How AUDI AG Established Big Data Analytics in Its Digital Transformation

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Executive Summary

Digital transformation often includes establishing big data analytics capabilities and poses considerable challenges for traditional manufacturing organizations, such as car companies. Successfully introducing big data analytics requires substantial organizational transformation and new organizational structures and business processes. Based on the three-stage evolution of big data analytics capabilities at AUDI, the full article provides recommendations for how traditional manufacturing organizations can successfully introduce big data analytics and master the related organizational transformations.

Stage I: Advancing. In Stage I, AUDI's sales and marketing department initiated data analytics projects. Commitment within the organization for data analytics grew slowly, and the strategic importance of the area was increasingly recognized. During this first stage, the IT department played a passive role, responding to the initiators of data analytics projects. The company's digital innovation hub, however, laid the technology foundation for big data analytics during the Advancing stage.

Stage II: Enabling. In Stage II, analytics competencies were built up not only in the digital innovation hub but also in the IT department. The IT department enabled big data analytics through isolated technology activities, sometimes taking on or insourcing tasks previously carried out by external consultancies or the digital innovation hub. Analytics services were developed through a more advanced technology infrastructure as well as analytics methods.

Stage III: Leveraging. In the current Stage III, AUDI is leveraging the analytics competencies of the digital innovation hub and the IT department to centrally provide analytics-as-a-service. The IT department is now fully responsible for all technology tasks and is evolving to become a consulting partner for the other big data analytics stakeholders (sales and marketing department and digital innovation hub). In particular, digital services are enabled by leveraging the most valuable data source (i.e., operational car data).

Ongoing Transformation of AUDI's IT Department

Traditionally, AUDI's IT department was not involved in designing a new car model or in the start of a car's production. With digitization, however, the business units now have to actively involve the IT department. As a consequence, C-level management launched a transformation project called "Move IT," with the aim of coordinating cross-departmental technology-driven areas such as big data analytics.

1 The full article is published in the June 2017 issue of MIS Quarterly Executive, available online at www.misqe.org.
The overall goal of the transformation project (which is led by the CIO) is to develop and consolidate digitization competencies in decentralized competence structures, called competence networks. These networks complement the traditional organizational structure and are available to interested parties from anywhere within AUDI. However, the most important competence networks, such as big data analytics, are embedded as internal competence center structures within the IT department. Thus, the head of each IT competence center is not only in contact with all involved actors doing related work in the particular area but also with the key players in the different business departments.

There are two types of competence network—technology and method. The former are concerned with technology-driven areas, and the latter address procedural aspects such as process and change management, agile software development, modern work methods and social collaboration. AUDI recognized that it needed to use agile development to build software-driven services for its cars. This ability is needed so it can fully exploit big data analytics and digitize its core processes.

**Recommendations for Establishing Big Data Analytics**

1. **Develop Analytics Capabilities to Leverage Analytics-as-a-Service and Evidence-Based Decision Making.** Big data analytics capabilities are leveraged for evidence-based decisions that enhance an organization's competitive advantage. In the early stages of their digital transformation journeys, organizations should create federated competencies supported by a core team of experts who provide support and guidance. These capabilities should be established within an analytics competence team that serves as the central contact for big data analytics.

2. **Adapt Traditional Organizational Structures for the Digital Age.** Organizations should identify core strategic areas relating to data analytics and build up the necessary expertise in interdisciplinary teams. A key challenge is to get employees to break free from the constraints of existing structures, roles and processes. To help break down the current rigid areas of responsibility, the resulting project structures and centers of excellence should be cross-functional and complement the existing structures. The new structures are an effective device for cascading digital transformation throughout the entire organization.

3. **Establish a Data-Sharing Culture and Encourage Business Functions to Leverage Operational Data.** Business departments often find it challenging to recognize value in operational data and to leverage that data for decision making. When big data analytics is first deployed, business departments can be intimidated by the operational transparency and facts that come to light from the operational data of their business. Organizations therefore need to establish a data-sharing and data-driven culture. Data must be perceived as a valuable resource that can help the organization to become a digital company and, thus, sustain or achieve a competitive advantage.

4. **Leverage Agile Application Development Methodologies.** To build digital business models enabled by insights gained from analytics services, organizations will need to collaborate across departmental boundaries, and this will require them to leverage new agile development approaches. Because of the wide diversity of digitization projects, the methodologies used should be determined by management and the individual project teams, according to the resources available, the characteristic way of working and the project type.

5. **Ensure the IT Department Provides Centralized Operational and Digital Expertise.** The IT organization should build up fast-paced digital expertise and resources, even though this will result in a two-speed IT organization, with core IT systems harmonized and centralized in traditional IT projects and digitization initiatives pushed forward in an accelerated and more agile way. To successfully leverage these resources, CIOs must ensure that internal technical skills and competencies are on par with those of external consultancies. The IT department should also reach out to business departments by showing interest in their current pain points.

In summary, digitization and digital technology are having a tremendous impact on traditional product manufacturing organizations. The experience gained from AUDI’s three-stage journey toward establishing big data analytics can be leveraged by other manufacturing organizations seeking to create digital business models based on data-driven services.

In summary, the agility of the resource allocation process has an important influence on realizing value from DDS investments, especially in conjunction with the maturity of the DDS platform and the extent of commitment from data-driven top management.