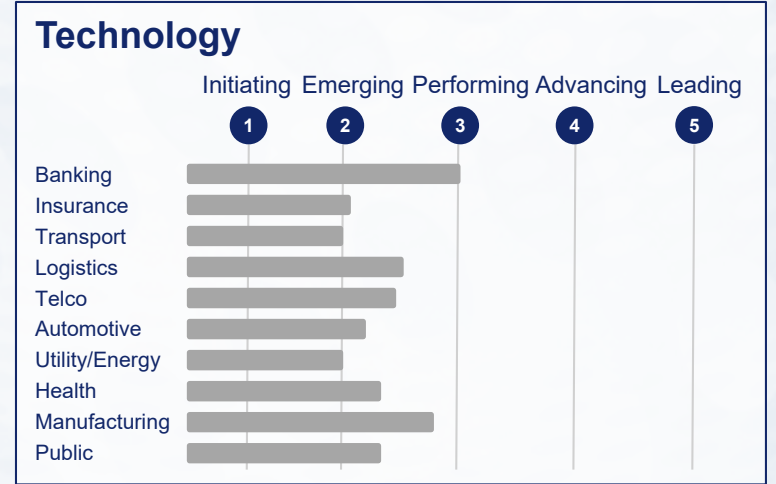
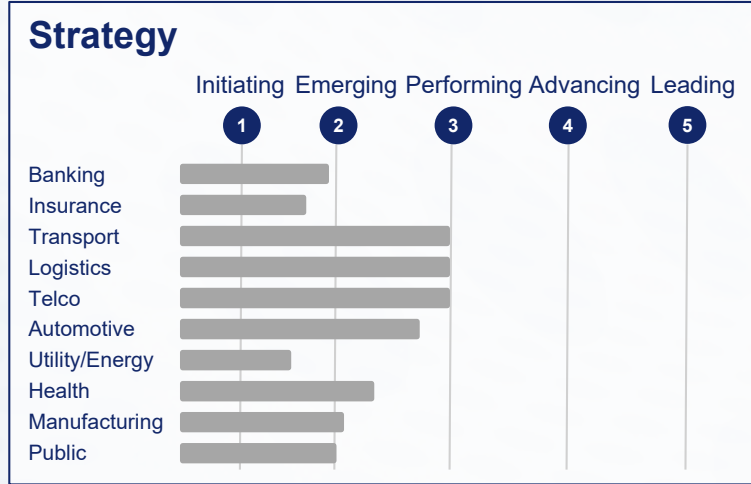
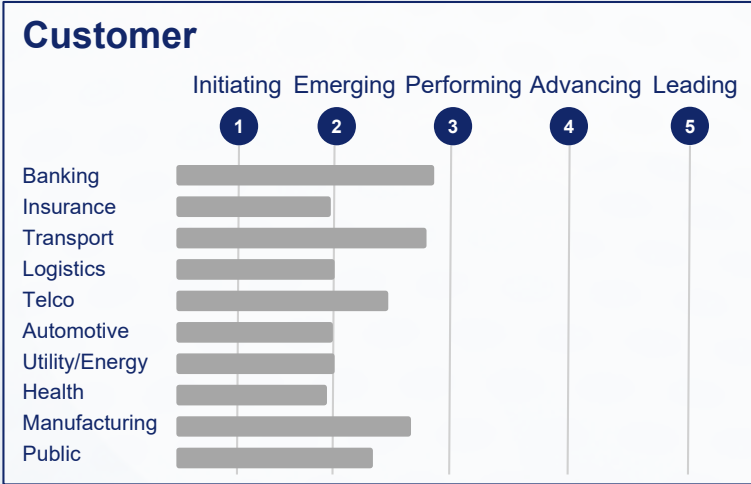
Not pure cost cutting, but intelligent implementation of digitally triggered efficiency

Focus areas:

1		Customer	<ul style="list-style-type: none">• Customer and sales orientation as top priority	<ul style="list-style-type: none">• Market-oriented range of services integration of the various sales channels	<ul style="list-style-type: none">• Integration of the various sales channels
2		Strategy	<ul style="list-style-type: none">• Convincing, long-term oriented strategy	<ul style="list-style-type: none">• Consistent E2E implementation	<ul style="list-style-type: none">• Sustainable achievement of the targeted objectives
3		Technology	<ul style="list-style-type: none">• Increased efficiency through consolidation and automation	<ul style="list-style-type: none">• Use of new technologies leads to shorter processing times	<ul style="list-style-type: none">• Improvement of financial performance
4		Operations	<ul style="list-style-type: none">• Efficient processes	<ul style="list-style-type: none">• Concentrating on core activities	<ul style="list-style-type: none">• Optimization of vertical integration through consistent outsourcing
5		Organization & Culture	<ul style="list-style-type: none">• Lean organizations	<ul style="list-style-type: none">• Agile organizations	<ul style="list-style-type: none">• Right mindset and skills for future collaboration

