



THE PHANTOM OF DATAISM IN PUBLIC ADMINISTRATION SCIENCES

An Exploratory Case Study

Alma Stolz
Public Governance across Borders
University of Twente, Enschede
Supervisor: Dr. Azadeh Akbari
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Abstract

Digital transformation has made our world increasingly rendered into a quantifiable data flow. The phenomenon of datafication changes everything around us. But, while some people view this development with horror, others view it as a tremendous opportunity. They believe in data, they are dataist. This study aims to make sense of a phenomenon, that up until now has not been subject to empirical investigation. This thesis aims to change that by conducting an exploratory case study about the Management, Society and technology Bachelor program at the University of Twente. With the help of an analysis of the course materials of the program, expert interviews with instructors and a group discussion with students, this study investigates how dataist perspectives influence education at the MS&T program. While ultimately no concrete evidence could be obtained, that a considerable influence exists, the study nevertheless offers valuable insights about which underlying dynamics influence dataism, how it can be operationalized and what processes in the program could contribute to keeping dataist perspectives at bay. This adds to the wider body of datafication research and helps illuminate this abstract concept.

Keywords: Dataism, Datafication, Public Administration, Education

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1. Introduction

'We are in the midst of the transition towards a digital economy and society' (OECD, 2017). This statement was made in a report by the Go Digital Project of the OECD. And indeed, one finds it hard to argue against this assessment. In 2021 almost half of the world's population owned a smartphone, ten years prior only one billion could claim this distinction (Mawston, n.d.). Internet access rates went up from a mere 1% in 1995 to 46% in 2016 (Gadzama et al., 2019). And the development does not show any sign of slowing down. With that coincide tremendous implications and uncertainties for society at large and the people within it in particular. While digital transformation has every chance of improving people's lives with innovations and increased productivity, it also pushes new challenges to the forefront and is already majorly altering our existence (OECD, 2017).

Through the increasing availability of advanced data-driven technology such as algorithms and artificial intelligence, datafication processes become prevalent in all parts of society. The world of today becomes increasingly defined by data, evaluation and quantitative assessment (Williamson, 2020). Some scholars even go as far as to classify datafication as a new socio-scientific paradigm that dominates every aspect of our being (Van Dijk, 2014). With that increasing focus has been put on the troubles, that such a development can bring to society, for example the phenomenon of dataveillance.

One of the most crucial sectors in any society is the education sector. Access to broad and extensive education has time and time again been linked to economic growth and poverty reduction on a personal as well as a national level. Higher university education has been linked to other forms of social change as well such as benefiting in the promotion of sustainability, as it allows students to develop productive and civic skills which allow them to compete on the labour market and participate as an active member of society (International Panel on Social Progress, 2018). Furthermore, University education has also been proven to facilitate or at least support the identity formation of its students, shaping their interpretation of meaning & self-awareness (Amina, I. H., 2021). It is therefore not surprising that the impact of datafication processes on the education sector has recently become a popular research subject (Flensburg & Lomborg, 2021). Datafication studies in the education sector have for example

investigated the effects of online learning arrangements on students during the Covid-19 pandemic (König et al., 2020).

Within the context of datafication research, one aspect of the puzzle has nevertheless remained largely neglected: dataism. Dataism can be described as '*an unconditioned belief in data*' (Petri, 2020) and is, what fuels the intense quantification processes of datafication. Without dataism, the intense developments of today would not be possible as datafication processes provide '*a new gold standard of knowledge about human behaviour*' (Van Dijk, 2014, Williamson 2020). Nevertheless, within the growing field of datafication research focussing on the education sector, dataism remains relatively unexplored. There have been theoretical works conducted concerning its implications for science and problems that could arise from data-driven research (Van Dijk, 2014, Kitchin, 2014, Boyd & Crawford, 2011). And research that has been perceived as dataistic has been called out by other researchers, resulting in a general call to be cautious of such research (Van den Bosch, 2022). But up until this point no empirical study about dataism has been conducted.

It is regrettable that dataism has been primarily talked about and has not investigated. The close connection to datafication, which is impacting society tremendously, should warrant a closer look. It would be enlightening if, we could actually be aware of how prevalent dataistic viewpoints are in different sectors and how they influence the dynamics and interactions of the people that are guided by them. Furthermore, despite being widely discussed in theoretical papers and popular literature, the phenomenon remains somewhat enigmatic.

The purpose of this study is it to change that and possibly contribute to shrinking the knowledge gap that is surrounding dataism. The focus of the study is going to be on the education sector. As stated before, schools and especially universities have been revealed to have a considerable impact on the viewpoints of the students that graduate from them. It would be therefore enlightening to see, if it is possible that dataistic perspectives are transferred through a curriculum to the problem solvers of tomorrow.

