

3. Achieving Effective Digital Transformation in Industries with High Resource Demands

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Abstract:

The article titled "Achieving Effective Digital Transformation in Industries with High Resource Demands" explores the critical factors and strategies involved in successfully implementing digital transformation in resource-intensive industries. The authors emphasize the significant opportunities and challenges that businesses face in adopting digitalization. The article draws from extensive research and practical insights to provide a comprehensive framework for achieving transformative outcomes in such industries.

the article offers a comprehensive roadmap tailored to steer digital transformations within resource-intensive industries towards resounding success. It underscores the pivotal roles of leadership, team alignment, capability building, culture, technology, value validation, data utilization, and strategic implementation. By heeding these guiding principles, businesses can navigate the intricate landscape of digitalization, tapping into the full potential of their resources to drive performance enhancement and sustainable growth in the ever-evolving digital realm.

Keywords:

Digital Transformations, EBITDA, Capability Building, Value creation, Digital Platforms

3.1 Introduction:

We currently reside in a decade characterized by the significant impact of scientific advancements and technological innovations on several facets of human existence. Climate change has experienced an unparalleled acceleration throughout this decade. The setting presents a significant obstacle for firms to adapt and evolve towards more sustainable, inclusive, and adaptable business models. In this era of unprecedented disruption for businesses, leaders in the digital realm are presented with a remarkable chance. According to findings from McKinsey, achieving successful shifts towards digitalization can potentially result in a twofold increase in EBITDA. Meanwhile, the disparity between those

who swiftly embrace digitalization and those who lag can expand by a factor of ten across various performance indicators for other aspects of a company, such as workforce efficiency, customer satisfaction, and return on investment. Moreover, once this competitive edge is established, its growth is rapid. Successful entities establish an early foothold in digital leadership and further enhance their position by attracting skilled digital professionals.

For companies to achieve an impact as substantial as tripling EBITDA, they must operate across multiple dimensions. The effects of such efforts are twofold, positively affecting both performance and sustainability, a critical aspect for businesses heavily reliant on resources.

Recognition of this influence can be attained through the implementation of strategies aimed at achieving high performance in many areas, such as marketing and sales, supply chain management, operations, and support functions, among others. Nevertheless, although the attainment of functional excellence can initiate the organization's progress in this endeavor, the implementation of appropriate technological facilitators is crucial in order to accomplish significant outcomes on a large scale. According to existing research, it has been observed that a significant number of industrial participants tend to encounter a phenomenon known as the "pilot trap." This refers to their failure to establish the necessary technological facilitators, which subsequently hinders their ability to effectively expand digitalization endeavors across various geographical locations, functional areas, and operational sites.

The achievement of comprehensive technological integration and digital transformation that encompass the entire value chain necessitates concerted endeavors across three key dimensions:

- The **commercial transformation** entails a concentrated effort to enhance revenue through targeted strategies, particularly in areas such as pricing optimization and expanding market reach with existing products, as well as through the introduction of new offerings.
- The **operations transformation** primarily revolves around implementing operational enhancements aimed at reducing costs, such as streamlining operations and implementing Six Sigma methodologies.
- On the other hand, the **technology transformation** primarily focuses on enhancing core applications and the technology stack, which serves as the foundation for modernizing technology and expanding the scope of the commercial and operations transformation.

3.2 Digital Transformation Offers Sustainable Development:

Consumers have never been confronted with such a wide array of options, while investors who prioritize sustainability are advocating for firms to address their business, social, and internal governance challenges in a manner that is both explicit and clear.

The incorporation of environmental, social, and governance (ESG) factors is relevant in this context. ESG refers to a collection of criteria employed for evaluating aspects pertaining to sustainable development and the societal repercussions of corporate activities.

Over the span of approximately twenty years, the concept of Environmental, Social, and Governance (ESG) has seen a transformation from a specific reporting framework primarily utilized by financial investors to a broad phrase encompassing the assessment of the effects of these aspects on goods and personnel within organizations or brands.

