

Arthur D Little

Digital Transformation – How to Become Digital Leader

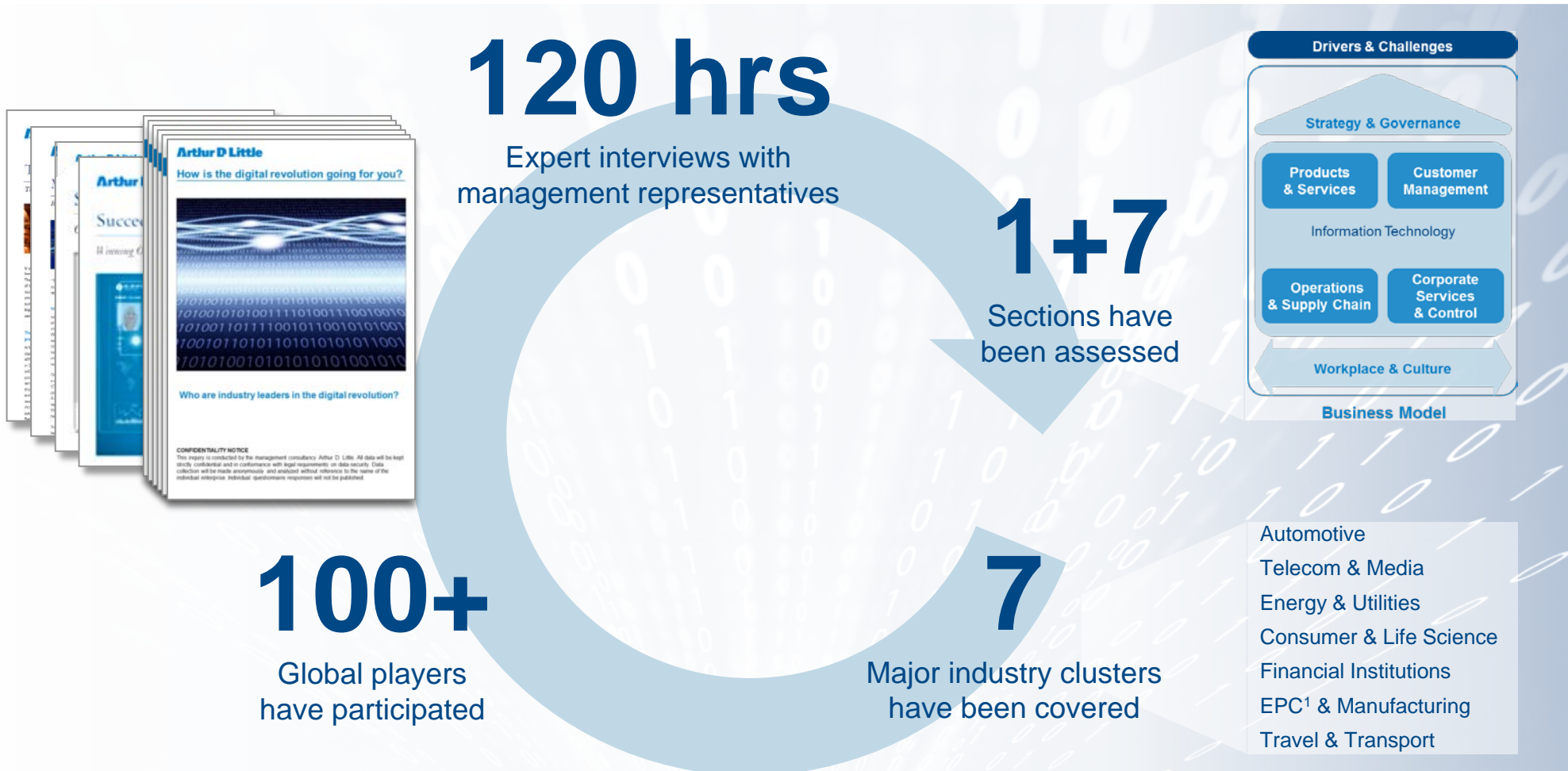
Study 2015 - Results

Arthur D. Little
www.adlittle.com



- 1 Executive Summary**
- 2 Deep Dive
- 3 Appendix (DTI per industry)

Arthur D. Little conducted the Digital Transformation Study globally and cross-industry. The key findings are summarized in this document.



Source: Arthur D. Little Digital Transformation Study 2015

1) EPC = Engineering, Procurement & Construction

The Arthur D. Little Digital Transformation study covers leading companies across all industry segments

Turning Digital has become a well understood imperative. Whilst Digital has commonly found its way into corporate strategies, the path to transform adequately remains unspecified



80% of surveyed companies are digital adaptive only

17% of companies have comprehensive digital transformation strategies in place

Progress in Digital Transformation is measured via the Digital Transformation Index (DTI)¹ **3.92 DTI**

15% have dedicated central units for Digital strategy development and implementation

50% perceive lack of digital knowledge across the value chain as their major challenge to overcome

Digital Transformation is everywhere and impacts everything and everyone



Our biggest challenge is to understand the customer and his **new behaviors**.

The market is changing: **partners are becoming competitors**.

Clients are **pushing** us towards digital transformation: If we don't transform they will move to our competitors.

Products and services need to undergo a digital transformation: we cannot just take **physical** products and put them **online**.

New entrants and fast-moving competitors increasingly capture **digital opportunities**, indicating the potential of “digital” in the market.

Productivity related to new technologies such as cobots, predictive analytics and additive manufacturing will increase by a factor of 100 over the next 5–8 years, while **costs** will be reduced by a factor of 100.

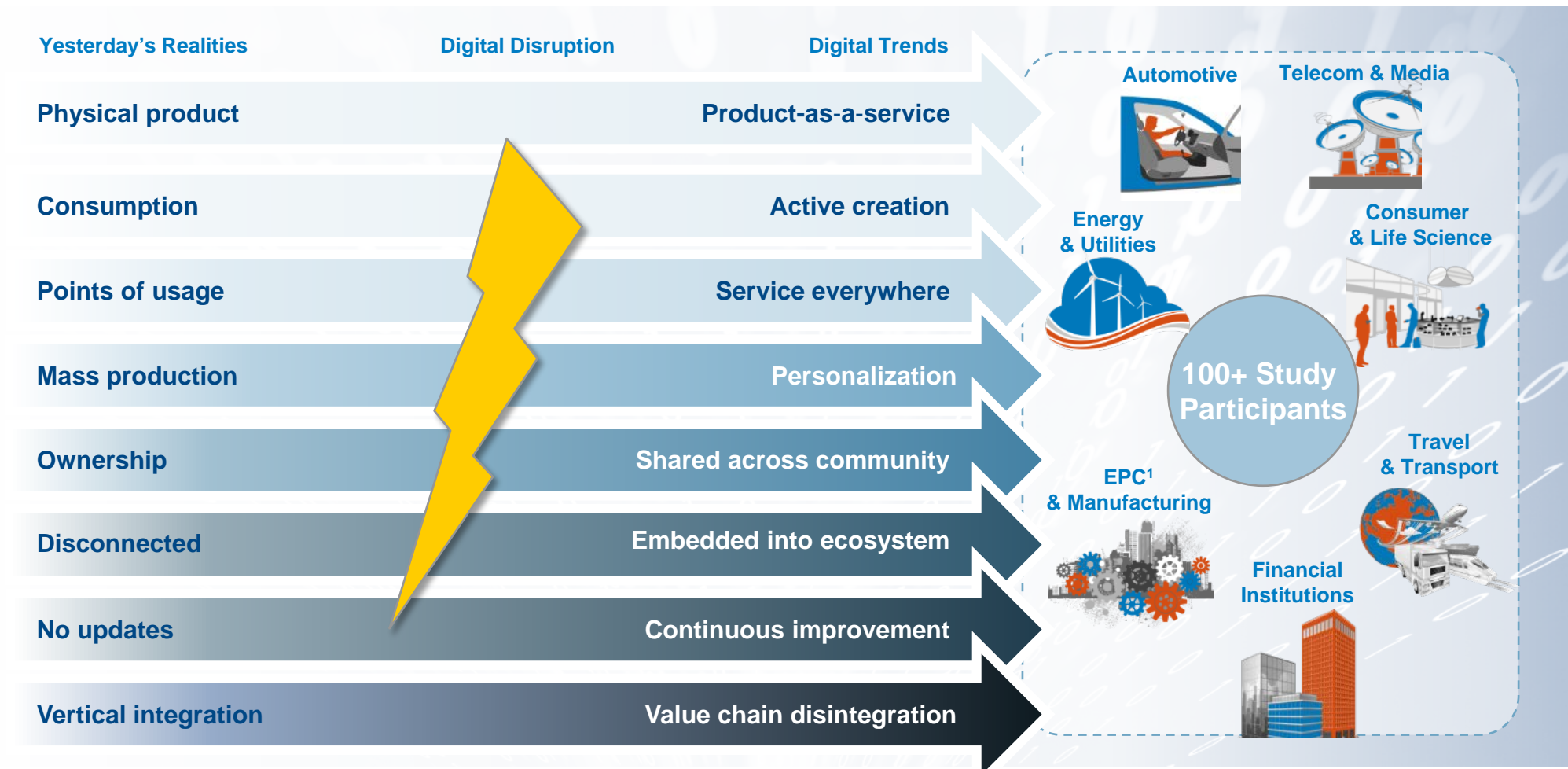
Our world has been changed by the expectations of our customers, while our basic service continues to be the same: **We need to transform** in order to maintain customer satisfaction.



Some of the below key findings we anticipated beforehand, whereas others have been surprising and astonishing

1. Digitization will change the competitive environment **of all industries** significantly
2. Most industries are **already affected by digital disruption** or realize that they will be soon
3. Few companies yet follow a **consistent digitization approach** for their whole business model
4. Companies **underestimate opportunities** in Operations and in Business Model Redesign
5. There is a **huge demand and backlog** for the majority to deal with “Digital” properly
6. No industry can claim to be a **digital front-runner**; however, each industry has its outperformers
7. Most companies are **either not aware of or ignore potential threats** from digital disruptors¹
8. Companies are **too slow in transformation**, though facing rapidly evolving digital competition
9. Third-party **integration is often underrated** as companies still try to solve problems on their own
10. The **usage of “smart data”**, and thus also **personalized offerings**, lag behind

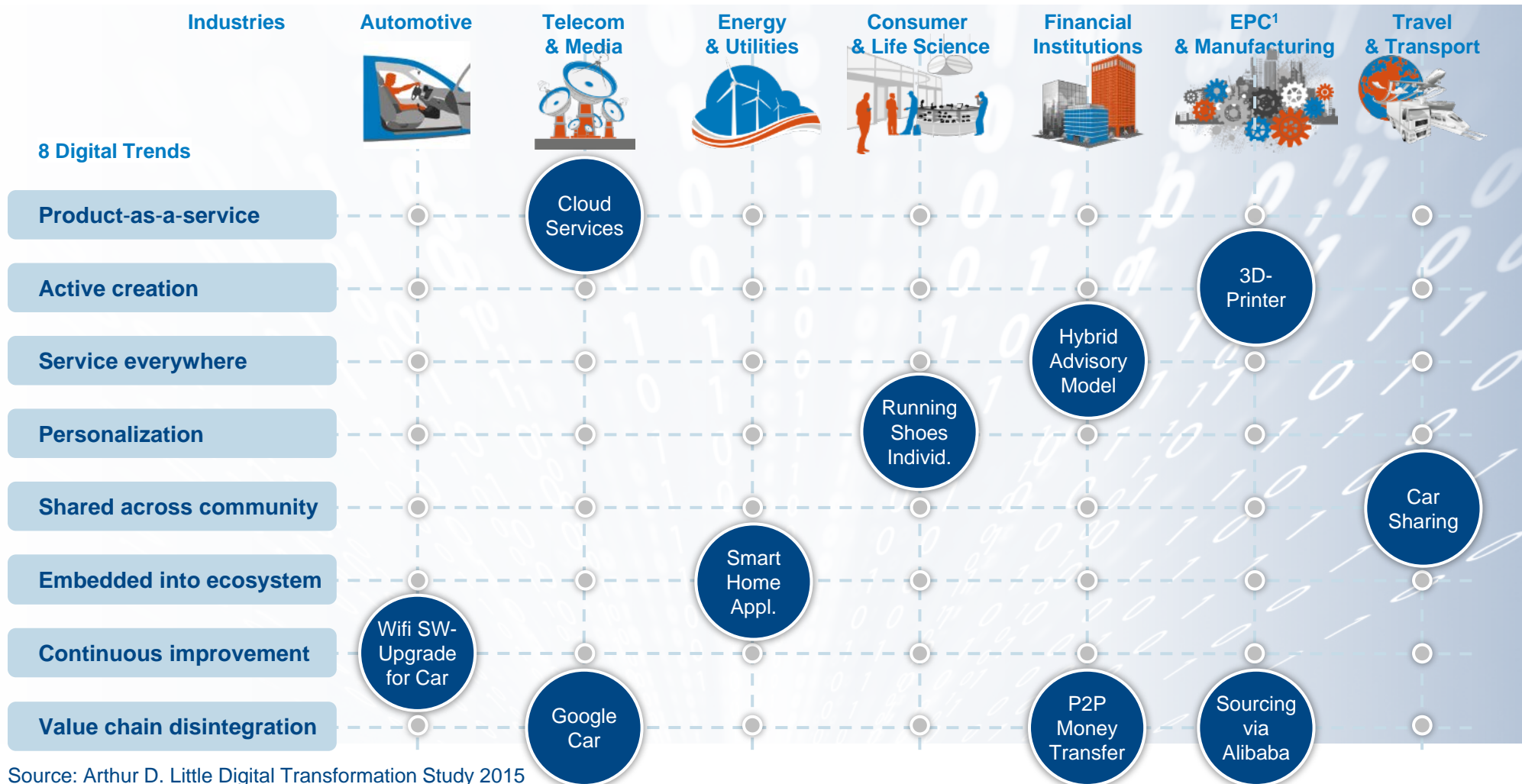
Some major digital trends change yesterday's realities – these “game changers” facilitate great opportunities and will inevitably generate some highly digitized champions



Source: Arthur D. Little Digital Transformation Study 2015

¹ EPC = Engineering, Procurement & Construction

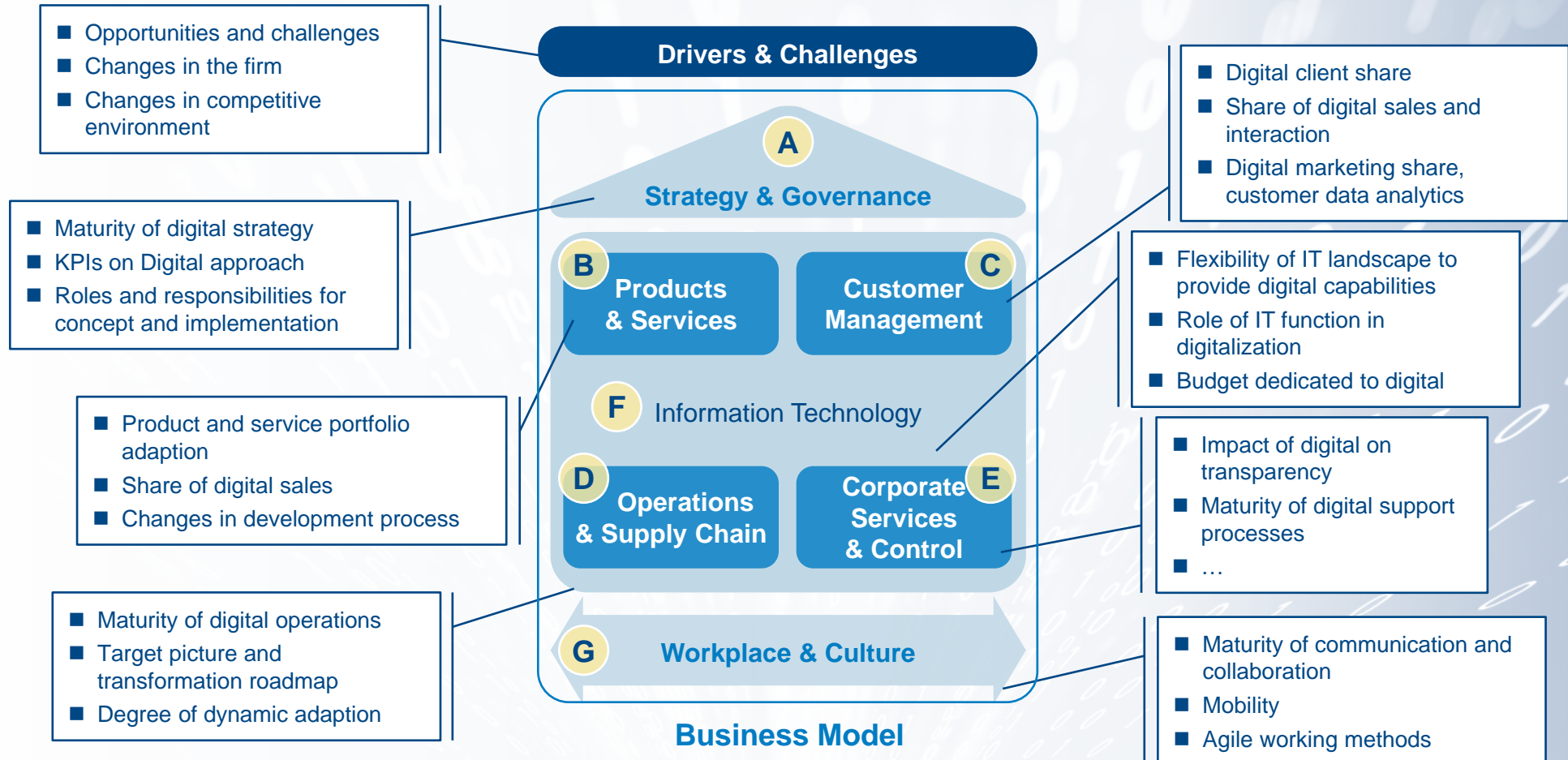
Prominent examples of digitalization can be found in every industry. By nature, each trend's impact varies and so does the industry-specific progress on digital transformation



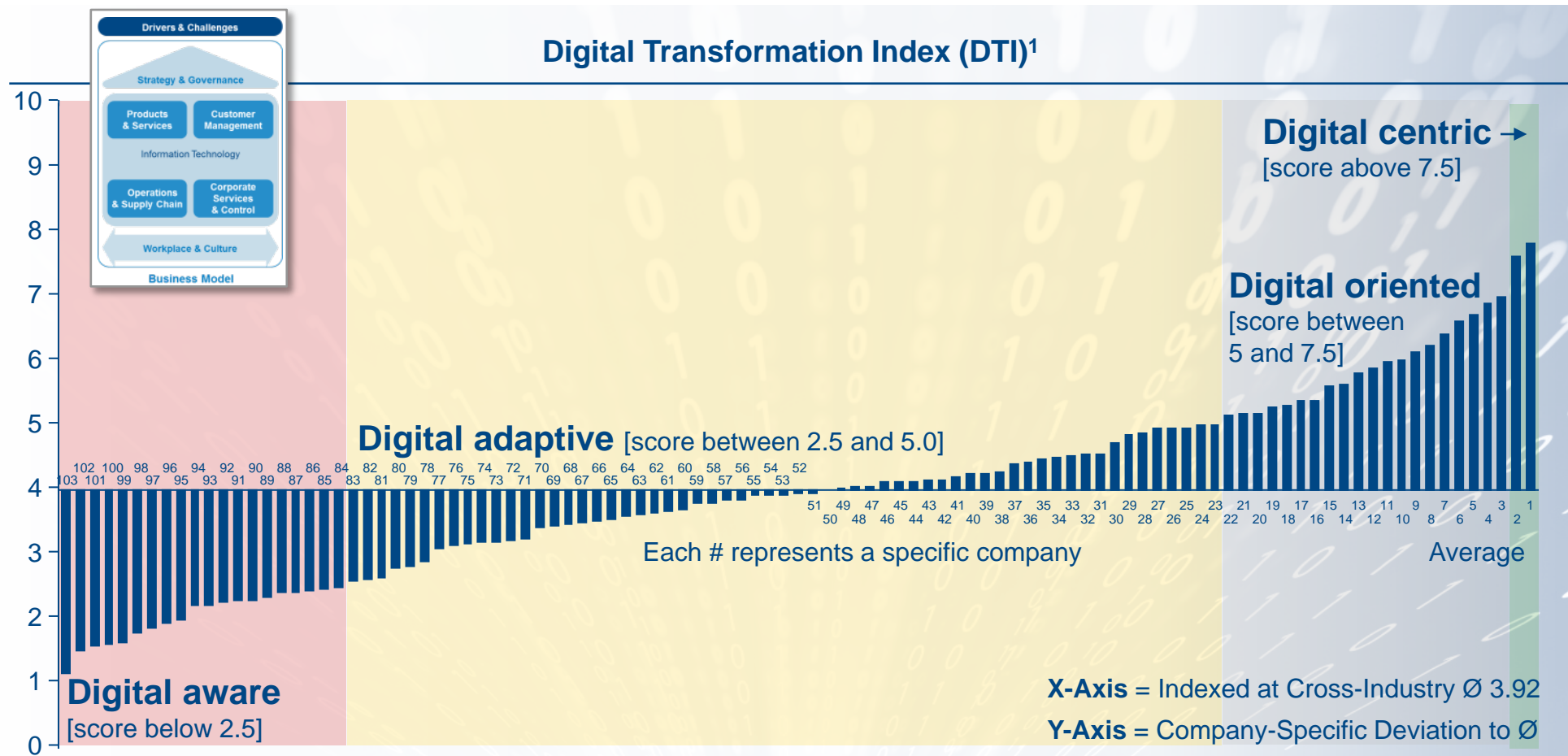
Source: Arthur D. Little Digital Transformation Study 2015