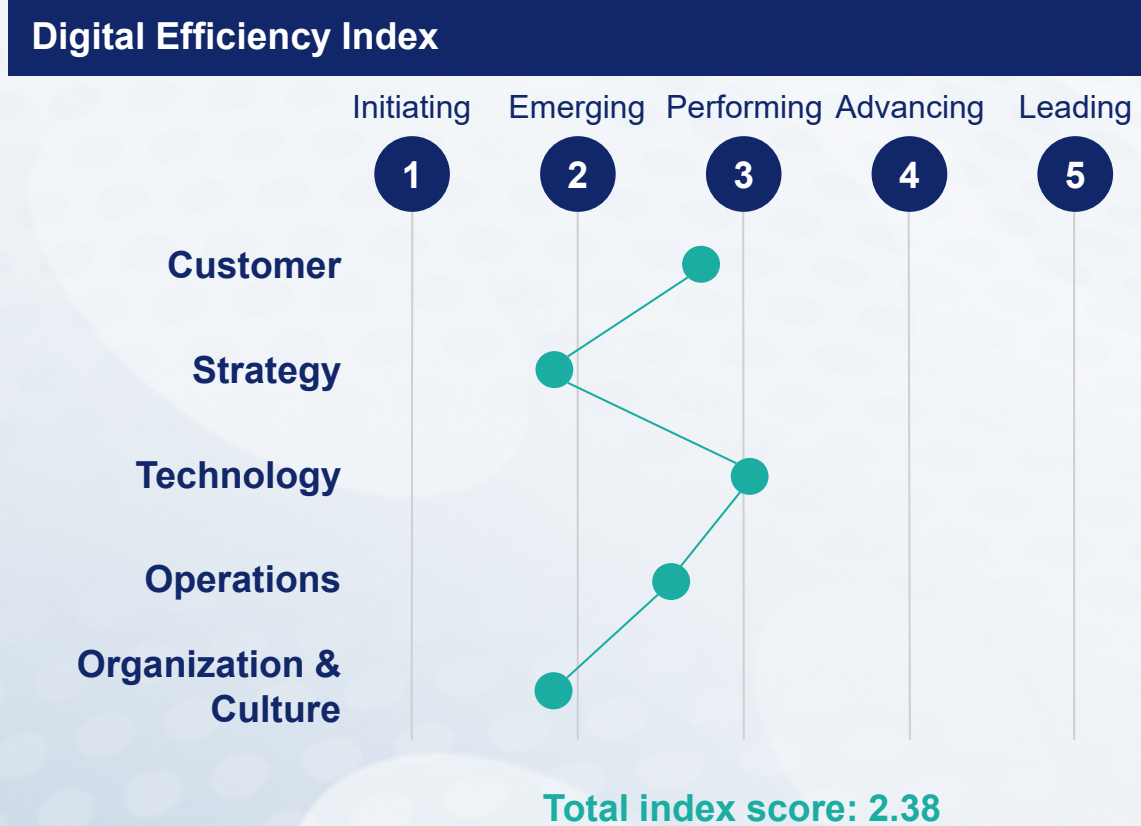
The rightsizing and prioritization of the digital efficiency initiatives per focus area considers available budgets and expected return on invest

Industry Overview: Digital efficiency is a key topic in all industries with different profiles in our index categories



Banking: Banks still suffer from unsatisfactory cost/income ratio

Hugo Preiss



Key Trends

- Alternative Solutions**
 Market entry of numerous alternatives to classic payment, lending services, e.g. mobile wallets/cards
- Enhanced Services**
 New, e.g. mobile or voice-operated services, smart home and video supported advisory, chatbots
- Digital Ecosystems**
 Build an Open Banking platform and connect with partners via standardized interfaces, e.g. PSD2
- Technology Driver**
 Blockchain is supporting banking services like smart contracts, payments, fraud detection, crypto custody

Key Challenges

- Competitive Landscape**
 New players are entering the market (e.g. GAFA, FinTechs) and address the digital-oriented clients
- IT-Transformation**
 Replacement of legacy IT systems by modern applications and move from on-premises to cloud
- Regulation**
 Increased regulatory requirements of BaFin and ECB limit the investment capacities
- Customer Loyalty**
 Provide a positive Customer Experience to increase customer loyalty and reduce the churn rate

Source: DTC Digital Efficiency Database

Insurance: Fields of efficiency identified but implementation still poor

Dr. Matthias Gröbner



Key Trends

- **From Product to Service**
Change of mindset from “insured” to “protected” using Smart Home, Smart Mobility or eHealth
- **Data Analytics**
Collection of data and data analytics, e.g. to optimize pricing or fraud detection
- **Digital Ecosystems**
Build an open insurance platform and connect with partners via standardized interfaces
- **New Products**
Develop on-demand insurance, micro insurance products or parametric insurance

