“Digitalization and IT Backsourcing: Towards a Transformational Model for the German Automobile Industry”

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## Resume of the presenter

- PhD candidate at University of Gloucestershire at Cheltenham and Gloucester
- More than 20 years of professional experience in the German aviation industry
- Study of business administration

## Research interests

- German automotive industry
  - Digital technologies
  - Digital innovations
  - Digital business models
  - Digitalization of products and services
  - Digital IT strategies
  - IT sourcing strategies
  - Digital transformation
  - Digital entrepreneurship
German automotive industry: facts and figures 2019

<table>
<thead>
<tr>
<th>Scope</th>
<th>Turnover</th>
<th>Investments</th>
<th>Workforce</th>
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</thead>
<tbody>
<tr>
<td>• The German automotive industry consists of the original</td>
<td>• In 2019, the total turnover amounted to</td>
<td>• Gross capital investment in plants and equipment of 17.7 billion €</td>
<td>• Regular workforce of 832.841 employees</td>
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<tr>
<td>equipment manufacturer (OEM) and a three-tier supplier</td>
<td>436.2 billion €, of which the export earnings</td>
<td>• Expenditure on research and development in 2018:</td>
<td>• In total 2.2 million workplaces in Germany, including the aftermarket</td>
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<td>network</td>
<td>were 282.7 billion €</td>
<td>• Worldwide: 44.6 billion €, of which 27.1 billion € in Germany</td>
<td>market and other services</td>
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<td>o Tier 1: Production of complete vehicle modules and systems</td>
<td>• This industry accounts for around one fifth</td>
<td>• The German automotive industry accounts for more than a third of total</td>
<td></td>
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<td>o Tier 2: Production of individual components</td>
<td>of the turnover of the German manufacturing</td>
<td>global R&amp;D expenditure in the worldwide automotive sector.</td>
<td></td>
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<td>o Tier 3: Production of standard parts and raw materials</td>
<td>industry</td>
<td></td>
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<td>• A total of around 3000 suppliers, of which around 500</td>
<td></td>
<td></td>
<td></td>
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<td>are German automotive suppliers</td>
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With regard to its demands on research and technology, the German automotive industry is described as a leading industry that sets standards recognized internationally.

It thus plays a key role in shaping the competitiveness of the German economy.
## IT sourcing of German car manufacturers

<table>
<thead>
<tr>
<th>Strategy</th>
<th>IT Budget</th>
<th>Outsourcing</th>
<th>Outsourcing drivers</th>
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</thead>
<tbody>
<tr>
<td>• Low range of vertical integration</td>
<td>• Each of the three major German car manufacturers has an overall IT budget of between 0.7 and 0.9 billion €</td>
<td>• Three decades of experience in IT outsourcing</td>
<td>• Efficiency</td>
</tr>
<tr>
<td>• On average, between 70 and 80 percent of the IT budget is outsourced to external IT providers</td>
<td>• Internal IT employees:</td>
<td>• Multi-provider approach with a larger number of bigger suppliers, complemented by smaller but highly specialized suppliers</td>
<td>• Cost reduction</td>
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<td></td>
<td>o Volkswagen around 12.000</td>
<td>• Forming a &quot;best of breed&quot; set of suppliers for various IT services</td>
<td>• Quality</td>
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<td></td>
<td>o Daimler around 11.000</td>
<td></td>
<td>• Access to new technologies</td>
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<td></td>
<td>o BMW around 5.500</td>
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</table>

So, why explore IT backsourcing?
The industry is being forced to reinvent itself again

Previous automotive business model

Transformation of the industry from the physical to the digital world

Future automotive business model

Product-centric industry

"Software-enabled Car Company"

Design, development, production and sales of high-tech physical products

Digitalization in the automotive industry combines the three major breakthrough innovations of the 20th century: vehicles, computers and the Internet

"Mobility as a Service" ("MaaS")
The industry is facing serious external organizational changes