1 EPC = Engineering, Procurement & Construction

The survey followed a holistic approach to analyze the relevant sections for digitalization; the questions raised have been mapped to these sections



The Arthur D. Little Digital Transformation Index (DTI) shows that today few firms can be considered “digital oriented” or “digital centric”

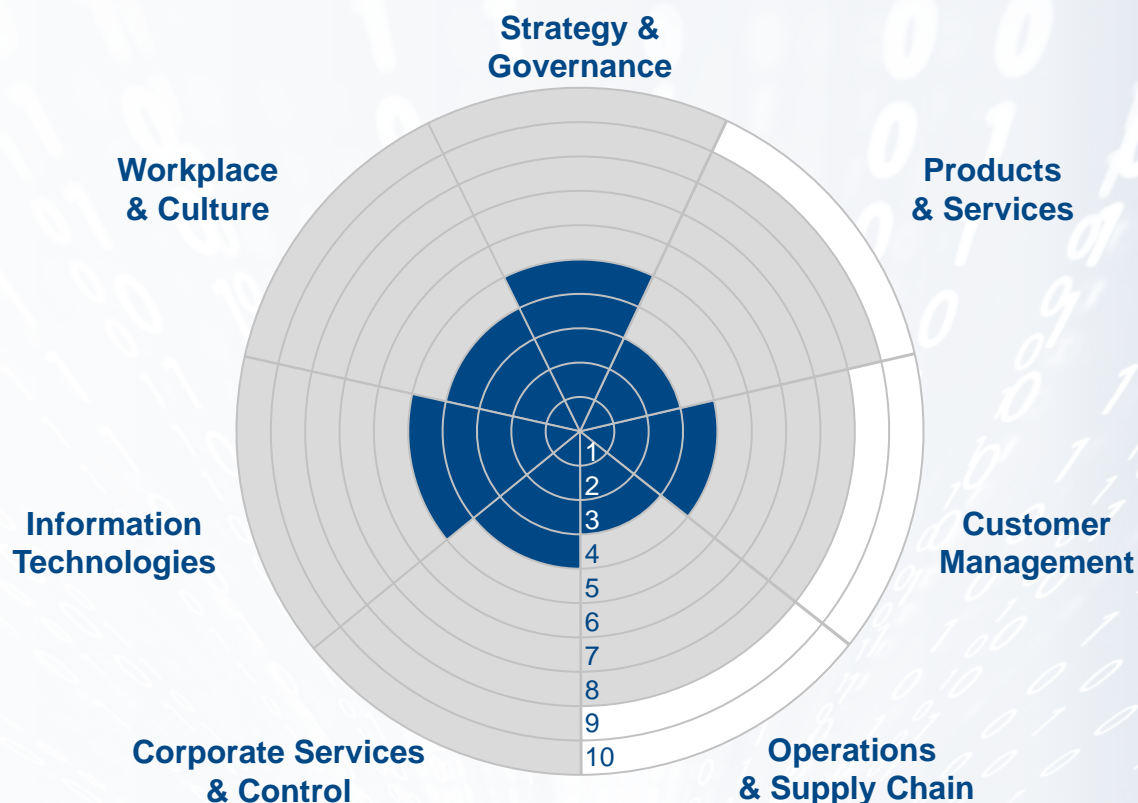


Source: Arthur D. Little Digital Transformation Study 2015

¹ DTI calculated as average of scores for each section

Average DTI is most advanced in the section “Strategy & Governance” as well as “Information Technology”, with a score of 5 – however, it still lags behind the virtual star performance

Digital Transformation Index (DTI) per Section



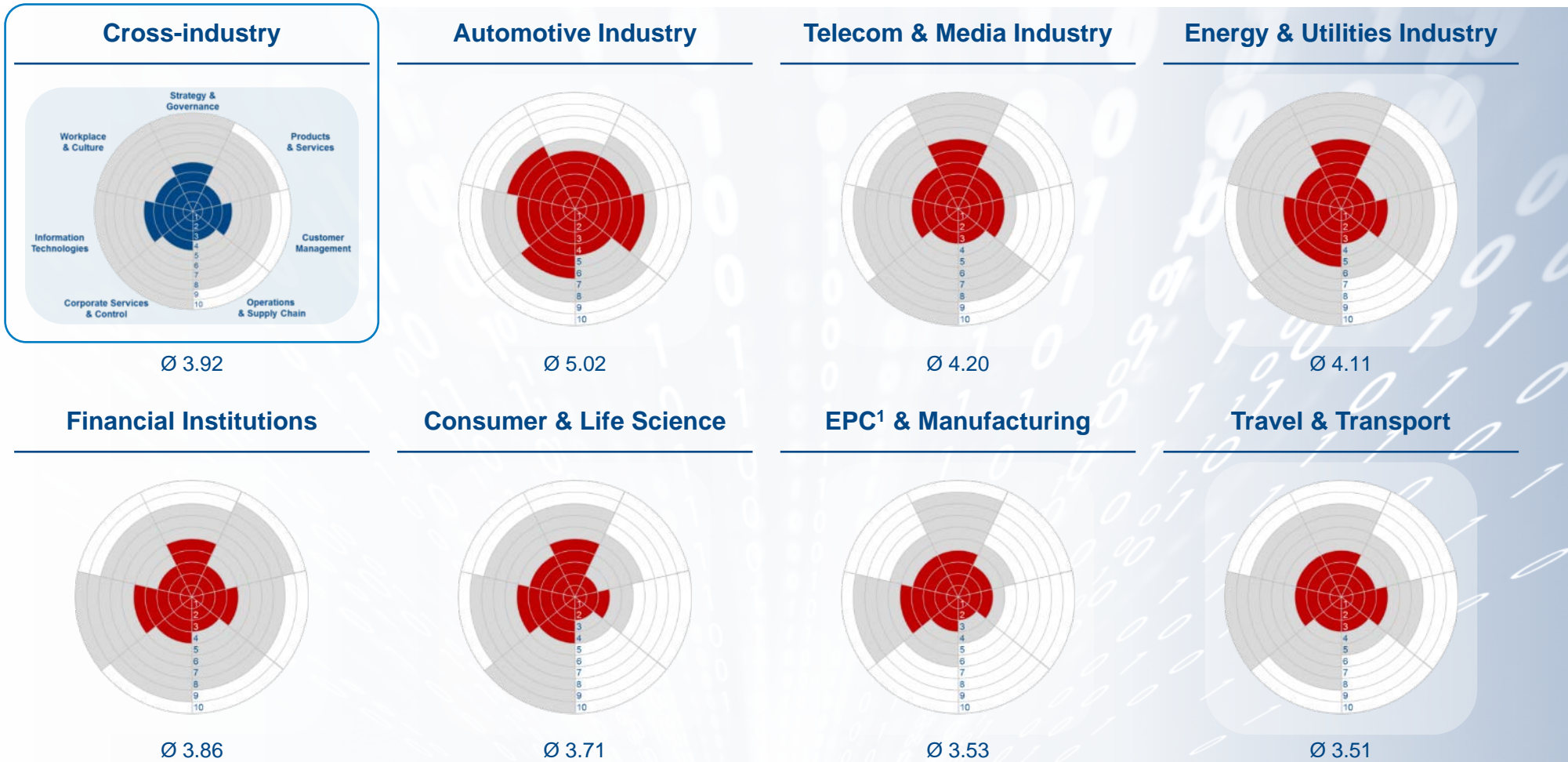
■ = Cross-Industry Virtual Star ■ = Cross-Industry Average

Source: Arthur D. Little Digital Transformation Study 2015

We collected many best practices for each section to share with you



The different progresses of industries in Digital Transformation can be investigated when looking at the radar charts, reflecting the 7 sections of the model

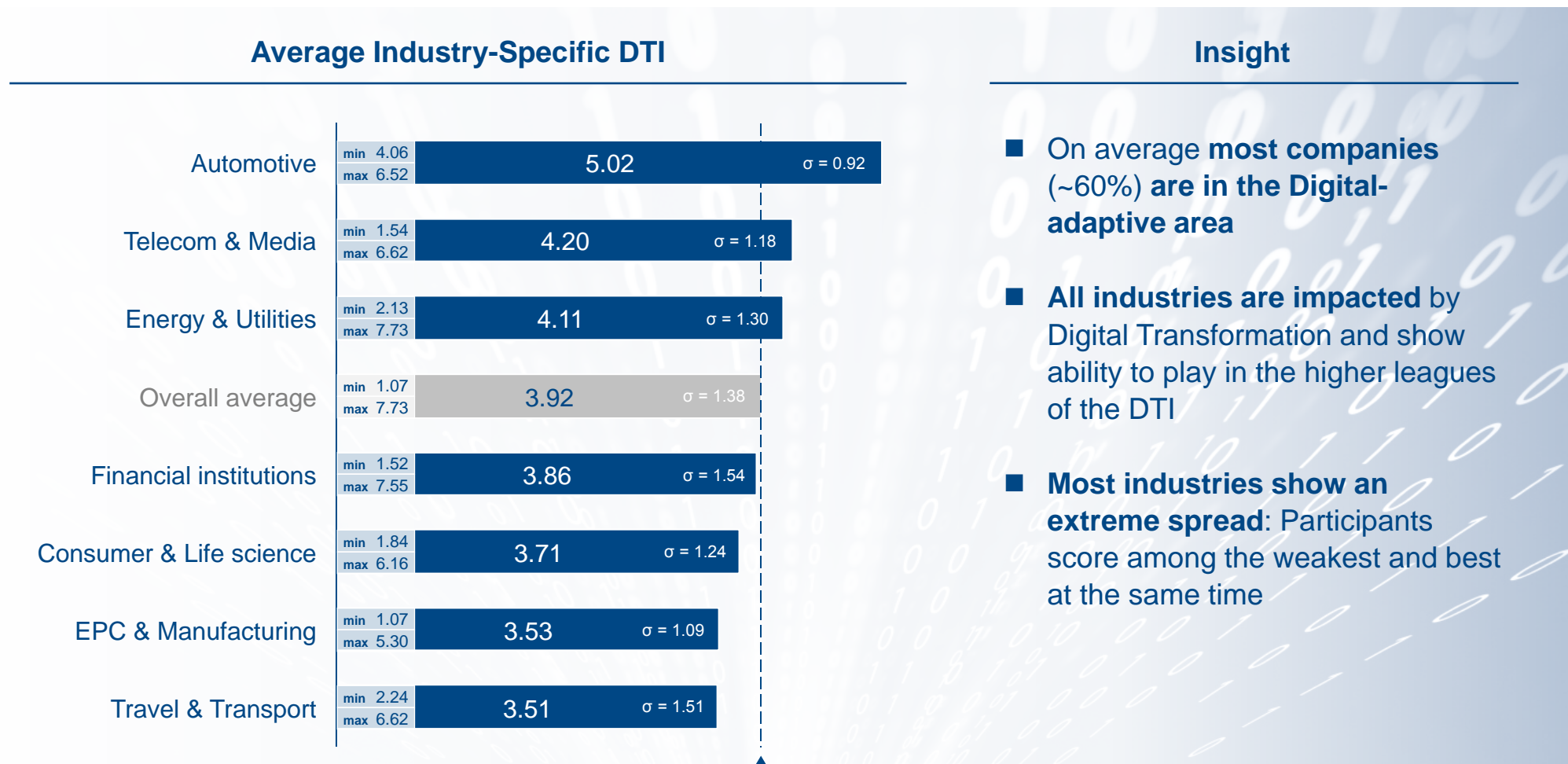


Source: Arthur D. Little Digital Transformation Study 2015

1) EPC = Engineering, Procurement & Construction

= (Cross-) Industry Virtual Star
 = Cross-industry average
 = Industry average

On average, all industries are “digital adaptive” only; however, each industry contains “digital-oriented” companies, whereas two industries contain one “digital-centric” company



Source: Arthur D. Little Digital Transformation Study 2015
 σ = Standard Deviation; \emptyset = Average

\emptyset 3.92

- 1 Executive Summary
- 2 Deep Dive**
- 3 Appendix (DTI per industry)

1 Executive Summary

2 **Deep Dive**

Drivers & Challenges

A. Strategy & Governance

B. Products & Services

C. Customer Management

D. Operations & Supply Chain

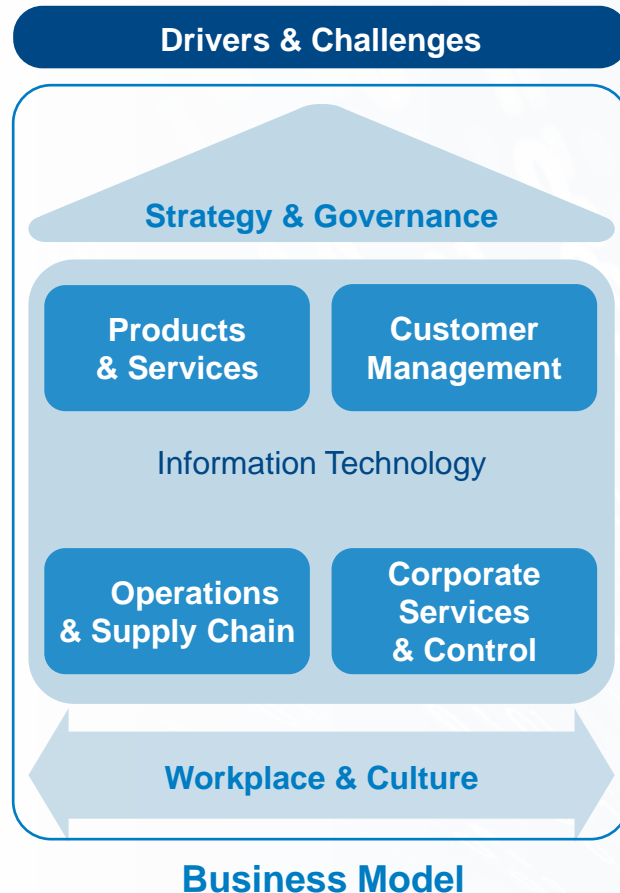
E. Corporate Services & Control

F. Information Technology

G. Workplace & Culture

3 Appendix (DTI per industry)

Drivers & Challenges Overview

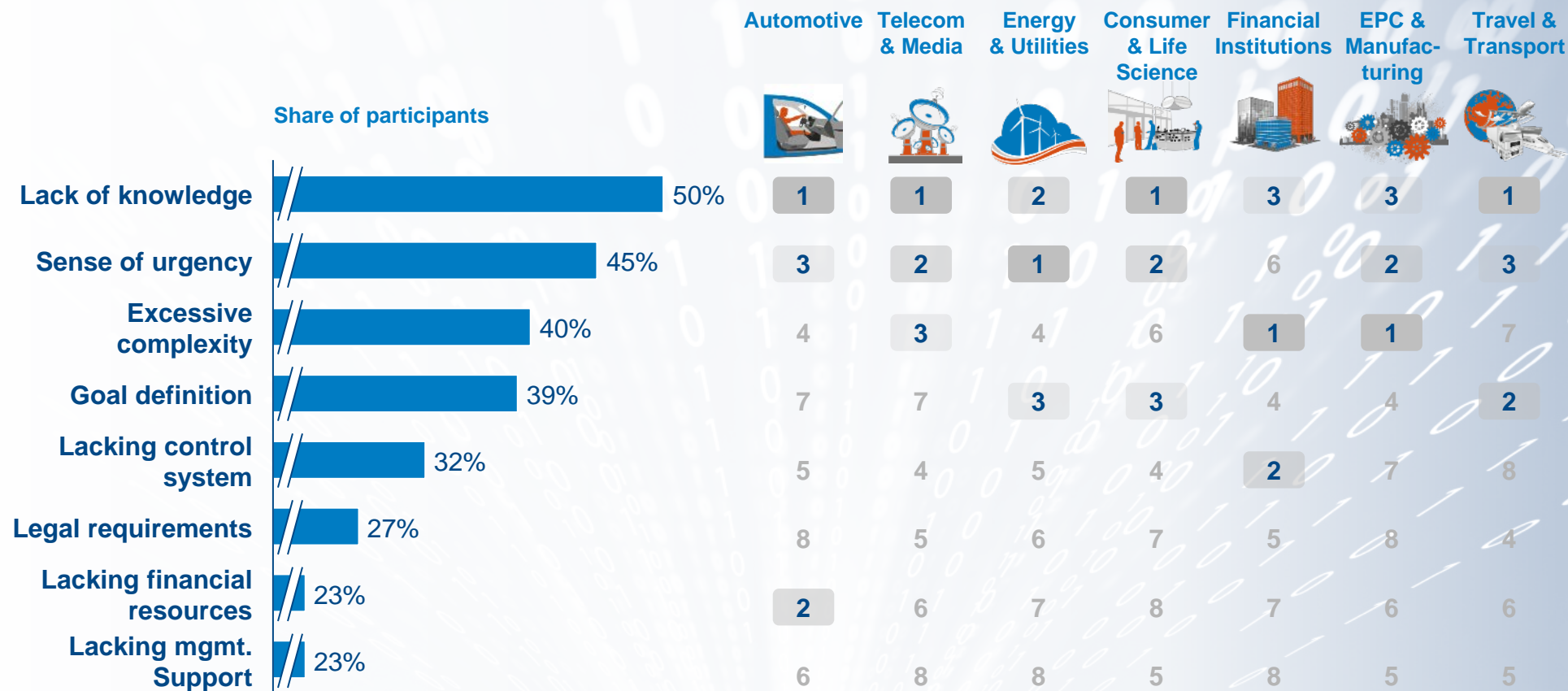


Key Learnings

- **Most critical challenges** for Digital Transformation are 1. lack of knowledge, 2. lacking sense of urgency and 3. excessive complexity
- Consideration of the **continuous increase of digital customer needs** and expectations will be key to succeeding in the future competitive landscape
- The primary impact of the Digital Transformation is reflected in **changes in distribution channels** and adaptations to existing products and services
- A prevailing number of the surveyed companies see the **acquisition of new customers** as a major opportunity brought by digitalization

Most critical challenges for Digital Transformation are 1. lack of knowledge, 2. lacking sense of urgency and 3. excessive complexity

Major Challenges for Digital Transformation



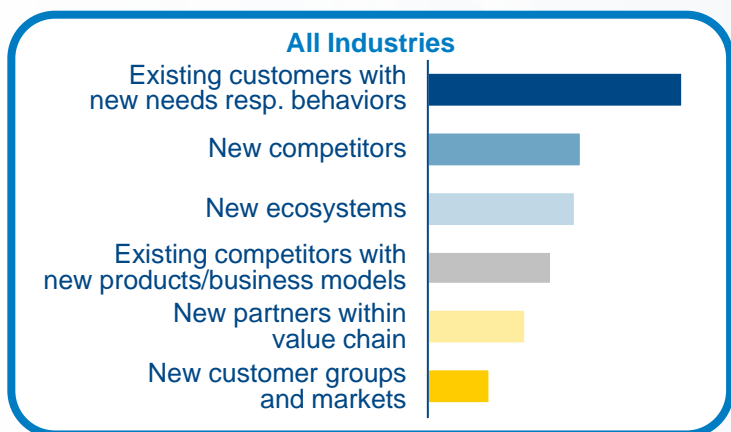
Source: Arthur D. Little Digital Transformation Study 2015

Numbers indicate frequency of answers among companies in given industries

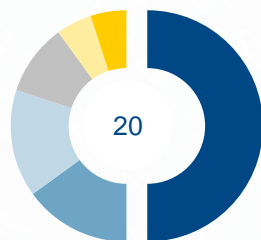
■ Highest

Consideration of the continuous increase of digital customer needs and expectations will be key to succeeding in the future competitive landscape

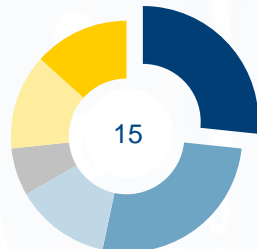
Changes in the Competitive Landscape due to Digitalization



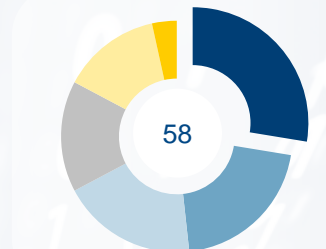
Consumer & Life Science



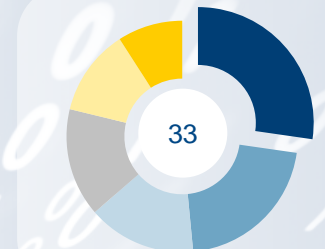
Automotive



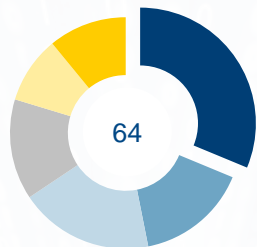
Telecom & Media



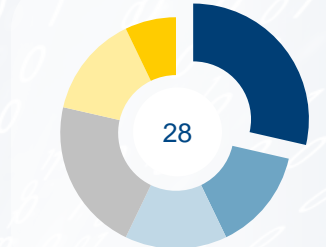
Energy & Utilities



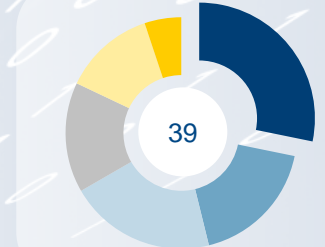
Financial Institutions



EPC & Manufacturing



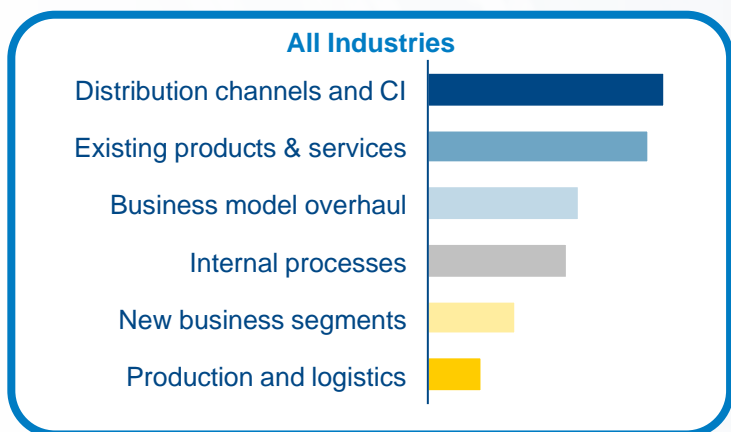
Travel & Transport



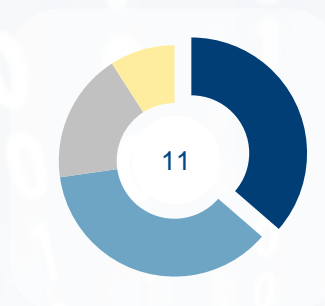
(X) = # of quotes

The primary impact of the Digital Transformation is reflected in changes in distribution channels and adaptations to existing products and services