Environmental variables encompass several elements such as climate change, energy consumption, carbon emissions, natural resource preservation, and animal welfare, among others. On the other hand, social aspects pertain to the evaluation of a business in terms of its interactions with other businesses, the fulfilment of stakeholder demands, and meeting expectations in areas such as health and safety. On the realm of corporate affairs, governance includes the assessment of accounting methodologies, the degree of transparency exhibited, and the extent of voting rights granted to shareholders on matters of significance. Additionally, governance entails the effective management of conflicts of interest and other related considerations.

Comprehensive digital transformation, meanwhile, can alter how people view how organizations solve problems in addition to making a company run faster and more effectively. For ESG, the same is true. By concentrating on this, firms will become more appealing and resilient.

Sustainability and digital transformation are now widely accepted concepts in the modern business. Businesses will be helped by digital transformation in their efforts to generate and develop ESG data sets methodically and to make decisions about investments that are sustainable. In the long run, the corporation will outperform its rivals thanks to the sharing of its ESG data sets. Reduced capital costs and business risk, improved shareholder position, and chances to access long-term capital while strengthening operational efficiency are all advantages of effective ESG implementation.

3.3 The Fundamental Guidelines for Expanding Your Transformation Efforts:

Based on an extensive analysis of over 500 instances of technology-enabled digital transformations, a collection of eight fundamental principles has been identified. These principles must be deeply ingrained within firms in order to effectively reap the benefits of their technological transformations.

3.3.1 Leadership Holds the Key:

For a prosperous digital transformation, a well-defined course of action is essential right from the outset. Historical instances reveal that companies achieve notable success when the CEO establishes a notably ambitious goal right from the start. Back in 2016, pioneering companies began embracing such audacious aspirations, conversing about "leveraging digitization to enhance value creation" or intricately integrating digital technology throughout their business framework. Remarkably, it's evident that the pivotal factor for success wasn't a singular, specific path, but rather, accomplishing success was reliant on adeptly steering the course in a resolute direction. As an illustration, a prominent entity in the oil and gas industry expressed its intention to pursue the venture capital approach by making investments in emerging enterprises focused on renewable energy.

This initiative facilitated the realization of its goal to mitigate carbon dioxide emissions and enhance sustainability. Equally significant, the corporation acquired exclusive access to disruptive technologies, generating synergistic impacts. At the outset, the company had expertise in establishing small start-ups equipped with necessary technologies but lacked the knowledge of effectively expanding and fostering collaborative relationships with the parent organization. Asset-heavy sectors possess established research and development capabilities that enable them to originate and internally test novel ideas with potential effects. However, these corporations frequently encounter difficulties in transforming these ideas into independent commercial ventures due to a lack of expertise. The use of a venture capital methodology facilitates the comprehensive management of the entire process, encompassing the inception of ideas and the subsequent development of substantial enterprises that may be integrated into a company's asset portfolio. This particular strategy is a viable pathway to high achievement. The commencement involves a clearly defined vision that the leadership has established, just like numerous other successful trajectories.

3.3.2 Alignment of Team Regarding Alignment of Action:

In order to effectively tackle the unique difficulties encountered in resource-intensive sectors, it is imperative for the leadership team of an organization to establish a shared alignment in both their beliefs and their subsequent behaviors.

The concept of top-team alignment refers to the synchronization and coordination of senior leadership within an organization, particularly in resource-intensive industries, in order to effectively execute digital transformations. This alignment is of utmost importance due to its crucial role in ensuring the success and efficiency of such transformations.

It is imperative to establish a clear understanding of the advantages that the organization can derive from the implementation of tech-enabled digital transformation, encompassing well-defined and specified overarching objectives. Acknowledging the significance of the potential benefits necessitates a genuinely cooperative methodology, including various business units and roles throughout the entire the necessity of digital advancements arises from the potential for indirect effects on the outputs of a certain business unit, as these advances can generate additional value through the value chain or synergistic interactions. Silos exhibit greater prominence and present greater challenges to dismantling within industries that are abundant in resources, as they typically trace their origins to earlier periods characterized by departmental frameworks that aimed to enhance productivity in industrial enterprises. In contemporary business practices, firms frequently adopt diverse organizational structures for their departments.