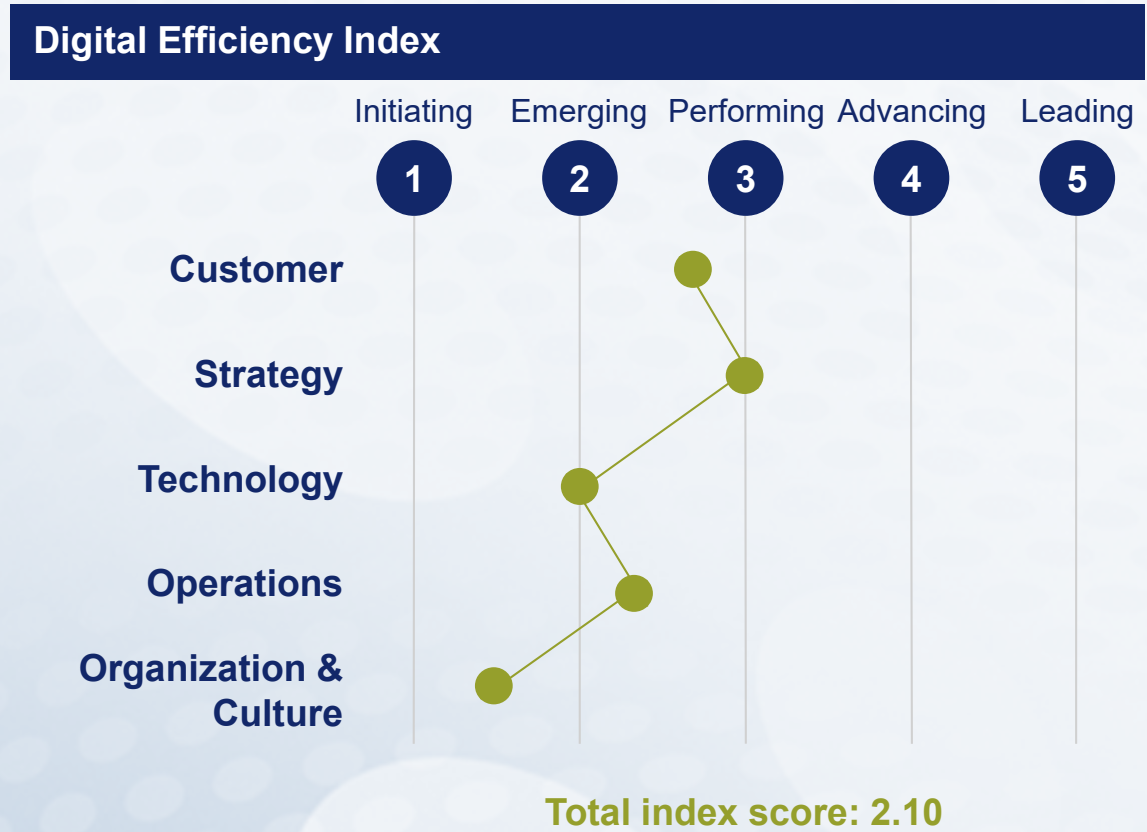
Key Challenges

- **Operational Excellence**
Process optimization via standardization automation to reduce costs
- **IT-Transformation**
Replacement of legacy IT systems by modern applications and move from on-premises to cloud.
- **Agile Organization**
Transformation of business and IT organization towards agility and better time-to-market
- **Customer Loyalty**
Provide a positive customer experience and ensure a seamless customer journey

Source: DTC Digital Efficiency Database

Transportation: Potential of “Digital” widely understood, application getting traction with challenges in culture and skills

Ludwig Haas



Key Trends

- **Contribution to CO2 - goals**
Rail/public transport is seen as an ecological means of transportation, thus contributing to CO2 reduction goals
- **MaaS & Connected Customer**
Completely digitally organized journey for travelers from door to door: trip search, booking, travelling, after care
- **Digital Assets & Maintenance**
Digital assets as prerequisite for efficiency through predictive maintenance capabilities in infrastructure and rolling stock
- **End-to-end Processes**
End-to-end processes across all corporate units to drastically increase service quality and efficiency

Key Challenges

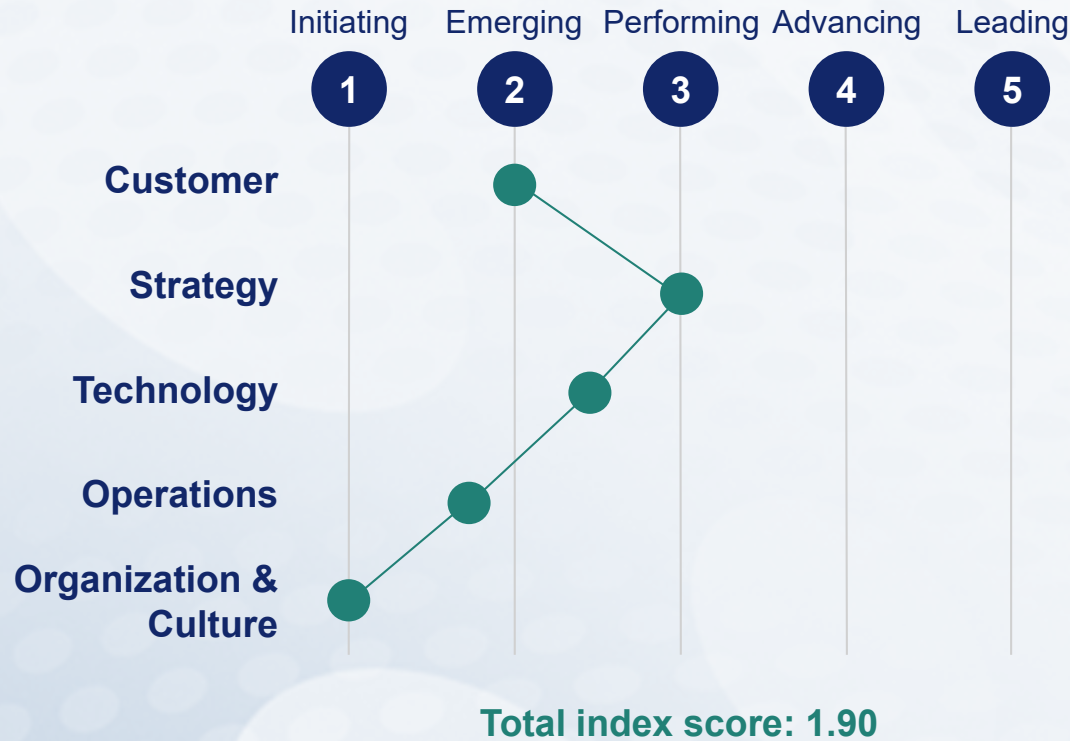
- **Capacity**
„Rail system“ is at the limit of its hardware-defined capacity. New hardware requires lots of money and time
- **Profitability in Cargo**
Rail cargo businesses are currently not or hardly profitable. Large restructuring efforts under way
- **Transformation to agile Org.**
Large Rail operators have decided to become agile/flexible organizations and started their journeys. Both business and IT functions struggle with progress and (lack of) direction
- **Skills & Resources**
In order to implement the digital strategy and to become a flexible organization, new skill sets are required on a large scale. Not enough supply on the market