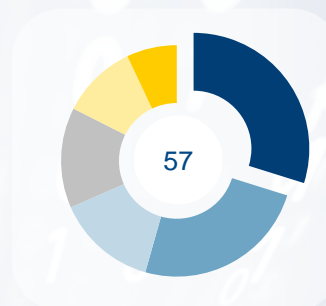
Changes of Your Company's Business Model due to Digitalization



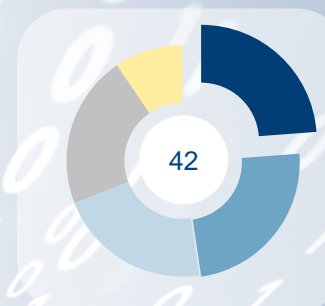
Automotive



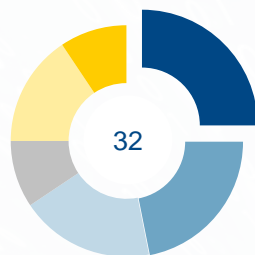
Telecom & Media



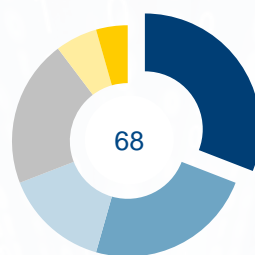
Energy & Utilities



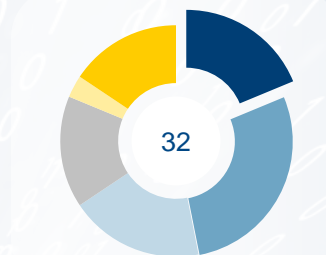
Consumer & Life Science



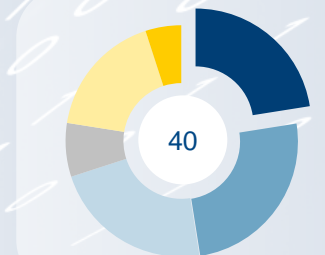
Financial Institutions



EPC & Manufacturing



Travel & Transport

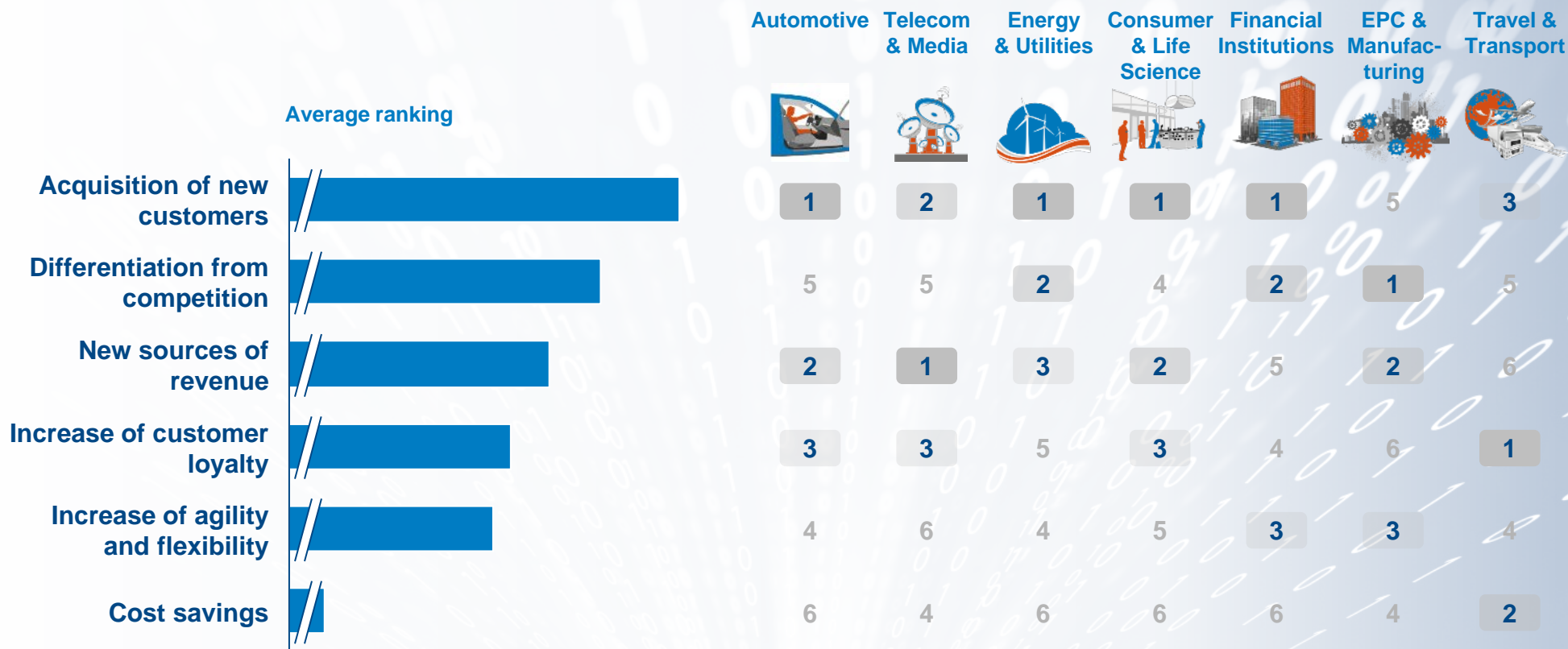


(X) = # of quotes

Arthur D. Little perspective: Companies are underestimating potential in new business segments and operations / processes

A prevailing number of the surveyed companies see the acquisition of new customers as a major opportunity brought by digitalization

Major Opportunities in the Digital Transformation Journey



Arthur D. Little perspective: Companies are underestimating potential for cost improvements, agility and flexibility increase

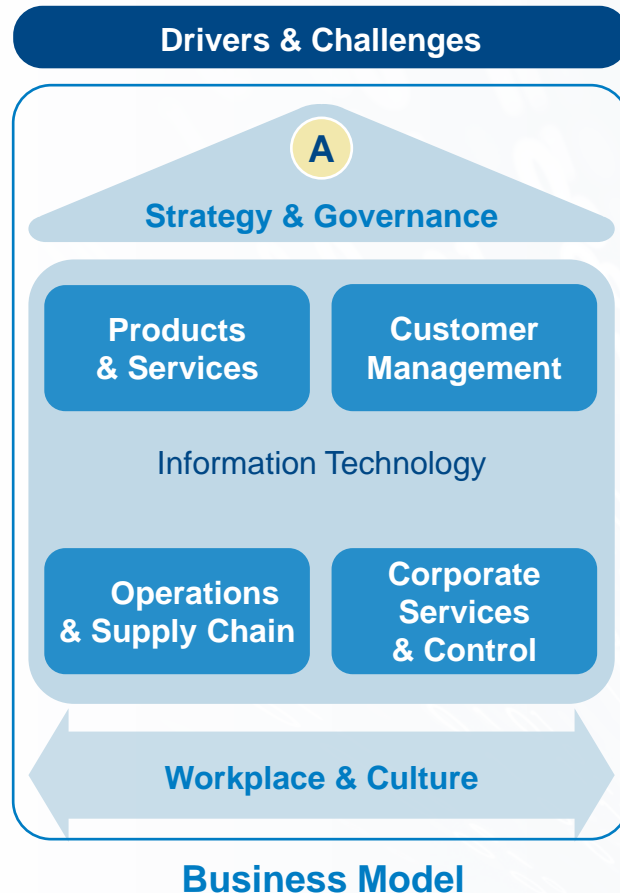
Source: Arthur D. Little Digital Transformation Study 2015

Numbers indicate frequency of answers among companies in given industries

■ Highest

- 1 Executive Summary
- 2 **Deep Dive**
 - Drivers & Challenges
 - A. Strategy & Governance**
 - B. Products & Services
 - C. Customer Management
 - D. Operations & Supply Chain
 - E. Corporate Services & Control
 - F. Information Technology
 - G. Workplace & Culture
- 3 Appendix (DTI per industry)

Strategy & Governance Overview

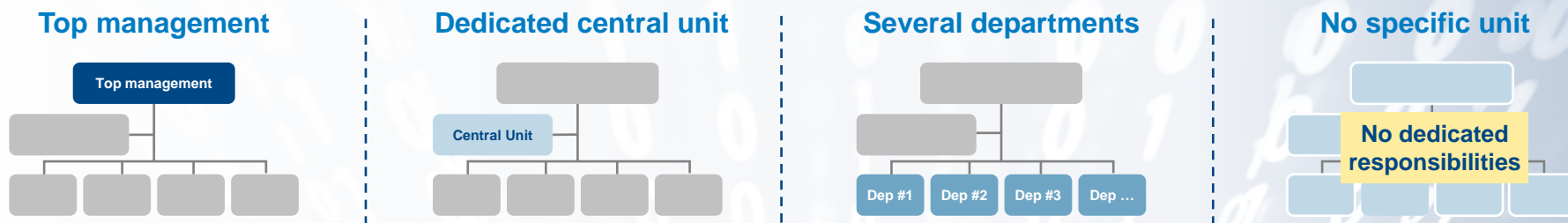


Key Learnings

- In most cases, CxOs **govern both strategy development and implementation** for the Digital Transformation – the topic has definitely arrived at the top of their agenda
- A cross-functional digital governance unit on corporate level can **ensure cross-functional digitalization of the End-to-End value chain**
- Across all industries, the levers **“hiring digital talent” and “training and further education” dominate** when it comes to capability building effort in all industries
- **Going beyond “corporate borders”** allows for matching experienced entrepreneurs with corporate resources, e.g. on dedicated venturing platforms

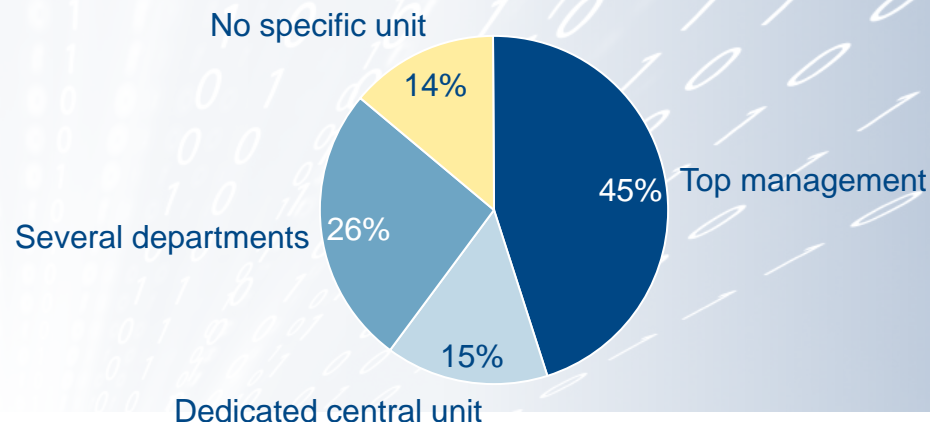
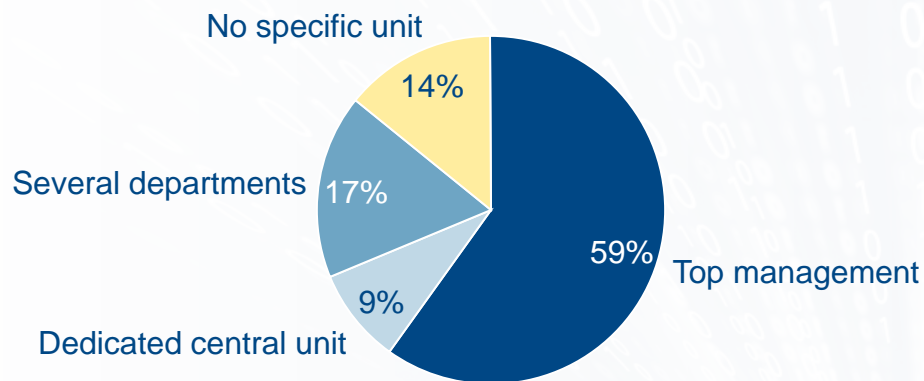
In most cases, CxOs govern both strategy development and implementation for the Digital Transformation – the topic has definitely arrived at the top of their agenda

Digital Strategy Development & Implementation



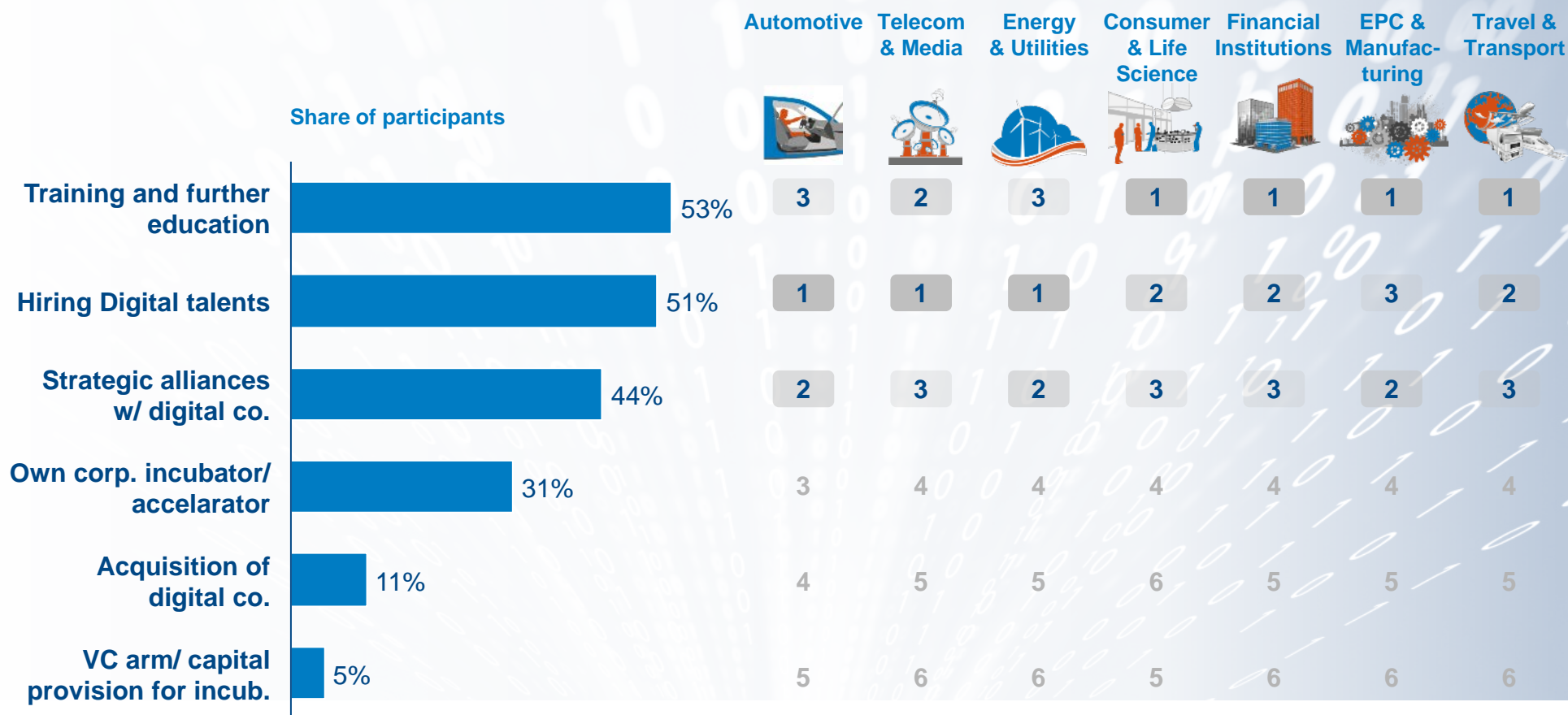
... is/are responsible for developing the Digital Strategy

... steer(s) the implementation of the Digital Strategy



Across all industries, the levers “training and further education” and “hiring digital talents” dominate when it comes to capability building effort in all industries

Measures Applied to Catalyze the Digital Transformation



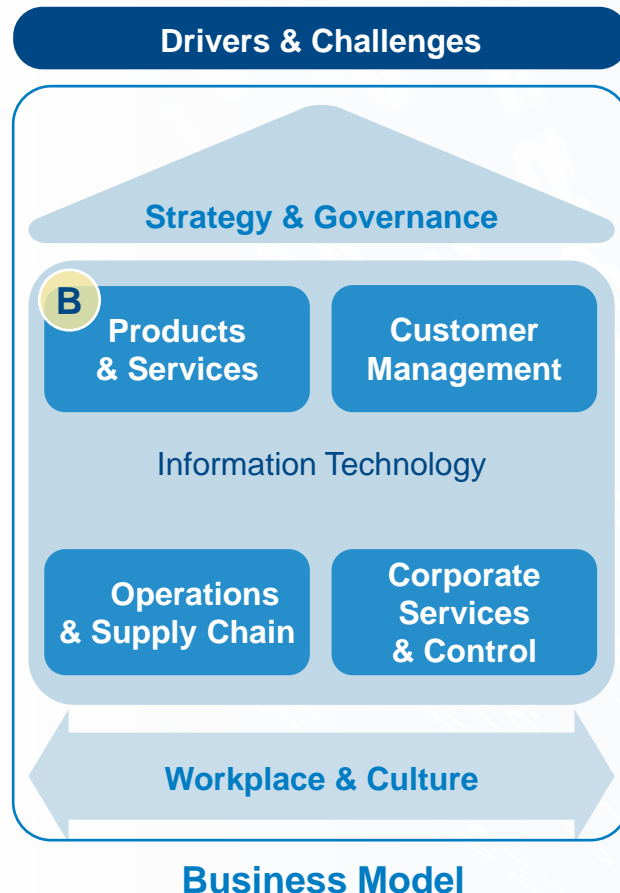
Source: Arthur D. Little Digital Transformation Study 2015

Numbers indicate frequency of answers among companies in given industries

■ Highest

- 1 Executive Summary
- 2 **Deep Dive**
 - Drivers & Challenges
 - A. Strategy & Governance
 - B. Products & Services**
 - C. Customer Management
 - D. Operations & Supply Chain
 - E. Corporate Services & Control
 - F. Information Technology
 - G. Workplace & Culture
- 3 Appendix (DTI per industry)

Products & Services Overview

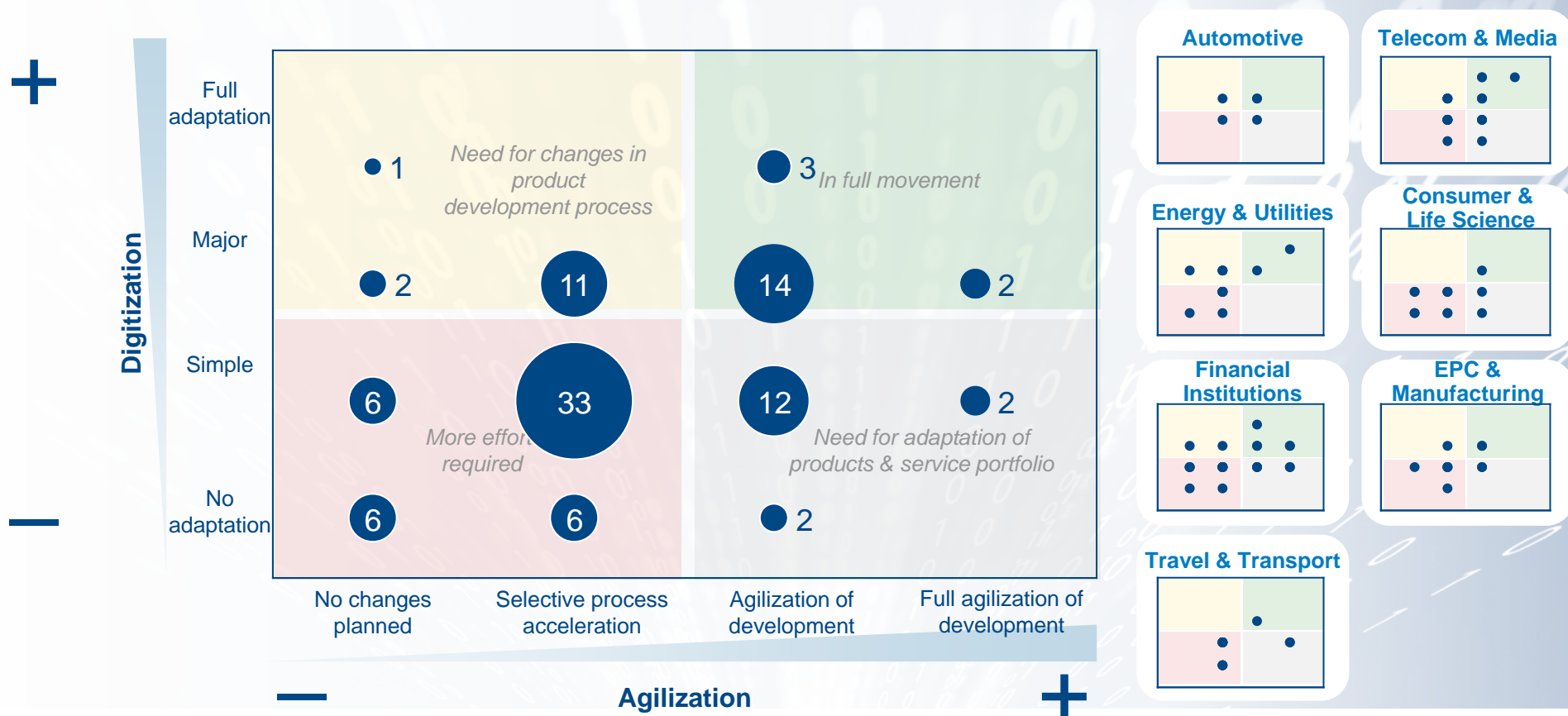


Key Learnings

- Most companies have **neither agilized nor digitized** their product and service portfolios
- The majority of companies only involve their customers in the product development process occasionally – **industry leaders typically involve their customers**
- It is worthwhile to **experiment with the smartization** of classic “Brick & Mortar” business – in order to protect core business and increase attraction
- For digitized products, the user experience can be enhanced through **remote SW-upgrades and data collection** to automatically inform on repair and service requirements
- Introduction of **products and services with peer-to-peer components** can increase competitiveness and growth of customer base

