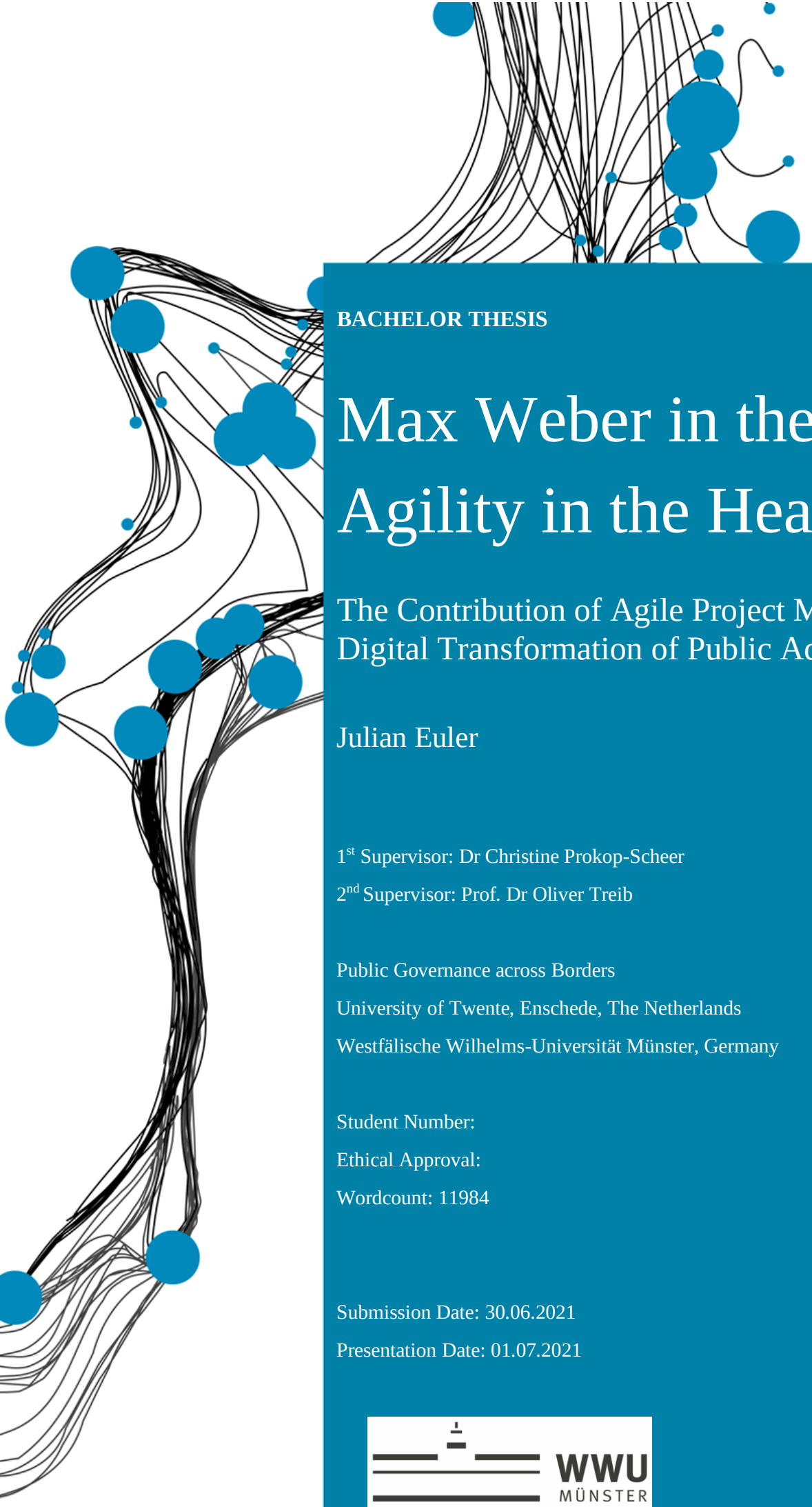

BACHELOR THESIS

Max Weber in the Head – Agility in the Heart

The Contribution of Agile Project Management to the Digital Transformation of Public Administrations

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Declaration of Academic Integrity

I hereby confirm that the present thesis

Max Weber in the Head – Agility in the Heart. The Contribution of Agile Project Management to the Digital Transformation of Public Administrations.

is the result of my own independent scholarly work, and that in all cases material from the work of others (in books, articles, essays, dissertations, and on the internet) is acknowledged, and quotations and paraphrases are clearly indicated. No material other than that listed has been used.

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Abstract

The digital transformation of the public sector is a topical issue that poses a great challenge to public administrations in Germany. To facilitate the transformation process, administrations have recently introduced agile project management methods. However, existing scholarly literature does not offer insights into how administrations apply agile project management and what it is used for. Using a single case study based on strategy papers and expert interviews, this bachelor thesis draws on a comprehensive understanding of digital transformation to elaborate on how agile project management can contribute. The results indicate that agile project management is primarily used in single digitalisation projects and changes key components in the project procedure. Specifically, agile project management changes the way projects are conceptualised, executed, and controlled by strengthening collaboration, customer orientation, flexibility, and the ability to experiment in administrations. This paper further reveals that the use of agile project management does not introduce far-reaching institutional changes but offers public administrations the ability to act appropriately according to the task they face. Additionally, anecdotal evidence points to a potential change in bureaucratic culture enabling institutional change.

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APM	Agile Project Management
DESI	Digital Economy and Society Index
DT	Digital Transformation
NPM	New Public Management

1. Introduction

In 2017, Germany passed the Online Access Act to introduce a reform of its public administrations, which aims to improve access to administrative services by making them available online (Bundesministerium des Innern, für Bau und Heimat, n.d.-b). This reform can be described as a unique undertaking that impacts all German municipalities, which are responsible for most of the administrative services in federal Germany (Bundesministerium des Innern, für Bau und Heimat, n.d.-a). Nevertheless, according to the Digital Economy and Society Index (DESI) of 2020, Germany ranks twelfth in a comparison of digital performance across European countries (European Commission, 2020) and, upon closer inspection, performs even worse in the field of 'Digital public services', where it is ranked 21st out of 28 and thus below the European average. As a result, municipalities still find themselves confronted with large digitalisation projects to make progress on their level of digitalisation.

Research suggests that many digitalisation projects tend to fail due to cost, time, or project efficiency issues (Lappi & Aaltonen, 2017) since they do not include organisation-related variables in their efforts (Flyberg & Budzier, 2011). Mergel (2019) thus argues that the Online Access Act not only initiates a digitisation of existing services, that means a pure transition from analogue to digital (Mergel et al., 2019), but will also lead to a digital transformation (DT) of public administrations.

DT is a holistic framework that includes changes in the mode of service delivery, as well as more far-reaching changes within public organisations. Accordingly, besides the pure digitisation of existing services, administrations are forced to digitalise themselves by developing new services and products and to adapt their processes to them (Mergel et al., 2019). Consequently, digitalisation is expected to change interactions between governmental and external stakeholders as service delivery processes are simplified and re-engineered (Dunleavy et al., 2006), transforming administrations' relationship with citizens and awareness of their needs (Mergel et al., 2019). However, to achieve these goals, some scholars believe that additional changes in the institutional structure are necessary (Fountain, 2004; Mergel et al., 2019; Raguseo & Ferro, 2011). Their arguments are twofold: while Fountain (2004) has proposed that the institutional structure influences the success of the implementation, others argue that structural changes are necessary to open the organisation to citizens' needs, for example, by enabling the inclusion of citizens in the service supply (Mergel et al., 2019; Raguseo & Ferro, 2011).

It becomes apparent that DT is a comprehensive concept which comprises efforts to digitalise administrations in terms of services and processes, while involving changes in institutional structures. Thus, DT poses a particular challenge to public organisations, which are generally slower in their innovation speed than private organisations (Nuottila et al., 2016). Moreover, the historically grown hierarchical structures of public organisations which traditionally serve to provide public services efficiently (Weber, 1922) and the application of the waterfall project management approach, in which one phase sequentially follows another, can further decrease the organisations' ability for successful DT (Fountain,

2004; Mergel, 2016). Therefore, Lappi and Aaltonen (2017) argue that 'increased collaborative practices, flexibility and agility in project development, organizing and execution processes [are necessary to] harness change and engage diverse stakeholders in value creation processes early and continuously' (p. 264). Likewise, Nuottila et al. (2016) have observed that experiences in the private sector prove that agile methods enable a high degree of flexible change management in software development projects. Drawing on best practices, agile project management (APM) has therefore recently been partly introduced in public administrations.

In short, APM is a buzzword for different management strategies which share similar basic assumptions: recognising that projects are complex, APM seeks to realise goals by dividing them into small steps with an emphasis on the practicability of the final results (Lévesque & Vonhof, 2018). As part of APM, interdisciplinary teams comprising different levels of expertise are assembled, and those affected by the final results are allowed to contribute to the project's success by expressing their needs (Lévesque & Vonhof, 2018). Thus, APM should allow administrations to conduct digitalisation projects in a different manner than before by increasing flexibility and collaboration. To enable interdisciplinarity, APM also requires public organisations to rethink their structural procedures. Consequently, APM might also impact the structure of public organisations, or at the very least, might prepare organisations for major structural changes (Dittrich et al., 2005) by impacting the bureaucratic culture insofar as public servants become accustomed to unplanned situations and so become more open to change in general (cf. Wipfler & Vorbach, 2015).

Investigating whether APM truly facilitates or even improves the results of public administrations' DT efforts is of societal and practical interest. First, it is necessary to investigate how public administrations can avoid implementation failures, such as overbudgeting and delays, which have occurred in the past. Second, DT is expected to enable administrations to utilise public resources more efficiently and precisely and to strengthen societal cohesion (Beck et al., 2017). A sufficient DT can also facilitate the provision of public value and strengthen democratic principles since citizens would appreciate their citizenship more if they were satisfied with the government thanks to improved public services (Mergel et al., 2019). Indeed, Ma and Zheng (2019) have found that the degree of DT is causally linked to citizen satisfaction in European countries. Their findings have been confirmed by Bernhard et al. (2018), who studied Swedish municipalities. Thus, successful DT is in the interest of citizens.