Source: DTC Digital Efficiency Database

Logistics: In the fragmented market of low margin business, a digital leader has not yet been established

Ludwig Haas

Digital Efficiency Index



Key Trends

- **End-to-end transport**
An increasing number of players try to manage end-to-end transport chains
- **Increasing delivery demand**
Ever increasing online trade drives demand for home delivery
- **Rise of trading platforms**
Platforms to exchange transport demand and supply are getting more and are growing
- **Digital transport chain**
Transport operations are increasingly organized digitally

Key Challenges

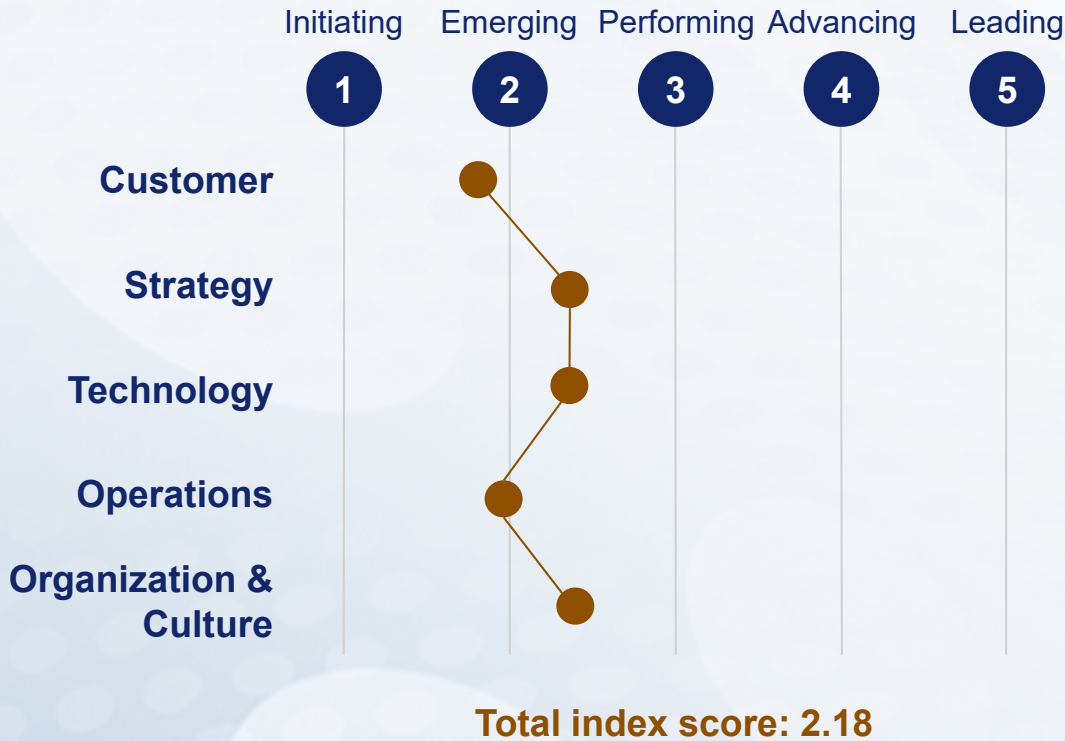
- **Fragmented carrier landscape**
Especially the carrier business is very fragmented, thus standardization in any meaningful way has not yet been successful
- **Excess capacity**
Up to 40% of trips are without freight
- **Little digital skill**
Small companies are focused on operations, hardly any skill, nor capacity for digital innovation present
- **Low margin business**
Extreme price pressure leads to very low margins. Innovation budgets rarely large enough for disruptive approaches

Source: DTC Digital Efficiency Database

Health: The most challenging issue is the interconnection of market participants

Rene Leuthold

Digital Efficiency Index



Key Trends

- **Ecosystem Health**
Connecting the health partners in the ecosystem on platforms in the field of telematics
- **Improvement of healthcare**
Digital health applications and wearables improve the diagnosis and the medical care processes
- **E2E Processes**
Automation and remodeling of process landscapes
- **Big Data and AI**
Health data predict diseases and provide for target-oriented therapies