An exploratory case study is going to be conducted that is focussed on the Public Administration science bachelor program Management, Society & Technology, which is taught at the University of Twente in the Netherlands. It is going to study if dataistic perspectives can be identified within the curriculum of the bachelor program and how this influences the dynamics and processes within it. To look for evidence of dataism,

at first a theory based operationalization of the phenomenon is going to be modeled. After that a qualitative data analysis of the course materials offered to the 2023 cohort of bachelor students is going to be conducted. Furthermore, expert interviews with instructors from the program add to the results by providing context and illuminating the decision-making processes behind the curriculum. A group discussion with students of the program is added as a supplementary data source.

The study is going to answer the overarching research question: '*How are dataist perspectives influencing education in the Management, Society and Technology program?*'. To inform and guide the research process four sub questions have been formulated.

- How is the Management, Society & Technology programme organized & run?
- To what extent are dynamics of the paradigm wars reflected in the program?
- To what extent are dataist perspectives reflected in the curriculum?
- What are the opportunities and challenges of dataist perspectives in Public Administration Sciences?

2. Theory

In the following section the main concepts that are relevant to the study are going to be defined and outlined. Furthermore, there is going to be an overview of major academic discussions about the topics. At the end of the section a set of theoretical expectations are going to be derived for the analysis.

2.1. Datafication, data-driven Public Administration and Education in the 21st Century

As mentioned in the introduction, the main concept of dataism is closely connected to the topic of datafication. It is therefore necessary to provide a more detailed definition of datafication as well as outline the impact these processes have on public administration and the education sector. Datafication can be broadly defined as the process of '*making something into data*'. This something tends to be equated with human life itself (Mejias & Couldry, 2019). Datafication processes transform personal preferences, romantic relationships and business interactions into something that can be measured, traced and monitored (Williamson, 2020). And while datafication has become associated with the new technological innovations of today, it is important to keep in mind, that such processes are by no means a contemporary phenomenon. Human life and society have been analyzed and administered way before the first computer was even thought of. It was just done with pen and printing machine instead (Cieslik & Margocsy, 2022). However, it is argued that the digital transformation has significantly altered the dynamics of datafication. Firstly, with the introduction of the internet, more aspects of human life now unfold in a digital, data-driven space. This has made aspects of human life, which previously were invisible to datafication efforts easier to access and analyze. Secondly, the availability of advanced statistical analysis tools has facilitated the measurement and quantification of these interactions. As a result, datafication processes have expanded in both scope and scale, gaining greater influence in society (Flensburg & Lomburg, 2023, Southerton, 2020). This increasing influence of datafication permeates all aspects and areas of life and has attracted considerable scholarly interest (Flensburg & Lomburg, 2023, Zhao et al., 2020).

One of those areas is the public sector. Datafication has long been present in processes of government and administration. Historical datafication processes often originated from the perspective of the state, for the remote management of colonial

empires it in fact was crucial (Cieslik & Margočsy, 2022). The use of datafication can be broken down into following two objectives. On the one hand gaining quantified information about society and citizens was and is a useful tool to get an overview of the problems that plague them, which could be used to design solutions and develop better institutions and services. On the other hand, making people into a measurable statistic also allows public agencies and the state to inflict greater control upon their citizens, as they are turned into measurable categories that can easily be judged against the framework of the state's norms (Williamson, 2020).

In the age of the digital transformation these objectives have not changed, but their impact on human life has been significantly increased. Furthermore, a new player has emerged on the field of datafication: data-administering private companies like Alphabet (Reutter, 2023). While they may also facilitate user data to improve the features of their many products or personalize the offer they can make to their clients, they also administer significant control over the people that use their services. Some of the prime concerns regarding such companies and their products have been that through controlling what one sees, they could control what the user thinks or that smartphone technology reduces the critical thinking skills of young adults (Grind et al, 2019, Fabio, 2023).

The increasing influence of datafication as well as the presence of private competitors has led to a paradigm shift within public administration circles towards what is called data-driven public administration (Reutter, 2023). This new paradigm works on the assumption of urgency, that datafication provides a new dazzling opportunity that needs to be exploited (Broomfield & Reuter, 2021). Scholars and practitioners alike propose the idea, that the public sector is lagging behind on that field and that it has to catch up at all costs to remain relevant in the new data-driven future. There is the need for simultaneously more data generation and administering in administrative practices while also using more sophisticated tools (Reutter, 2023). The belief is, that using those technologies will make it possible to reform the public sector and make it more efficient and in service of the citizens (Redden, 2018). But, some scholars have pointed out, that such a paradigm should not be readily accepted. While the wish to improve peoples lives through better government services is certainly noble, the other use of datafication as a control mechanism could lead to a citizen that is datafied but

disempowered compared to the state and is now closely monitored and controlled not by one but two entities (Redden 2018, Broomfield & Reutter, 2022).