The conventional practice of adhering to decade-long investment horizons tends to foster a disposition towards maintaining steadfast commitment to a predetermined plan, whereas a mindset that embraces the concept of "failing fast" is crucial for achieving success in digital revolutions. Therefore, it is imperative for the leading team to reach a consensus regarding both the fundamental principles of design and the metrics for measuring success. Within the framework of the fail-fast approach, it is imperative to consider entrepreneurial endeavors as successful even if they do not provide favorable outcomes in conventional business indicators such as EBIT and cash flow.

The initiation of the transition should commence with a cohesive rationale and a shift in the narrative. It is easier to envision the advantages derived from real assets as opposed to investing in intangible assets like "technology." It is imperative for leadership to acknowledge this problem and demonstrate unwavering commitment to allocate resources towards these intangible assets with the aim of attaining enduring advantages in the long run.

Employees may not readily embrace digital innovation due to the potentially longer timeframe required for the advantages to manifest, in contrast to more conventional transformation endeavors. Therefore, it is imperative that leadership exhibit tangible enthusiasm and dedication in order to achieve a prosperous and comprehensive transition.

3.3.3 More Stress on Capability Building:

More stress on capability building the inability to scale digital transformations is frequently attributed to challenges encountered inside the organizational realm. The presence of suitable individuals is a fundamental component in the construction of a prosperous technological metamorphosis. Nevertheless, it is widely acknowledged that there exists a significant dearth of individuals possessing technical expertise within labor markets on a global scale. However, considering the specialized skills possessed by several employees in an industry that heavily relies on resources, this issue can be addressed by simultaneously enhancing the capabilities of existing personnel and seeking external candidates with exceptional abilities. The combination of both measures holds the potential for a more rapid rate of technological advancement compared to the majority of other businesses. For a visual representation of many possibilities for enhancing skills.

It is imperative for top management to assume the responsibility of becoming advocates of digital and advanced-analytics initiatives, actively participating in and guiding projects that entail substantial technological elements. The statement applies similarly to operational managers, who must acquire digital proficiency and, at the very least, possess a basic understanding of sophisticated analytics.

Based on our empirical observations, it has been demonstrated that individuals occupying employment roles in maintenance and production, central technology/maintenance, or technical functions possess the potential to acquire the necessary skills and knowledge to serve as proficient "translators" in the context of digital and advanced-analytics subjects. Consequently, they may effectively facilitate communication and understanding between different stakeholders. Likewise, it is possible to provide training for agile coaches and product owners by selecting individuals from the current workforce.

Nevertheless, digital occupations such as data scientists, data engineers, and IT architects necessitate a higher level of focused dedication. It is probable that a limited number of employees possess the potential for upskilling with a reasonable level of effort, but a more extensive and comprehensive training regimen would be necessary for others. In many instances, there is a need for supplementary recruitment, primarily aimed at augmenting the existing workforce through the acquisition of individuals possessing additional skills and competencies. In certain instances, the inclusion of professionals with specialized expertise,

such as UX/UI designers, is necessary to facilitate the collaboration of teams consisting of designers who have acquired additional skills. Digital academies exemplify the finest approach to equipping the workforce with optimal educational materials, bolstered by a combination of internal facilitators and external specialists. By defining distinct learning cohorts and meticulously curating the educational content into targeted learning paths, more favorable outcomes are achieved. Employing a range of instructional formats, along with a train-the-trainer model and a hands-on learning approach, has demonstrated its essential role in both establishing and expanding such academies. In summary, a track record encompassing over ten diverse scenarios has underscored the advantages, as well as the direct correlation to value, of prioritizing the development of capabilities as a foundational element for technological transformations.

3.3.4 Every Idea Should Be Given Due Importance:

Historically, numerous companies have implemented a range of continuous improvement initiatives within certain operational areas, thereby enhancing overall efficiency. In order to fully adopt digital innovation, it is imperative to undergo a transformation in the organizational culture, with a specific emphasis on achieving both high performance and organizational health. According to studies conducted by McKinsey, there is a direct correlation between the culture of an organization and its performance. Companies that rank in the top quartile in terms of organizational health have an average total shareholder return that is three times higher compared to companies that do not rank in the top quartile.