Despite the topic's societal importance, there is little research on the consequences of utilising APM 'that pays attention to the actual implementation challenges' (Mergel, 2016, p. 521). Most research on the implications of APM stems from the literature of information management (Mergel, 2016). However, scientific research still lacks insights into how public organisations apply APM to digitally transform themselves and, more importantly, how APM contributes to their success in DT. Specifically, scholars have not comprehensively investigated how public organisations apply APM to conduct

digitalisation projects and which constraints they encounter when doing so. Hence, this paper fills a research gap by investigating APM's impact on the implementation of single digitalisation projects. Furthermore, DT requires additional changes to institutional structures and bureaucratic cultures. Whereas most scientific literature does not yet address whether APM changes institutional structures (Mergel et al., 2018), Wipfler and Vorbach (2015) have at least theoretically elaborated how APM might change organisational cultures. Nonetheless, their study lacks practical insights. Accordingly, this paper attempts to shed light on an additional research gap.

Aiming to identify what role APM can play in the DT efforts of public administrations, this paper addresses the following research question:

How does agile project management contribute to the digital transformation of public administrations in German cities?

To facilitate a systematic analysis of this research question, three additional sub-questions are formulated:

(1) How does the application of agile project management influence the implementation of digitalisation projects?
(2) To what extent does the use of agile project management lead to changes in institutional structures?
(3) To what extent does agile project management lead to cultural changes that facilitate institutional change?

These sub-questions enable a holistic analysis of APM's influence on DT. The first question, RQ (1), seeks to analyse how APM changes organisational processes and whether these changes facilitate successful digitalisation. Zooming out from single digitalisation projects, RQ (2) takes a different perspective, analysing whether public organisations implement changes to their institutional structures when applying APM that corresponds to DT requirements. Finally, RQ (3) examines how APM might influence an organisation's bureaucratic culture and so facilitate institutional change.

To address these questions, a single case study design was developed. First, to establish a basis for the analysis, relevant literature (2.1), a theoretical model of DT success (2.2), and the principles of APM (2.3) are introduced; the section culminates in a theoretical elaboration of how APM might influence DT (2.4). Thereafter, this paper's research design (3.1), along with a description of the selected case (3.2), the collected data (3.3), and the research activities carried out (3.4), are described. After analysing the data (4), the main research question is answered with reference to the three sub-questions (5.1). Finally, additional findings (5.2), this paper's limitations (5.3), and its implications for further research (5.4) are considered.

2. Theoretical background

To answer the research questions, this chapter introduces the theoretical framework used for the analysis. After a brief review of the literature concerning APM, Gil-Garcia's and Flores-Zúñiga's (2020) 'Enacting Electronic Government Success' model is introduced. This model allows to take an intra-organisational perspective to establish the factors that explain the success of DT. Subsequently, theory concerning APM in the context of public administrations is outlined to establish how APM is expected to contribute to the DT of public administrations.

2.1. Literature review

Several studies highlight the implications of agile methods for public organisations. Mergel (2016), for example, compares traditional management approaches with APM and discusses how public organisations shape their policies to enable agile innovation management.

Likewise, Dietel and Heine (2020) analyse how the principles of APM can be integrated with those of the existing bureaucracy of the Weberian administration. Although they have found that the characteristics of public organisations tend to contradict agile principles, they argue that public organisations can be agile in the management of certain projects. However, Altukhova et al. (2016) have observed that public servants' motivation to participate in agile projects tends to be low if their project roles do not match their competencies. Additionally, bureaucracies typically avoid utilising management approaches that contradict existing hierarchies.

Lappi and Aaltonen (2017) have taken a qualitative research approach to analyse which kind of project governance practices are used in agile projects and how these practices influence project performance. Closely examining agile software development projects, they argue that six dimensions of APM practices should be applied to influence a project's performance. These include, for example, business case, controlling, and decision-making.

Dittrich et al. (2005) have researched the role of APM in the restructuring of organisations and found that APM can be used to align institutional structures with the general digitalisation strategy. Hence, they do not consider whether APM itself leads to organisational change but whether it can be used to prepare organisations for change. Wipfler and Vorbach (2015), by contrast, have investigated APM as a framework which itself facilitates change by fostering openness to change among employees.

Thus, the existing scientific literature provides insights concerning APM but fails to investigate the implications of APM for the DT of public organisations comprehensively. Furthermore, many of the studies discussed above either consider APM without a focus on DT or do not provide practical insights.

2.2. Digital transformation framework

Relying on different studies, Gil-Garcia and Flores-Zúñiga (2020) have established that the applied management strategies, as well as institutional arrangements, are among the most critical factors that influence the success of DT (Figure 1). Although their model also recognises that general organisational characteristics and environmental conditions influence DT, these factors are not part of the analysis as APM's impact on them is considered negligible. Furthermore, all the mentioned dimensions were found to be interrelated, meaning that they influence each other (Gil-Garcia & Flores-Zúñiga, 2020). Hence, the boundaries between these dimensions are not always clear in practice. Nevertheless, to enable a clear and comprehensive analysis, they are conceptually distinguished below.

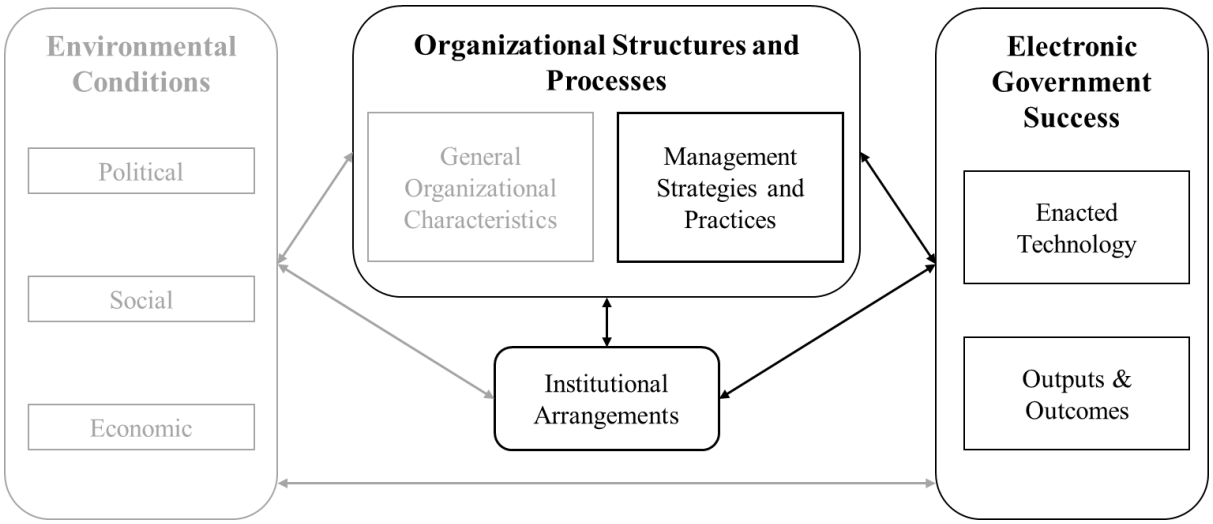

Figure 1: Enacting Electronic Government Success (Gil-Garcia & Flores-Zúñiga, 2020)

2.2.1. Management strategies and practices

Regarding the factors that affect the actual implementation of digitalisation projects, Gil-Garcia and Flores-Zúñiga (2020) observe that scholars have found that various factors[1] impact its success or failure. This paper, however, focuses on applied management strategies and practices.

Prior to implementation, digitalisation projects must be conceptualised (Anthopoulos et al., 2015). Nevertheless, many digitalisation projects within public organisations already fail during this stage due to a 'lack of alignment between organisational goals and the IT projects' (Gil-García & Pardo, 2005, p. 192). Considering digitalisation projects as a pure transition from offline to online is too simplistic. Instead, digitalisation requires reconciling organisations' processes, technologies, cultures, agendas, and people (Sarantis et al., 2011). Bringing these dimensions together is a complex undertaking since

[1] Cf. Gil-Garcia and Flores-Zúñiga (2020) for an integral overview.

goals are sometimes diverse or contradictory within bureaucracies, complicating the alignment of digitalisation projects with organisational goals. Moreover, digitalisation is a profound endeavour that influences the whole organisation (Fountain, 2004) and is not carried out in a short timeframe. Thus, impreciseness during the conceptualisation or goals that are not aligned might have harmful effects on the project's success in the long run. Furthermore, Anthopoulos et al. (2015) add that weakly defined requirements can harm the success of a digitalisation project by raising concerns about gaps between design and reality, meaning that goals would be neither feasible nor applicable (Gil-Garcia & Flores-Zúñiga, 2020).

Even when clear goals are defined, the solution to achieve the goals is often unknown in advance (Sarantis et al., 2011). Hence, scholars have observed that traditional implementation approaches have resulted in failures stemming from a lack of flexibility in the implementation of projects (Mergel et al., 2020). For example, in the waterfall approach, the goal of a project is defined in the first place by managers. Thereupon, project phases are constructed and carried out sequentially without further adaptations (Mergel et al., 2020). However, Paulin (2015) notes that projects tend to fail or at least be unsustainable if they are not adaptable to changes in the environment, such as changes in legal rules. In addition, scholars have argued that the successful execution of a project requires the identification and inclusion of relevant stakeholders, such as users. This enables organisations both to benefit from stakeholders' feedback and to incorporate relevant expertise from different angles (Garson, 2003; Gil-García & Pardo, 2005). Garson (2003) has further observed that a pretesting phase before the final release positively influences the implementation of a project.

Moreover, predetermined milestones and measurable deliverables, i.e., sufficient controlling schemes, are necessary to avoid complications regarding budget and timeframe (Garson, 2003). Nonetheless, although the waterfall approach defines milestones in advance, Sarantis et al. (2011) criticise that in this approach, 'milestones represent the completion of activity, not the accomplishment of a result' (p. 121). Consequently, predetermined goals and milestones might be achieved, yet the expected results might not occur, especially since public digitalisation projects usually require a long time and are often outdated as soon as they are released (Mergel et al., 2020). Nevertheless, to avoid going over budget, public organisations cannot dispense with sufficient controlling schemes (Gil-García & Pardo, 2005).

2.2.2. Institutional arrangements

In addition to the factors discussed above, scholars have argued that institutional arrangements, defined as the formal and informal rules surrounding an organisation (Gil-Garcia & Flores-Zúñiga, 2020), influence the success of DT. Fountain's (2004) Technology Enactment Framework explains that technologies can shape institutions to better match their logic, but, conversely, institutional arrangements 'influence the selection, design, implementation, and the use of information technologies in governments' (Gil-Garcia & Flores-Zúñiga, 2020, p. 3). Therefore, it can be argued that information technologies and

institutional arrangements are connected and influence each other; thus, DT efforts do not meet expectations if organisations remain the same (Yang, 2003).

