Metadata is Key to Digital Transformation in Enterprises

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ABSTRACT

The swift rise in global internet utilization and the escalating intricacy of digital landscapes have compelled firms to undertake digital transformation to maintain competitiveness. Despite previous studies emphasizing the significance of digital transformation, a substantial vacuum persists in the literature providing comprehensive and generalizable frameworks. Current models frequently pertain to certain sectors or are created by consultant companies, resulting in limited application across various organizational contexts. This study fills the vacuum by conducting a meta-analysis of diverse organizations—varying in size, sector, and geographic location—that have already experienced digital transformation. The objective is to discern prevalent trends and obstacles, and to provide a cohesive framework applicable across many industries. This inquiry is guided by two fundamental research questions: What are the similarities and contrasts among firms that have undergone digital transformation? What strategic measures may organizations do to expedite this process? The data indicate recurring themes in successful transitions, which were utilized to construct a preliminary framework. The model was subsequently evaluated against the identical instances to determine its applicability. The framework is designed to assist entrepreneurs, executives, change managers, and researchers in strategizing and implementing successful digital transformation programs.

Keywords: Metadata, Digital Transformation, Enterprise Data, Data Governance, Data Management, Data Quality, Metadata Management, Compliance, Data Catalog, Data Discovery, Data Privacy, Analytics, Data Integrity, Business Strategy, Big Data.

Introduction

A component of digital transformation is evolving, and there are several sorts of modifications an organization may do. The two primary categories of change. They characterize first-order modifications as gradual enhancements to a minor segment of the organization. First-order change elements inside organizations are executed while preserving structural stability. Secondly, they discuss second-order changes, which entail significant and discontinuous organizational transformations that result in extensive structural modifications. In context, digitalization exemplifies first-order change. Digital transformation exemplifies second-order change [1-4].

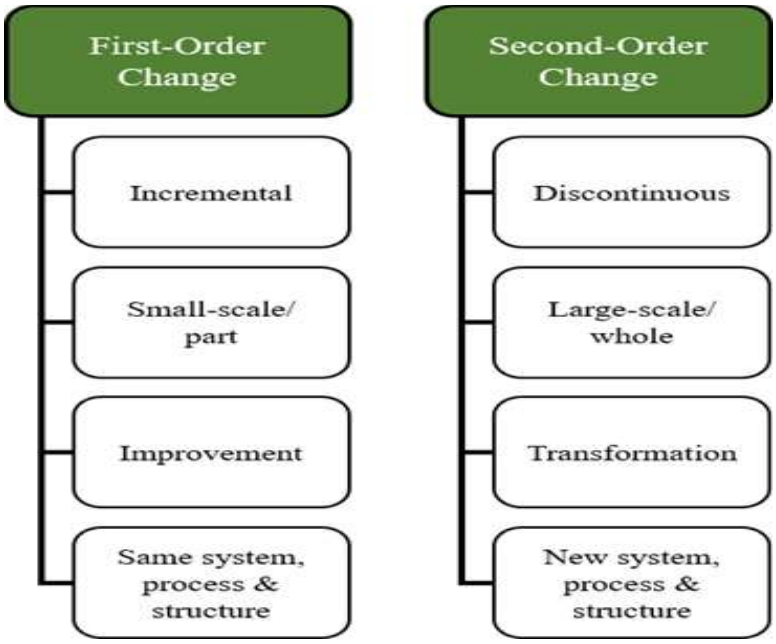

Figure 1: Changing order in digital transformation

The distinction between gradual and discontinuous change during organizational transformation. During incremental change, organizations will continue to progress by implementing little adjustments without disturbing the main system. Conversely, during periods of discontinuous change, organizations encounter more extreme and comprehensive, system-wide transformations aimed at revitalizing their core. This distinction is evident between digitalisation and digital transformation, with the latter defined by a more radical and fundamental shift inside the organization [5-9].

Digital transformation will necessitate alterations in both corporate operations and organizational culture. Given that both are undergoing transformation, we have resolved to emphasize Kotter's (1995) change model alongside the cultural change model. Employing change models can diminish complexity and enhance the effectiveness of organizational transformation. The significance of selecting an appropriate change model and expresses optimism over the concurrent application of multiple models based on the specific subjects or departments necessitating change.

Kotter's 8 phases of change emphasize the entire organization, whereas Cameron and Quinn's 9 steps for cultural change underscore the human aspect of organizational transformation. They contend that initiating any change necessitates prioritizing cultural transformation. To develop a generalized framework by the conclusion of this paper, it is beneficial to comprehend the methodologies proposed by others for implementing change.