Most companies have neither agilized nor digitized their product and service portfolios

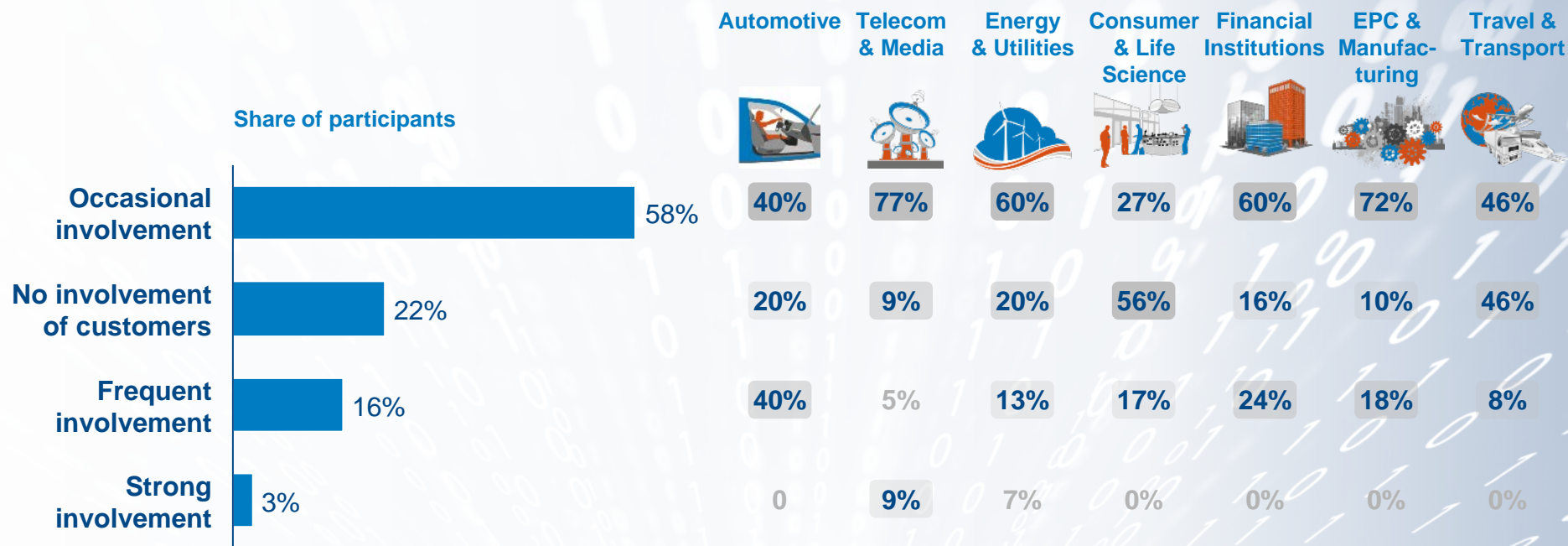
Agilization in P&S Development vs. P&S Digitization



Source: Arthur D. Little Digital Transformation Study 2015

The majority of companies only involve their customers in the product development process occasionally – industry leaders typically involve their customers

Customer Involvement in Product Development



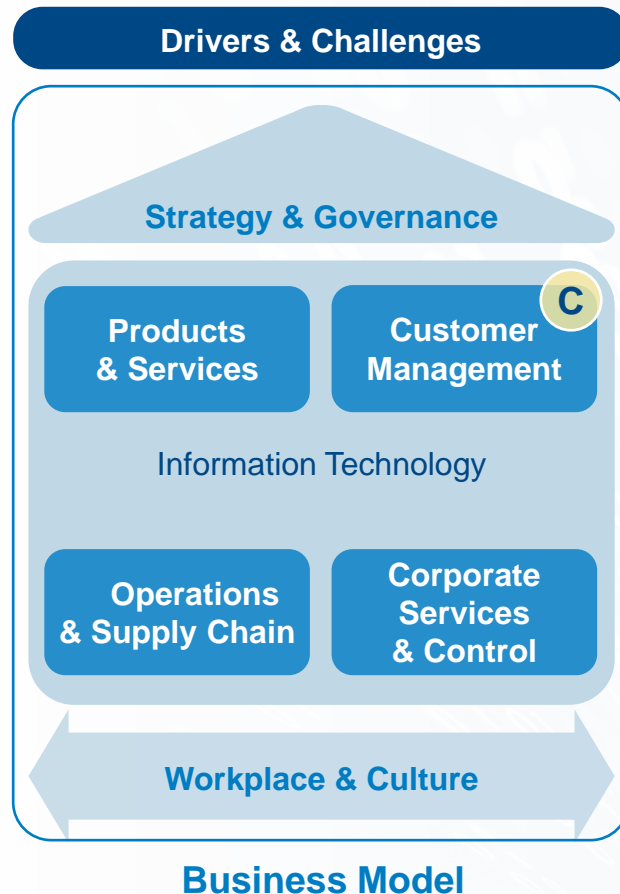
Source: Arthur D. Little Digital Transformation Study 2015

Numbers indicate frequency of answers among companies in given industries

■ Highest

- 1 Executive Summary
- 2 **Deep Dive**
 - Drivers & Challenges
 - A. Strategy & Governance
 - B. Products & Services
 - C. Customer Management**
 - D. Operations & Supply Chain
 - E. Corporate Services & Control
 - F. Information Technology
 - G. Workplace & Culture
- 3 Appendix (DTI per industry)

Overview Customer Management



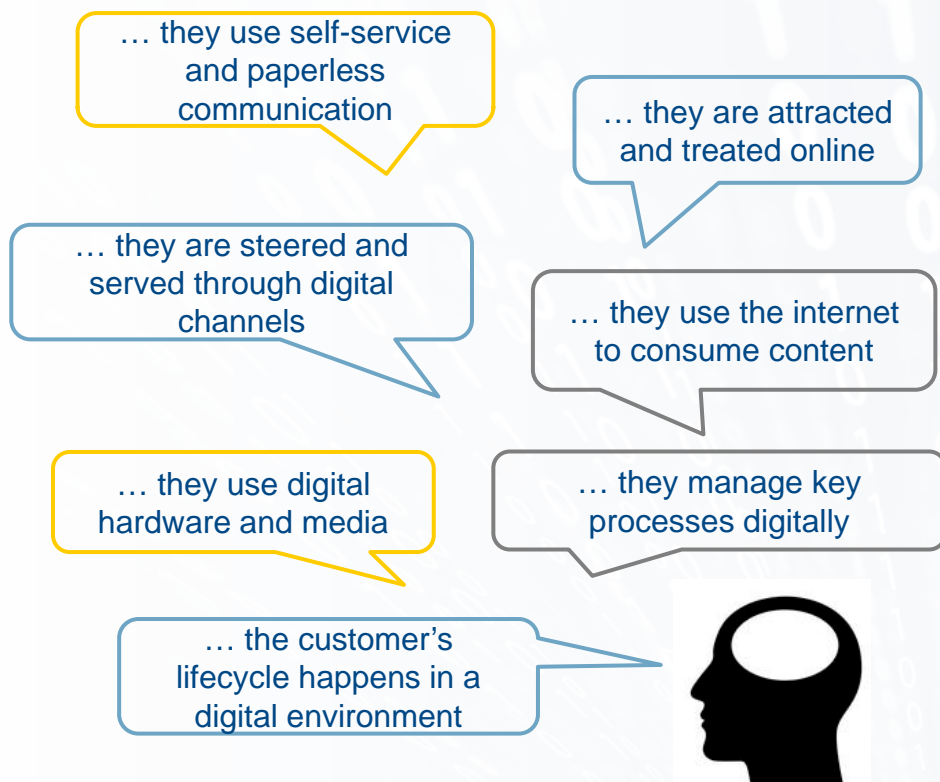
Source: Arthur D. Little Digital Transformation Study 2015

Key Learnings

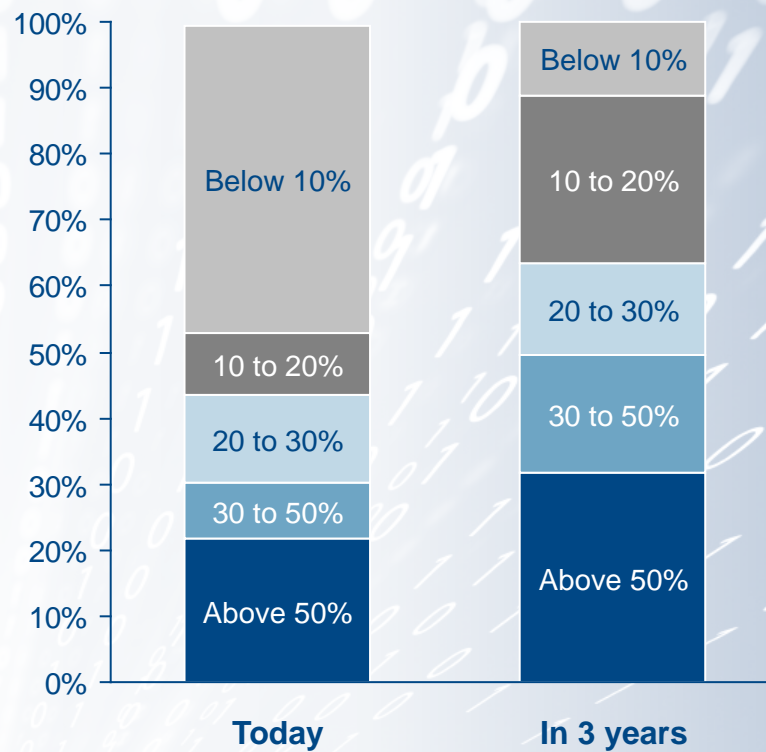
- Despite a diverse understanding of the nature of the “digital customer”, companies expect a **significant increase in the share of digital customers** within the next 3 years
- The share of customer interactions through digital customer service is **constantly growing** – great opportunities lie ahead
- **Digital technology can be leveraged to transform** from wholesale to a retail-led growth strategy based on an integrated customer experience across all channels
- Current low share of digital marketing expenditure correlates with a low share of digital channel sales – **both are mostly still below 25%, but predicted to grow**
- There is still huge potential for many companies **to capture client information from digital interactions** and increase the benefit for better business decisions
- **Real-time dynamic pricing** can be used to optimize revenues by driving in an average profit boost of ca. 25%
- **Integrated solutions with sophisticated analytics** are meanwhile available across the customer journey and history

Despite a diverse understanding of the nature of the “digital customer”, companies expect a significant increase in the share of digital customers within the next 3 years

Companies Consider Customers ‘Digital’ if ...



Share of ‘Digital’ Customers¹



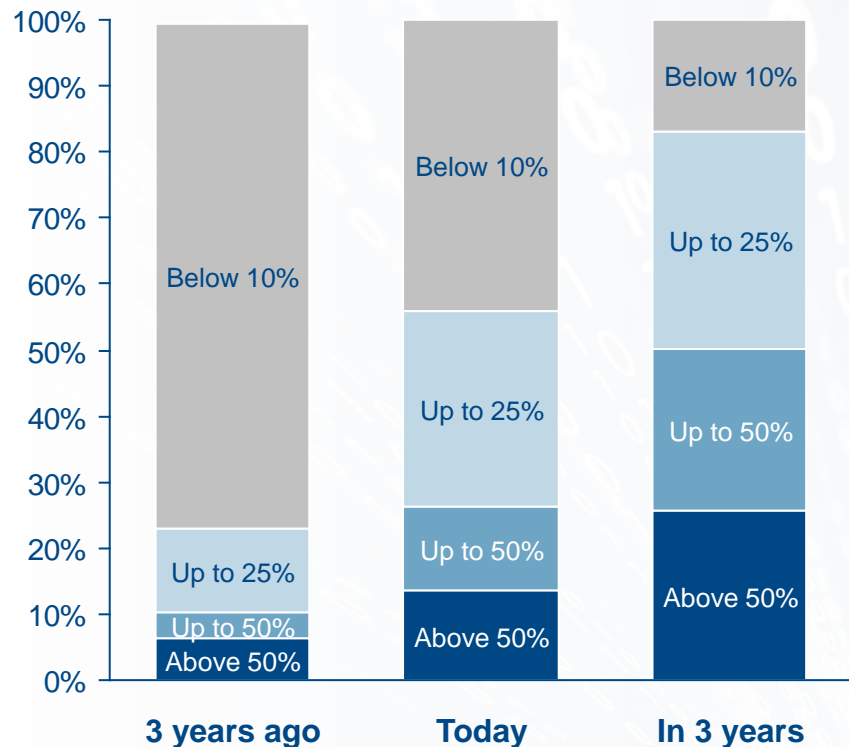
Source: Arthur D. Little Digital Transformation Study 2015

¹ Related to a company’s total customer base; sums may not add up as some participants have voted for n/a

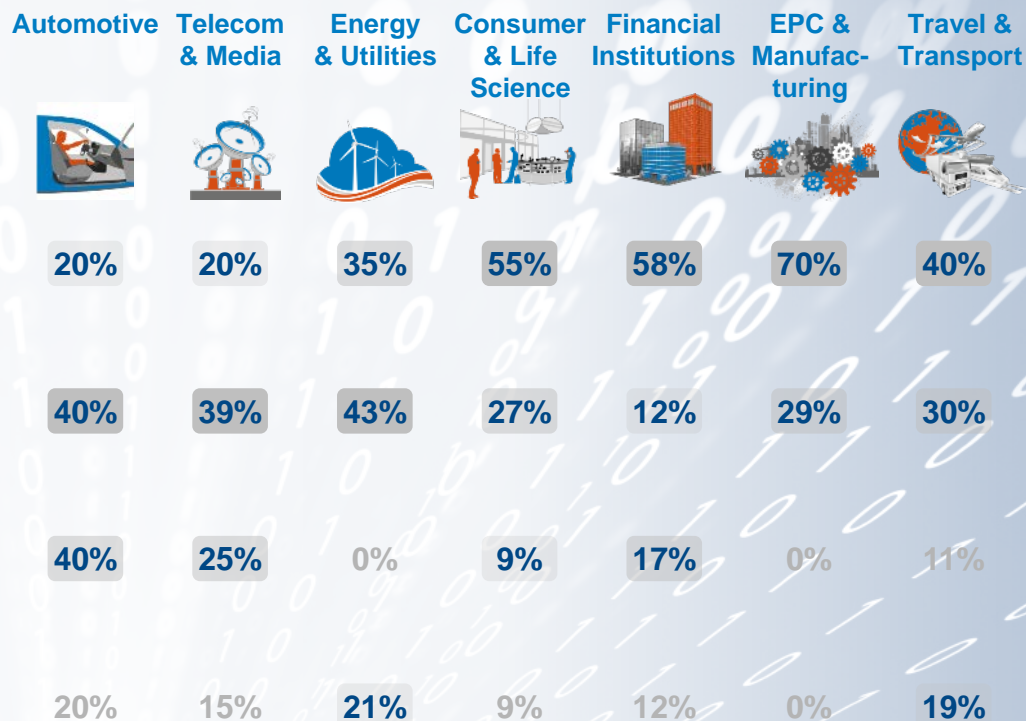
The share of customer interactions through digital customer service is constantly growing – great opportunities lie ahead

Digitalization of Customer Service Interaction

All industries



Current situation in respective industries

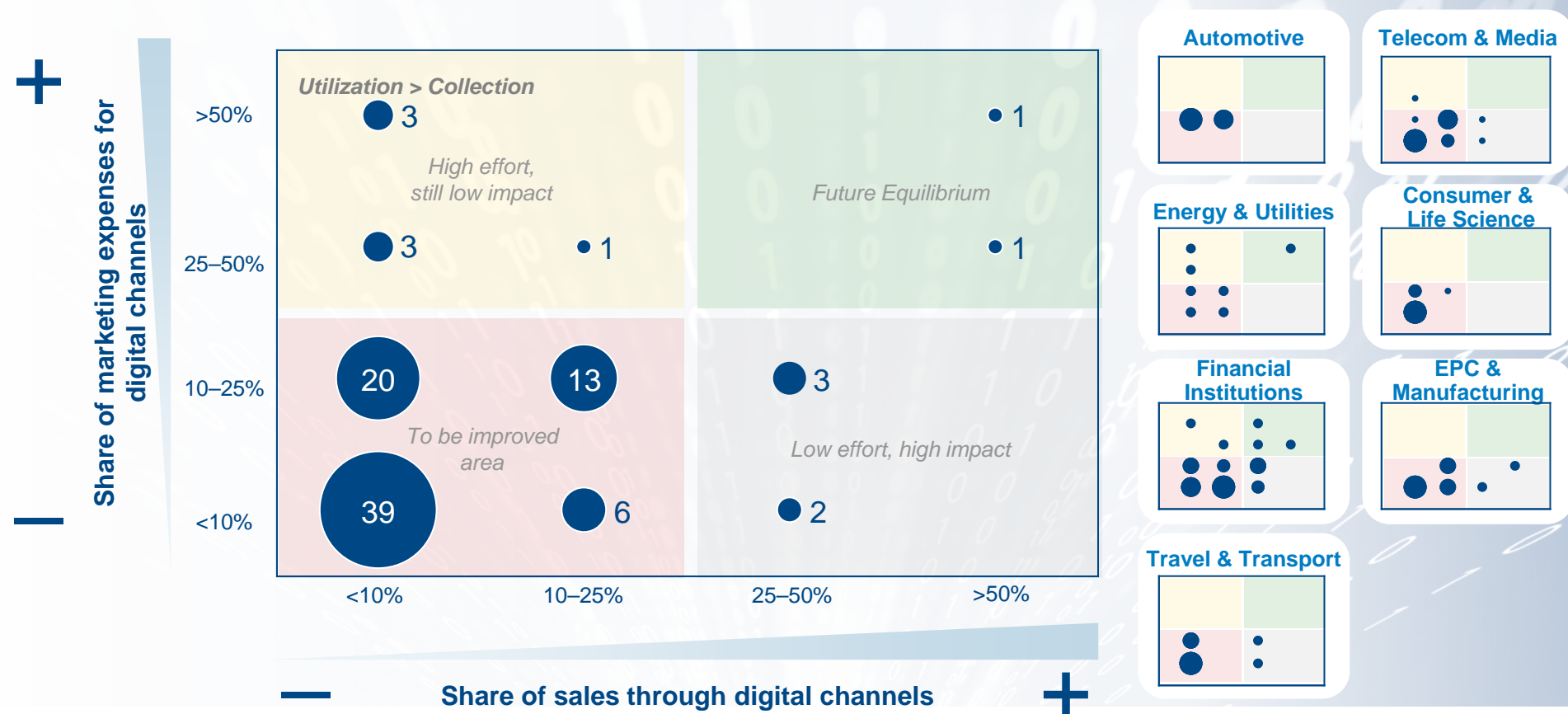


Source: Arthur D. Little Digital Transformation Study 2015

% Percentage share of companies by given answer in respective industries

Current low share of digital marketing expenditure correlates with a low share of digital channel sales – both are mostly still below 25%, but predicted to grow