Traditionally, Weber (1922) characterised bureaucracies as organisations defined by hierarchies and specialised competencies to achieve efficiency, clarity, and speed, as well as to avoid delays that would stem from collegial cooperation. Subsequently, scholars have observed that public organisations are structured as machine bureaucracies (Rainey, 2014). This means that they are organised vertically so that no horizontal collaboration among different departments occurs and hierarchy is the main coordination mechanism (Raguseo & Ferro, 2011). Furthermore, bureaucracies are characterised by formal control systems in which large distances exist between managers, who exclusively determine organisational strategies, and public servants, who fulfil specialised tasks (Raguseo & Ferro, 2011). However, because of their high degree of centralisation and formalisation and the existing red tape, public organisations are criticised for being effective only in relatively stable environments (Rainey, 2014) as their rigid structures and fixed values do not allow them to quickly adapt to environmental changes.

To achieve the expected outcomes of DT, Raguseo and Ferro (2011) have, therefore, claimed that changes in institutional structures must be achieved in addition to the introduction of digitalised services to exploit the potential of DT. Specifically, they have suggested transforming public organisations from machine bureaucracies to 'network-oriented organization[s]' (Raguseo & Ferro, 2011, p. 422). The argument is that the environment of public organisations has changed from stable to unstable, forcing them to become more flexible. To enable an effective provision of public services, public administration would thus have to increase their internal coordination and the commitment to a shared goal. To achieve this, the general structure of public organisations must change from vertical to horizontal, breaking down the silo structure. Therefore, collaboration between departments should be strengthened, and decision-making power should be redistributed from top leaders to public servants, who will be empowered not only to fulfil specialised tasks but to share their knowledge and collaborate to define and achieve mutual goals (Raguseo & Ferro, 2011). Indeed, public servants are well suited to contribute to the strategies of public organisations since they experience citizens' needs directly and might consequently have effective solutions for them (Raguseo & Ferro, 2011). To better understand citizens' requirements, network-oriented organisations also require enabling the inclusion of citizens in public activities to contribute to the support of public policies and thus to democratic principles (Raguseo & Ferro, 2011).

2.3. Agile project management in public administrations

Now that the factors influencing DT success have been elaborated, this section presents the key assumptions of APM and the deriving consequences for project management.

The New Public Management (NPM) era has resulted in disaggregated administrations confronted with competition and outsourced digital service delivery, as well as reduced skills and capacities in government (Dunleavy et al., 2006). As a result, administrations have been overly reliant on external IT contractors (Mergel, 2016). To tackle this issue, public administrations have recently introduced agile approaches. With the publication of the Agile Manifesto (Beck et al., 2001), which outlines various principles and values for software development, agile methods were first introduced in the field of software engineering. However, since the principles are hardly specific to software development but apply generally to the development of products in areas in which innovative work is carried out (Bornewasser, 2020), agility has been extended to a broader administrative scope, where it is intended facilitate responses to 'changing public needs in an efficient way' (Mergel et al., 2020, p. 162).

At their core, agile concepts assume that innovation is not a linear phenomenon (Dietel & Heine, 2020; Mergel et al., 2020) and deny that public administrations operate in stable environments (Dunleavy et al., 2006). Consequently, agility demands that administrations become more flexible, adaptable, and quicker in their behaviour (Mergel et al., 2018). APM is further based on the following principles.

- Traditional management approaches consider customers to have little knowledge about their current and future requirements (Wipfler & Vorbach, 2015). Therefore, specific user requirements are often extensively elaborated within the conceptualisation and later serve as contractual guidelines. However, this procedure may be unsatisfactory for both customers and developers, and the final results tend not to meet the actual needs. APM, therefore, demands increased involvement of customers and more frequent deliveries so that customers have the opportunity to communicate feedback (Wipfler & Vorbach, 2015).
- Accordingly, APM aims at closer collaboration between stakeholders, which also necessitates more direct communication, for example, in daily meetings (Wipfler & Vorbach, 2015). Furthermore, it requires a suitable culture characterised by empowerment, trust, and managers who recognise that their task is facilitated by it (Wipfler & Vorbach, 2015).
- Since the NPM era, project success has been regularly measured in terms of costs, scope, and time. In APM, project success also includes dimensions like product quality and customer value (Wipfler & Vorbach, 2015).

Accordingly, APM understands development processes as being introduced by the management but prepared and implemented by self-organised teams, which consist of internal employees from different departments but can also include relevant experts or end users. These linked partners are understood as 'crowds' in which each person works independently on a specific task according to their competencies (Bornewasser, 2020). The process itself is thus defined by interactive work with customers and by non-fixed expectations regarding the path towards the targeted result (Bornewasser, 2020). Furthermore, APM claims that projects are fluid (Mergel et al., 2020) and cannot be predicted sufficiently at their

beginning since obstacles, environmental changes etc. might occur; hence, the process proceeds iteratively, i.e., in timeboxes leading to a series of jointly created product increments. After each timebox, the preliminary work results are shared with the other team members to guarantee orientation within the project and to allow others to provide feedback. Additionally, preliminary work results are introduced constantly into practice to obtain feedback from users who do not participate in the crowd.

2.4. Expected contribution of agile project management to the digital transformation

To enable a clear analysis, it is necessary to elaborate how APM is expected to contribute to the DT of public administrations. Hence, this section paves the ground for further analysis by utilising the presented frameworks of DT success to elaborate theoretically possible impacts of APM on the implementation of digitalisation projects (RQ (1)) and on institutional arrangements (RQ (2), RQ (3)).

2.4.1. Agile project management and management strategies and practices

APM is a management strategy that aims to tackle issues that emerge from traditional approaches. As previously discussed, digitalisation projects must be aligned with the organisation's general strategy and must be applicable in practice. Accordingly, traditional approaches seem to be better suited to align with the goal of a digitalisation project since, contrary to APM, managers spend much effort during the project's conceptualisation. Nevertheless, based on the theory, the goals of a digitalisation project do not only include the digitalisation of a specific service but also affect processes, cultures, people, etc. Since APM projects should be planned and prepared by the crowd, which consists of experts from different hierarchy levels and departments, it can be assumed that aligning the goals of digitalisation projects to the organisational strategy is facilitated. By including different perspectives, APM will likely enable the conflicting goals of, e.g., different departments to attract attention and therefore to be clarified within the conceptualisation. Besides, APM is expected to change the goals of digitalisation projects. Whereas in traditional approaches goals are clearly defined during conceptualisation with a focus on introducing an artefact, APM is expected to use fewer established goals and focus more on the actual needs of those who will use the developed artefact. Therefore, following Gil-Garcia and Flores-Zúñiga (2020), APM might make digitalisation projects more vulnerable to design-reality gaps. Alternatively, the inclusion of public servants might contribute to the feasibility of the project since public servants are usually in closer contact with citizens than management is (Raguseo & Ferro, 2011) and are the ones who fulfil the daily tasks. Therefore, they know how digitalised services should be designed to make their work easier and more efficient.

Furthermore, a lack of flexibility within the implementation of projects has been identified as a cause of digitalisation failures. Although traditional approaches might sufficiently conceptualise project goals, they do not allow adaptations during a project and thereby fail to react to uncertainties inherent in projects (Lappi & Aaltonen, 2017). Therefore, APM's approach, which assumes that situations can

change over time, is expected to enable more flexibility, improving the management of uncertainties and increasing productivity and innovation (Lappi & Aaltonen, 2017). In addition, APM is expected to facilitate the achievement of the final result and meet customers' needs insofar as it is profoundly oriented towards customer satisfaction and divides projects into timeboxes after which interim results are tested.

Regarding controlling, APM does not set milestones for completed activities but uses them to refer to expected results within the process. Therefore, APM might have twofold implications for digitalisation projects. On the one hand, APM might contribute positively to their success as projects are not controlled by rigid structures; rather, they enable adaptions within the process in accordance with lessons learned or changed conditions. On the other hand, Anthapoulos et al. (2015) have found that changes in the scope of a project during its implementation can threaten implementation success, so breaking up rigid controlling schemes might raise concerns regarding budget and time.

2.4.2. Agile project management and institutional arrangements

As previously mentioned, institutional arrangements must be changed to achieve the expected outcomes of DT. It should be noted that APM is an intra-organisational phenomenon; thus, influences on structural dimensions, such as the environment surrounding an organisation or its sheer size (Rainey, 2014), are not covered. In general, the argument why APM, a management method, is expected to lead to the institutional changes is twofold.

On the one hand, to work successfully, APM requires organisations to change. The goal of APM is to eliminate boundaries, creating open organisations in which solutions are found through close interaction in project teams defined by horizontal decision-making power. As such, APM requires collaboration among different departments and hierarchies and is even believed to break up the traditional hierarchical structures of bureaucracies, as well as the silo structure frequently found in municipalities. Thus, the institutional arrangements that APM demands resemble the network-oriented organisation proposed by Raguseo and Ferro (2011). It follows that public organisations, in changing their institutional arrangements to successfully utilise APM, might unintentionally realise the changes of the network-oriented organisation proposed by Raguseo and Ferro (2011).

On the other hand, APM relies on a change of bureaucratic culture to the extent that project members must organise themselves as external control by superiors decreases and self-control, autonomy, and responsibility increase (Bornewasser, 2020). Hence, Wipfler and Vorbach (2015) suggest that agility should be considered a framework that enables organisations to actively undertake change. Organisational change would be a 'long-term learning process' (Wipfler & Vorbach, 2015, p. 197), requiring time and openness to new and unplanned developments. Therefore, agility demands a suitable culture, while, conversely, organisational change would result from utilising agile methods (Wipfler & Vorbach,

2015). Correspondingly, it is argued that utilising APM causes members of an organisation to change their mindsets, which, in turn, increases the ability of the organisation to change. When APM is applied, individuals' competencies in solving problems, thinking creatively, and managing complex situations increase (Wipfler & Vorbach, 2015). Furthermore, it is expected that people are more likely to understand and accept changes if they participate in the decision-making process and so become familiar with the expectations connected to these changes. Additionally, APM might influence how organisations handle blurred situations, which would become routine. Thus, the handling of change would also become routine (Wipfler & Vorbach, 2015).

3. Methodology

This section details the methodological choices made during the research, the casing strategy, and the instruments used for data collection and analysis.

3.1. Research design

The research question was designed to investigate in an open-minded way whether, and, if so, how APM contributes to DT within German municipalities. As no peer-reviewed literature exists on this topic, a single case study design was used as it allows to '[investigate] a contemporary phenomenon within its real-life context' (Ebneyamini & Sadeghi Moghadam, 2018, p. 1, as cited in Yin, 2003) and is well suited for little-researched topics (Gerring, 2007). Accordingly, a typical case study was conducted to acquire knowledge that 'contribute[s] directly to the understanding […] of a contemporary issue' (Lewis, 2003, p. 24). Hence, this paper is guided by an established theoretical framework and is based on different data sources to enable a comprehensive analysis of the expected implications of APM. However, consistent with the methodology of single case study designs, and since it is difficult to measure because of its rather qualitative dimension (Mergel et al., 2019), this study does not evaluate whether DT is ultimately achieved.

