Why Digital Maturity Models Fail: An Exploratory Interview Study Within the Digital Transformation Steering Process

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Keywords: Digital Maturity Models, Digital Transformation, Transformation Steering, Explorative Interview Study.

Abstract: Digital Maturity Models (DMMs) are widely used tools to assess and guide organizational digital transformation (DT). However, their practical contribution to the transformation process often fails due to insufficient stakeholder involvement, inadequate adaptability, or unsuitable assessment tools. This study explores these shortcomings through a socio-technical lens, analyzing why DMMs fail to deliver value in transformation processes. Drawing on an exploratory interview study with experts from the industry, eight key dimensions of failure, such e.g. as misalignment with organizational strategies, cultural resistance, and inadequate iterative usage practices, were identified. These initial results reveal that beyond the design of DMMs, systemic organizational and procedural barriers significantly hinder DMM utility. Building on that, ultimately, a comprehensive framework of utility barriers and derived requirements for building and integrating DMMs should be developed.

1 INTRODUCTION

With virtually every organization relying at least once on (Digital) Maturity Models (DMMs) during a transformation process the development of numerous DMMs has lead to their widespread adoption (Thordsen et al., 2020). However, their increasing use has also exposed significant weaknesses. In addition to fundamental shortcomings related to their scientific foundation, development process, and associated rigor, practitioners have frequently reported that these models fail to deliver the anticipated benefits, often falling short of effectively supporting the transformation process as expected (Thordsen & Bick, 2023a). Value creation in this context is not always directly quantifiable and depends heavily on the type of model used and its intended purpose. Despite the high heterogeneity of such models, existing research identifies capability maturity models as the dominant form of DMMs (Pöppelbuß & Röglinger, 2011). These models establish various dimensions of a digitally mature organization, each comprising capabilities defined across multiple developmental stages. This structure is designed to enable organizations to determine their current level of digital maturity (DM), identify a target state, and derive a model-supported pathway to achieve that state (Pöppelbuß & Röglinger, 2011). This in essence reflects a simplified outline of the typical DMM usage process. The application perspective of DMMs is equally heterogeneous, as these models can fundamentally be applied to any level within organizations. Over time however their primary use has become focused in the context of transformation processes at the organizational level, specifically in transformation steering (Ifenthaler & Egloffstein, 2020; Minh & Thanh, 2022a). In practice, DMMs are often analogized as a compass for the transformation process, helping organizations navigate their journey (Minh & Thanh, 2022a). Practitioners utilize these models to understand their current state, determine the actions required to achieve a desired maturity level and monitor their progress along the way. Ultimately, users of DMMs aim to actively guide and manage the transformation process to ensure the organization successfully reaches its target state (Rossmann, 2018). Underperformance occurs in this process when the DMM fails to adequately support the transformation as expected. For various reasons, DMMs often fall short on their promises, leading to their declining use over the course of the transformation (e.g. Thordsen

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Breitruck, M.
Why Digital Maturity Models Fail: An Exploratory Interview Study Within the Digital Transformation Steering Process.
DOI: 10.5220/0013427800003929

In *Proceedings of the 27th International Conference on Enterprise Information Systems (ICEIS 2025) - Volume 2*, pages 883-890
ISBN: 978-989-758-749-8; ISSN: 2184-4992

& Bick, 2023b). This support in transformation processes is however the exact justification for existence and continuous development of these models—to enable organizations to initiate and steer their transformation processes effectively. Nevertheless, there is currently little structured knowledge from a practical perspective regarding the specific reasons for this underperformance in the application of DMMs. In particular, the question regarding where this loss of value occurs remains unaddressed (Thordsen & Bick, 2023b). DMMs can, therefore, be perceived as socio-technical systems embedded within the organizational digital transformation. As such, challenges can arise from multiple perspectives—technological, organizational, procedural, or human—which ultimately contribute to the failure of the model to deliver its intended value. Therefore, this paper aims to systematically address the following research question: *What factors hinder Digital Maturity Models from effectively supporting value creation during the organizational digital transformation?* To analyze this question, the following chapters will first establish a theoretical foundation, upon which an exploratory interview study with industry experts will be built upon. The study aims to systematically identify the key challenges in the practical application of DMMs.