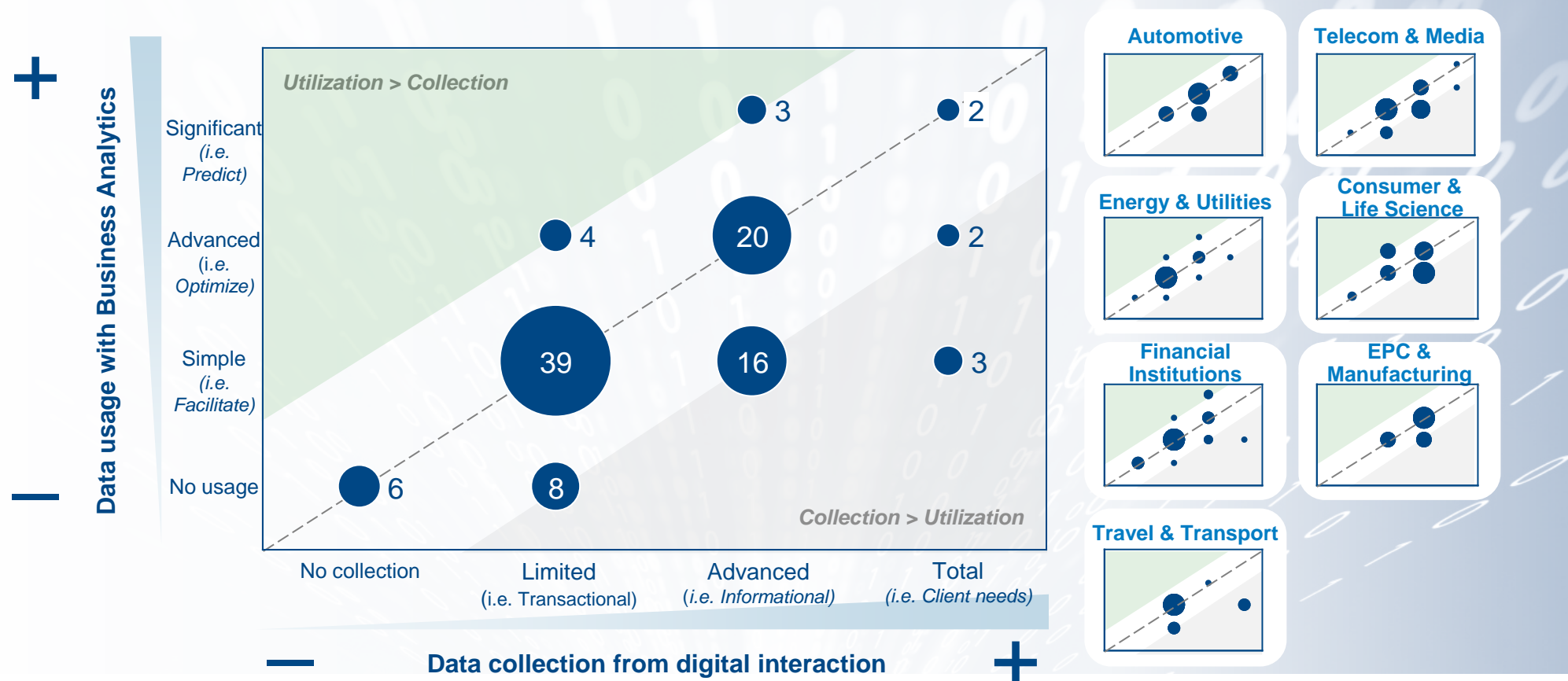
Impact of Digital Marketing Expenditure on Digital Channel Sales



Source: Arthur D. Little Digital Transformation Study 2015

There is still huge potential for many companies to capture client information from digital interactions and increase the benefit for better business decisions

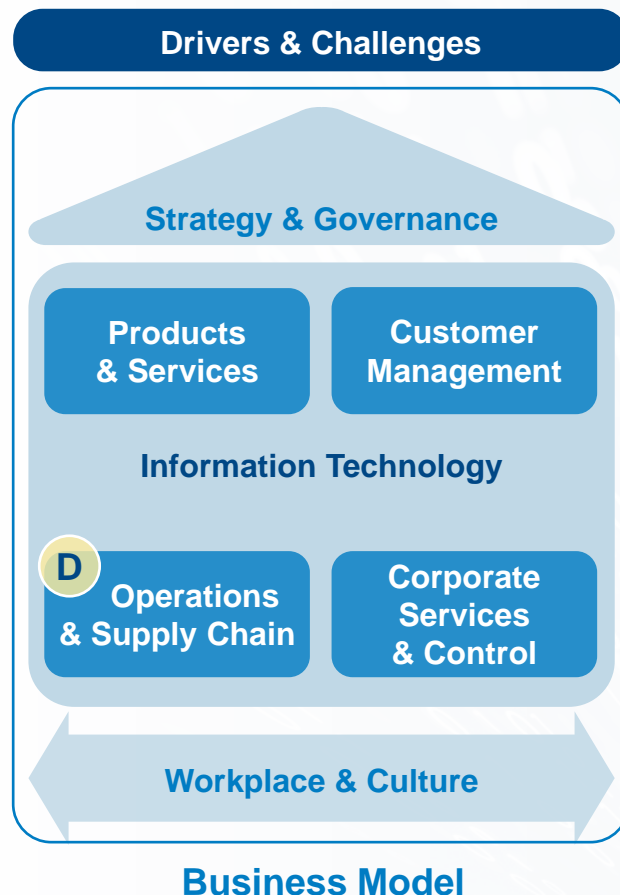
Obtaining Customer Information and Using it



Source: Arthur D. Little Digital Transformation Study 2015

- 1 Executive Summary
- 2 **Deep Dive**
 - Drivers & Challenges
 - A. Strategy & Governance
 - B. Products & Services
 - C. Customer Management
 - D. Operations & Supply Chain**
 - E. Corporate Services & Control
 - F. Information Technology
 - G. Workplace & Culture
- 3 Appendix (DTI per industry)

Overview Operations & Supply Chain

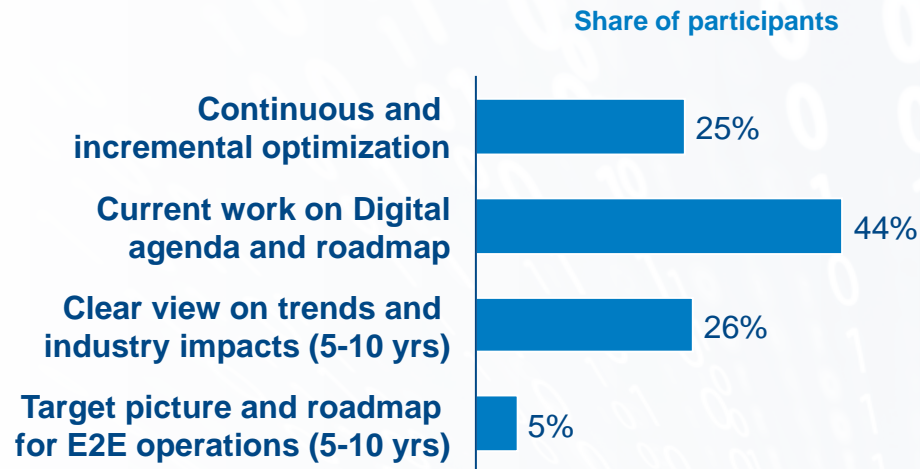


Key Learnings

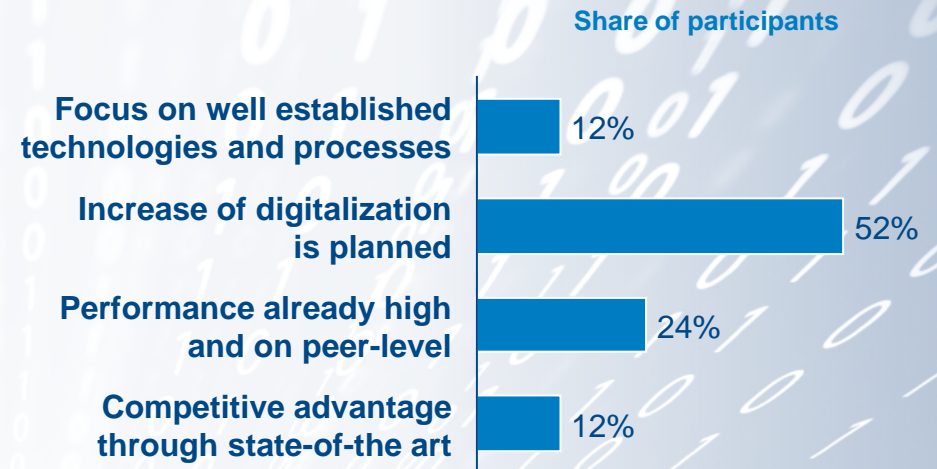
- 70% of the participants have no clear view and perspectives on trends and the **impact** of new digital technologies **on their Operations & Supply Chain**
- Most companies **underestimate radical innovation capabilities** and **full digitalization** of technological components in Operations & Supply Chain
- Leading Companies have a **clear understanding** of how digital and new technologies will **impact** Operations & Supply Chain and have set up a process for rapid deployment
- Prototypes already allow for de-central **in-store and just-in-time productions**, i.e. customized products with individual colors, sizes, etc. with a few minutes' delivery time
- Tests of Augmented Reality in warehousing resulted in **significant efficiency increases and reductions in errors**
- Cloud-based **Machine-to-Machine (M2M) solution** and **RFID-based asset tracking** solution can help ensure product quality

70% of the participants have no clear view and perspectives on trends and the impact of new digital technologies on their Operations & Supply Chains

Target Picture & Transformation Roadmap



Leverage of Technologies & Digital Methods



Leading Companies have a clear understanding of how digital and new technologies will impact Operations & Supply Chain and have set up a process for rapid deployment

Best Practice

Strategic plan for Innovating Operations

Description

Systems	I Supply Chain Configuration	II SC Control & Execution	III End-to-end material flow	IV Processing & Assembly	V Quality & Traceability	VI Maintenance	VII Green operations
Building Blocks							
Simulation / Virtual Manufacturing	●	●					●
Augmented Reality	●		●	●	●	●	
Predictive Analytics	●	●			●	●	●
Cyber Physical Systems (CPS)	●	●				●	
Internet of Things (IoT)		●	●	●	●	●	
Smart Robots & Machines			●	●	●	●	
Additive Manufacturing				●	●	●	
Advance Machining / Material Science				●			●
Smart Energy Systems							●
Reconfigurable, de-central / mobile value-add	●						
Converging Industries, eco-systems and value chains	●	●			●	●	●

- A manufacturing company has developed a 10-year vision about technology usage in operations & supply chain
- A self-financing project pipeline for deployment is set up and will be frequently updated to extend coverage and to leverage new technology opportunities
- Partner-Networks have been set up for mission-critical technologies and applications to create competitive advantages

EBITDA [M€ / year] ¹⁾

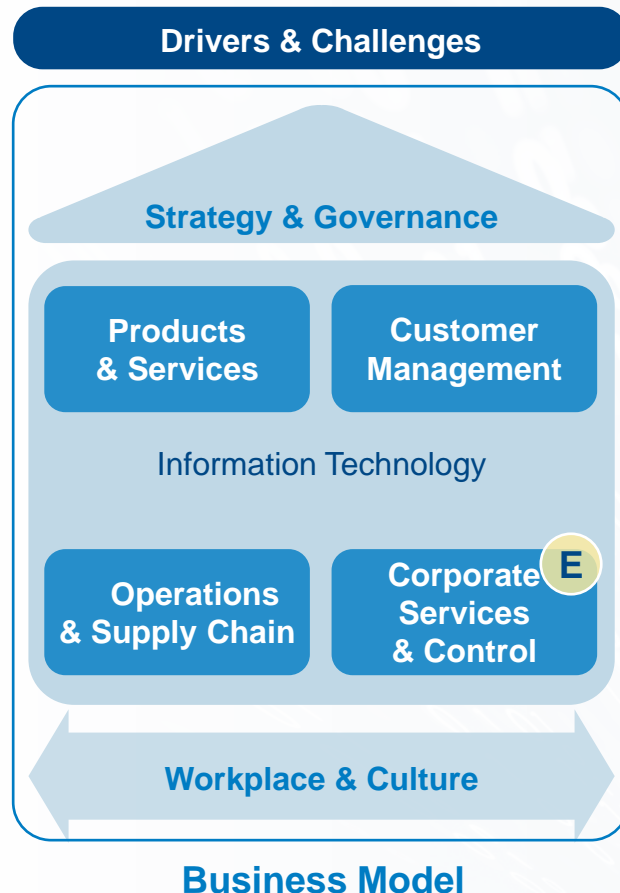


Implications & Benefits

- Cost improvement potential above 20% in relation to value add
- Higher customer and staff satisfaction

- 1 Executive Summary
- 2 **Deep Dive**
 - Drivers & Challenges
 - A. Strategy & Governance
 - B. Products & Services
 - C. Customer Management
 - D. Operations & Supply Chain
 - E. Corporate Services & Control**
 - F. Information Technology
 - G. Workplace & Culture
- 3 Appendix (DTI per industry)

Overview Corporate Services & Control



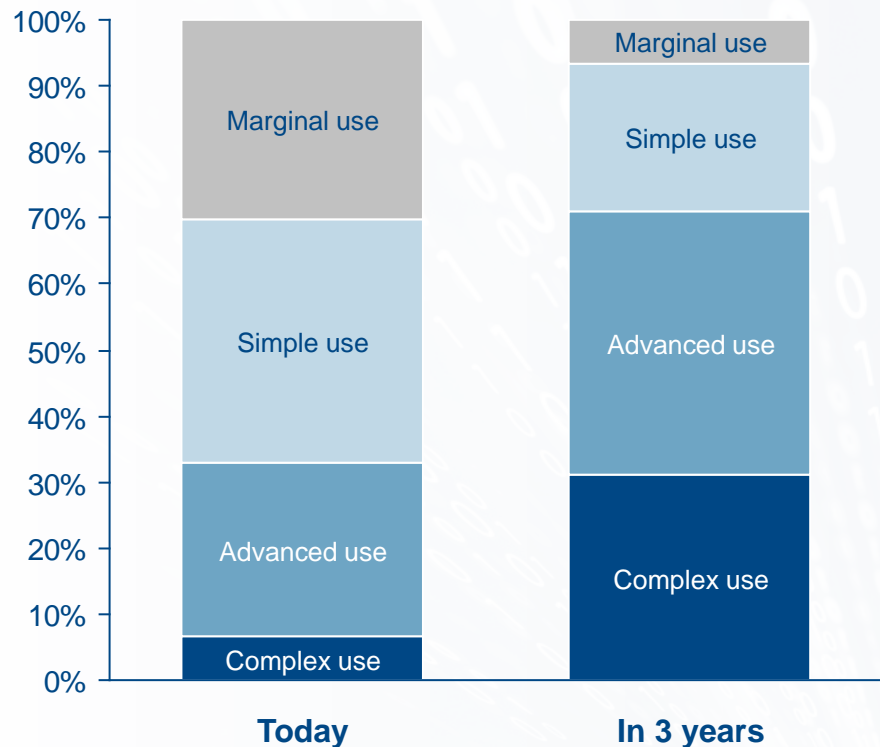
Key Learnings

- Participants expect their companies to heavily invest in advanced digital solutions to **create transparency and comprehensive controlling**
- Companies plan to **utilize complex digital solutions** to support and automate their processes
- **Brand dashboards** can integrate Web Analytics, CRM and share of voice at a single glance
- **Highly standardized and thus professionalized** “launch factory” approach can be seen as starting point for mastering execution
- A cloud-based HR model can **foster high employee performance** and efficient global staffing

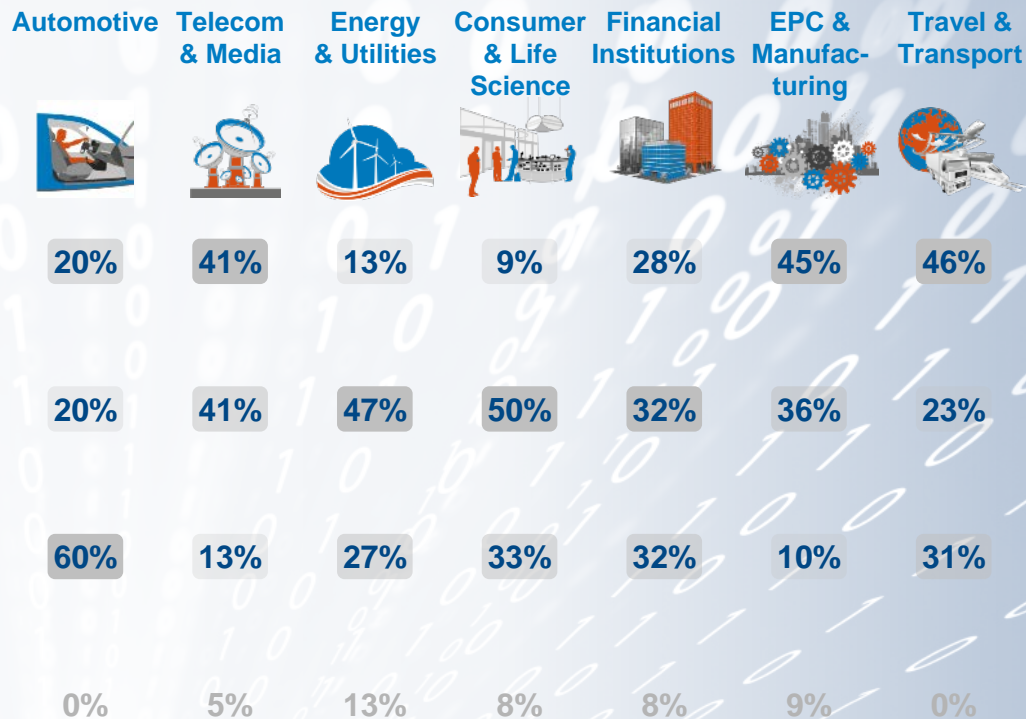
Participants expect their companies to heavily invest in advanced digital solutions to create transparency and comprehensive controlling

Use of Digital Solutions to Achieve Transparency and Control

All industries



Current Situation in Respective Industries



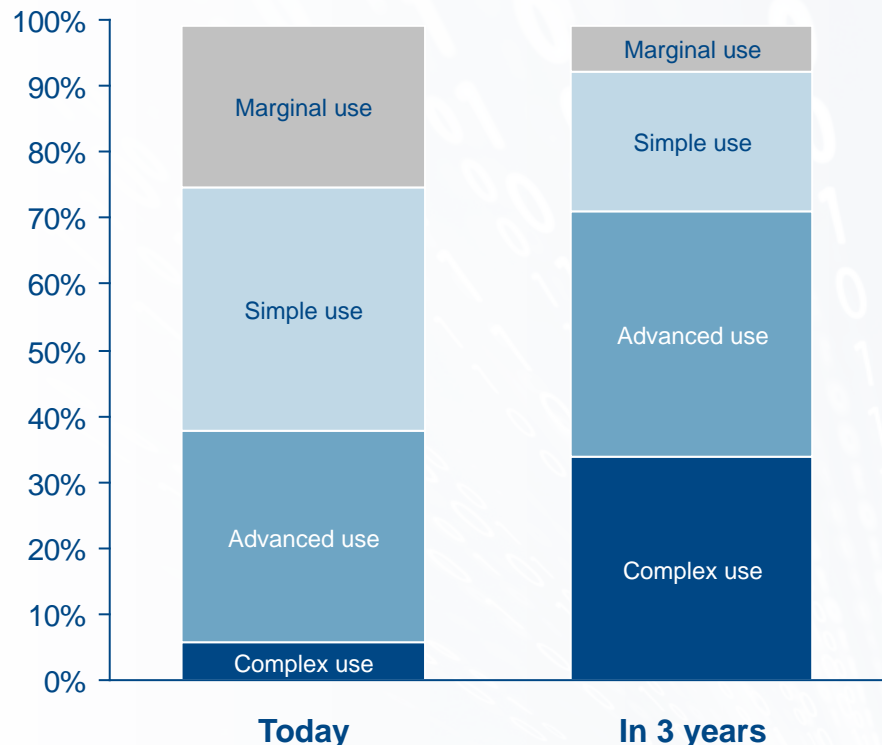
Source: Arthur D. Little Digital Transformation Study 2015

% Percentage share of companies by given answer in respective industries

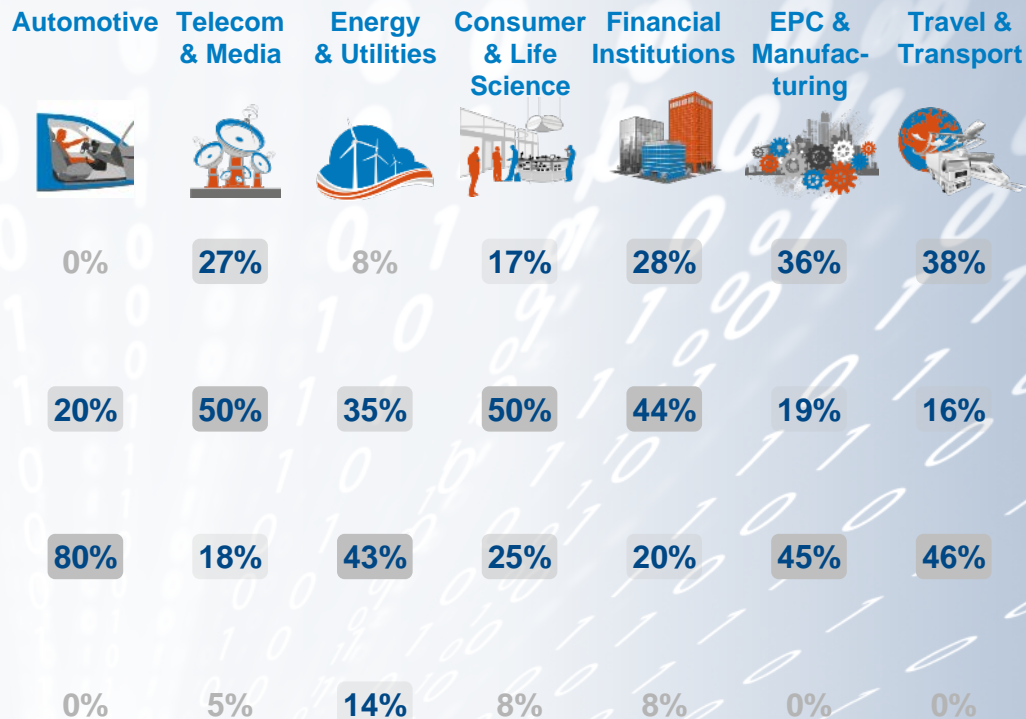
Companies plan to utilize complex digital solutions to support and automate their processes