Case studies allow researchers to achieve an in-depth understanding of the phenomenon under investigation by considering various possible explanations of a specific real-world subject, as well as to explore key characteristics, meanings, and implications of one case (van Thiel, 2007). Nevertheless, the reliability and validity of single case study designs can be threatened (van Thiel, 2007). Thus, to ensure reliability, this chapter offers a detailed description of the research process. To increase the internal validity of this paper, several efforts were undertaken. Descriptive validity was achieved by accurately reporting the collected data and submitting the interview transcripts to the participants to check. Interpretation validity was attained and researcher bias prevented by sticking closely to the gathered data, as well as evaluating contradicting data. Furthermore, the provision of direct quotes increases trust in and transparency of the findings. Although these measures are expected to contribute to the internal validity of this paper (cf. Maxwell, 2013), other threats, such as the reliance on internal documents from the collected case, required greater effort to be eliminated. This issue is thus extensively discussed in Chapter 3.3. Additionally, external validity can be threatened in single case studies (Patton, 1990). Case studies do not aim to make statistical generalisations regarding wider populations (Blatter & Haverland, 2012) but to make context-specific statements that may only be valid under certain conditions (Mayring, 2007). Accordingly, the selected case is extensively described in Chapter 3.2, while Chapter 5.3 contains a discussion of the extent to which the results are transferable to other cases.

3.2. Case selection

Based on the aforementioned considerations, it is necessary to offer a detailed description of the arguments that justified the case selection and of the case itself to enable readers to assess whether the findings of this study are to some extent transferable.

The selection of the city of Nuremberg as the case under investigation was justified by substantive and practical arguments. APM is still a relatively new phenomenon that has not been fully implemented in public organisations in Germany, but some have begun to experiment with its usage. Nuremberg has recently published its strategy to transform digitally and has declared that agility will play a key role in its efforts. Nuremberg was thus chosen since it has already experimented with the use of APM and has publicly provided information about its experiences. Accordingly, Nuremberg provided an 'information-rich' case (Patton, 1990, p. 169), enabling exploration of the phenomenon of interest. Moreover, Nuremberg can be defined as a typical (i.e., representative) case (Seawright & Gerring, 2008) based on key parameters, such as organisational and economic structure, and the administrative resources presented below.

Nuremberg has over 500,000 inhabitants and is among the twenty largest German cities. It also ranks among the ten wealthiest cities in terms of its gross domestic product (Nürnberg, 2020) and, according to data from 2019, has one of the lowest unemployment rates compared to its peers (Nürnberg, 2020). The city itself employs over 10,000 people (Nürnberg, n.d.). In terms of its governance structure, Nuremberg can be best classified as a 'divisionalized form' (Rainey, 2014, p. 228), in which product divisions have their own functional tasks as a further development of traditional machine bureaucracies. Hence, its organisational structure represents the silo structure often found in bureaucracies. Similarly, the decision-making power in the city is organised top-down.

3.3. Data collection

Following the research design described above, this study is based on qualitative data. As multiple issues arise from the theory, various data collection methods are crucial to examine the expected contributions of APM. Accordingly, the application of data triangulation enabled robust findings in a framework defined by rich data collection methods (Flick, 2014; Maxwell, 2013).

A document analysis was conducted based on primary data consisting of three strategy papers (7.1). Two of the documents refer to the DT status of Nuremberg and identify strategic dimensions in need of further development. The third document contains a strategy for one department whose main task is to collaborate with others, helping them progress in their DT efforts. However, since Nuremberg published two of the three documents, it is possible that these sources do not fully represent reality or are characterised by a low degree of objectivity (cf. Finnegan, 2006).

Therefore, four semi-structured interviews[2] with open-ended questions[3] were conducted, allowing differences between the findings from the documents and the interviews to be made explicit. The questions were deductively derived from the theory but paraphrased to elicit respondents' true experiences and adapted for each interview depending on the respondent's position. Follow-up questions were asked to clarify understanding.

It should further be noted that in qualitative research probability sampling is inappropriate because the goal is not to assess the statistical significance of a phenomenon in a broader population but to select actors with certain characteristics (Ritchie et al., 2003). The selection should allow a detailed investigation and understanding of the issue under study (Ritchie et al., 2003). Accordingly, purposive sampling was applied in which members of a group are selected to represent a type that is connected to a key criterion. Consequently, already in the early stages of the study, decisions about key criteria were made based on the aim of this paper and existing knowledge derived from the theory. Nonetheless, although purposive selection requires conscious choices, this does not imply bias since the choices can be considered objective in that they encompass diverse perspectives (Ritchie et al., 2003).

Two respondents were selected based on their direct participation in the selected case, meaning that they are employed in different departments within Nuremberg. Respondent 1 is a project manager of the IT portfolio, and his tasks range from prioritising and planning to executing and controlling projects. Hence, this interview focused on the implications of APM within digitalisation initiatives and on the respondent's experience of changes in the bureaucratic culture. Respondent 2 works in a department whose task is to change the organisational structure of the administration according to digitalisation requirements. This respondent primarily focuses on the implications of the Online Access Act. Accordingly, the interview focused mainly on the dimension of institutional arrangements, but project-related questions were also asked. To increase the generalisability of single case studies, van Thiel (2007) suggests including independent experts in the research. Therefore, two additional interviews were conducted with respondents who possess profound knowledge of the field of APM and DT. One of the interviews (Interview 3) was conducted with a management consultant (Respondent 3) who has advised public organisations of different levels in their endeavours to digitally transform themselves using APM. The other interview (Interview 4) was conducted with two respondents (Respondents 4 and 5) who are part of an association that aims to open administrations to agile methods. Henceforth, it is explicitly indicated whether the findings stem from the case itself or from the independent experts who were consulted.

[2] Cf. Chapter 7.2 for an overview of the conducted interviews.
[3] Cf. Chapter 7.3 for the interview guideline.

3.4. Data operationalisation and analysis

To analyse the collected data, a qualitative, category-led approach to content analysis (Mayring & Fenzel, 2014) was chosen. Given the central aim of this paper, the aim of the analysis is to acquire an in-depth understanding of the implications of APM for the DT of public administrations. The definition of categories is central to achieving a comprehensible analysis. Consequently, in the first phase nominal categories (cf. Mayring, 2014) were developed deductively based on the introduced theory. Thereafter, labels were assigned to the gathered data to extract the relevant information from them. However, it was also aimed to remain open to unexpected implications without being excessively biased by expectations or pre-existing theory. Thus, a second phase of coding was conducted in which the codebook was inductively expanded. Additionally, sub-categories were added to enable a more detailed analysis. The coding guideline (7.4) provides the applied coding rule, keywords that were used within the process, and anchor examples derived from the analysed data. Thus, the codebook does not exactly resemble Mayring's (2014) suggested codebook but is oriented by it.

From the coding process, the following taxonomy emerged (Figure 2). This coding taxonomy is closely related to the theory introduced in the previous chapter and is discussed more extensively in the following chapters.

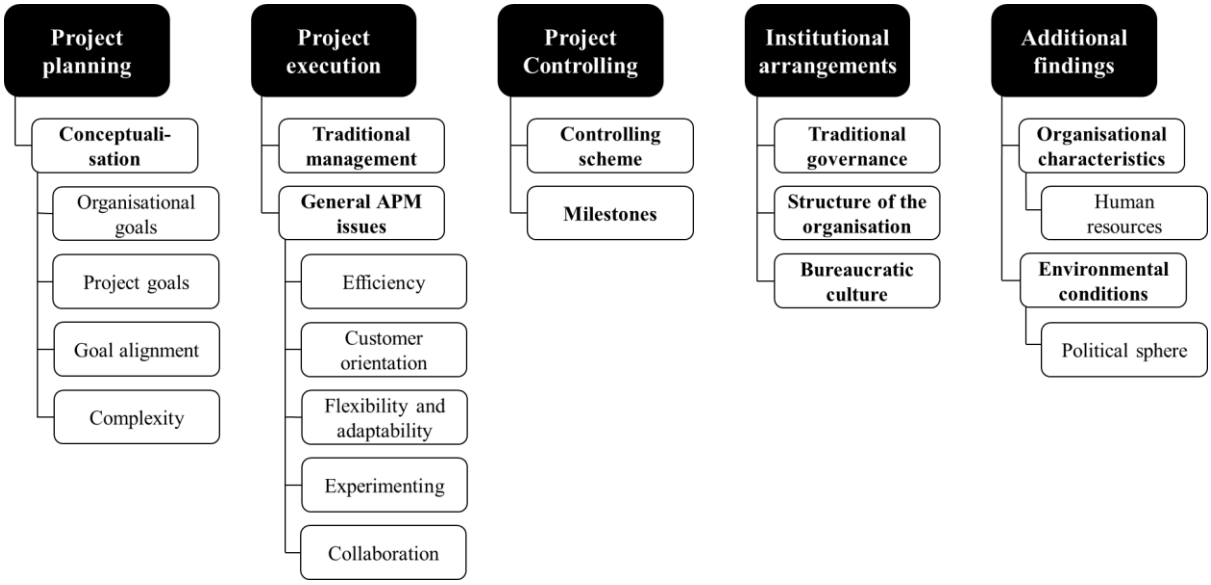

Figure 2: Coding taxonomy

4. Data analysis

This chapter provides the empirical analysis of the collected data drawn from the coding.[4] To enable a detailed analysis, the management strategies are first presented divided into project planning, project execution, and project controlling. Subsequently, the focus shifts from the implications of APM for single digitalisation projects to its influence on institutional arrangements.

4.1. Management strategies and practices

This section first explores how APM contributes to the conceptualisation of digitalisation projects, including how it influences the definition of goals and how agile projects are aligned to the general organisational strategy. Next, the execution of a digitalisation project is investigated by closely examining the implications of APM within a project. Finally, its implications for the controlling of a project are considered.

4.1.1. Project planning

Digitalisation projects are considered successful if they align with the organisation's broader goals. Therefore, the projects must be aligned with the general strategy during conceptualisation. Accordingly, it is assumed that APM contributes to the alignment of goals as different perspectives from the crowd come together.