Key Challenges

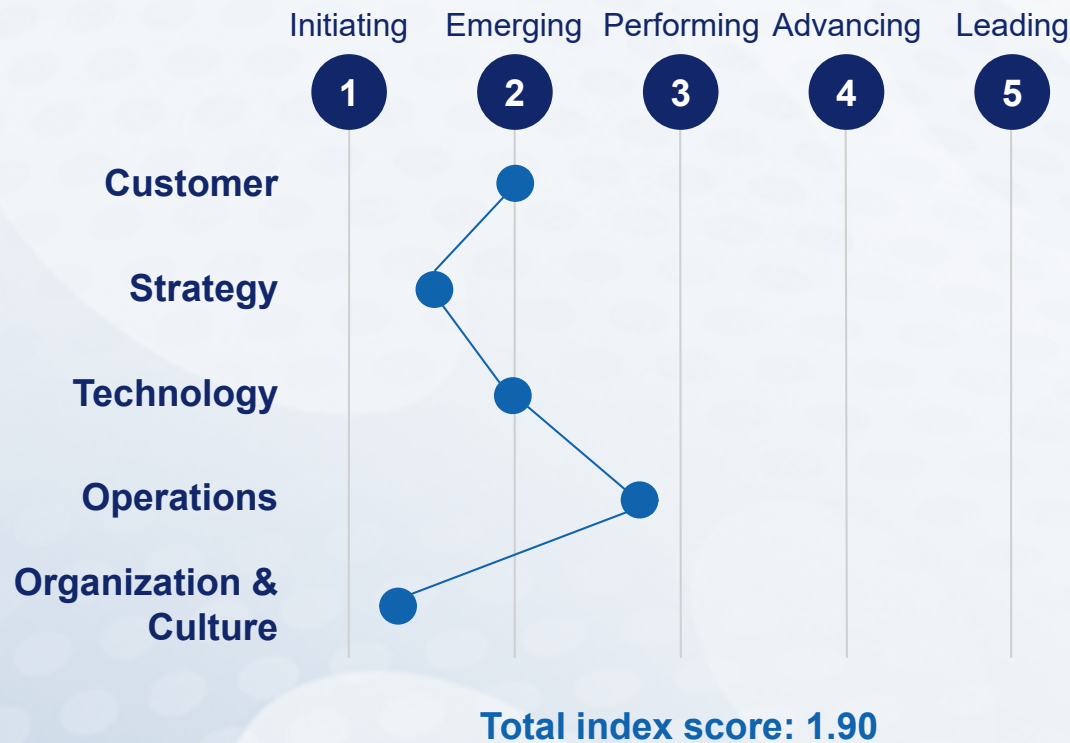
- **Regulation**
Implementation of the new legal framework in Germany, globally very heterogeneous regulatory landscape
- **Integrated strategy**
Strategic development considers the needs of a connected ecosystem
- **Business transformation**
Prioritization and acceleration through agile methods and innovation management
- **Data security**
Patient data in the application and during operation must be specially protected

Source: DTC Digital Efficiency Database

Utilities/Energy: Digitization and renewables transformation require a realignment of the utilities industry – towards an Energy Services Provider

Marcus Felsmann

Digital Efficiency Index



Key Trends

- **Digitization**
Customer-specific solutions and operational innovations such as cloud services, smart grid and e-mobility pave the way to "Utilities 4.0"
- **Decentralization**
Increasing share of not centrally generated renewable energy
- **Energy Efficiency**
Energy reduction and conservation by applying more efficient technology
- **Renewable Energy**
Growing efforts to reduce carbon emissions lead to an increase in renewable energy sources