Use of Digital Solutions to Automate Management Processes

All industries



Current Situation in Respective Industries

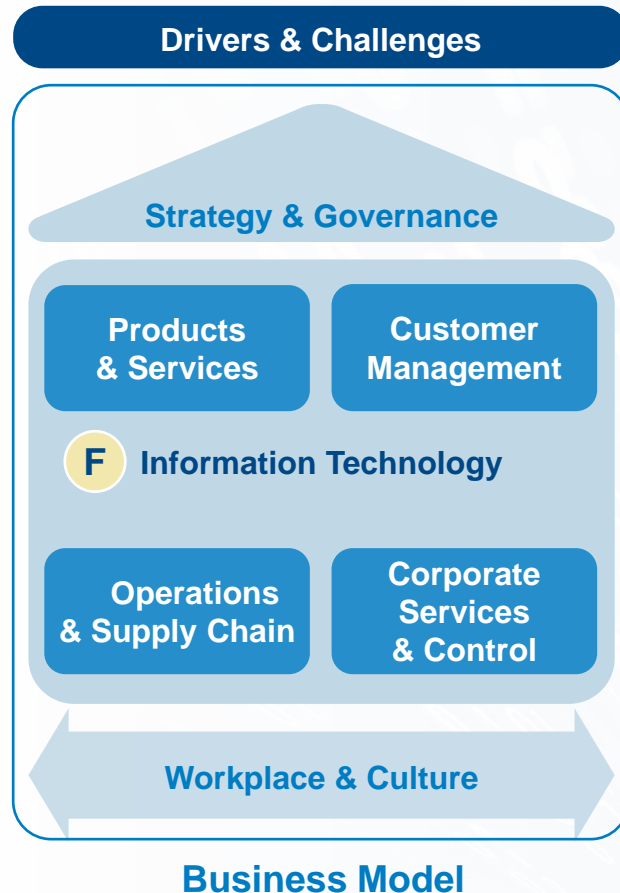


Source: Arthur D. Little Digital Transformation Study 2015

% Percentage share of companies by given answer in respective industries

- 1 Executive Summary
- 2 **Deep Dive**
 - Drivers & Challenges
 - A. Strategy & Governance
 - B. Products & Services
 - C. Customer Management
 - D. Operations & Supply Chain
 - E. Corporate Services & Control
 - F. Information Technology**
 - G. Workplace & Culture
- 3 Appendix (DTI per industry)

Overview Information Technology

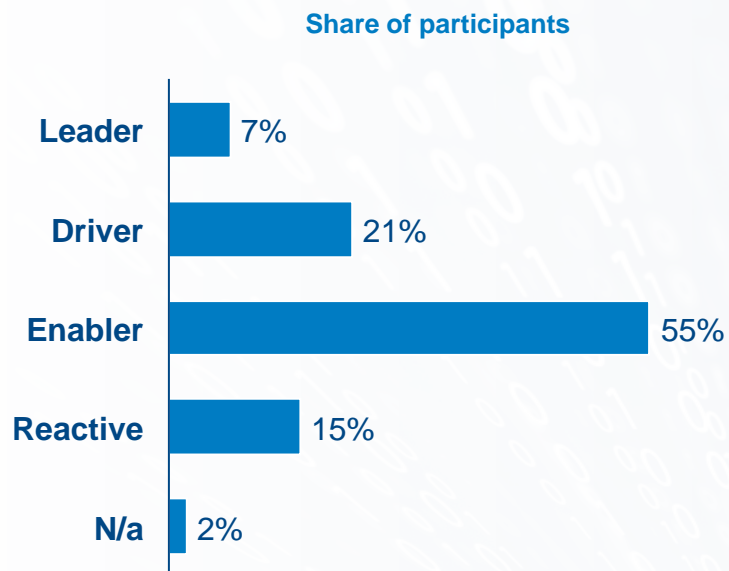


Key Learnings

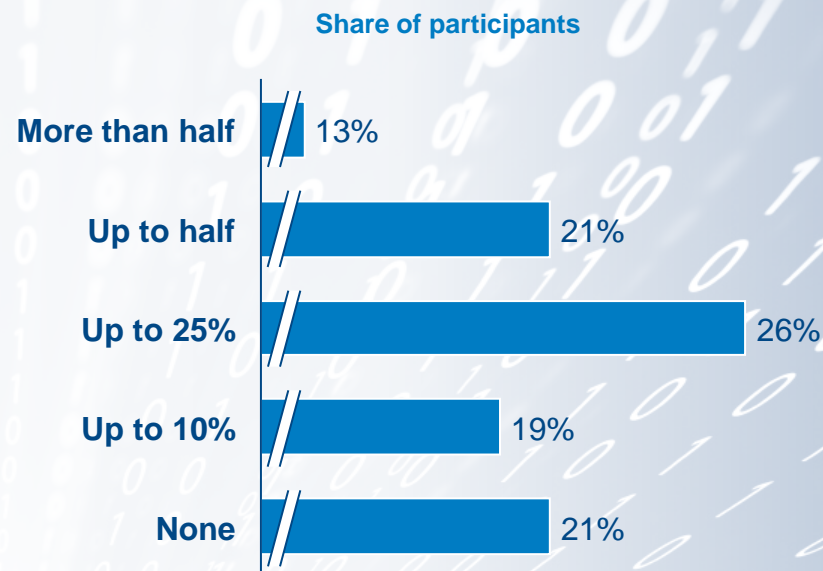
- The role of IT departments is still passive – The majority “enables” Digital Transformation only. **The leaders also have a budget share of 50%** dedicated for Digital
- IT departments need to **balance their technical capabilities** and redefine their operating models in order to become co-leaders in the digitalization process
- Layered IT architectures enable even large companies to **realize an omnichannel solution in less than 6 months**, with a massive impact on footfall and revenues
- IT infrastructure-enabled Industry 4.0 solutions can help to **increase productivity and profits** for contractors

The role of IT departments is still passive – The majority “enables” Digital Transformation only. The leaders also have a budget share of 50% dedicated for Digital

The Role of IT in the Context of Digitalization

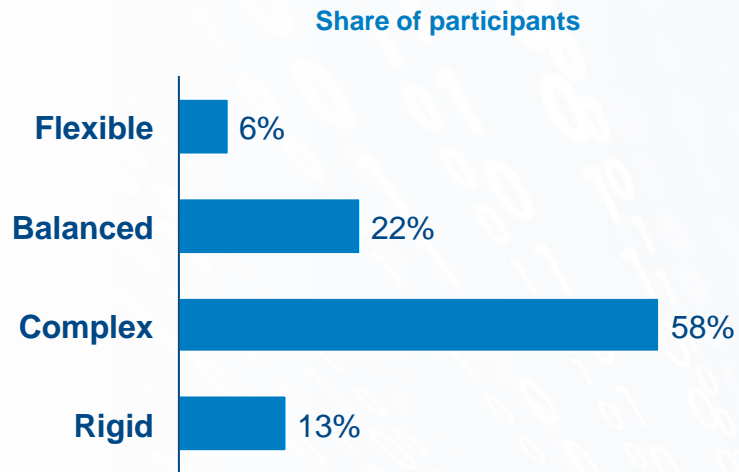


IT Budget Dedicated to Digital

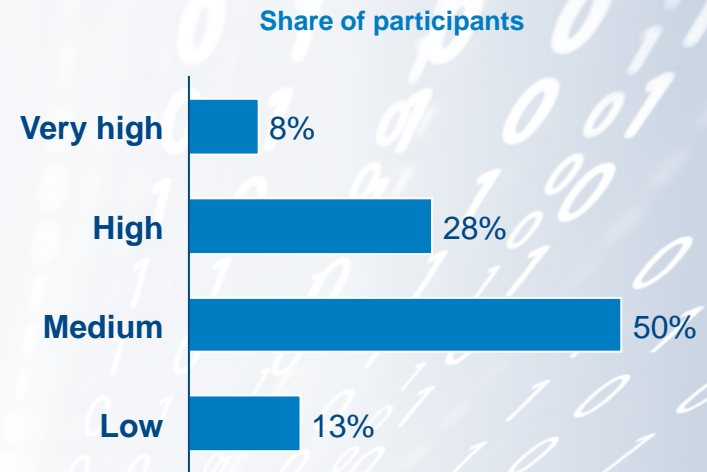


IT departments need to balance their technical capabilities and redefine their operating models in order to become co-leaders in the digitalization process

Flexibility of the IT Landscape

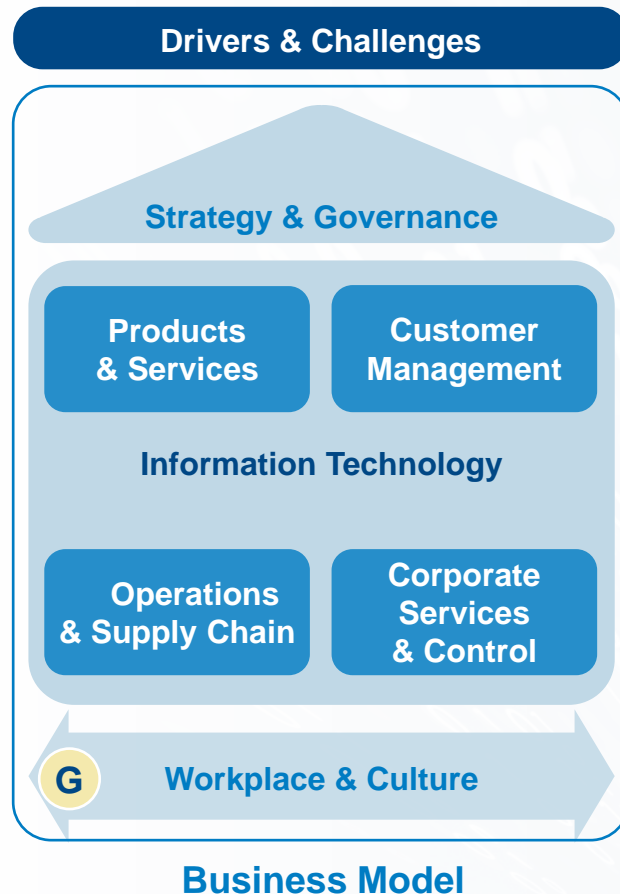


Maturity of the IT Operating Model



- 1 Executive Summary
- 2 **Deep Dive**
 - Drivers & Challenges
 - A. Strategy & Governance
 - B. Products & Services
 - C. Customer Management
 - D. Operations & Supply Chain
 - E. Corporate Services & Control
 - F. Information Technology
 - G. Workplace & Culture**
- 3 Appendix (DTI per industry)

Overview Workplace & Culture



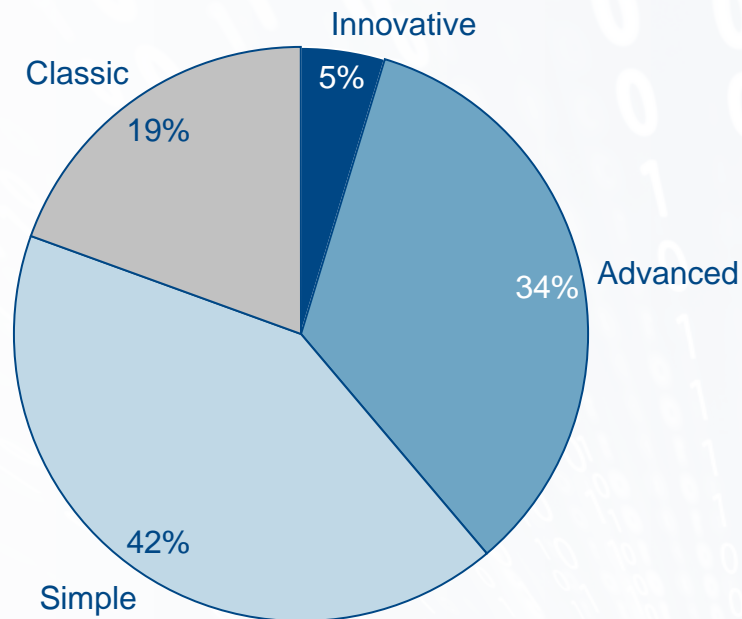
Key Learnings

- Today **simple concepts for communication and collaboration**, as well as for agile methods, seem to prevail
- This is unfortunately **not yet the adequate playground** for catalyzing the digitalization of business
- **Internal innovation capability generally lags behind** due to little usage of agile methods
- A **gamification-based workplace culture can attract talent** from all over the world

Today simple concepts for communication and collaboration, as well as for agile methods, seem to prevail

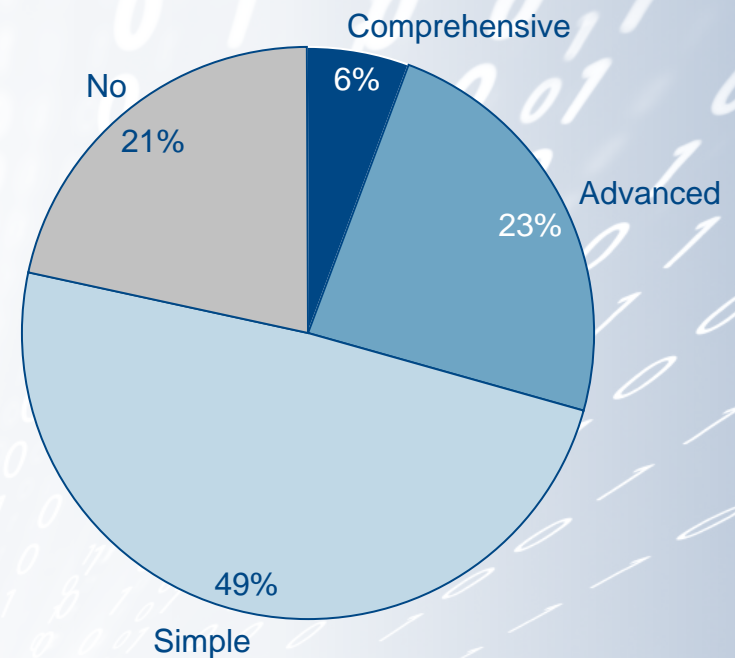
Concepts for Communication and Collaboration

All industries



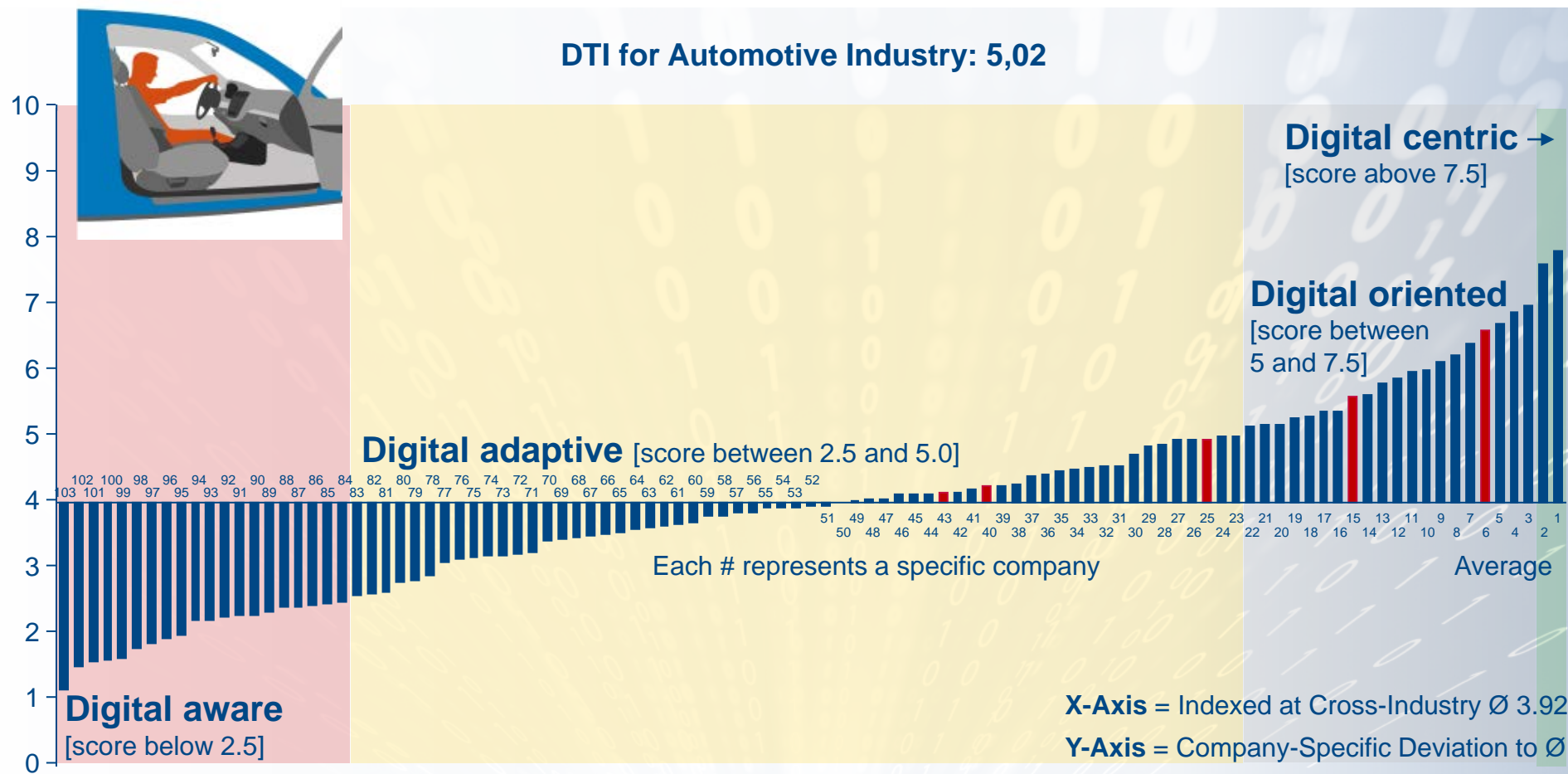
Agile Methods Integration

All industries



- 1 Executive Summary
- 2 Deep Dive
- 3 Appendix (DTI per industry)**

The Arthur D. Little Digital Transformation Index (DTI) shows that today few firms can be considered “digital oriented” or “digital centric”

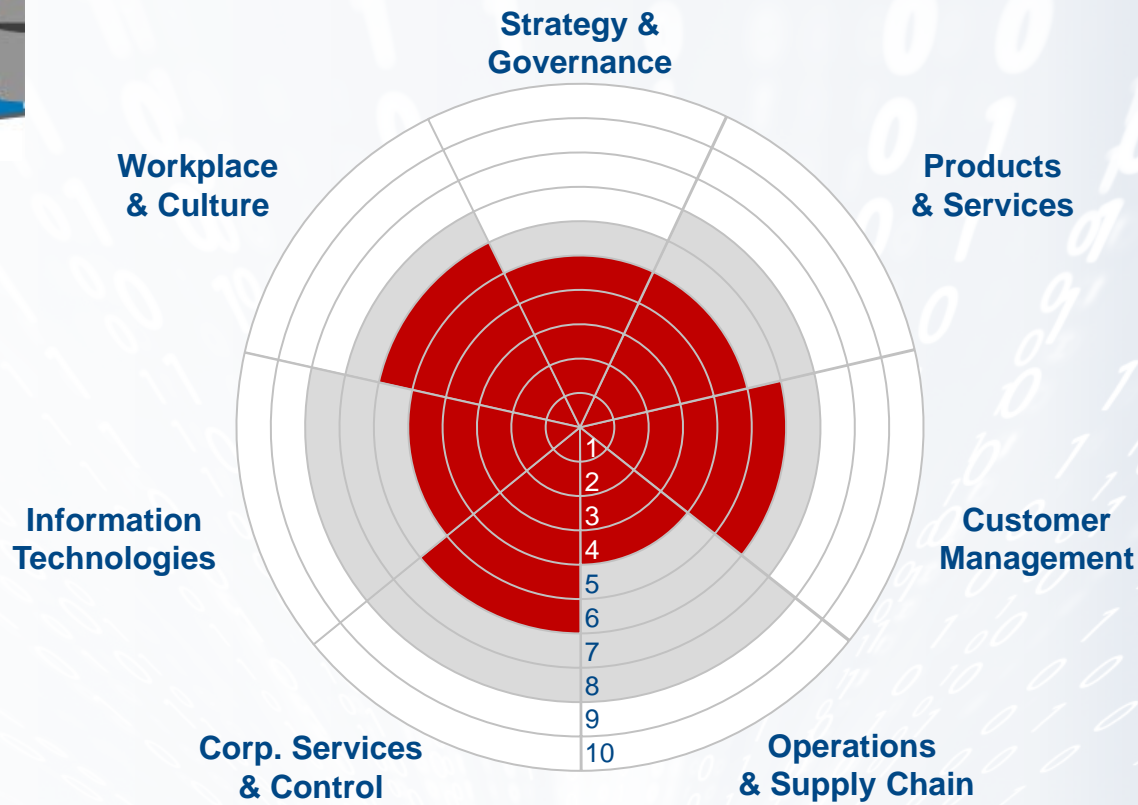


Source: Arthur D. Little Digital Transformation Study 2015
 Note: DTI calculated as average of scores for each section

Automotive belongs to the most developed industries in terms of digitalization. The field of Operations & Supply Chain is perceived as the weakest point