2 RESEARCH CONTEXT

2.1 Digital Transformation of Organizations

Although existing research does not provide a clear and homogeneous definition of the term, digital transformation (DT) in the context of organizations can be broadly defined as: "*A fundamental change process, enabled by the innovative use of digital technologies, accompanied by the strategic leverage of key resources and capabilities, aiming to radically improve an entity and redefine its value proposition for its stakeholders*" (Gong & Ribiere, 2021, p. 12). This definition explicitly links five distinct elements: the change process, the entity undergoing the change, the means by which the change is achieved, the expected outcome, and the associated impact on the respective entity.

The change process, which is essentially fundamental in nature, must be distinguished from non-fundamental changes, a distinction closely tied to differentiating DT from related concepts such as digitization and digitalization. In addition to its fundamental nature, the scope of improvement and the distinct end results serve as further differentiation factors between the aforementioned related concepts and DT (Gong & Ribiere, 2021). Fundamental change, as exemplified by DT, is inherently tied to radical improvement, as opposed to the incremental improvements typically associated with less fundamental change initiatives (Bekkhus, 2016). Radical improvement entails a holistic disruption of existing paradigms and structures, driving fundamental change. In contrast, incremental improvement is characterized by small, continuous steps, primarily oriented towards process optimization. In terms of impact the distinguishing factor between digitalization and DT lies in the achievement of non-quantifiable, long-term effects that generate fundamentally new value for organizations and their stakeholders rather than short-term efficiency improvements (Chanias, 2017; Gong & Ribiere, 2021). To facilitate this fundamental change, specific measures are necessary. First, the innovative application of digital technologies, such as artificial intelligence, blockchain, and IoT, plays a crucial role (Gong & Ribiere, 2021). The strategic leverage of organizational resources and capabilities is equally important, enabling the broader scope and radical changes that distinguish digital transformation from digitalization initiatives (Gong & Ribiere, 2021; Heubeck, 2023). Furthermore, human resources are essential for implementing changes within the organization and supporting the development of knowledge resources (Alvarenga et al., 2020; Smirnova et al., 2019). Financial capital acts as a key enabler for successful transformations, particularly given that the long-term, non-quantifiable benefits of digital transformation often require significant investments. Organizations with sufficient reserves can prioritize holistic transformation efforts over short-term projects with immediately measurable benefits, creating space for comprehensive change without compromising on other organizational priorities (Gong & Ribiere, 2021; Hess et al., 2016; Liu & He, 2024). Capabilities, both dynamic and digital, are also critical to navigate the complexity of digital transformation. These capabilities enable goal-oriented and agile actions, ensuring that human and technological components are effectively operationalized (Ellström et al., 2021; Gong & Ribiere, 2021). Combined, these three means—technologies, resources, and capabilities—allow organizations to achieve both economic and capability-driven outcomes. In the context of digital transformation, capability-driven outcomes are particularly significant, as they encompass long-term, non-quantifiable benefits such as business model innovation, transformative leadership, and the establishment of competitive advantages. These outcomes serve as the primary differentiator from economic benefits, such as process optimization or cost reduction, which, while important, are already achievable within digitalization projects. (Gong & Ribiere, 2021; Leão & da Silva, 2021; Nwankpa & Roumani, 2016).

2.2 Digital Maturity Models as Socio Technical Systems

As the distinction between DT and digitalization highlights, DT is not a trivial initiative that can be implemented through simple project structures within short timeframes. Instead, DT represents a multifaceted and complex construct that must be broken down into numerous sub-projects and workstreams involving a wide range of stakeholders to enable a gradual and systematic implementation of the transformation process (Correani et al., 2020; Furr et al., 2022; Jöhnk et al., 2020). As with all organizational initiatives, the initial and most critical steps in digital transformation involves defining objectives, determining the current state, and establishing a pathway to achieve the desired target state. In the context of digital transformation, the concept of maturity models has been adapted to the digital domain. These digital maturity models (DMMs) are designed to measure how digitally mature organizations are, to define a target maturity state, and—depending on the model type—even support organizations in achieving that state (Gill & VanBoskirk, 2016; Minh & Thanh, 2022b; Pöppelbuß & Röglinger, 2011; Thordsen & Bick, 2023a). The variable being measured, referred to as maturity, can be defined as a *"measure to evaluate the capabilities of an organization in regard to a certain discipline" (Poeppelbuss et al., 2011).*