Strategic Planning, Delegation, and Implementation

After senior management has established the overarching phases and transformation objectives, it is essential to transparently convey them to all workers. Engaging all employees and securing their commitment to the ultimate objective is crucial; else, the transformation program risks disintegration. A strategy establishes a target for the organization to pursue, necessitating the development of an accompanying execution plan. To effectuate grassroots improvements, it is prudent to integrate the subjective expertise of all employees. Upon retrospective analysis of the failure's causes, experts found that the implementation plan evidently lacked the foresight necessary for comprehensive β-testing. They remarked that the proposals were very ambitious. The management at Haribo clearly failed to create an internal support base of workers as stakeholders to facilitate a smooth transition for the organization.

Although large-scale reform must be initiated from the top, the collective efforts of all stakeholders are crucial for its success. Transparent and explicit communication of management initiatives engages individuals and integrates them into the transformation process. The company saw itself as a bulk provider and was significantly dependent on its business-to-business (B2B) partners to access its end clients. Consequently, as they embarked on their transformation path, they ensured that the B2B partners were informed throughout the whole process. Despite several recommendations to expand its business-to-consumer (B2C) channel, from direct selling to end customers to avoid alienating its business-to-business (B2B) partners. Ultimately, the outcome was a synergistic expansion of both the brand and its partners.

A comprehensive change is an ambitious endeavor that undoubtedly gains from many viewpoints. Therefore, it is essential to engage employees from all departments or functions in the transformation process. Any aspirations for transformation would be futile if the individuals inside the organization feel estranged from the change process. Digitalization cannot be effectively pursued as a standalone endeavor by one or more roles within an organization. The efficacy of Springfield State University's (SSU) transformation programs is attributable to the inclusion of stakeholders in the process. They designated several faculty members and students as "change agents" and provided them with training on the impending modifications. Concurrently, the University created a communication campaign encompassing workshops, a project blog, intranet updates, poster displays, town hall meetings, lunch-and-learn sessions, and after-work events. They deemed it essential to elucidate the necessity for transformation and the methods by which they will attain their objectives.

What Measures may Organizations do to Achieve Digital Transformation?

Following the literature study, we resolved to perform a meta-analysis of the current case literature addressing the successes and failures of various organizations. The literature was intentionally maintained to encompass a varied range of organizations from various industries and operating at varying scales. This was executed to guarantee that the end

outcome (framework) is genuinely homogeneous and applicable to all types of organizations. Our research was done using the suggested stages for an effective meta-analysis (Himmelfarb Health Sciences Library, 2022). Upon identifying the pertinent instances, they underwent a thorough assessment to collect adequate information regarding the similarities and variations in their individual transformation trajectories.

By doing so, we identified many critical factors that were common across nearly all instances. The similarities and differences in these factors were analyzed and discussed; the results are presented in Table 1.

Topic	**Key Findings**
Trigger Points	There are some internal (research and development) and external triggers (competitor behaviour) in an organisations' environments that are catalytic to cause change. The management must keep an eye on these factors and remodel their strategy accordingly.
Strategic Initiatives	Digital transformation is led from the top. It is vital that all the top management agree and align themselves towards a common goal. Moreover, based on the environmental triggers, the strategy must be reworked accordingly.
Planning, Delegation and Execution	Any transformation initiative will fall flat if all the stakeholders are not included in the change process. It is important to communicate the strategy to everyone and bring them onboard with the changes in their daily tasks and responsibilities.
Training and Change Management	Any change initiative will be met with internal resistance. In the case of digital transformation it is even more stark because of the data privacy concerns. The management must employ widely available change management principles to address these concerns. A large-scale transformation initiative will not be successful without efficient change management practices.
Challenges and Roadblocks	There are challenges to any digital change. Ideally, the management should be able to foresee such roadblocks and account for those in the initial strategy. For other practical purposes, a strategy should be agile and flexible to be able to adjust to unforeseen challenges.
Evaluation and Feedback	To build a sustainable process it is important to have a steady feedback loop. Digital transformation is a long drawn process. Hence, it is necessary to set checkpoints where the organisation can review its progress and make adjustments to the strategy wherever necessary.
Impact Assessment	Digital transformation has a two-fold impact. One is the direct economic benefit of increased sales, market share etc. The other more subtle impact is on the organisational culture. Digital transformation is a continuous process and the stakeholders must be empowered to

	think for themselves. They should be able to deal with the next phase of technological innovation.

