Chapter 2
Digital Technology Deployment in Multi-National Enterprises

Jose Irizar
SRH University Heidelberg, Germany

ABSTRACT

After the longest period of continuous growth in its history, the automotive industry is experiencing a most dramatic downturn. The challenge for automobile companies is not just to cope with the three converging trends of vehicle electrification, autonomous driving, and shared mobility, but also to make the best judgement on how and where to invest in a declining market. Digital is becoming the de facto way of operating along the value chain. Advanced automation, artificial intelligence (AI), and additive manufacturing will reshape traditional processes. This chapter reports upon the implementation of new digital technologies and related critical success factors in two multi-national industries, with major interests in the automotive sector. It takes an empirical approach, analysing use cases, projects, and input from experts. The findings assess the repercussions for IT strategy and changes in business processes impacted by the use of new technologies and illustrate how people skill requirements have evolved, both within the IT organisation and in other company departments.

INTRODUCTION

In order to better serve their customers, achieve cost savings and meet competitor pressures, many companies are looking to introduce and adopt new technologies, notably those that are sometimes termed "disruptive digital technologies." The deployment of digital technologies can change current business models, particularly in the automotive industry (Felser & Wynn, 2020). These new technologies are deployed to improve internal processes, collaborate with customers and suppliers and enhance product features. Digitized manufacturing and associated internal processes are also often viewed as part of Industry 4.0 (Butt, 2020), and these innovative technologies enable novel working, collaboration and automation (Urbach et al., 2019). For example, communication between vehicles and cloud infrastructure is a critical component of current and new vehicle features (Dhanjani, 2015). Staying competitive will require investment in new technologies and the adaptation of existing processes. Among other challenges,

DOI: 10.4018/978-1-7998-7712-7.ch002

Original Equipment Manufacturers (OEMs) and suppliers will need to partner more closely and avail themselves of digital tools and dashboards to improve data sharing and transparency. They should also strengthen manufacturing productivity, making use of different volume scenarios and simulation tools (Collie et al., 2019).

In this chapter, a number of use cases are analysed to assess the impact of new technology implementation on IT strategy, process change and people skills requirements. There are six sections. Following this introductory section, the background and concept definitions section provides a context for the studied industries and an overview of some of the new technologies impacting the automotive, electronic consumer goods and wind energy industries. The research methodology and its justification are then set out. Next, the research findings are reviewed, and this is followed by discussion of key issues that emerge from the use cases and the conducted interviews. The final section summarises the results of the research and discusses some key issues for future digital technology deployment.

BACKGROUND AND TECHNOLOGY CONCEPTS

This research focuses on two large multi-national groups. Although a large part of the companies' activities is in the automotive sector, around a quarter of the business in both companies concerns other industry sectors, such as consumer goods (power tools, power-tool accessories), measuring technology, energy and building automation technology, wind power and escalator drives. Some of the use cases discussed in this chapter were developed and implemented within these non-automotive industry sectors. The introduction of many disruptive new technologies follows a different pattern to the traditional adoption of previous techniques and applications. While in the past, most technology implementations followed a classic project management approach, current projects tend to follow an agile, or at least hybrid, approach. Instead of meticulous planning, projects are now more about cross-disciplinary collaboration and adaptive planning for rapid delivery and early benefits (Gemino et al., 2021).

This chapter deals with the concepts of use cases and projects, and it is relevant to point out how these two concepts differ yet overlap. While projects have, until recently, typically been formal, structured, complex and, in most cases, timely endeavours with several stakeholders, use cases tend to be smaller in scope, and often encompass iterative development cycles, involving end users in the implementation of a system or technology. Use cases can thus be seen as agile projects, and are a small part of a long-term product road-map with a "start small – but think big" approach, characterized by the use of diagram structures to describe and communicate required functionalities (Krasadakis 2019; Larson & Larson, 2015). Use cases often become test cases with acceptance criteria, and can be understood as prototypes or minimum viable products. While many projects in the automotive and consumer goods industries are run using traditional project management methodologies, use cases are mostly performed applying agile project management approaches.

The term "volatility, uncertainty, complexity, and ambiguity" or "VUCA", is an approach to management that recognises the unpredictability of the modern world and its impact for business. The VUCA approach suggests that a rational firm's response should be to protect against volatility by engineering-in redundancy and slack, gather information to reduce uncertainty, develop expertise to make complexity computable, and learn heuristically to reduce ambiguity (Clegg et al., 2019). It is a response to the unprecedented levels of turbulence, mainly due to the impact of technological change that many industries are experiencing (Millar et al., 2018). The introduction of new technologies can lead to disruptive in-