In the case of DMMs, this specifically pertains to digital capabilities, which, as previously established, are an outcome of digital transformation. Consequently, existing research often uses the term Digital Transformation Maturity synonymously with digital maturity. The Capability Maturity Model, the most frequently used type of maturity model in the literature, serves as the foundation for this approach. It deconstructs the concept of DM into various dimensions, each associated with corresponding capabilities that represent specific maturity levels (Aguiar et al., 2019; Paulk et al., 1993).

An organization can exhibit a certain capability level within each dimension, which is then interpreted as its maturity level in that area. Descriptive models focus solely on reporting the current maturity level to the user, enabling an initial As-Is assessment. Prescriptive models take this a step further by allowing users to define a target state and provide guidance on how to progress from the current maturity level to the desired state. Building on these, comparative models add the functionality of benchmarking, allowing organizations to compare their performance internally (tracking progress over time) or externally (evaluating their standing relative to competitors). DMMs can thus play a central role in the transformation process by first conducting an As-Is assessment, providing a starting point for planning digital transformation (descriptive). Building on this, they offer guidelines to support detailed planning and target setting (prescriptive). Furthermore, DMMs can serve as a steering tool by tracking progress through intermediate steps, measuring their success, and benchmarking the organization's advancing digital maturity both internally and externally (prescriptive and comparative) (Pöppelbuß & Röglinger, 2011).

DMMs often exist in traditional analog formats, such as assessment documents and questionnaires. However, opportunities have emerged for applying these models in digital formats, enabling assessments, target states, and selected steps toward these targets to be stored and continuously accessed, for example, on web-based platforms. As a result, DMMs have increasingly evolved into technical systems that can be integrated as decision-support tools within transformation processes. Due to their growing technical nature and integration into organizational processes, the application of DMMs can increasingly be perceived as a socio-technical construct (Warnecke et al., 2019). Within this construct outlined by Bostrom & Heinen (1977), the DMM serves as the *technology*, the transformation acts as the *task*, the transforming organization represents the *structure*, and individuals involved in digital transformation—such as steering committees, project managers, and other key stakeholders—constitute the *people* component. The socio-technical systems (STS) perspective can be applied here to understand how the surrounding organization reacts to the introduction of IT artifacts like DMMs, how their integration functions, and what potential barriers arise in their use, along with possible solutions. This perspective emphasizes the relationship between the *social system*, comprising structure and people, and the *technical system*, consisting of tasks and the technology itself (Bostrom & Heinen, 1977). The interplay between these components represents the central variable to be optimized for the efficient integration of technical systems into organizations. In this case, it involves achieving the best possible integration of DMMs into the transformation process to generate value-add from these decision-support artifacts, particularly in navigating this complex process effectively.

3 METHODOLOGY

3.1 Qualitative Interview Study Design

To understand which factors, hinder DMMs from delivering value as decision-support tools in digital transformations, it is necessary to systematically identify the barriers. This involves in particular examining the integration of DMMs as socio-technical systems (STS), focusing on how the various system components interact and identifying where usage-inhibiting issues arise within or between system components. To address this, we employ a qualitative, exploratory research approach (Strauss & Corbin, 1998). While theory-driven hypotheses regarding potential issues have been put forward, there is little empirical evidence from the user perspective. As a result, the field of study remains in an early stage of maturity, where neither quantitative nor more focused research methods are feasible, as these would require the specific problem factors to already be well-defined (Strauss & Corbin, 1998).

Table 1: Interview partners.

IP.	Job Title	Industry
1	CIO	Medical
2	Senior VP	Manufacturing
3	Head of Data & AI	Telecommunication
4	Director	Consulting
5	Manager	Consulting
6	Head of Digitalization	Industrials

In line with the research question, we have chosen to conduct a qualitative interview study. The theoretical development is guided by Strauss and Corbin's (1998) methodology, where insights are "grounded" in the data obtained from experienced experts. Our research adopts a neopositivist approach, classifying digital leaders as "competent truth-tellers" who serve as carriers of knowledge (Schultze & Avital, 2011). The experts interviewed are distinguished by their direct involvement in the context of digital transformation (DT), either as members or advisory actors of the steering committee responsible for planning and overseeing DT initiatives. These experts have utilized DMMs in their work, granting them access to explicit knowledge about how these models are employed in DT, how they are integrated into processes, and why issues arise during their application—potentially leading to reduced utility or even complete abandonment of their use.