This material was organized under certain headings that would ultimately contribute to the development of the Framework for Digital Transformation. This paradigm is applicable to entrepreneurs, executives on management boards, change managers, consultants, and scholars seeking to explore generalized transformation frameworks in greater depth.

In addition to addressing the research questions, we want to reflect on the original objective of this research and assess if it has been achieved. The objectives of this research are presented below:

To examine the current transformation frameworks that concentrate on various fragmented components of change. Consolidate the lessons from these frameworks into a more cohesive outcome.

Utilizing these deductions to provide a generalized and reproducible framework for organizations to digitize their operations [15-19].

Following a meticulous analysis of the instances, we juxtaposed the data, identifying both parallels and discrepancies in relation to the previously conducted literature review. Subsequent to the comparison, we commenced the development of our proprietary framework for digital transformation. In this framework, we used a distinct methodology compared to current frameworks and created a generalized framework that organizations may utilize to digitalize their operations.

- Researchers aim to surmount the preliminary obstacle of comprehensive literature review.
  - This framework or case studies offer advantages not only for organizations but also for researchers pursuing more investigations. For certain scholars, the preliminary obstacle to undertaking comprehensive literature case study may be substantial. Consequently, we believe that providing both condensed case studies and a generalized framework may enhance future research.

Practical Implications

This research aimed to provide a paradigm for digital transformation grounded in the authors' evaluation of prior successful and unsuccessful digital change projects. An detailed meta-analysis was performed on existing literature about digital transformation and its impact on strategy, operations, marketing, and technology. Upon identifying the pertinent case studies, they were rigorously assessed to discern potential commonalities in the various trajectories of all the organizations. This enabled the writers to establish the foundation for digital transformation. The study also succinctly addresses the execution and subsequent evaluation of the framework's application. This study offers a robust framework for managers seeking to integrate digital transformation throughout the organization. Ultimately, this paradigm offers an academic perspective on a domain predominantly characterized by the technical jargon of major consulting firms [20-27].

Conclusion

The progression of Industry 4.0 and the proliferation of internet technologies have compelled organizations to transform themselves to maintain relevance. While the majority of managers today recognize the advantages of digital transformation, shockingly few comprehend the true implications of fully digitizing an organization. The prevalent narratives of failures instill skepticism in the hearts of managers courageous enough to embark on an ambitious change initiative. Throughout the course of our investigation, we have recognized that digital transformation is a double-edged sword. On one side, there exists the risk of becoming obsolete in a competitive market due to reluctance to innovate. Conversely, another grave consequence is that an organization expends its time, effort, and financial resources on a project, only to witness it devolve into a catastrophic failure. Organizations must engage in ongoing digital transformation to maintain competitiveness. Secondly, we contended that a significant deficiency exists in accessible practitioner research for organizations seeking to internalize this transformation process rather than delegating it to a consulting firm.

This study sought to provide a standardized framework to guide organizations in their digital transformation efforts. Utilizing current data, the authors aimed to address the following research question: What parallels and differences were identified in organizations that experienced digital transformation in the past?

References

[1] Malhotra, I., Gopinath, S., Janga, K. C., Greenberg, S., Sharma, S. K., & Tarkovsky, R. (2014). Unpredictable nature of tolvaptan in treatment of hypervolemic hyponatremia: case review on role of vaptans. *Case reports in endocrinology*, *2014*(1), 807054.

[2] Singh, V. K., Mishra, A., Gupta, K. K., Misra, R., & Patel, M. L. (2015). Reduction of microalbuminuria in type-2 diabetes mellitus with angiotensin-converting enzyme inhibitor alone and with cilnidipine. *Indian Journal of Nephrology*, *25*(6), 334-339.

[3] Karakolias, S. E., & Polyzos, N. M. (2014). The newly established unified healthcare fund (EOPYY): current situation and proposed structural changes, towards an upgraded model of primary health care, in Greece. Health, 2014.

[4] Shilpa, Lalitha, Prakash, A., & Rao, S. (2009). BFHI in a tertiary care hospital: Does being Baby friendly affect lactation success?. *The Indian Journal of Pediatrics*, *76*, 655-657.

[5] Polyzos, N. (2015). Current and future insight into human resources for health in Greece. Open Journal of Social Sciences, 3(05), 5.

[6] Gopinath, S., Janga, K. C., Greenberg, S., & Sharma, S. K. (2013). Tolvaptan in the treatment of acute hyponatremia associated with acute kidney injury. *Case reports in nephrology*, *2013*(1), 801575.

[7] Gopinath, S., Giambarberi, L., Patil, S., & Chamberlain, R. S. (2016). Characteristics and survival of patients with eccrine carcinoma: a cohort study. *Journal of the American Academy of Dermatology*, *75*(1), 215-217.