When APM is applied, managers of different departments are asked to jointly determine project goals (Interview 4) to enable the exchange of viewpoints, creating an understanding of the limitations, feasibilities, and non-feasibilities of the other parties involved from which project plans can jointly be agreed on (Interview 3). Likewise, when projects are conceptualised in Nuremberg, their goals are first determined by the managers of the department responsible for process and organisational design, the managers of the IT department, and the head of the department that will be affected by the project's results (Interview 2). In addition, unit heads with a certain position in the hierarchy are asked to contribute to the detailed planning of the project since a degree of decision-making power is necessary to determine the direction of the project during conceptualisation (Interview 2). At a later stage, Nuremberg includes public servants in the project to profit from their expertise (Interview 2). Thus, public servants can communicate their needs but have no decision-making power in the formulation of project goals.

It was further observed that APM contributes to an extent to the alignment of goals with the general organisational strategy since the experts from the department responsible for process and organisational design who accompany the project are responsible for guaranteeing that digitalisation projects are

[4] Cf. Chapter 7.5 for an overview of the codes for each document/transcript.

developed according to the organisational goals (Interview 2). However, the proximity of digitalisation projects to the overall strategy is largely unaffected by APM but arises from the prioritisation of projects (Interview 1). Accordingly, among various criteria, the support of a digitalisation project for the city-wide strategy, respectively, for the strategy of one department, is a key criterion that leads to higher prioritisation (Interview 1). Nonetheless, Respondent 2 clearly expressed that the interdisciplinary approach of agility and the freedom to work more innovatively inherently correspond to the demand of aligning the procedure of the project with the organisational strategy.

Furthermore, the literature indicates that project requirements must be clearly defined during conceptualisation to guarantee feasible and applicable results. However, APM is most often utilised in projects in which only a broad vision exists:

> *'It's like this, you basically know the goal: certain things are digitalised, new systems are built and have to be put into operation.'*

Interview 3 (l. 71 ff., own translation)

Moreover, in APM projects, goals tend not to be as clearly defined as in traditional management practices:

> *'Behind every agile approach, there is always the question of why, a vision, right at the beginning. There, too, I need to set a course. But I don't go there and say that I know exactly what it should look like, but I have a rough picture of where we want to go. That is our direction. I provide a north star that helps to orient us […].'*

Interview 4 (l. 203 ff., own translation)

In practice, it became apparent that Nuremberg applies different management strategies depending on the complexity of a project, which is determined utilising methods such as the Stacey Matrix (Interview 1). APM is therefore preferred for projects in which Nuremberg cannot determine precisely what final form the product will take, or how it will achieve the end result (Interview 1). This does not mean that projects are conducted without any guiding framework. Rather, agile projects are defined by a minimum goal that must be achieved (Interview 2). This allows the minimum scope and quality, the timeframe, and the available budget to be fixed. Nevertheless, unlike traditional approaches, agility allows results to exceed expectations (Interview 2). In agile projects, broader goals are deconstructed into smaller tasks or steps, called timeboxes, which must be fulfilled during the project, while members of the crowd can decide with sole responsibility whether goals can be surpassed (Interview 2).

APM thus differs from traditional approaches in the conceptualisation of projects. In short, traditional projects are designed to the smallest detail since this supposedly generates plannability (Interview 4);

by contrast, APM defines minimum goals since complex projects often only allow a broader vision to be formulated.

4.1.2. Project execution

The main contribution that APM was found to make to digitalisation projects refers to the project execution. As soon as a project is conceptualised, APM offers a fixed framework, which yields several benefits (Table 1).

Table 1: General APM issues

Efficiency	10.62 %
Customer orientation	26.55 %
Flexibility and adaptability	9.73 %
Experimenting	10.62 %
Collaboration	42.48 %

Collaboration. The main benefit associated with the utilisation of APM is increased collaboration, understood as coordination between different stakeholders and persons involved in a project. Referring to the analysed documents, collaborating stakeholders consist of members of the city administration, but can also include scholars, members of the private sector, and citizens (Nuremberg, 2019.-b). These groups may come together to drive innovation. Nevertheless, collaboration is also understood more narrowly, as only occurring within the city administration between different departments and units, or between employees of different hierarchy levels, i.e., between managers and public servants (Nuremberg, 2019.-a).

Collaboration is desirable for several reasons. First, the inclusion of relevant stakeholders and consumers is expected to motivate them to share their knowledge. Thus, opening the project integrates new perspectives, from which new ideas can be drawn (Interview 2), resulting in the creation of spaces of innovation (Nuremberg, 2019.-a). Second, Nuremberg has recognised that individual departments do not always have the necessary competencies to independently execute digitalisation projects (Interview 2). Collaboration enables departments to consult additional expertise by intensifying exchange between departments (Nuremberg, 2019.-a). Third, in terms of personnel resources and the institutional structure (detailed in Section 4.2), project participants not only are involved in one project but also remain responsible for their daily work (Interview 1). Hence, APM offers the benefit that projects are not exclusively conducted by the same crowd; instead, different experts can work exclusively on one phase, depending on the task that must be fulfilled in the specific timebox (Rödl & Partner, 2019). Therefore, collaboration also helps to overcome a lack of human resources (Interview 2).

Nevertheless, in the case of Nuremberg, the degree to which certain stakeholders, such as public servants or citizens, become engaged in digitalisation projects depends on these projects' scope, importance, and complexity (Interview 2). Thus, the inclusion of all stakeholders affected by the final result is not yet standard practice, but it is being increasingly pursued (Interview 2).

Customer orientation. To enable the exploitation of the expected benefits of digitalisation, APM is also applied to increase the inclusion of customers within the implementation to optimise results in a target group-oriented manner (Nuremberg, 2019.-b). Therefore, customer orientation is considered a two-sided endeavour. On the one hand, project groups must be open to customers' feedback. On the other hand, customers are asked for mutual commitment, meaning that they must participate actively, e.g., by testing results (Interview 1). Customer orientation therefore serves several purposes and is based on experiences stemming from traditional projects, where errors in the procedure only raise concerns after a certain period:

> *'The customer doesn't hear anything for a long time, and at some point it's finished, and something is presented to him, and then you're either lucky and it's good, or you're unlucky and it's not good.'*
>
> Interview 1 (l. 90 ff., own translation)

To tackle this threat, APM considers customers as the main drivers of impulses to adapt products to users' needs (Interview 4). Therefore, APM uses pilot groups to test interim results. Subsequently, their feedback is considered, and adaptions are made before the product is rolled out and expanded to all users (Interview 3).

Customer orientation can be understood differently, depending on how customers are defined. Nuremberg distinguishes between customers as users and end users (Interview 2). While the former are intra-organisational and include the departments and units of the city administration, as well as its employees, the latter consist of external parties such as citizens. Within the organisation, customer orientation is seen as a way to decrease the necessary training efforts and facilitate a quick transition to new applications (Nuremberg, 2019.-a). Therefore, feedback is gathered during the process to prevent dissatisfaction with the final results and to meet customer requirements more quickly, increasing the acceptance of new products (Nuremberg, 2019.-a; Rödl & Partner, 2019). Nuremberg does not, by contrast, seek feedback from external parties within most agile projects. Instead, most feedback comes from public servants who act as representatives of citizens' needs (Interview 1). Although surveys are conducted that include asking citizens about their needs, this method was found to be less established (Interview 1).

Experimenting. Connected to the idea of customer orientation, agile projects were found to be open not only to customer feedback but also to an exploratory approach, meaning that solutions can tried by

being allowed to make errors. Since the goal is rather vague and the required steps are unknown, APM thus creates space to experiment with different ways of achieving the desired result (Interview 4). In this case, APM allows self-organised teams to choose certain aspects of a problem with which they feel comfortable (Interview 2) and to approach additional problems by making mistakes (Interview 3). Here, feedback from customers, e.g., in the form of a pilot group, is utilised as a source of insights, from which the crowd can learn how to improve in the future (Interview 3). Accordingly, APM changes the risk-averse culture in bureaucracies (Interview 4), which traditionally seek to avoid errors (Interview 3):

> *'You can't call it a culture of mistakes; you have to call it a culture of insights. Mistakes are also insights, and these insights are valuable for making things better in the future.'*
>
> Interview 3 (l. 99 ff., own translation)

However, in practice, the scope for trial and error in the implementation of digitalisation projects appears to be rather small in Nuremberg due to historically grown circumstances and legal requirements (Interview 1). On the one hand, budget planning in public organisations requires lead times of one year or longer. Therefore, it is necessary to make profitability analyses, which are contrary to agile approaches, where projects are approached experimentally according to the fail-fast principle (Interview 1). On the other hand, public organisations face strict data protection laws and are required to treat people equally. This limits their ability to provide poor online services that are later improved or to treat pilot groups differently (Interview 2).

Flexibility and adaptability. The ability to react flexibly inherent in APM was found to be a criterion for success in digitalisation projects. According to the independent experts, APM allows projects not only to react to changes, such as delays in the schedule, but also to adapt procedures based on lessons learned (Interview 3). Consequently, APM enables rapid responses, in which adjustments can be made quickly so that the deviation of results is minimised as project groups can work continuously along changing target images (Interview 4).

In the case of Nuremberg, similar experiences were observed. Respondent 2, for example, noted that agile projects enable the project team to recognise undesired developments more easily since projects are conducted in timeboxes so that countermeasures can be taken simultaneously. Consequently, the flexibility associated with APM may even allow organisations to surpass the results for which they previously aimed (Interview 2). Nevertheless, although the ability to explore how to achieve a desired goal is a strength of APM (Interview 1), agile approaches may not always be appropriate since they are not suitable for routinised work (Interview 1). This issue is further discussed in Section 4.2.1.

Efficiency. To a relatively limited extent (10.62%), APM was found to be used for efficiency purposes. The experimental approach enables prototypes to be created more quickly. These can in turn be optimised faster and with fewer resources due to the constant and rapid responsiveness of all stakeholders involved (Rödl & Partner, 2019; Interview 2). Finally, agile projects provide better risk management than traditional projects (Interview 2) because of how they are controlled.