3.2 Data Collection

Utilizing interviews as a data collection method is a cornerstone of qualitative research, enabling the collection of "authentic accounts of participants" who have directly confronted or been involved with the phenomenon under investigation (Schultze & Avital, 2011). To ensure an adequate degree of rigor, we follow the established approach by Levina, widely recognized in IS literature (Levina, 2021). As of now, six interviews have been conducted between October and December 2024 with experienced digital leaders who have been actively involved in digital transformation initiatives. An additional 5–10 interviews are planned. Participants were directly approached by us, with particular attention given to ensuring sufficient diversity in terms of organizational size and industry sector, making theoretical sampling feasible (Strauss & Corbin, 1998). An increasing degree of similarity in responses is already becoming apparent, indicating an emerging saturation point. The in-depth interviews were conducted one-on-one using a semi-structured format (Myers, 2019). The discussions were divided into two parts. The first part focused on the participants' roles in digital transformation initiatives and the general structure of such initiatives within their organizations. The second part delved deeper into the subject of DMMs, with a particular emphasis on the socio-technical systems (STS) components and subsystems in the context of DMM usage in DT. Participants were asked to identify points in the process where ssues in DMM usage occurred, if at all, and to elaborate on how these issues influenced the long-term utilization of the models.

3.3 Data Analysis

The interviews conducted so far were recorded and transcribed, to provide a solid foundation for subsequent coding analysis. A qualitative analysis software was used to structure the coding process (Strauss & Corbin, 1998). During the open coding phase, 123 codes were documented. Similarities and differences among these codes were then consolidated during axial coding, resulting in 70 first-order concepts.

People	
Dimension	Second-Order
Stakeholder engagement	Stakeholder Inclusion (IP2,5), Leadership Involvement (IP2), External Coordination (IP2)
Organizational barriers	Cultural Challenges (IP2), Transformation Commitment (IP2)

Structure	
Dimension	Second-Order
Strategic Alignment	Strategic Linkage (IP3), Objective Clarification (IP3), Expectation Setting (IP2,5)
Governance	Governance structuring (IP5), Anchoring (IP4¥)

Task	
Dimension	Second-Order
Operational Integration	Workflow integration (IP5), Support (IP2), Standardization (IP4)
Iteration	Cycle duration (IP6), Practicality (IP1)

Technology	
Dimension	Second-Order
Model Design	Complexity (IP5), Flexibility (IP6), Context adaption (IP5), Context adaptation (IP3), Performance integration (IP3)
User Integration	User Friendliness (IP6), Explanation (IP5)

Figure 1: STS-Findings Overview.

In the second-order analysis, the findings were re-evaluated to ensure that the combined concepts adequately explained the phenomenon under investigation. This process ultimately led to the formation of 21 second-order themes, which were organized into 8 dimensions aligned with the STS framework. These dimensions and their underlying themes are described in the following sections and are outlined within table 2. As the majority of interviews were conducted in German, the relevant quotes were translated into English to enhance the accessibility and comprehensibility of the results.

4 PRELIMINARY RESULTS

To refine the coding scheme, the resulting dimensions, to which the second-order themes were assigned, were mapped to the four components of STS theory. In the following section, the issues reported by the experts regarding the application of DMMs in the transformation process are systematically analysed in relation to the respective components.