The significance of culture cannot be overstated when it comes to attaining transformative transformation on a broad scale. However, it is worth noting that such transitions pose significant challenges. It is unsurprising that our research findings indicate a failure rate of approximately 70 percent in the attainment of stated objectives. Approximately 66% of these failures can be attributed to issues relating to culture. Furthermore, the replication of culture is inherently challenging. The advantages are readily apparent, however. Organizations that successfully cultivate an appropriate organizational culture are more adept at attracting and retaining digital talent. Cultural transitions often encompass three primary phases: goal establishment, action strategizing, and execution. These procedures, while straightforward, possess significant efficacy.

To begin with, a distinct sense of purpose can be established when leaders effectively convey their vision, including objectives, through frequent town hall meetings or by enhancing their visibility. This facilitates employee's comprehension of the connection between their work and the organization's mission. Furthermore, it is imperative for leaders to provide a coherent framework that bolsters their vision, offering lucidity through well-delineated objectives and goals that correspond to everyone's job. Finally, the implementation of precise action plans in a manner that facilitates the effort to enact change and maximize the transformation. As an illustration, a multinational energy corporation experienced notable improvements in its operational efficacy within a span of three years after implementing cultural enhancements. The assessment of outcomes was comforted using the McKinsey Organizational Health Index, which revealed significant advancements in various domains, including direction, leadership, shared vision, employee involvement, and personal ownership, with-improvements reaching double-digit figures.

3.3.5 Transforming the Technology Set Up:

A robust and updated foundation of core technology is crucial for expanding digital initiatives and is constructed upon five key principles:

- a. A shared data and AI platform that handles the intake, storage, retrieval, handling, and regulation of data from both information technology and operational technology (IT/OT) sources throughout the organization aids in simplifying operations and expediting the implementation of projects by mitigating technological obligations.
- b. An updated data and application integration framework, incorporating contemporary solutions such as APIs, and its expansion into the plant area, contributes to the swift implementation of features, ensuring a uniform user experience across various channels.
- c. Improved cloud solutions, utilizing a strategy involving multiple cloud platforms and allowing self-initiated setup of a private cloud, reinforce the organization's data security stance.
- d. By merging plant and corporate endeavors through the convergence of IT/OT systems, the organization facilitates the presence of high-quality data across the entire enterprise, eradicating isolated compartments and enhancing the caliber of solutions.
- e. The standardization of key capabilities and the reuse of foundational and digital platforms, such as enterprise resource planning (ERP) and manufacturing execution systems (MES), are crucial for simplifying and enhancing the application landscape. These measures are necessary to support the realization of value in large-scale implementations and to achieve a higher return on investment through the reuse of core technological components.

It is acknowledged that the process of modernizing the entirety of the IT landscape can present significant challenges since numerous organizations are confronted with legacy IT systems that possess intricate organizational rules that are tough to extract. The five pillars are typically presented as incremental rather than sudden transformations, with each organization having its own distinct beginning point. Adopting a business-centric use-case methodology would serve as a favorable initial step towards the process of modernization.

3.3.6 Value Creation Through Digital:

Establishing a transparent value validation procedure is crucial for showcasing early and frequent outcomes. This necessitates translating all technology transformation actions into tangible financial gains for stakeholders. While there is no questioning the role of technology in facilitating digital transformation, initial funding is imperative to initiate the process. Subsequently, as value generation commences, the transformation itself finances future investments.

This creates a self-sustaining cycle where technological modernization empowers business value, thereby funding further technological advancements to generate more business value. Hence, it's of paramount importance to make the impact of technology visible by substantiating business value delivery. The front-line staff takes charge of connecting individual initiatives to digital transformation to exhibit advantages.

A dedicated transformation management team assumes the responsibility of enhancing stakeholder visibility across the entire organization. A meticulous value validation approach ensures the consistent generation and preservation of value by guaranteeing a continuous stream of practical cases.

Additionally, it offers transparency regarding accomplished impact, establishes precise guidelines (baseline criteria, benefit assessment), and continuously monitors Key Performance Indicators (KPIs).

The optimal method for value validation involves a stage-gate process as the central governing element, pinpointing high-impact scenarios while minimizing delivery risks. An effectively managed transformation management strategy facilitates the delivery of a definitive reference point to monitor initiative performance and assign clear accountability to initiative owners. Automated reporting on KPIs and clear team guidance support this.