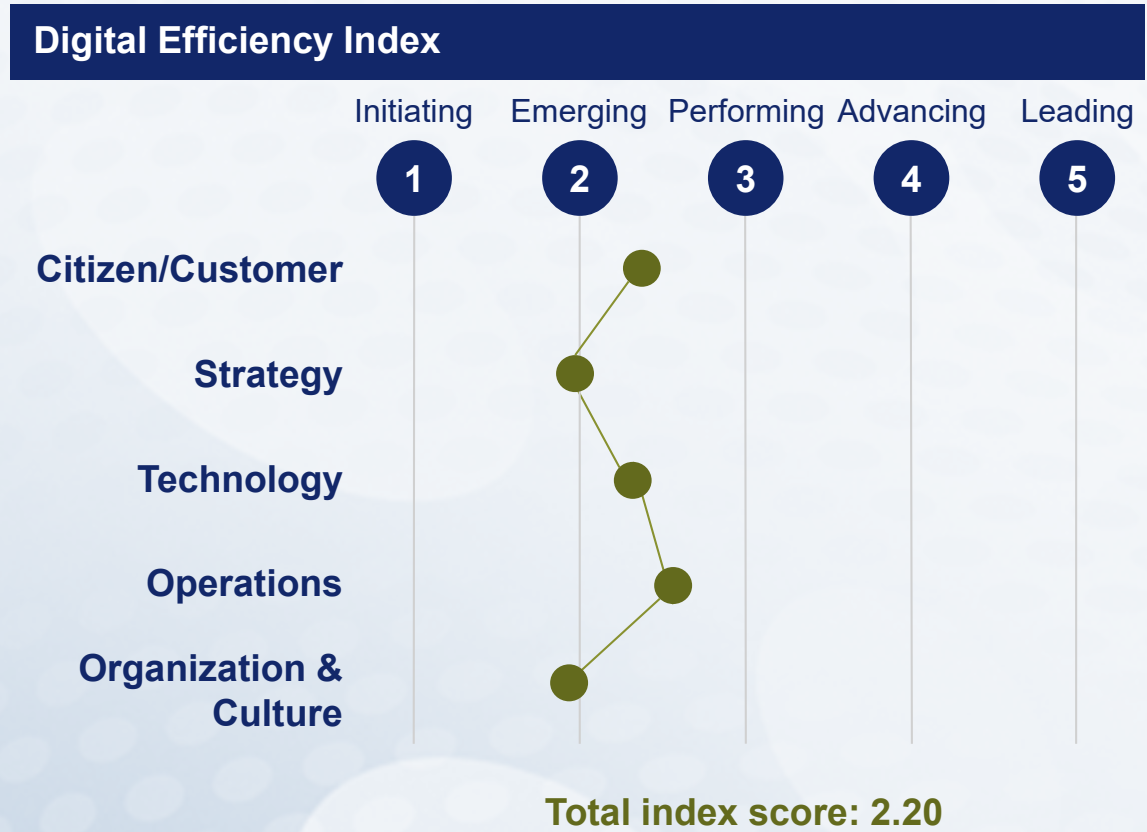
Key Challenges

- **Prosumer – the new client**
New services and means of interaction for increasing number of active market participants – the prosumer
- **Infrastructure connectivity**
Advanced grid monitoring and control of connected assets by communication technology
- **Digital operational excellence**
Creating value by adopting sophisticated technology to increase operational efficiency
- **Threat of cyber-attacks**
Orchestration of increasing security requirements and cyber defense

Source: DTC Digital Efficiency Database

Public: In the new digital era the German public sector adapts, extends and further develops the services for its citizens and companies too slowly

Carsten Glohr



Source: DTC Digital Efficiency Database

Key Trends

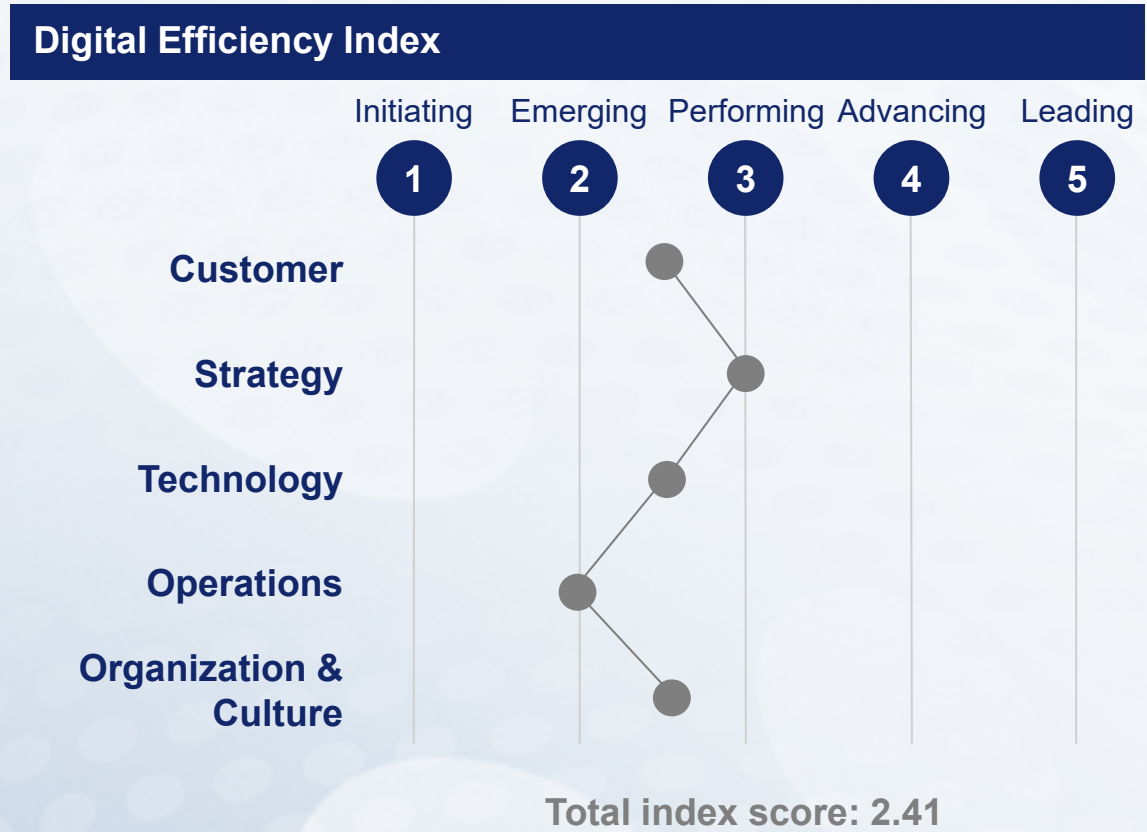
- **Smart Government / OZG**
The OZG obliges the federal and state governments to offer their administrative services “online” by 2022 at the latest.
- **Smart City**
New technologies like IoT enable cities to optimize operations and services and connect closer with its citizens
- **Digital Ecosystems**
Public ICT providers & IT departments must consolidate the IT, modernize their portfolio & adapt to new standards e.g. fiware, UI, xÖV ...
- **Technology Drivers & Risks**
Hyperscaler, innovative SaaS, PaaS and IaaS solutions, IoT, AI, AR/VR, RPA, Drones, Cyber Defense Technology ...