The analysis was carried out starting with the social subsystem, which comprises the two components *People* and *Structure*. As previously mentioned, in the research context the *People* component refers to individuals involved in the digital transformation, such as the steering committee (SteerCo), employees reporting to the SteerCo, top management. Other organizational participants indirectly involved in the transformation, referred to hereafter as external stakeholders, are also included. The issues within this component were found to relate to two dimensions: stakeholder inclusion beyond the steering committee and organizational barriers. Regarding **stakeholder engagement**, it is evident that including all project stakeholders who will interact with the DMM during the selection process or in evaluating its outcomes is critical. Resistance to adoption often arises when the model fails to reflect the perspectives and needs of its intended users (stakeholder inclusion,) (IP5). Furthermore, the involvement of top management is particularly essential. The DMM must appear credible and coherent to leadership to secure their trust and support for its implementation (leadership involvement) (IP2). Additionally, external stakeholders, even those not directly engaging with the DMM, should be informed about its application where possible. This alignment ensures consistency with internal project stakeholders and their discussions. Failure to coordinate externally can result in internal challenges during the use of the DMM (external coordination) (IP2). In relation to **organizational barriers**, cultural challenges were identified that hinder the integration of DMMs into the steering processes of digital transformations. These models often carry a highly academic character, which can dampen commitment in more pragmatically oriented organizations (Cultural Challenges) (IP1, IP2). Additionally, the overall commitment or lack thereof to the transformation process itself may lead to the abandonment of the DMM as a steering tool. This occurs particularly when the perceived effort required to utilize the model is deemed too high, causing its application to be discontinued at an early stage (Transformation Commitment) (IP1, IP2).

The *Structure* component, which in this context refers to the organization and its inherently embedded rules, hierarchies, processes, and existing technical infrastructure, is susceptible to challenges across three dimensions: **strategic alignment and governance.** Organizations typically approach strategic topics, such as new value propositions, by first defining their strategy and subsequently identifying the capabilities needed to achieve their goals. In contrast, DMMs often reverse this approach by prescribing the capabilities required to meet a predefined target, which the organization cannot easily adjust. This was highlighted as a barrier in the strategy formulation aspect of digital transformation (strategy linkage) (IP3, IP1). Closely related to this is the observation that organizations often measure their success by achieving their specific goals rather than by comparing themselves to a peer group. DMMs, however, frequently rely on peer group good practices, making it more challenging to apply the standard performance assessment approach and to set and achieve meaningful goals (objective clarification) (IP3, IP1, IP2). This challenge also ties into expectation setting. It is essential to clearly establish the purpose of the model, how it will be integrated into existing processes, and to develop a shared understanding of its capabilities and limitations. Divergent perceptions of what DMMs are, what they can achieve, and how they can be applied create additional barriers (expectation setting) (IP3, IP5, IP7). Regarding **governance**, it is essential to define in greater detail how the outputs of the DMMs should be utilized within the transformation process and how underlying process structures can be built and leveraged for digital transformation. Without such procedural foundation, the model may be used, but its results would not be effectively integrated into the transformation efforts, thereby failing to generate added value from its application (governance structuring) (IP5, IP4). This requirement is closely tied to the need for anchoring the DMM as a central reference point within the organization. As noted earlier, all relevant stakeholders must recognize the model as a pivotal steering tool. This requires the initiators of the model's adoption to consistently highlight its value and utility, ensuring it becomes deeply embedded within the organization and its processes (Anchoring) (IP4, IP5).

The *task* component, regarded here as the core of the transformation process, encompasses the work invested, including objectives, underlying processes, and how these are defined and executed to ultimately achieve transformation goals. Beginning with **workflow integration**, it is essential not only to consider processes at a high level but also to ensure integration into more operational aspects of the transformation. This involves managing and tracking granular progress, such as the status of individual steps and identifying what actions are required to complete them (workflow integration, IP4, IP5, IP2). Additionally, it is crucial to provide **support** during the use of the DMM and its accompanying materials. Simply making the model available without adequate guidance often results in it being perceived as unsuitable or irrelevant, leading to abandonment (IP2, IP6, IP7). This also highlights the importance of **standardization** in application—establishing clear guidelines on where and how the DMM should be used within operational steering and planning. Such standardization reduces the risk of underutilization due to insufficient integration into organizational workflows (standardization) (IP4, IP5). In addition to proper integration into the task, **iteration** was repeatedly identified as a critical challenge. Specifically, the cycle iteration in which the DMM is updated is crucial for it to function as an effective steering artifact. Regular updates are necessary to evaluate whether the chosen transformation roadmap is working and to enable adjustments, thereby deriving value from the DMM's application (cycle duration) (IP6, IP5). To support iterative use, appropriate approaches for employing the DMM must be developed. This requires a pragmatic approach to the model's use, ensuring that it is practical and conducive to frequent reapplication (practicality, IP1, IP6).