4.1.3. Project Controlling

In keeping with the literature, sufficient controlling schemes were found to be necessary for successful digitalisation projects. Traditional management approaches are burdened by high documentation efforts, as well as rigid frameworks regarding phases and procedures (Interview 1), whereas agile projects work with a roadmap which divides broad visions into small steps and only provides a rough schedule (Interview 1). Moreover, in traditional projects, already within the conceptualisation, milestones are set to precisely determine when certain artefacts must be introduced and how they should be designed. In agile projects, by contrast, milestones are scheduled less rigidly, and projects sometimes only rely on a start and an end date (Interview 1). Nonetheless, certain fixed points, such as the completion of a timebox, are established (Interview 1) to enable reflection on interim results so that changes within a project are possible (Interview 4):

> *'And, what's more, there's always reflection in between. Does this fit? […] What new things have we learned? Is it right? Are we on the right track there? Are our assumptions correct? That is the advantage of agile approaches. That they always pause in between and say, do our assumptions still match what we originally thought?'*
>
> Interview 4 (l. 443 ff., own translation)

Indeed, Respondent 2 indicated that milestones are used extensively. Specifically, APM introduces quality gates to ensure frequent reflection on the success of the project so that threats to the schedule, resources, and the general success of interim results are noticed earlier in the process (Interview 2). Additionally, based on the idea of customer satisfaction, APM changes what is considered successful. Accordingly, the performance of introduced products is measured by gathering feedback both from citizens who use the new services and from relevant departments which can evaluate whether the services facilitate their daily work (Interview 2). Furthermore, digitalisation results are controlled continuously, even beyond the pure implementation of the project. This is important in agile projects since the introduction of, e.g., a service is not expected to have an ultimate endpoint; rather, continual adaptations are assumed to be necessary (Interview 2). Therefore, introduced services are controlled using key performance indicators, such as dropout rates, click rates, and conversion rates, even after the completion of a project.

In sum, agile digitalisation projects, like traditional projects, are controlled by evaluating monetary issues, such as execution time or material resources (Interview 2). However, agile controlling shifts the focus to the quality of the work results. This is intended to decrease the chance of a misguided development because project teams can realise earlier that they are moving in the wrong direction.

4.2. Institutional arrangements

According to the theory, the utilisation of APM might affect institutional arrangements in two ways: changes might be implemented in the organisation to enable the successful use of APM, thereby meeting the demands of a network-oriented organisation, or APM might act as a mediating variable that leads to changes in the bureaucratic culture and thus facilitates organisational change.

4.2.1. Structure of the organisation

DT requires organisations to rethink hierarchical structures and to break down boundaries of responsibility to enable cross-departmental thinking and action on challenging tasks (Nuremberg, 2019.-a). Furthermore, multi-layered decision-making processes are not suitable for new approaches or innovations (Nuremberg, 2019.-a). Therefore, Nuremberg's (2019.-a) strategy demands overcoming time-consuming coordination traditions, such as hierarchies and boundaries of responsibility, which hinder solution-oriented and efficient procedures. Thus, the operational structure should be adapted to enable stronger cross-departmental, interface-related cooperation (Rödl & Partner, 2019) and facilitate communication and knowledge transfer among managers and public servants (Nuremberg, 2019.-a).

In practice, however, Respondent 1 indicated that the use of APM has not led to far-reaching institutional changes in Nuremberg as changes mainly occur within agile projects. In such projects, Nuremberg tries to fade out hierarchical structures to work productively in an agile manner, lifting the basic disciplinary management allocation (Interview 1). Nonetheless, hierarchical structures are not yet being broken up completely (Interview 1), and hierarchy still demands that work results have to be released by managers (Interview 2). This is because Nuremberg uses a 'matrix organisation', in which public servants are not entirely removed from their line affiliation for one project but assume a dual role for the duration of a project (Interview 1). Hence, public servants remain in their official positions and continue to fulfil their daily tasks while also working on digitalisation projects as part of interdisciplinary teams (Interview 2). It can therefore be noted that, although Nuremberg utilises collaboration forms in agile projects (4.1.2), it still relies on traditional hierarchical structures even within single projects.

These findings correspond to issues highlighted by the independent experts. According to them, breaking up hierarchical structures in agile projects would be not only difficult (Interview 4) but also inexpedient since, at some point, someone would have to make the final decision (Interview 3). Hence, it is argued that, as long as hierarchical structures dominate within an organisation, dismantling them only in digitalisation projects but not simultaneously in the organisation itself would impede successful

digitalisation as decisions made in the project might not align with the expectations of managers outside the project (Interview 3). Thus, when the hierarchy is, to an extent, represented within a project, this facilitates the efficient realisation of goals (Interview 3).

In terms of the institutional arrangements, Nuremberg observed that they must allow to be innovative and modern while remaining efficient, effective, and comprehensible (Interview 2). Accordingly, the independent experts suggested an approach in which the organisational structure is not completely changed from traditional to agile; rather, both approaches should be applied (Interview 3) depending on the complexity of an undertaking. Repeatable processes would therefore not require agility but traditional methods (Interview 4). Consequently, the challenge for public administrations is not to use only one of the approaches but to decide when to use which one (Interview 3):

> *'Max Weber in the head. Agility in the heart. That is the challenge now facing the administration.'*
>
> Interview 3 (l. 355 ff., own translation)

Referring to Nuremberg, the application of the matrix organisation reflects this demand. Accordingly, APM has not yet produced significant changes regarding Nuremberg's institutional structure but provides the ability to act flexibly. Although APM has introduced small changes within single projects, the general structure remains untouched (Interview 2). Hence, in general, neither the decision-making power of public servants increases significantly nor is the silo structure broken up. Instead, APM offers an additional capability that enables Nuremberg to remain within its traditional structure to perform routinized tasks, also being able to react agile if required. Such organisational ambidexterity would be necessary not only to enable agile reactions on projects defined by uncertain goals or changing challenges but also to guarantee stability, accountability, and comprehensibility in tasks defined by clear goals and routinised work (Interview 2). Therefore, the challenge identified by the respondents was to find a balance between agile and traditional approaches within the matrix organisation. Respondent 1, for example, indicated that the current approach creates problems in digitalisation projects as they are often constrained by resource bottlenecks since line affiliation often trumps project affiliation (Interview 1).

4.2.2. Bureaucratic culture

Nuremberg (2019.-a) views DT as an opportunity to actively promote a constructive learning culture which would create acceptance for change. Lasting acceptance is necessary when making fundamental changes in the functioning of the city and its organisational structures; otherwise, such changes might be difficult to implement because, when structures have existed for a long time, there is a risk that employees will fall back into old habits (Nuremberg, 2019.-a). Consequently, Nuremberg (2019.-a) has recognised that change can be achieved when its value is made tangible for public servants, and it thus

gains a high level of acceptance. Therefore, Nuremberg (2019.-a) expects that agile methods characterised by flexible working models in interdisciplinary teams can encourage public servants to perceive change positively.

Respondents were therefore asked whether the use of APM affects openness to change among those affected by the introduced products. Respondent 5 indicated that the application of APM creates the possibility to achieve an understanding of DT necessity since agile projects require transparency regarding the background of a decision, and high effort to explain why a specific goal has to be achieved so that people can work independently within a timebox. Likewise, Respondent 2 experienced that APM releases a commitment for change since public servants achieve the possibility to participate. On the contrary, Respondent 1 observed that, although everybody affected is invited to participate, usually only those people participate who are open to change. Accordingly, among those who usually refuse change, only a few, if any, would gradually accept change (Interview 1).

Nevertheless, Nuremberg has yet not fully established agile approaches in every department; this explains why changes in the culture have not yet received much attention (Interview 2). Respondent 2 expected that the more agile methods are established, the more likely it is that changes in the culture will occur. Nonetheless, it was highlighted that, so far, changes in the relationship between top-level leaders and public servants have occurred, expressed by changes in the mindsets of managers, who need to trust their public servants to let them work with own responsibility (Interview 2). Correspondingly, APM would encourage managers to allow people to organise themselves and to take sole responsibility when working on certain projects (Interview 2). Therefore, public servants would have the opportunity to work creatively and to voice their own ideas, which would, in turn, encourage them to trust their own ideas and would have positive psychological effects and so facilitating progress (Interview 2).

5. Discussion and conclusion

This chapter answers the main research question and the sub-questions by highlighting the most striking findings. Additional results that exceed this paper's scope of analysis are also presented, as are the limitations of this study and its implications for further research.

5.1. Answer to the research question

The main research question asks, *How does agile project management contribute to the digital transformation of public administrations in German cities?* It can be argued that APM indeed influences the DT of public administrations. Throughout this paper, the applied management practices that shape digitalisation success, institutional factors, and the bureaucratic culture were analysed as the main contributors to DT success. APM could thereby be identified to contribute to all dimensions whereby its influence on the success of single digitalisation projects was identified greatest. This can be partly explained by the fact that Nuremberg only utilises APM in digitalisation projects to improve its success. Accordingly, Nuremberg does not utilise agile approaches to prepare itself for major organisational changes (cf. Dittrich et al., 2005). Subsequently, the main research question is more explicitly addressed by discussing and answering the sub-questions.

5.1.1. Research question 1

According to the theory, the success of digitalisation projects is mainly determined by the applied management strategies. Hence, their impact was analysed by examining different phases of digitalisation projects.

In terms of conceptualisation, the study found that in agile projects representatives of different departments jointly define the goals, but by those at the top of the hierarchy to be able to make enforceable decisions. Therefore, public servants do not contribute to the formulation of goals but are at some point included in the conceptualisation to communicate their needs and understand the project's aims. However, the alignment of goals is mainly achieved by other factors, such as the prioritisation of projects. Likewise, APM's influence on goal alignment was found to be relatively small. Nevertheless, it changes the preciseness of goals. In general, Nuremberg applies APM whenever projects are complex – that is, when the goals and the solution cannot be clearly defined. In such cases, APM was considered to be advantageous as it enables goals to be broken into smaller pieces, which can change over time. These findings are thus opposed to those of Gil-Garcia's and Flores-Zúñiga's (2020), who argue that clear definitions of requirements are necessary to avoid design-reality gaps.

Nevertheless, agile projects appear to be even better suited than traditional approaches to avoid these gaps because they allow adaptions to be made during the execution. APM was further found to increase collaboration within the organisation, including among people with diverse standpoints and different

levels of expertise in digitalisation projects. It was, however, mentioned that Nuremberg is overburdened with many digitalisation projects so that, in practice, collaboration is sometimes limited to those at the top of the hierarchy, and public servants are not always involved. Furthermore, APM shifts the focus of digitalisation projects towards the customers and aims to achieve a high degree of satisfaction among them. However, in most cases, only public servants are asked for their feedback during the project execution and are expected to represent citizens' needs. In addition, Nuremberg utilises APM to approximate goals in small steps in which solutions can be tried and lessons can be learned. Together with the ability to react flexibly to changing circumstances, this aspect of APM was, as in Paulin's (2015) study, found to contribute to the project's efficiency and success. Indeed, expected goals can sometimes even been exceeded. Consequently, the application of APM already provides many benefits for Nuremberg, but its full potential has yet to be fully exploited. This is, on the one hand, because Nuremberg is confronted with many digitalisation projects, for which it lacks both time and personnel. On the other hand, characteristics of the public sector, such as legal requirements and long-term budget planning, limit Nuremberg's scope for trial and error.