DTI for Automotive Industry per Section

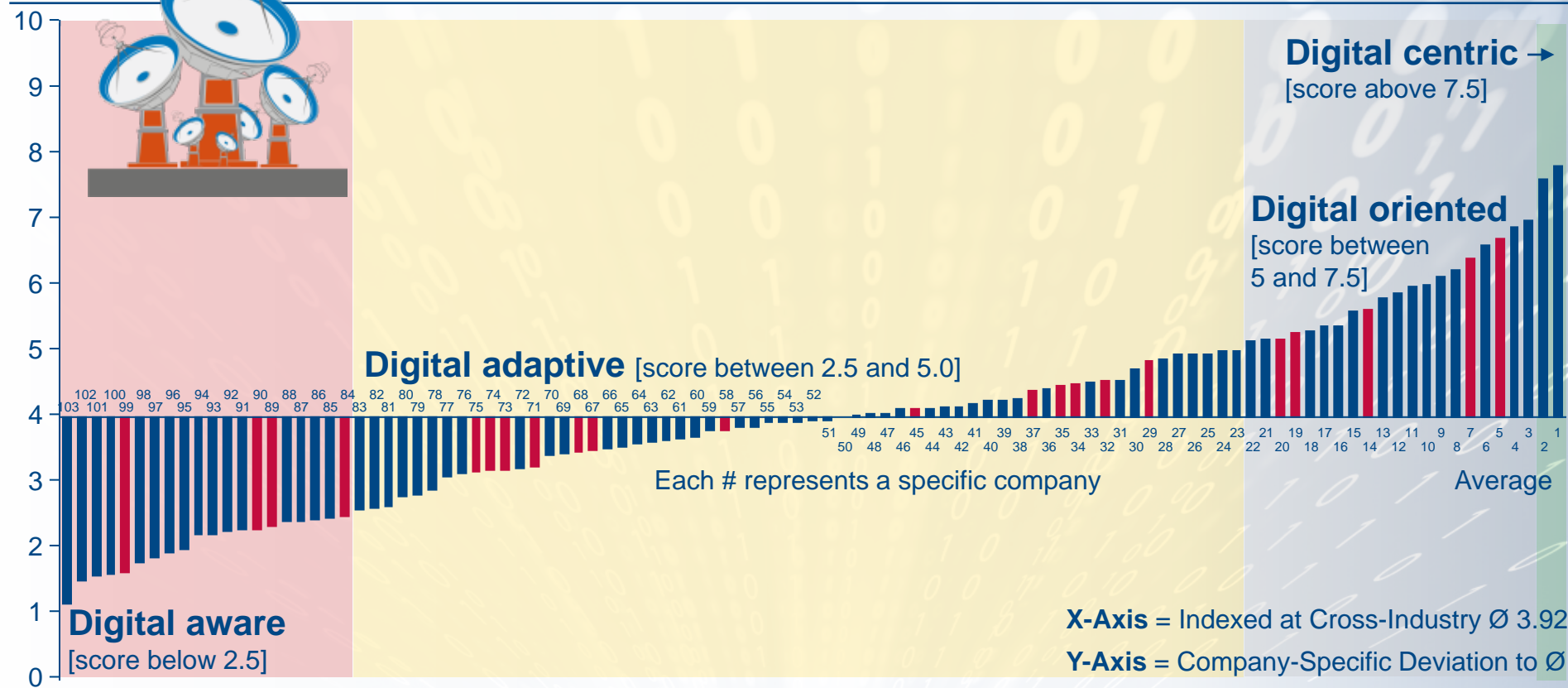


■ = Automotive Virtual Star ■ = Automotive average

Source: Arthur D. Little Digital Transformation Study 2015

The Arthur D. Little Digital Transformation Index (DTI) shows that today few firms can be considered “digital oriented” or “digital centric”

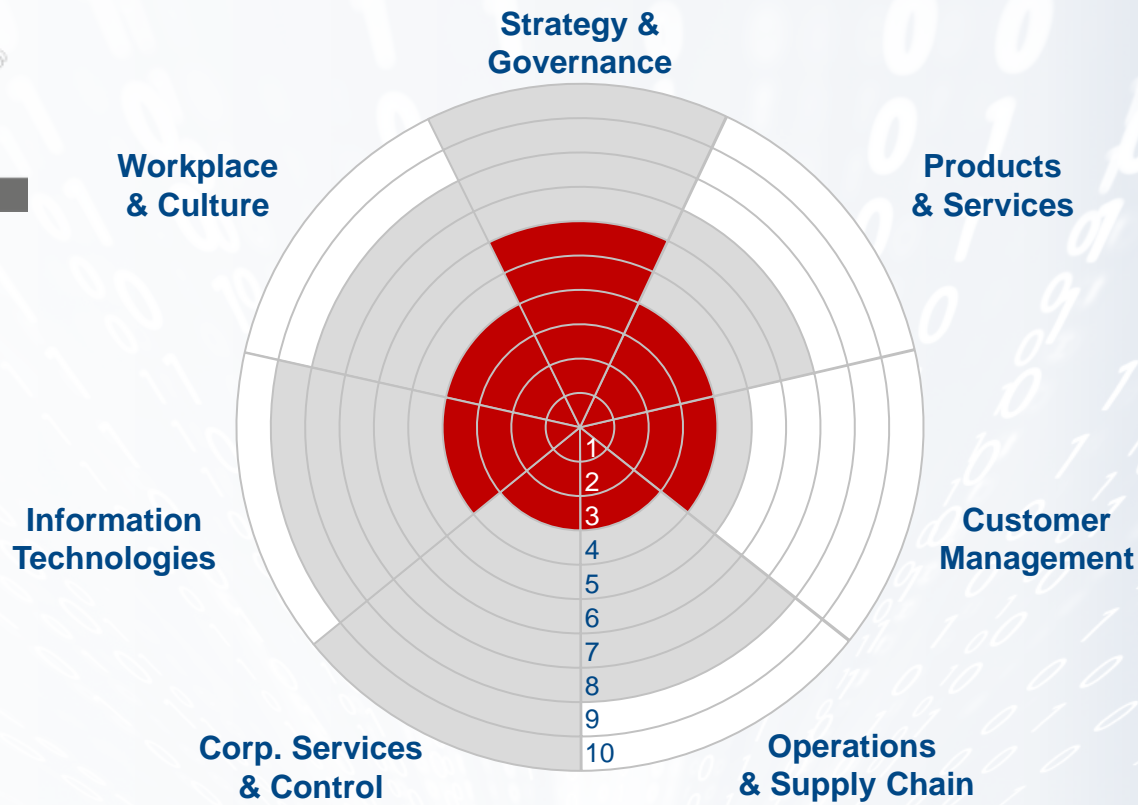
DTI for Telecom & Media Industry: 4,20



Source: Arthur D. Little Digital Transformation Study 2015
Note: DTI calculated as average of scores for each section

Although the Telecom & Media Industry is strong in digital strategy there is no clear industry pattern, but significant room for improvement in some sections for each company

DTI for Telecom & Media Industry per Section

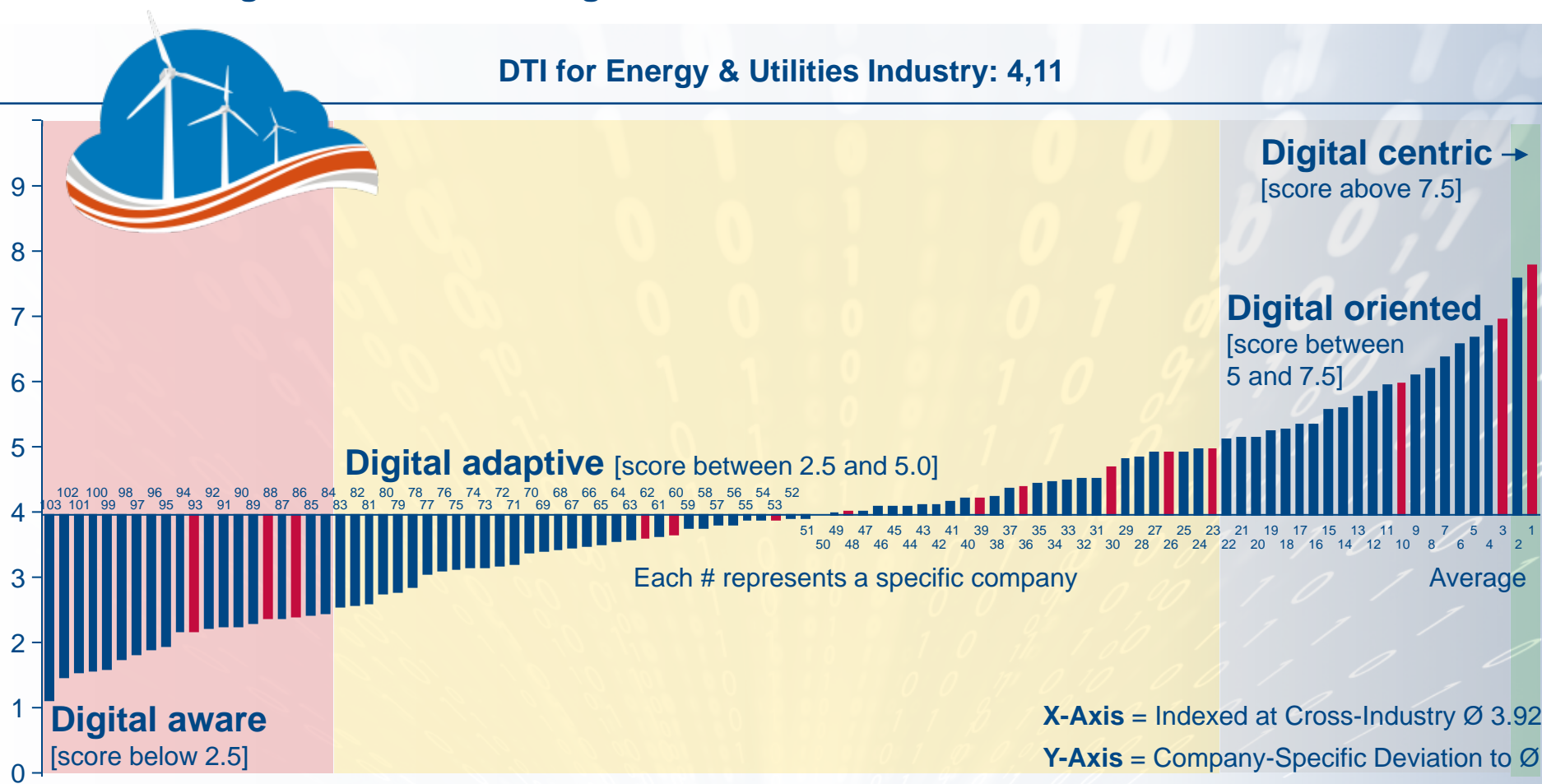


■ = Telecom & Media Virtual Star ■ = Telecom & Media average

Source: Arthur D. Little Digital Transformation Study 2015

The Arthur D. Little Digital Transformation Index (DTI) shows that today few firms can be considered “digital oriented” or “digital centric”

DTI for Energy & Utilities Industry: 4,11

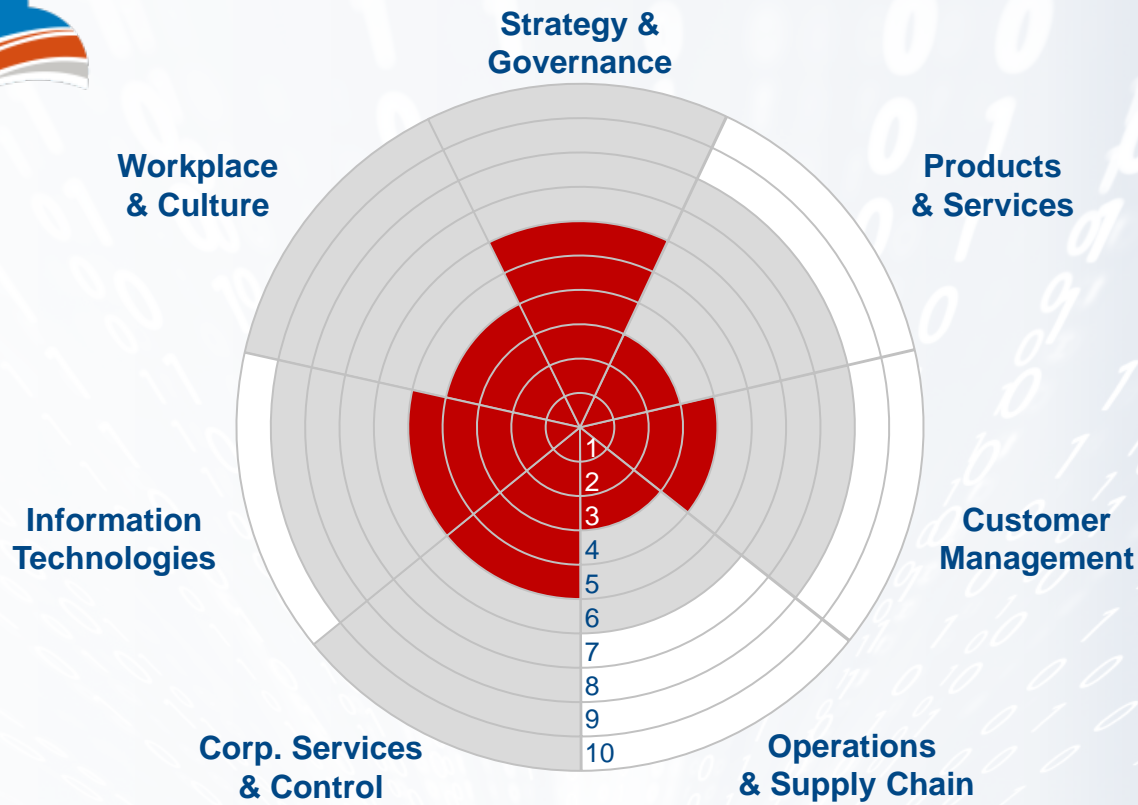


Source: Arthur D. Little Digital Transformation Study 2015
 Note: DTI calculated as average of scores for each section

There are rather strong differences between respective enterprises in Energy & Utilities, but the industry generally lags behind in terms of products and operations



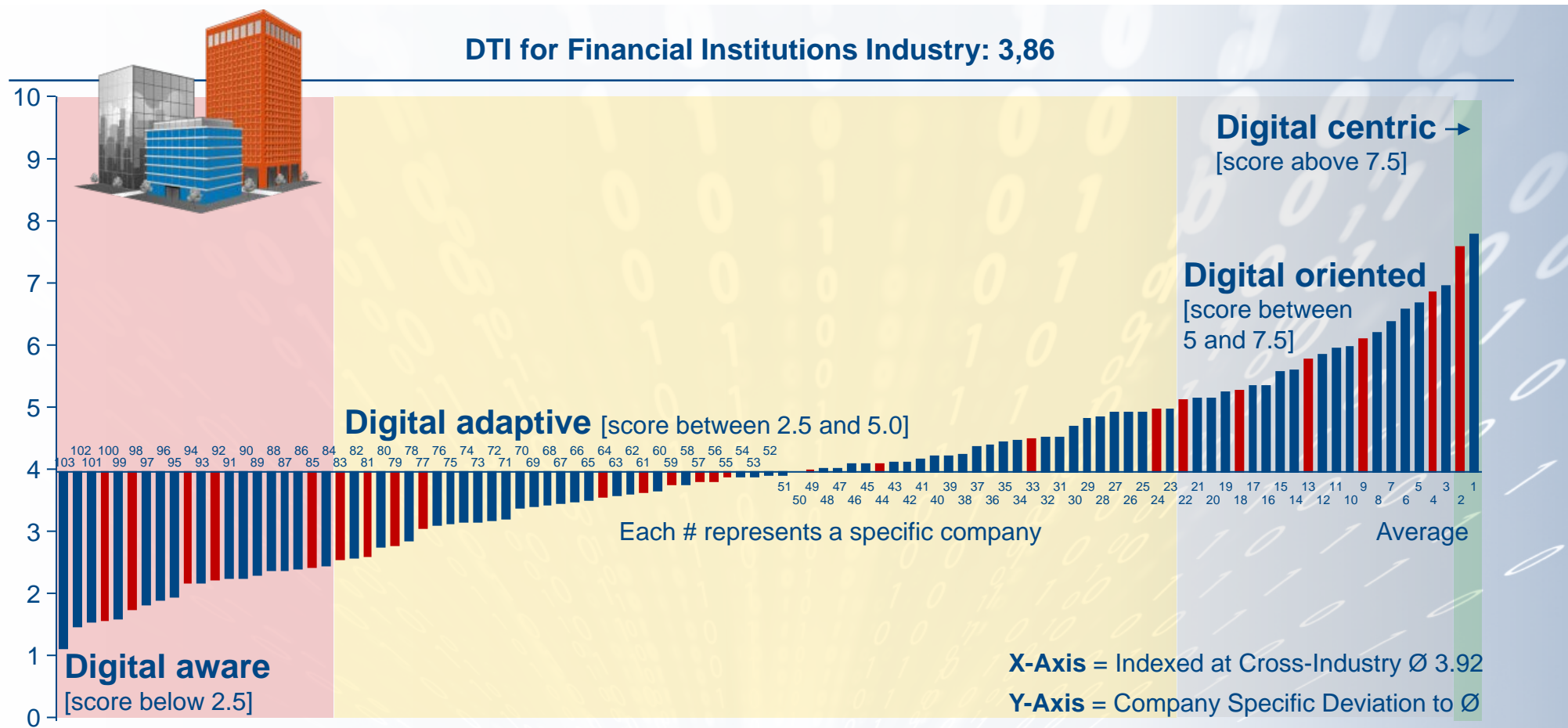
DTI for Energy & Utilities Industry per Section



■ = Energy & Utilities Virtual Star ■ = Energy & Utilities average

Source: Arthur D. Little Digital Transformation Study 2015

The Arthur D. Little Digital Transformation Index (DTI) shows that today few firms can be considered “digital oriented” or “digital centric”

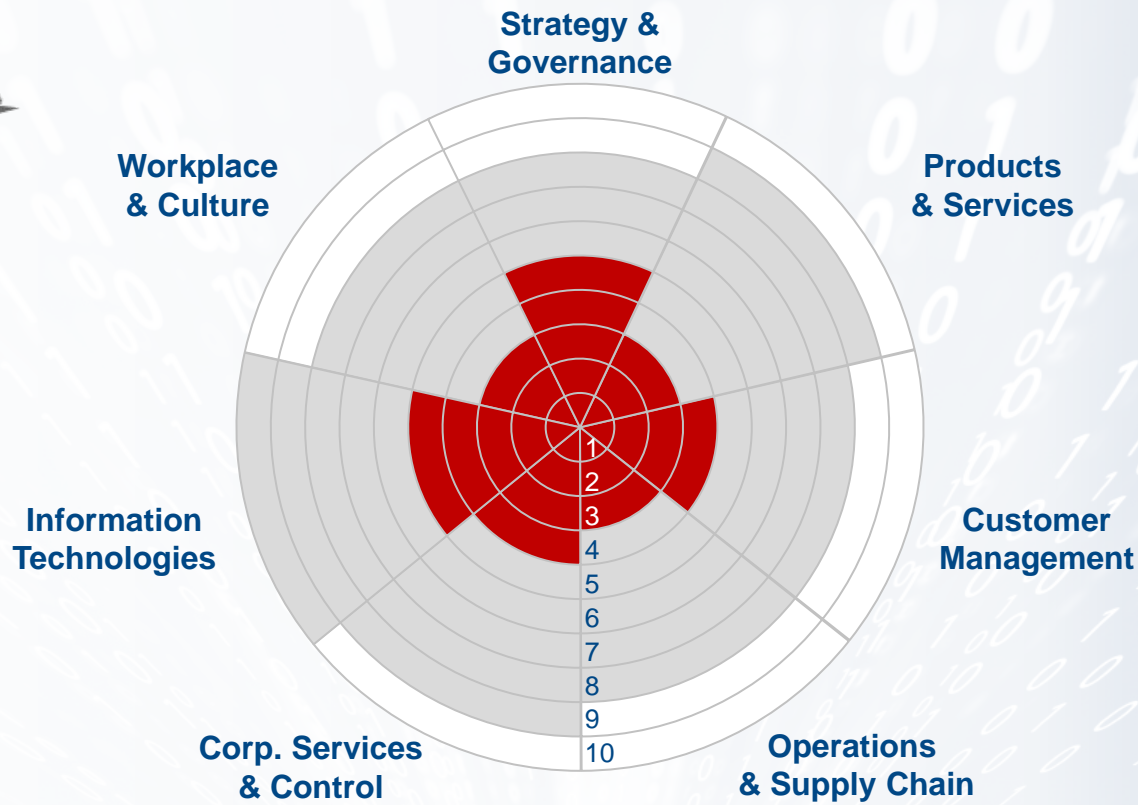


Source: Arthur D. Little Digital Transformation Study 2015
Note: DTI calculated as average of scores for each section

Financial Institutions focus on digital strategy, governance and IT while only few actually have adapted products and operations