The central artifact component in the STS is the *technology*, which in this case is the DMM itself. Key issues identified in this area include **model design** and the associated **user integration**. One recurring concern is that the models are often perceived as overly complex, discouraging usage from the outset. To ensure adoption, the DMM must be designed in a way that avoids excessive dimensions or maturity levels, which could render it opaque and difficult to use (complexity) (IP4, IP5). Similarly, the model must allow for some degree of adaptation to individual needs without compromising its usability (flexibility) (IP4, IP6). While complete customization may not always be feasible, adapting the model to the specific context is essential, as applying it generically across different contexts often leads to mismatches that undermine both its utility and user motivation (context adaptation) (IP5, IP6). In addition, concrete performance metrics are crucial to enable effective project steering. While these metrics do not always have to be quantitative, they should provide a means to assess whether progress is being made toward achieving the transformation objectives or whether adjustments are necessary (performance integration, IP3). Related to the model design is also **user integration**, which is often tied to the supporting materials of the model, such as assessment instruments, questionnaires, etc. It is crucial to ensure that users have the easiest possible access to the model, and by leveraging digital technologies, assessments can be automated or made viewable for later reference (user-friendliness) (IP6, IP1). Additionally, it is important to ensure that comprehensive documentation is available. This documentation can serve as the foundation for introducing the DMM into the transformation process and also provide guidance for any support measures. Without such documentation, incorrect usage or improper implementation can quickly lead to a loss of motivation and a decline in usage/utility shortly after introduction (explanation) (IP5).

5 EXPECTED CONTRIBUTION AND FUTURE WORK

Based on the exploratory insights gathered so far, an initial version of a coding scheme/framework has been developed. This scheme, structured along eight dimensions aligned with the four components of socio-technical systems (STS) theory, provides an initial exploratory understanding of the root causes of issues and the derived requirements to solve them potentially. These insights shed light on why DMMs have failed to deliver value or function effectively in the transformation process and identify what is needed to ensure their successful application. This confirms the issues regarding model design already highlighted in the literature: that DMMs are often too complex, inflexible, or insufficiently context-specific to be effectively applied in the operational execution of a transformation. However, with regard to the STS components beyond the DMM itself, i.e., the technology, it has become evident that, contrary to claims in existing research (e.g., Barry et al., 2023), there are significant issues outside the design of the DMM that contribute to the insufficient value these models generate in digital transformation efforts. As outlined in the dimensions related to the remaining STS components, factors such as the anchoring of the DMM within the organization and its associated processes, cultural barriers, and the lack of leadership support are also significant reasons why DMMs fail to deliver the anticipated value. For the continued progression of this research, the remaining interviews will be conducted, and the coding framework will be refined based on the additional insights gained. Given that a certain repetition of problem areas has already been observed after six interviews, with only a few new insights emerging, it can be assumed that the coding scheme and the derived findings will only change marginally. Nevertheless, increasing the sample size remains crucial to enhance the overall validity of the results and ensure broader coverage across different industries and organizational sizes, thereby improving the generalizability of the findings, which is the biggest limitation of the present study. In its finalized form, the resulting framework, based on the coding scheme, will identify the core issues that prevent DMMs from delivering the expected value in the transformation process. These shortcomings often manifest as declining usage and a lack of valuable additional insights, undermining the DMM's function as a decision-support artifact. The framework will also outline fundamental requirements for the effective use of DMMs in digital transformation processes aimed at addressing and mitigating these issues. The findings of this paper are intended not only for researchers but also, especially, for practitioners attempting to integrate DMMs into their transformation processes. Future research should not only address the design-related issues of DMMs and develop principles for their construction but also focus more extensively on the challenges outside the model's design. This includes developing processes and frameworks for effectively embedding DMMs into transformation initiatives, identifying the underlying contingency factors that enable successful implementation, and defining what success concretely entails. This emphasis is particularly relevant as the findings of this study predominantly report on negative cases of implementation, highlighting the need for a deeper understanding of how to achieve positive outcomes.

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