3.3.7 Maximizing Usage of Data Resources:

Our fundamental concepts regarding the optimal methodology for handling data involve the integration of technological expertise, established governance rules, and a commitment to enhancing skills. The implementation of a centralized data platform is necessary in order to facilitate data integration and effectively oversee the complete data life cycle, encompassing data ingestion through analysis. The comprehensive management of data governance is essential, encompassing several crucial aspects such as security, controls, and prioritization across all data domains.

The central focus of any data platform should be on the delivery method and capability building. This entails prioritized embedded agility and talent management as primary objectives, in order to mitigate risk and ensure effective maintenance of the architecture. Typically, this entails the presence of a data office that facilitates the coordination of design decisions pertaining to operational models and technology, while also aiding in the expansion of these endeavors throughout the organization.

Typically, instances of success have involved the establishment of a centralized team specializing in association, which assumes responsibility for the creation of standards and assets. Furthermore, there existed smaller teams within the organization that were responsible for customizing and deploying resources to cater to various market requirements.

The central team and the local teams engage in ongoing data interchange through the dissemination of code via the code repository. The code has been customized to suit the specific requirements of the deployment. The core team receives feedback, suggestions for improvement, and innovative ideas, which they use to iterate the assets.

The most effective instances employed a federated data office and a centralized data platform characterized by well-defined governance. The teams that were integrated within the organization employed an agile methodology and placed a strong emphasis on producing significant outcomes.

3.3.8 Implementation:

The acquisition of initial momentum is crucial for the achievement of a successful digital transition. It is common for companies to concurrently initiate and cultivate many endeavors. While the attainment of success is limited to a select few, there are still instances where others serve as significant milestones during the process for additional successful applications.

Industries that heavily rely on resources must demonstrate the value of digitalization across several assets and domains simultaneously in order to garner support throughout the entire organization. In order to accomplish this, it is imperative to execute a substantial quantity of high-impact use cases simultaneously, considering the possibility of failure in certain instances.

The goal is to function using a single organizational operating system that applies the fresh methodology throughout value chains, individuals, resources, and operations. Utilizing a sequential approach that encompasses these distinct domains enables the gradual accumulation of momentum throughout the entire organization.

3.4 References:

1. Adrian Booth, Nikhil Patel, and Micah Smith, “Digital transformation in energy: Achieving escape velocity,” Mckinsey September 03,2020
2. A manufacturer guide to scaling industrial IoT, “Mckinsey, February 5, 2021
3. Chanas, S.; Myers, M.D.; Hess, T. Digital transformation strategy making in pre-digital organizations: The case of a financial services provider. *J. Strateg. Inf. Syst.* 2019, 28, 17–33
4. End to end digital transformation for chemical companies, “ Mckinsey August 25,2020
5. Hess, T.; Benlian, A.; Matt, C.; Wiesböck, F. Options for formulating a digital transformation strategy. *MIS Q. Exec.* 2016, 15, 123–139.
6. Kraus, S.; Schiavone, F.; Pluzhnikova, A.; Invernizzi, A.C. Digital transformation in healthcare: Analyzing the current state-of-research. *J. Bus. Res.* 2021, 123, 557–567
7. Matt, C.; Hess, T.; Benlian, A. Digital Transformation Strategies. *Bus. Inf. Syst. Eng.* 2015, 57, 339–343
8. Mckinsey organisational health index: Mckinsey transformational change survey
9. MacCrory, F.; Katsamakos, E. Competition of Multi-Platform Ecosystems in the IoT. *SSRN Electron. J.* 2021, 1–52.
10. Pavlov, O.V.; Katsamakos, E. Will colleges survive the storm of declining enrollments? A computational model. *PLoS ONE* 2020, 15, e0236872.
11. Sanchez-Cartas, J.M.; Katsamakos, E. Artificial Intelligence, Algorithmic Competition and Market Structures. *IEEE Access* 2022, 10, 10575–10584
12. Vial, G. Understanding digital transformation: A review and a research agenda. *J. Strateg. Inf. Syst.* 2019, 28, 118–144