[8] Swarnagowri, B. N., & Gopinath, S. (2013). Ambiguity in diagnosing

esthesioneuroblastoma--a case report. *Journal of Evolution of Medical and Dental Sciences*, *2*(43), 8251-8255.

[9] Shilpa, Lalitha, Prakash, A., & Rao, S. (2009). BFHI in a tertiary care hospital: Does being Baby friendly affect lactation success?. The Indian Journal of Pediatrics, 76, 655-657.

[10] Gopinath, S., Janga, K. C., Greenberg, S., & Sharma, S. K. (2013). Tolvaptan in the treatment of acute hyponatremia associated with acute kidney injury. Case reports in nephrology, 2013(1), 801575.

[11] Swarnagowri, B. N., & Gopinath, S. (2013). Pelvic Actinomycosis Mimicking Malignancy: A Case Report. *tuberculosis*, *14*, 15.

[12] Gopinath, S., Giambarberi, L., Patil, S., & Chamberlain, R. S. (2016). Characteristics and survival of patients with eccrine carcinoma: a cohort study. Journal of the American Academy of Dermatology, 75(1), 215-217.

[13] Ravichandran, N., Inaganti, A. C., Muppalaneni, R., & Nersu, S. R. K. (2020). AI-Driven Self-Healing IT Systems: Automating Incident Detection and Resolution in Cloud Environments. Artificial Intelligence and Machine Learning Review, 1(4), 1-11.

[14] Manduva, V.C. (2020) AI-Powered Edge Computing for Environmental Monitoring: A Cloud-Integrated Approach. The Computertech. 50-73.

[15] Pasham, S.D. (2018) Dynamic Resource Provisioning in Cloud Environments Using Predictive Analytics. The Computertech. 1-28.

[16] Ravichandran, N., Inaganti, A. C., Muppalaneni, R., & Nersu, S. R. K. (2020). AI-Powered Workflow Optimization in IT Service Management: Enhancing Efficiency and Security. Artificial Intelligence and Machine Learning Review, 1(3), 10-26.

[17] Manduva, V.C. (2020) How Artificial Intelligence Is Transformation Cloud Computing: Unlocking Possibilities for Businesses. International Journal of Modern Computing. 3(1): 1-22.

[18] Pasham, S.D. (2017) AI-Driven Cloud Cost Optimization for Small and Medium Enterprises (SMEs). The Computertech. 1-24.

[19] Pasham, S.D. (2019) Energy-Efficient Task Scheduling in Distributed Edge Networks Using Reinforcement Learning. The Computertech. 1-23.

[20] Inaganti, A. C., Sundaramurthy, S. K., Ravichandran, N., & Muppalaneni, R. (2020). Zero Trust to Intelligent Workflows: Redefining Enterprise Security and Operations with AI. Artificial Intelligence and Machine Learning Review, 1(4), 12-24.

[21] Inaganti, A. C., Sundaramurthy, S. K., Ravichandran, N., & Muppalaneni, R. (2020). Cross-Functional Intelligence: Leveraging AI for Unified Identity, Service, and Talent Management. Artificial Intelligence and Machine Learning Review, 1(4), 25-36.

[22] Nersu, S. R. K., Kathram, S. R., & Mandaloju, N. (2020). Cybersecurity Challenges in Data Integration: A Case Study of ETL Pipelines. Revista de Inteligencia Artificial en Medicina, 11(1), 422-439.

[23] Srinivas, N., Mandaloju, N., & Nadimpalli, S. V. (2020). Cross-Platform Application Testing: AI-Driven Automation Strategies. Artificial Intelligence and Machine Learning Review, 1(1), 8-17.

[24] Mandaloju, N., Srinivas, N., & Nadimpalli, S. V. (2020). Machine Learning for Ensuring Data Integrity in Salesforce Applications. Artificial Intelligence and Machine Learning Review, 1(2), 9-21.

[25] Sai, K.M.V., M. Ramineni, M.V. Chowdary, and L. Deepthi. Data Hiding Scheme in Quad Channel Images using Square Block Algorithm. in 2018 International Conference on Advances in Computing, Communications and Informatics (ICACCI). 2018. IEEE.

[26] Manduva, V.C. (2020) The Convergence of Artificial Intelligence, Cloud Computing, and Edge Computing: Transforming the Tech Landscape. The Computertech. 1-24.

[27] Pasham, S.D. (2020) Fault-Tolerant Distributed Computing for Real-Time Applications in Critical Systems. The Computertech. 1-29.