Key Challenges

- **Immature Solutions/Standards**
Especially for smart cities there is a lot of hype, but standards and comprehensive solutions are rare or do not fit to public req’s
- **Speed & Agility**
Department-thinking, fragmented responsibilities instead of agile organizations and open culture; slow & inflexible tendering
- **Regulation & compliance**
Often a adaption in legislation / regulation is necessary in order to establish “truly” lean and citizen-focused processes
- **Demographics/lack of resources**
The “war for talent” is especially difficult for the public sector; lack of key skills e.g. in the IT area e.g. “agile skills”, DevOps, IT architects, AI, RPA ...

Telecommunication: fields of actions identified and addressed, way forward defined but implementation still ongoing

Dr. Peter Krüssel



Key Trends

- **Technological breakthrough**
Explosion of computing powers, cloudification, ubiquitous connectivity, advanced analytics and AI, VR, blockchain, RPA and machine learning
- **Regulation and industrial politics**
From vertical to horizontal regulation, level playing field in the digital competition arena for all players, globalization vs. protectionism
- **Platform economy under pressure**
Fake news, hate speech, manipulation, monopolization, data security, privacy, tax avoidance strategies, competition law
- **Market Consolidation**
High debt burdens of Telcos, high investment requirements in infrastructure, increasing competition from hyperscalers, shrinking margins

Key Challenges

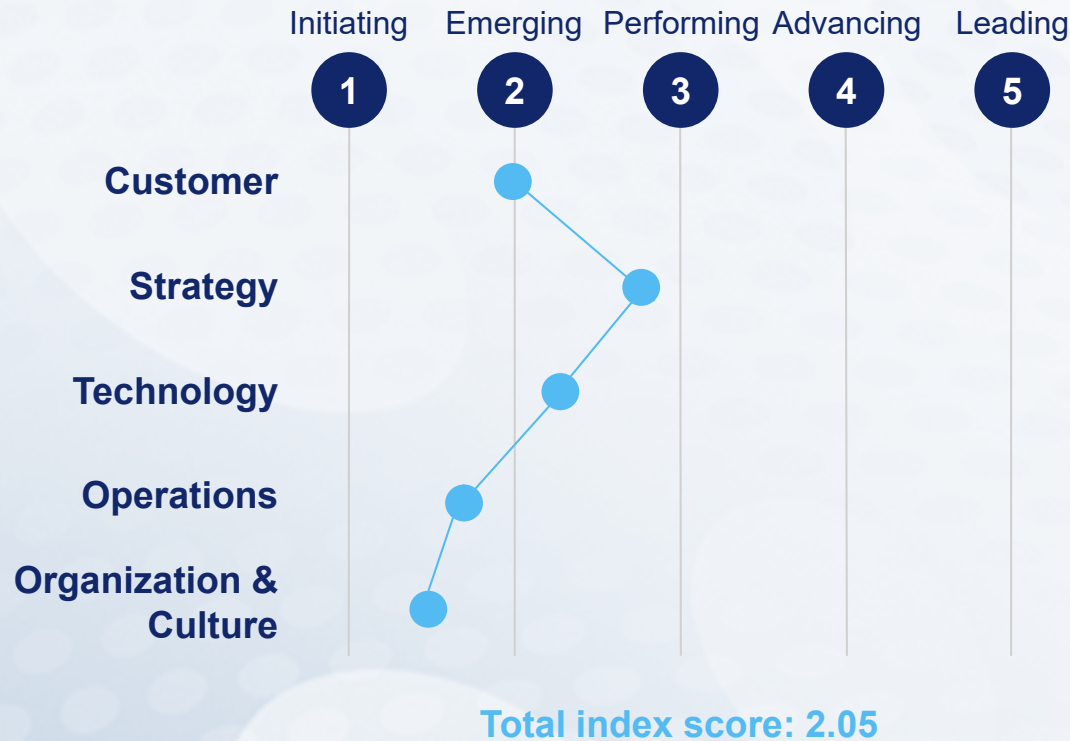
- **Network Capacity & Coverage**
Fulfil 5G requirements, accelerate FTTH rollout, reduce capex burden through innovative corporation models
- **Building digital ecosystems**
Building up orchestrated partnering landscape over the whole value chain from network over IT to Marketing, Sales and Service
- **Cloudification & Softwarization**
Realize flexibility and efficiency through automation and virtualized as well as open production models
- **Safeguarding customer relationship**
Optimize customer interfaces CEX, realize balance between own focused innovation and intelligent and flexible partnering models, segment of one