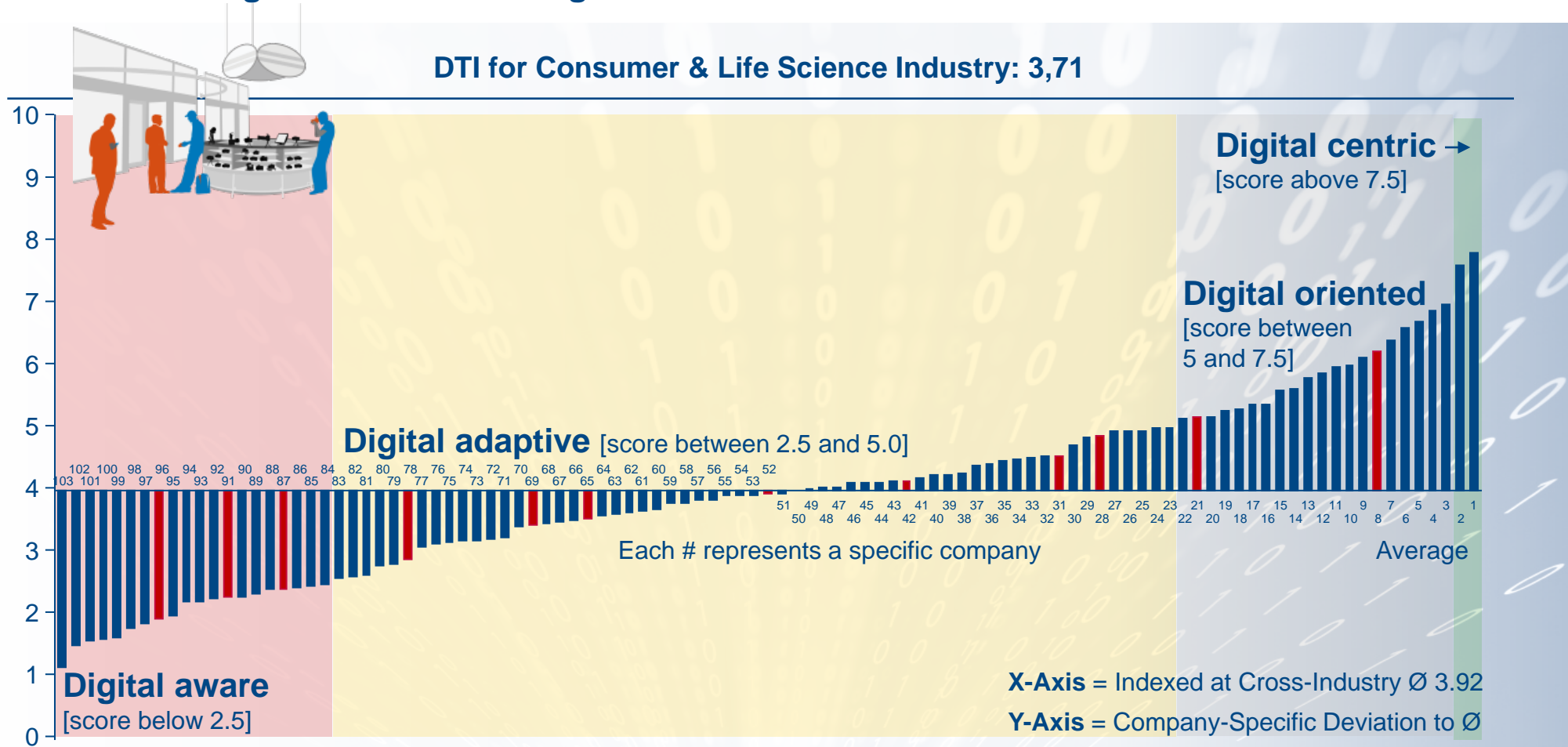
DTI for Financial Institutions Industry per Section:



= Financial Institutions Virtual Star
 = Financial Institutions average

Source: Arthur D. Little Digital Transformation Study 2015

The Arthur D. Little Digital Transformation Index (DTI) shows that today few firms can be considered “digital oriented” or “digital centric”

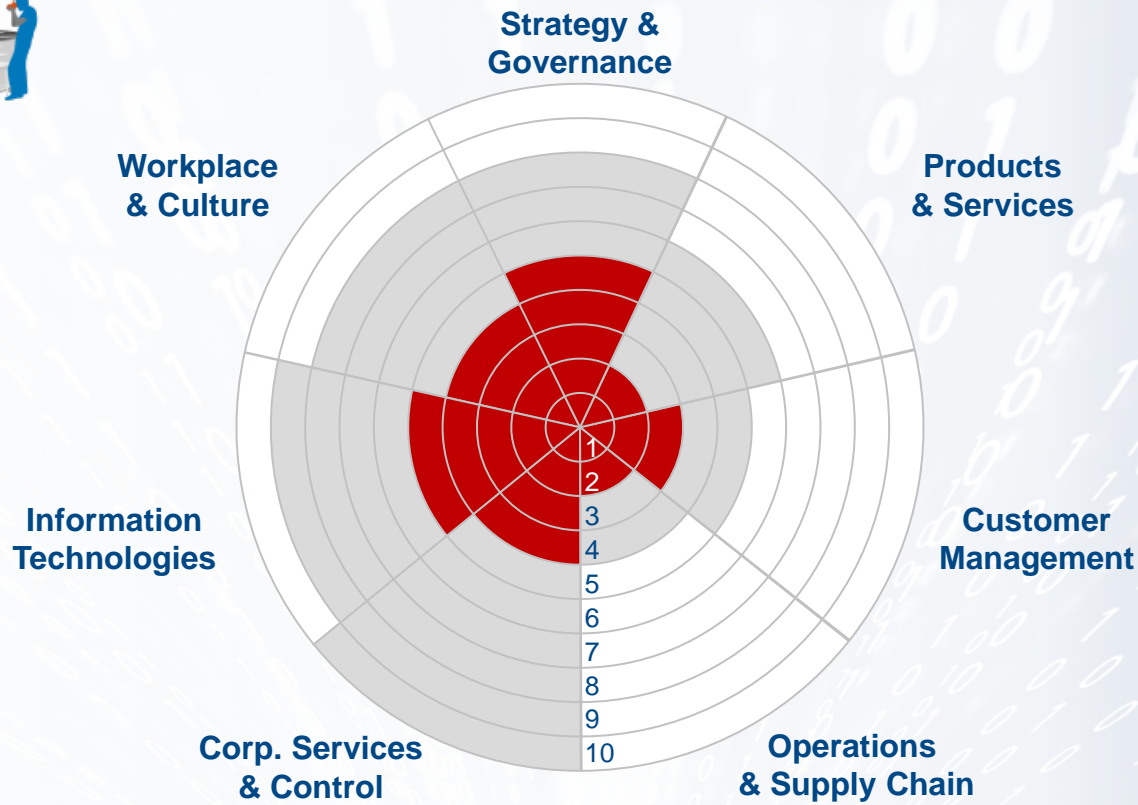


Source: Arthur D. Little Digital Transformation Study 2015
Note: DTI calculated as average of scores for each section

The Consumer & Life Science industry has large potential to digitize customer management, operations and corporate services



DTI for Consumer & Life Science Industry per Section

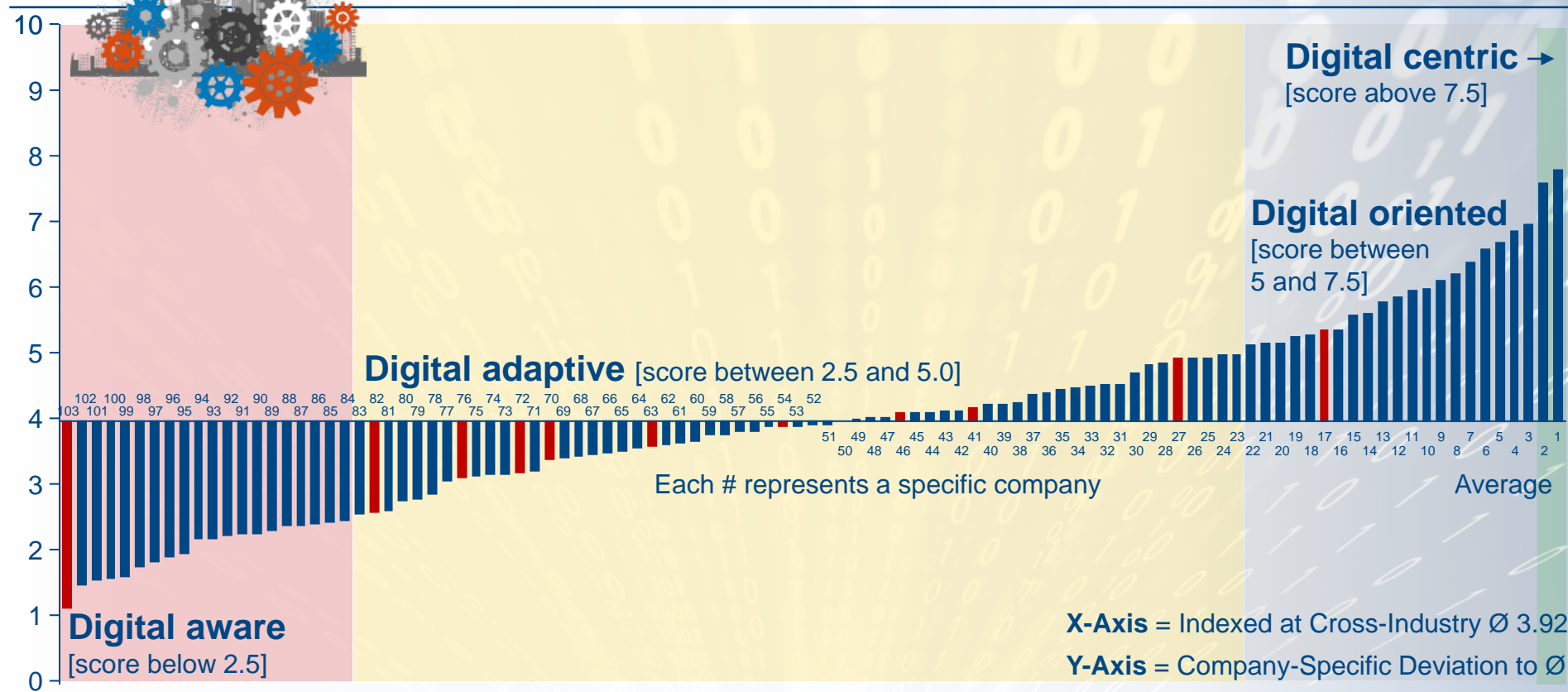


■ = Consumer & Life Science Virtual Star ■ = Consumer & Life Science average

Source: Arthur D. Little Digital Transformation Study 2015

The Arthur D. Little Digital Transformation Index (DTI) shows that today few firms can be considered “digital oriented” or “digital centric”

DTI for EPC¹ & Manufacturing Industry: 3,53



Source: Arthur D. Little Digital Transformation Study 2015

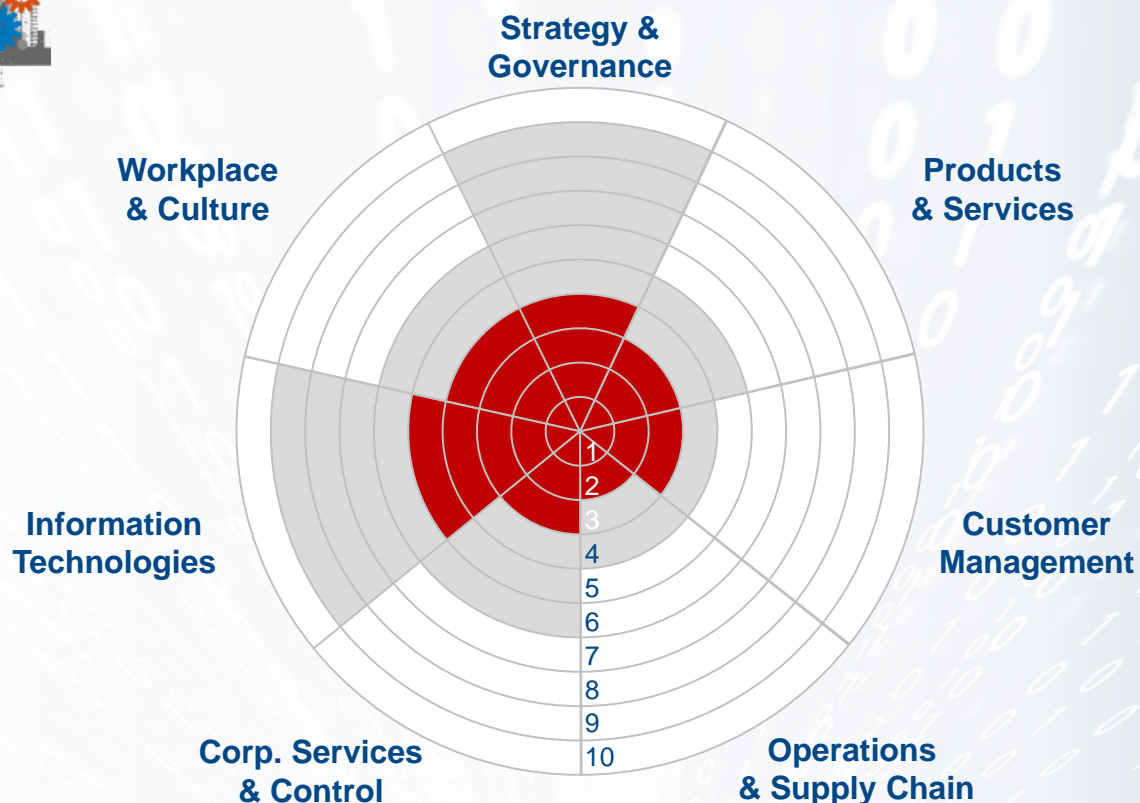
Note: DTI calculated as average of scores for each section

1) EPC = Engineering, Procurement & Construction

Few EPC¹ & Manufacturing companies have set a digital strategy, while no company in our sample has significantly transformed its products or operating model



DTI for EPC¹ & Manufacturing Industry per Section



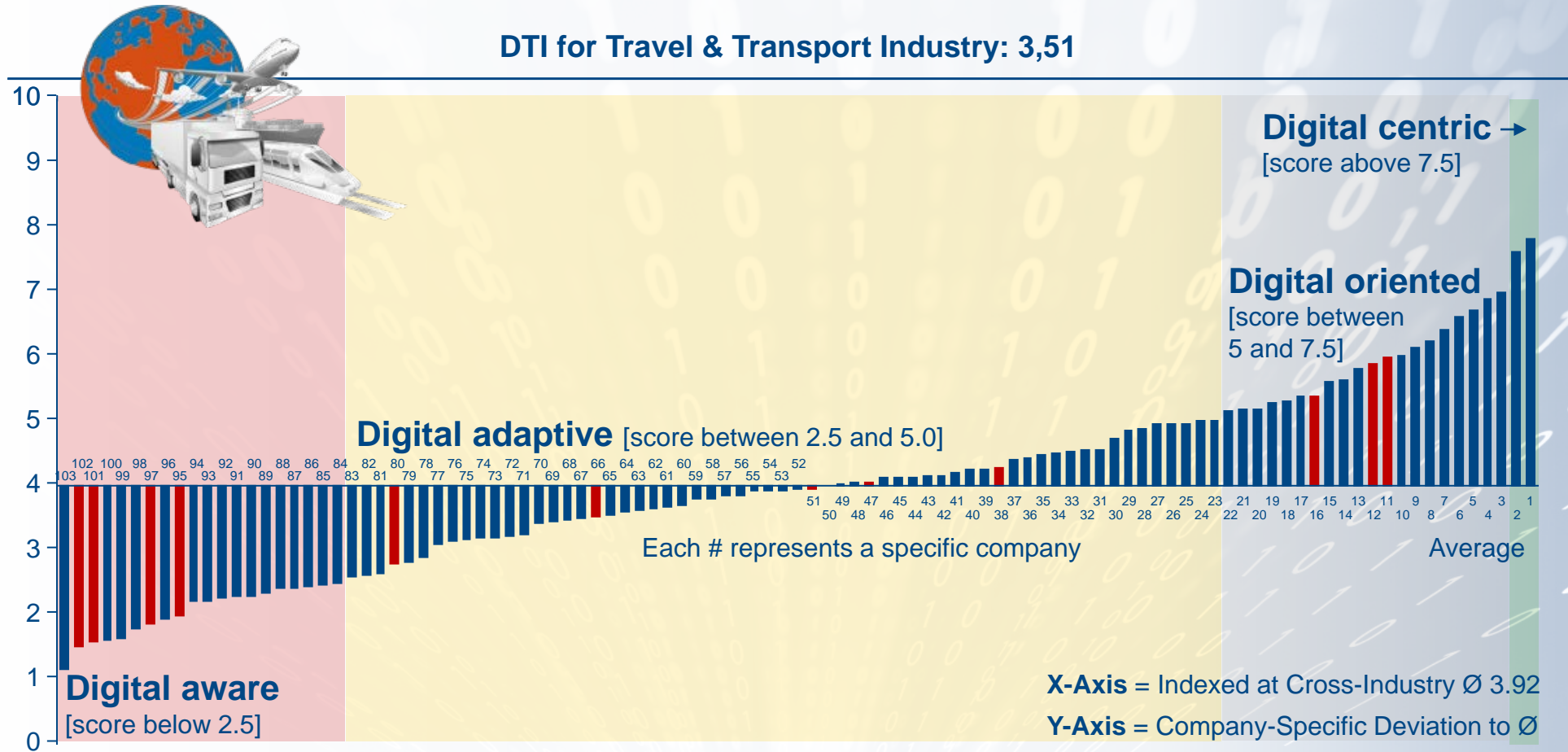
■ = EPC & Manufacturing Virtual Star ■ = EPC & Manufacturing average

Source: Arthur D. Little Digital Transformation Study 2015

1) EPC = Engineering, Procurement & Construction

The Arthur D. Little Digital Transformation Index (DTI) shows that today few firms can be considered “digital oriented” or “digital centric”

DTI for Travel & Transport Industry: 3,51

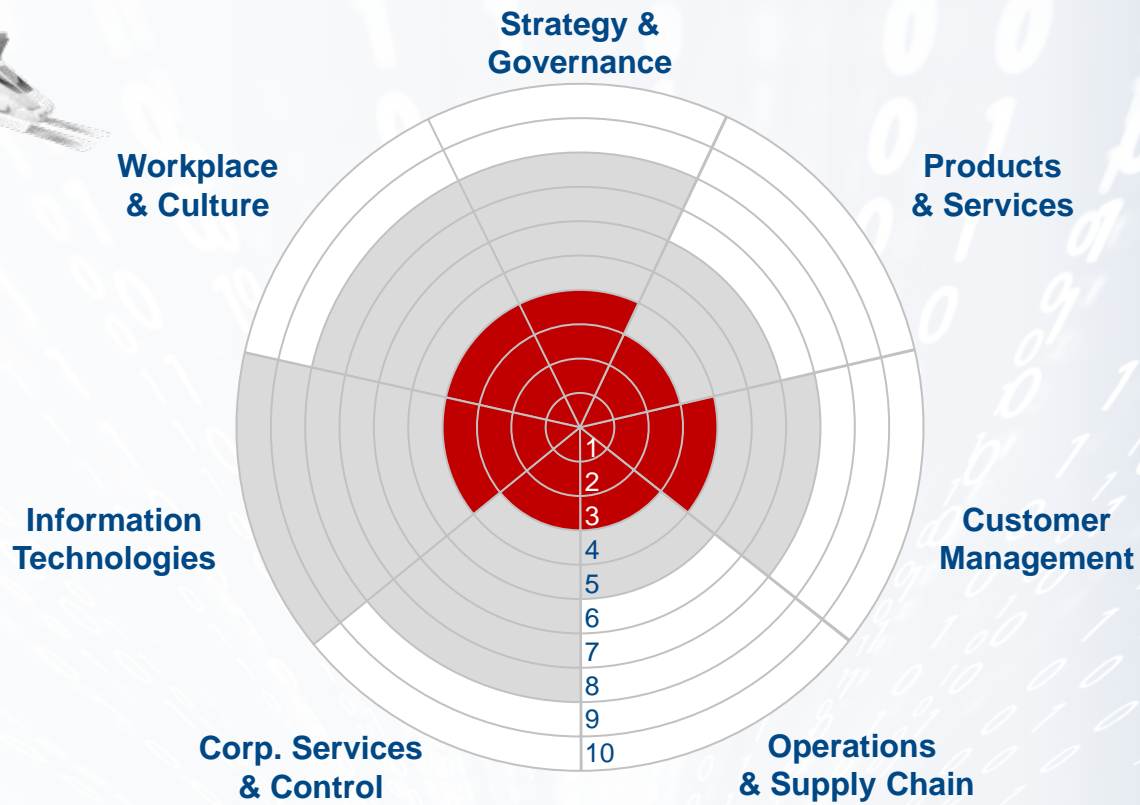


Source: Arthur D. Little Digital Transformation Study 2015
Note: DTI calculated as average of scores for each section

Travel & Transport is lagging behind in Digital Transformation – products and services as well as operations have especially not seen relevant changes



DTI for Travel & Transport Industry per Section



■ = Travel & Transport Virtual Star ■ = Travel & Transport average

Source: Arthur D. Little Digital Transformation Study 2015

Arthur D. Little has been at the forefront of innovation since 1886. We are an acknowledged thought leader in linking strategy, innovation and transformation in technology-intensive and converging industries. We navigate our clients through changing business ecosystems to uncover new growth opportunities. We enable our clients to build innovation capabilities and transform their organization.

Our consultants have strong practical industry experience combined with excellent knowledge of key trends and dynamics. Arthur D. Little is present in the most important business centers around the world. We are proud to serve most of the Fortune 1000 companies, in addition to other leading firms and public sector organizations.

For further information please visit www.adlittle.com

Copyright © Arthur D. Little 2015. All rights reserved.

Contact:

Dr. Michael Opitz

Head of TIME Practice Central Europe

Nymphenburger Str. 4
80335 Munich
Germany

M: +49 175 5806 187

E: opitz.michael@adlittle.com
www.adlittle.com

Authors:

Michael Opitz, Bernd Schreiber, Volker Pfirsching,
Alejandro Gonzalez, Thomas Gnirs, Gabriel Mohr,
Stefan Peintner, Oliver Krause