<table>
<thead>
<tr>
<th>Megatrends and changes</th>
<th>Measures</th>
<th>Challenges</th>
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<tbody>
<tr>
<td><strong>C.A.S.E.</strong></td>
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<td>• Connectivity (connected cars)</td>
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<td>• Substantial investments</td>
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<td>• Autonomous driving</td>
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<td>• Cost and cash preservation</td>
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<td>• Shared &amp; Services</td>
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<td>• Continued sustainable competitive advantages</td>
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<tr>
<td>• Electro mobility</td>
<td></td>
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<tr>
<td><strong>Digitalization</strong></td>
<td></td>
<td>• Dynamic capabilities to react flexibly to the accelerating changes</td>
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<td>• Automation / Industry 4.0</td>
<td></td>
<td>• Unique digital knowledge and skilled resources to drive digital innovations</td>
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<td>• Smart factory</td>
<td></td>
<td>• Re-positioning of core competencies</td>
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<tr>
<td>• Digital processes</td>
<td></td>
<td></td>
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<tr>
<td>• Car-Software / Automotive clouds</td>
<td></td>
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<tr>
<td>• Digital production platforms</td>
<td></td>
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<tr>
<td>• Artificial intelligence</td>
<td></td>
<td></td>
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<tr>
<td>• Ecosystems</td>
<td></td>
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<tr>
<td><strong>De-carbonization</strong></td>
<td></td>
<td></td>
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<tr>
<td>• Reduction of CO2 Emissions</td>
<td></td>
<td></td>
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<tr>
<td>• Electric mobility</td>
<td></td>
<td></td>
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<tr>
<td>• Carbon-neutral plants</td>
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<tr>
<td><strong>Capacity adjustments</strong></td>
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<td><strong>Competition from world-leading internet players</strong></td>
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<td><strong>Climate protection / Energy consumption</strong></td>
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<td><strong>World-wide over-capacities</strong></td>
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Ten arguments lead to the assumption of this study

1. Digitalization as a disruptive force
2. German automotive industry most affected
3. Company-wide digital transformation strategies
4. Re-definition of business models, core competencies and mission critical knowledge
5. Starting point for new sustainable competitive advantages

Digitalization might encourage IT backsourcing in the German automotive industry

6. IT is seen as an enabler for digitalization
7. The management of information becomes the critical success factor
8. Regain ownership and control of previously outsourced IT services
9. Companies in the automotive sector are currently forced to review their IT sourcing strategies and concepts
10. Strategic decisions for IT backsourcing
Understanding of the term IT backsourcing

Ownership: regardless of where IT activities are performed locally.

- **Backsourcing:** bringing previously outsourced activities back in-house
- **Backsourcing:** is the only term that indicates a change in ownership
## General reasons for IT back sourcing based on literature review

### Contract Problems: Outsourcing agreement did not meet expectations

- Higher than expected costs
- Poor service quality
- Poor transition planning
- Loss of control over the core business
- Loss of flexibility
- No benefits from outsourcing
- Disagreement with vendor
- Loss of know-how
- Incompetence of the vendor (e.g. missing innovations on the vendor side hinders the client’s business success)

### Internal Organizational Changes

- New or changed executive management
- Structural changes in the company (e.g. new business line, new corporate entity)
- New business strategies
- Recognition of IT as business enabler
- New / changed importance of outsourced activities
- Changes in IT strategy due to mergers and acquisitions
- Power and politics

### External Organizational Changes

- Changes in the environment of the company
- Economic cycles
- Bandwagon effect
- Changes in vendor organization
- Technology changes (“break-through” technologies)

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However, little is known about the real extent of IT back sourcing.
Framework for identification of IT backsourcing

Technology Environment

- Corporate IT (1)
- CAR-IT(2)
- Platforms / Ecosystems

Backsourcing

“Make”
Insourcing

“Buy”
Outsourcing

(1) Also termed Company Business Information System, Backend-IT, Mainstream Business Systems
(2) Also termed In-Automotive IT, Connected Car, Onboard-IT
Contribution to knowledge

1. Closes the gap of a currently missing evidenced view on whether digitalization is encouraging IT backsourcing.

2. Explains how companies in the German automotive industry justify decisions for IT backsourcing within the digital transformation strategy.

3. Provides insights into whether IT backsourcing decisions have been made based on the need to develop dynamic capabilities and redefine core competencies.

4. Demonstrates the methods used by companies to establish a strategic link between digitalization and IT backsourcing and to determine the resulting value.

5. Provides information about the strategic position of the IT management in the companies and whether IT is seen as an enabler for the digital transformation.
## Summary

1. Digitalization is data-driven and based on an increased generation, processing and analysis of often new types of data

2. Data only gets a strategic value through comprehensive analysis and correlation

3. What matters is the management of information and the intelligent usage of this information

4. New core competencies and unique knowledge to manage the information becomes the critical success factor

5. In this context, IT back sourcing could be a strategic decision to regain ownership and knowledge in order to be more flexible and respond faster to the necessary changes