Source: DTC Digital Efficiency Database

Automotive: The industry is pressured by disruption through data-driven business, alternative MaaS* offers and environmental regulations

Mark Heinrich

Digital Efficiency Index



Source: DTC Digital Efficiency Database

Key Trends

- Connectivity and Digitalization**
 The connectivity of vehicles lays the foundation for new service offerings and data-driven business models in the future of the automotive sector
- Regional shift towards east**
 China is leading the future mobility market – more than ever before. Executives agree that China will leapfrog the market (e.g. with its battery industry)
- Autonomous, shared vehicles**
 Owning, sharing or renting - the mobility of the future offers more flexibility. Even more so with the introduction of self driving cars
- Electric and alternative drives**
 Electrification of vehicles is a mayor step towards carbon neutral mobility. Multiple drivetrain technologies (BEV, PHEV, FCEV) gain market shares

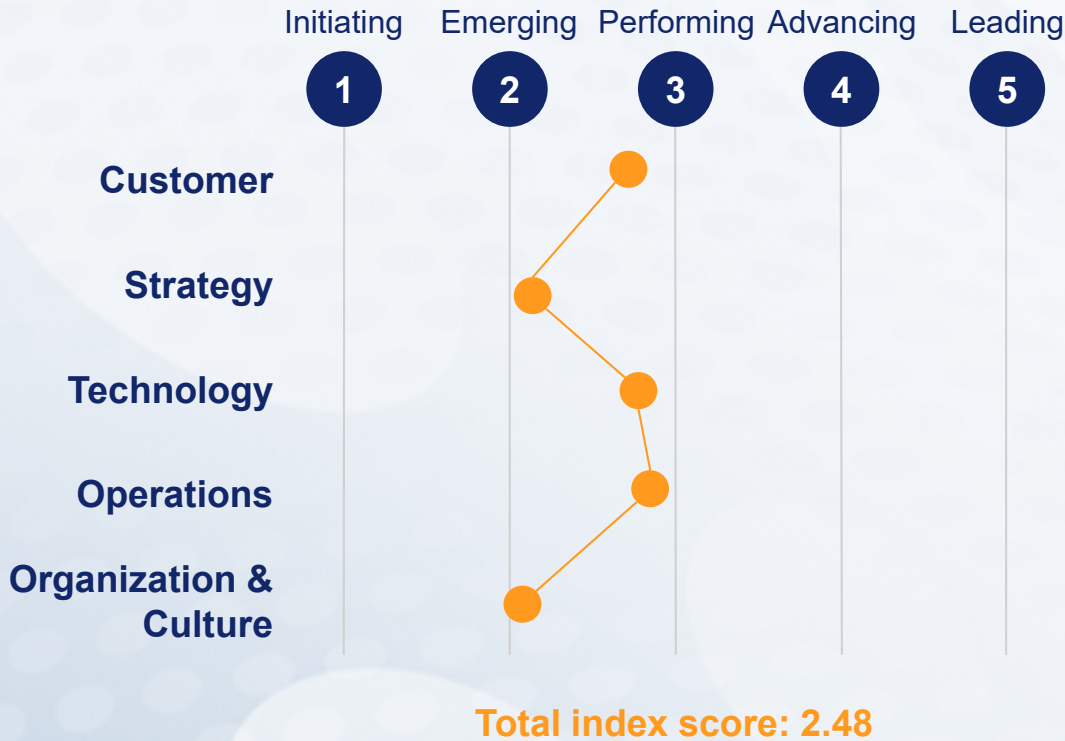
Key Challenges

- Becoming data driven**
 Data is the new oil“ - car makers need to shift their value creation in order not to be disrupted by IT-“native“-Companies
- Shift away from car ownership**
 A shift away from privately owned vehicles towards a service orientated mobility ecosystem strains automotive sale figures
- Choosing the right powertrain technology**
 Investments in new powertrain technologies are extremely high. Decisions in favor of a technology entail correspondingly high risks
- Intense governmental pressure on pollution**
 Environmental initiatives and regulations are putting pressure on the cash cows (diesel and petrol vehicles) of OEMs

Manufacturing: Most German companies drive efficiency with automation of processes, mainly in production and logistics

Dr. Olaf Sieg

Digital Efficiency Index



Key Trends

- **Condition Monitoring / AI**
Data analytics, error detection and machine learning within engineering, production and supply processes
- **Smart Planning & Production**
Digital production architecture, process automation, I4.0 usages and monitoring based on IoT, 5G, BIM models
- **Operations & Processes / ERP**
Optimization and simplification of operations / O2C processes driven by ERP / SAP Introduction
- **Digital Products / Digital Twin**
PLM strategy includes all digital models to be traced e.g. in the production / usage phase as “digital twins”

Key Challenges

- **Eco-Systems (new) challenger**
Big / small (IT) players aim to take over classic value chain parts, e.g. with new platform services
- **Data ownership**
Data analytics and usage for digital business require clear legal rules within partner / eco system
- **Hybrid Skills Engineers & IT**
Classic mechanical engineers require both IT and mechanical skills including agile methodologies (system engineering)
- **Innovation culture & Agility**
Manufactures often are still driven by family owned cultures, classical steering, processes and line-organization

Source: DTC Digital Efficiency Database