In terms of controlling, APM shifts the focus away from purely monetary issues towards the quality of the introduced product. Although scholars have worried that the abandonment of clearly formulated milestones may lead to changes in project scope during the implementation (Anthopoulos et al., 2015), agile projects are in fact extensively controlled to guarantee quality to enable adaptions if quality is threatened. This does not mean that project scopes change but that APM aims to better meet projects' intentions. Thus, agile projects were also found to avoid outdated results (cf. Mergel et al., 2020).

5.1.2. Research question 2

Regarding institutional arrangements, until now, Nuremberg has not made profound institutional changes as silo and hierarchical structures have remained despite the application of APM. Although different departments and hierarchy levels collaborate closely and share knowledge within single agile projects, a transfer of this approach to the city-wide administration's structure and organisational procedure has not been observed so far. Furthermore, collaboration is not always sought, and it is mostly limited to people within the organisation.

However, it can be argued that, although Nuremberg has yet not completely transformed itself into a network-oriented organisation, the application of the matrix organisation reflects the main principles as APM, with a few sector-related restrictions, enables employees to act flexibly and in a collaborative manner defined by low distances among hierarchies. Therefore, APM redistributes decision-making power at least within a timebox to some extent to public servants. Moreover, public servants are asked to share their knowledge to contribute to the attainment of goals. Network-oriented organisations further demand the inclusion of citizens in the provision of public services. However, Nuremberg, if at all, only includes citizens in selected projects. There, as well as when using a service, they receive the possibility

to voice their needs via feedback forms. Consequently, citizens do not always contribute to public activities.

More strikingly, the experts indicated that a complete change of the organisation according to Raguseo and Ferro's (2011) concept of a network-oriented organisation would not be purposeful. Instead, administrations must be able to be both agile and stable to handle complex problems as well as routinised work adequately. The challenge is thus to decide when to use which approach. These findings correspond to those of Dietel and Heine (2020) who have also suggested that public organisations utilise a hybrid approach.

5.1.3. Research question 3

The bureaucratic culture was analysed as a means to facilitate institutional change, arguing that experiences from single projects can be transferred. Accordingly, APM was observed to influence the acceptance of single project results to a limited extent. On the one hand, experts from within and outside Nuremberg indicated that APM creates an understanding of the necessity of change, resulting in an increased commitment for progress and thus in a higher acceptance of change. On the other hand, Respondent 1 gained different experiences, arguing that APM has not led to significantly higher acceptance rates.

Nevertheless, APM increases the trust between different hierarchy levels, creating the possibility for public servants to work with sole responsibility. Therefore, it is conceivable that these new competencies encourage public servants to contribute more creatively to the organisational progress. It can further be assumed that they gain higher problem-solving skills and the capability to manage complex situations. However, this paper's research method did not directly include public servants' perspectives. Thus, it cannot be evaluated whether these changes truly occur.

The influence of APM on the openness towards institutional change appears to be limited. Even within Nuremberg the consulted experts have made different experiences regarding implications on the acceptance of change. Furthermore, individuals' competencies are likely to change, but such changes could not be observed so far. This may either be because APM is a fairly new approach within Nuremberg so that that culture changes did not receive attention or can be attributed to the research design (detailed in Section 5.3).

5.2. Additional findings

This paper did not focus on other organisational characteristics, such as the financial situation of the administration or the availability of hardware during a project, which would, according to Gil-Garcia & Flores-Zúñiga (2020), also influence the success of digitalisation projects. This is because APM is not expected to affect these characteristics. Nonetheless, scientific literature has not yet explored

whether the availability of human resources can also constrain digitalisation initiatives. However, the analysis of the collected data reveals that a lack of available personnel often constrains the success of digitalisation projects. Hence, Nuremberg was found to use the collaboration emerging from APM to meet a lack of human resources by assigning people only for a certain period of a project.

Moreover, environmental conditions were not part of the analysis as APM was considered an internal phenomenon. Nonetheless, one challenge of digitalisation projects was ascertained to be a lack of involvement of the political sphere since they would have the ability to impede projects (Interview 4). While this paper focused on collaboration within the organisation and with users, APM could also include the political sphere in the process, creating a shared understanding among them (Interview 4).

5.3. Limitations of the research

By analysing APM's role in a real-world setting, this study generated knowledge via the use of strategy papers and insights gathered from public sector experts from within and outside the administration. However, this paper is not without limitations.

As presented, DT is a holistic concept that comprises diverse developments for public administrations. Consequently, scientific literature has identified many factors that contribute to its success and influence each other. However, to enable a comprehensive analysis, it was decided to analyse only particular factors on which the influence of APM was expected to be highest. Nevertheless, this does not mean that APM does not influence other factors which determine DT's success. Accordingly, APM might also influence other factors which are not covered in this paper.

Additionally, this paper relies on strategy documents formulated by the city of Nuremberg. Hence, the analysed documents mainly contain declarations of intent but do not evaluate APM's actual success. Although the interviews with respondents from the city administration could add insights from work practices, it must be noted that they might have an overlapping perspective on APM. For example, as described, APM relies on collaboration between different levels of hierarchies. Nevertheless, the interviewees from Nuremberg only represent project managers who support departments in their digitalisation efforts. Accordingly, some identified contributions of APM (e.g., its impact on the bureaucratic culture or increased customer orientation) may only reflect their point of view. Direct involvement of public servants would have decreased bias in the findings and increased this paper's internal validity.

Due to the single case study design, the generalisability of the findings may be limited since they cover a limited sample in a unique empirical setting. Although Nuremberg was identified as a typical case in terms of its structure, experiences with APM can differ among cities. As Nuremberg has only recently introduced APM (Nuremberg, 2019.-a), it cannot be excluded that the findings regarding institutional arrangements might only represent preliminary influences. Hence, it is possible that other cities have already undergone greater changes in terms of their hierarchies or the abandonment of the frequently

found silo structure. Furthermore, they might have experienced more changes to the bureaucratic culture, especially since cultural changes might only occur gradually and slowly. Although the inclusion of independent experts increases this paper's external validity, it has also demonstrated that context-specific differences exist.

5.4. Suggestions for further research

Additional research is needed to analyse the significance of APM's influence on the identified dimensions. From this paper's findings, hypotheses can be drawn to measure APM's influences quantitatively. Likewise, although APM was found to tackle some of the shortcomings of traditional management practices, this paper does not allow any conclusion to be drawn as to whether APM is indeed better suited to contribute to the success of DT than other management methods. Therefore, additional research should compare DT efforts in which different approaches are utilised.

In addition, APM's implications for the institutional arrangements require further research. In-depth analysis is needed to determine whether institutional ambidexterity can truly help organisations to better achieve their goals and which challenges accompany this approach. Potential changes in the bureaucratic culture should also be observed over a longer period.

Furthermore, research is needed to analyse whether APM can open channels to include the political sphere within digitalisation projects. Therefore, scholars should also investigate whether APM increases the political support for DT.

This paper has highlighted that DT is a profound endeavour whose success is influenced by different factors. Nevertheless, besides the dimensions analysed in this paper, Gil-Garcia and Flores-Zúñiga (2020) observe that DT's success should also be measured via the adoption of digital services. This paper has demonstrated that a key element of APM within digitalisation projects is increased customer orientation. Hence, more research is needed on whether APM truly satisfies users and whether, consequently, implemented services are more likely to be adopted. However, whereas Gil-Garcia and Flores-Zúñiga (2020) propose to measure adoption in terms of citizens and other external parties who use services made available by the government, it should also be analysed whether APM influences adoption among public servants within the organisation.

Finally, DT is seen as a means to increase citizen participation. This study has indicated that APM likewise opens channels for participation, but Nuremberg mostly offers the possibility for feedback after the implementation of digitalisation projects. It should be researched how APM can also lead to DT's goal of stronger engagement and integration of citizens already within the creation of public services, ultimately resulting in its co-production.

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7. Appendix

7.1. Selected Documents

Title	Publisher	Date	Source Type	Pages	Link
Digitale Dachstrategie / Integriertes Stadtentwicklungskonzept (INSEK) Digitales Nürnberg TEIL 1: STRATEGISCHE LEITLINIEN	Nuremberg	11.07.2019 (2019.-a)	Strategy Paper	69	https://www.nuernberg.de/imperia/md/digitales_nuernberg/dokumente/insek_digitales_nurnberg_teil_1_strategische_leitlinien.pdf
Digitale Dachstrategie / Integriertes Stadtentwicklungskonzept (INSEK) Digitales Nürnberg TEIL 2: ROADMAP – PERSPEKTIVEN FÜR DIE WEITERENTWICKLUNG	Nuremberg	Dec. 2019 (2019.-b)	Strategy Paper	77	https://www.nuernberg.de/imperia/md/digitales_nuernberg/dokumente/200210_digitalesnuernberg_roadmap_webversion.pdf
Gesamtbericht Strategieprojekt 3 – Struktur und Organisation der neuen Dienststelle DIP (Digitalisierung, IT und Prozessorganisation) und Neuausrichtung DIP/1 (Allgemeine Organisation) der Stadt Nürnberg	Rödl & Partner	11.10.2019 (2019)	Strategy Paper	176	https://online-service2.nuernberg.de/buergerinfo/getfile.asp?id=842529&type=do

7.2. Overview of the conducted interviews

Interview	Respondent	Position	Date	Time	Length (min.)
Interview 1	Respondent 1	IT Department	10.05.2021	2.00 p.m.	35:27
Interview 2	Respondent 2	Department for Process and Organisational Design	25.05.2021	9.30 a.m.	40:14
Interview 3	Respondent 3	Independent expert: Management consultant	06.05.2021	4.00 p.m.	37:59
Interview 4	Respondent 4 Respondent 5	Independent experts: Association for Agility in Public Administrations	05.05.2021	3.30 p.m.	44:46

7.3. Interview guideline

The interview transcripts can be found in a separate zip file that can be provided upon request.

7.3.1. Interview 1

1. What challenges do you see in the DT of the city of Nuremberg?
2. Why do you use APM in the DT of public administrations?
3. What changes result from the use of agile methods compared to classic methods?
4. Which factors do you include in the planning of digitalisation projects?
5. Which people participate in the planning of digitalisation projects? What influence does this have?
6. What influence does APM have on the formulation of goals for a project?
7. What influence does APM have on the execution of digitalisation projects?
8. To what extent does APM result in changes regarding the people involved during implementation?
9. To what extent do you involve end users when running agile projects?
10. What is the role of the end user in agile digitalisation projects?
11. How do you determine whether the desired effect of a project is occurring?
12. What influence does APM have on the controlling of projects?
13. What influence does APM have on the actual usability of a product after project completion?
14. Does APM have any influence on the willingness for change among employees of public administrations?
15. What impact does APM have on the culture within the organisation?
16. What impact does APM have on the organisational structure of the city?

7.3.2. Interview 2

1. What challenges do you see in the DT of public administrations and the city of Nuremberg?
2. What changes result from the use of agile methods compared to classic methods?
3. For what reasons do you use APM in the DT of public administrations?
4. Which groups of people do you involve in the implementation of agile digitalisation projects?
5. What influence does APM have on human resources?
6. What influence does APM have on the planning of digitalisation projects?
7. To what extent does the use of APM affect the formulation of goals for a project?
8. What influence does APM have on the actual applicability of a product after project completion?
9. How do you determine whether the desired effect of a project is occurring in agile digitalisation projects?
10. What influence does APM have on the controlling of projects?
11. To what extent does the use of agile methods affect the organisational structure?
12. What impact does APM have on the culture within the city?
13. How does APM affect the culture of error and the willingness to change?

7.3.3. Interview 3

1. What challenges do you see in the DT of public administrations?
2. Why is APM used in the DT of public administrations?
3. Which factors do you think are necessary to consider in the design and implementation of digital content?
4. Which of the factors you mentioned are influenced by APM?
5. To what extent does the formulation of goals change in agile projects?
6. What influence does APM have on the willingness to innovate and the commitment of managers, project participants, and those directly affected?
7. To what extent does APM influence collaboration in administrations?
8. To what extent does APM change the role of end users during the DT?
9. How is user feedback handled in agile digitalisation projects?
10. According to what factors are applications and processes aligned?
11. What role does the organisational structure of the administration play in the DT?
12. What influence does APM have on organisational structures?
13. What impact does APM have on decision-making powers or hierarchies in public administrations?

7.3.4. Interview 4

1. How do you define APM in the context of public administrations? What are the possible barriers to public administrations?
2. What advantages does APM offer over traditional management methods used in public administrations?
3. Why do you call for the use of APM?
4. What is the importance of goals in APM, and what is the impact of APM on goals?
5. To what extent does APM change the goals of the overall organisation?
6. According to what factors are goals aligned within APM?
7. How does APM deal with changing conditions?
8. What impact does APM have on the governance of a project?
9. According to which criteria are projects controlled?
10. Which people are included in the crowd in APM? What are their roles?
11. What influence does APM have on the commitment of project participants?
12. To what extent does APM change the final result of a project compared to traditional management methods?
13. What are the roles of end users and their experiences in agile management methods?
14. What influence does APM have on the organisational structures of public administrations?
15. To what extent does APM influence collaboration in administrations?
16. What impact does APM have on decision-making authority or hierarchies in public administrations?

7.4. Coding Guideline

Main category	Sub-category	Coding rule	Key words	Anchor example
Project planning				
Conceptualisation	Organisational goals	Code if source refers to the organisational DT strategy	strategy, broader concepts, big concepts	'So, I think it already goes together because what we've envisioned in the **big concepts**, it's a lot about being, I'll say, closer to the people, faster, more responsive, more innovative.' (Interview 2, l. 175 ff., own translation)
	Project goals	Code if source refers to the goal of a digitalisation initiatives	services, processes, vision	'It's like this, you basically know the **goal**: certain things are digitalised, new systems are built and have to be put into operation.' (Interview 3, l. 71 ff., own translation)
	Goal alignment	Code if source refers to the reconciliation of organisational and digital transformation goals	proximity, alignment	'So, this **proximity to the overall strategy** is mapped relatively explicitly in our company, even when we prioritise projects.' (Interview 1, l. 306 f., own translation)
	Complexity	Code if APM is related to the complexity of a project	complexity, difficulty	'Frankly, also because the problems are often very **complex** and because it is difficult to tackle them properly.' (Interview 2, l. 208 f., own translation)
Project execution				
Traditional management		Code if characteristics of the traditional project management approach are mentioned	classical approach, traditional management, waterfall approach	'**Classical project management** reaches its limits and requires more agility (goal and path are not known from the beginning, implementation is waterfall-like, new requirements and information have to be considered).' (Rödl & Partner, 2019, own translation)
General APM issues	Efficiency	Code if efficiency issues are mentioned	fast, quick, cheap, time, money, resources needed	'Nevertheless, the advantages remain. So, you just have something **faster**, you still have something more direct.' (Interview 2, l. 234 f., own translation)
	Customer orientation	Code if source refers to customers (public servants, citizens, companies)	user satisfaction, customer orientation, user, end user, user experience	'A good service culture and a high level of **customer orientation** are coming to the fore. Existing e-government offerings must therefore be continuously aligned with the various **life situations of citizens** and further developed with a view to **user experience**.' (Nuremberg, 2019.-b, own translation)

Main category	Sub-category	Coding rule	Key words	Anchor example
	Flexibility and adaptability	Code if source refers to flexibility within the process, projects that can be adapted to environmental changes, different requirements, or adaption as response to feedback	flexibility, adjustments, change, adaptation	'Agility is required when it comes to **flexibility** and innovation.' (Interview 3, l. 388 f., own translation)
	Experimenting	Code if source mentions that agility is applied to experiment	trying out, learning, discover, testing, experiment	'So, as I said, that takes into account my personal assessment and also I think to some extent the widespread assessments that you use agile methods precisely when **you don't yet know exactly what you want to come out in the end**, for one thing.' (Interview 1, l. 105 ff., own translation)
	Collaboration	Code if source refers to coordination between public servants and managers, coordination only among top-level leaders, coordination between different departments, or coordination with citizens	cooperation, interdisciplinarity, exchange, participation, interaction, contact, communication	'I think the biggest difference is that, yes, a key point of agile methods is **interdisciplinary teams**, and I don't think that's yet the practice everywhere for the city, but the city is very much fragmented by responsibilities.' (Interview 2, l. 36 ff., own translation)
Project Controlling				
Controlling schemes		Code statements that refer to the general framework utilised in agile projects or factors which are used to control digitalisation projects	Prince2, key performance indicators, KPI, monitoring	'So, to take online services as an example, we have just developed fresh new KPIs and **key performance indicators**, a drop-out rate, click rate, and so on, conversion rate, where we just record how customers accept it. Where are we still losing customers, where can we catch up?' (Interview 2, l. 310 ff., own translation)

Main category	Sub-category	Coding rule	Key words	Anchor example
Milestones		Code if source refers to milestones within digitalisation projects	milestones, quality gates, roadmap	‘But yes, there are, I think, stronger **milestones**, because you think in timeboxes and also look at things about three times a week depending on the project or monthly. That's why they're always little **quality gates** where you notice that you're on schedule, you're on resource plan, you've improved a product, or you've failed at it.’ (Interview 2, l. 340 ff., own translation)
Institutional arrangements				
Traditional governance issues		Code if characteristics of traditional governance approaches are mentioned	Max Weber, responsibility, guidelines, effectiveness	‘There is such a thing as one side of **classical administrative action,** and that is Max Weber. So that's really the way it is. You have very precise guidelines, responsibilities, who takes care of what.’ (Interview 3, l. 83 ff., own translation)
Structure of the organisation		Code if source refers to changes in the organisational structure, hierarchy, or decision-making power	hierarchy, decision-making power, silo structure, line affiliation	‘If I'm honest, I think there are a lot of factors that influence **organisational structures** per se in the direction of digitalisation, shifting boundaries, making people think more strongly in terms of back office, front office, and so on. Or also process orientation, that you don't just think in terms of cases, but break down a process cleanly, that has a lot of influence on the organisation. The agile method per se also has an influence, but I don't think as much as others, if I'm honest, on the structure, I'd say.’ (Interview 2, l. 369 ff., own translation)
Bureaucratic culture		Code if source refers to changes in the bureaucratic culture, including self-organisation, motivation, or error culture	self-organisation, mindset, problem-solving skills, trust	‘That inevitably changes the **culture**, if the aim is to establish these methods at the management level, then that inevitably leads to changes. And to that extent, you can already say that yes, that overall the culture is moving in this direction as a result.’ (Interview 1, l. 261 ff., own translation)
Additional findings				
Organisational characteristics	Human resources	Code if source refers to the human resources within digitalisation projects	human resources	‘Especially when the people, that's also a huge problem, because we just, **the administration often lacks people**, they not only do this project work in the Scrum team or are as a Kanban team in some project inside or something else, but they still have various other, still have line tasks on the side.’ (Interview 4, l. 105 ff., own translation)

Main category	Sub-category	Coding rule	Key words	Anchor example
Environmental conditions	Political sphere	Code if source refers to the political sphere influencing DT or APM	politics	‘And of course the **involvement of politics**, which so far has come up far too little in the whole discussion, has not even been taken into account yet, because it can fall on your feet in the medium to long term, because they are part of the management and they are not yet too involved there, at least in the municipal area, in these whole change processes, but they would have to be, because they support it.’ (Interview 4, l. 68 ff., own translation)

7.5. Codes per document/transcript

		Nuremberg 2019.-a	Nuremberg 2019.-b	Rödl & Partner 2019	Inter-view 1	Inter-view 2	Inter-view 3	Inter-view 4	Total
Project planning									
Conceptualisation	Organisational Goals	4	-	-	-	1	-	-	5
	Project goals	-	-	1	2	3	2	6	14
	Goal alignment	5	-	-	1	3	-	-	9
	Complexity	-	-	-	1	1	1	3	6
Project execution									
Traditional management		-	-	1	2	2	1	3	9
General APM issues	Efficiency	4	-	2	-	3	2	1	12
	Customer orientation	12	5	4	2	4	1	2	30
	Flexibility and adaptability	-	-	1	-	2	7	1	11
	Experimenting	3	-	1	2	-	4	2	12
	Collaboration	24	1	11	3	2	4	3	48
Project controlling									
Controlling schemes		2	-	-	2	2	-	1	7
Milestones		-	-	-	2	1	-	2	5
Institutional arrangements									
Traditional governance issues		-	-	-	-	-	5	-	5
Structure of the organisation		6	2	7	4	6	12	8	45
Bureaucratic culture		14	1	5	6	10	6	6	48
Additional findings									
Organisational characteristics	Human resources	-	-	-	-	1	1	3	5
Environmental conditions	Political sphere	-	-	-	-	-	-	2	2
Total		74	9	33	27	41	46	43	**273**