Datafication also has had a significant impact on the education sector, especially higher university education. First of all, this has come in the form of the introduction of digital technology and assessment tools, which are meant to contribute to school development through digital assessment & evaluation. And secondly, datafication has transformed *'our understanding of education, of what is understood as 'good education'* (Jarke & Breiter, 2019). The main expectation for education systems is for them to prepare students for a future work life. Yet today, educators have to prepare students for a future that becomes increasingly uncertain. Skills that are taught at university, may become irrelevant within the next ten years, the job one is training for today may cease to exist in no time (Coskun, 2022). Furthermore, employers have increasingly high standards, when it comes to who they want to hire. According to a Forbes article, *'businesses are looking for (...) independent thinkers, ambitious problem solvers, goal-oriented proactive workers, works well on a team, enjoys learning new things, and finally, someone who is reliable and responsible'* (Misiewicz, 2016). Like public administration education management has also experienced a paradigm shift in recent years towards something that is predominantly known as 'Education in the 21st century'. This paradigm works on the assumption, that in adjusting to these new demands, it is simply not enough to add a new component to an otherwise traditional structure of pedagogy, but rather that a wide-spread change is the only effective solution (Kagan, 2004). 'Education in the 21st Century' can be understood as a broad range of ideas, that wish to tackle the new demands of the new century. Amongst the many propositions, three different learning types have been prominently discussed: interdisciplinary, project-based and research-driven learning (Shaw, 2009; Sikhakane et al., 2020, Coskun, 2022). Interdisciplinary learning becomes a necessity as people become increasingly connected through technological devices and students need to acquire more transferable skills in the wake of an everchanging job market (Misiewicz, 2016). Project-based learning also helps by making students work in groups which is strengthening their teamwork skills in the process (Coskun, 2022). And finally, research-driven learning helps them acquire knowledge and apply scientific methods independently, which is meant to encourage their thinking skills and an affinity towards life-long-learning (Seif, 2021). Together all

these three components are meant to successfully prepare students to face an uncertain world.

2.2. Dataism

Dataism is the underlying belief system that fuels datafication processes (Van Dijk, 2014). David Brooks from the New York Times was the first to define it in his opinion piece 'The philosophy of data' then years ago in which he called it the '*the rising philosophy of the day*' (Brooks, 2013). He argues that data is a new source of authority in society and is going to fundamentally change the way we see the world and make decisions. For him dataism is the belief that data is going to help us archive great things for society & that it is a transparent and reliable source to archive knowledge. Notably, he does not frame the development as either good or bad, rather seeing the possibilities in the usage of data while remaining sceptical towards endless quantification of natural environments (Brooks, 2013). The term was ultimately picked up and popularized in Yuval Noah Harari's bestseller *Homo Deus*. He does not share Brooks more ambivalent view towards dataism. Rather he frames dataist perspectives in a thoroughly negative light. For him dataism is a fundamental attack against everything that makes us human as it perpetuates that '*Humans are merely tools for creating the internet-of-all-things*' (Harari, 2016). The value of objects and people is only determined by how well they are able to process data. In his view, digitized objects such as computers and algorithms are way superior to humans in that regard and will therefore enact better judgements about the world around us, replacing us as the most developed entities within it (Harari, 2016). Other popular interpretations of dataism link it to the rise of a new neoliberal technology of power that is going to take away human agency entirely (Moulaison, 2020). Furthermore, the term dataism has also been used in very specific contexts, that have very little in common with the original definition provided by Brooks. Within the cryptocurrency community, dataism, for example, refers to the process when money is transferred from humans to machines, while artists use the term to describe a possible new art movement involving data (Barabasi, 2022).

It becomes evident, that dataism is neither a coherent concept nor has a single consensual definition a study can draw on. Moving forward this study is going to follow Jose Van Dijk's definition of dataism:

'Dataism betrays a belief in the objectivity of quantification and in the potential of tracking all kinds of human behavior and sociality through online data' (Van Dijk, 2014)

This definition has been chosen, because contrary to the other ones presented in this section it is both scientific, refrains from a normative framing and can be applied to a wide range of contexts and topics.

2.2.1. Exploratory Science

The previously cited authors are largely concerned with the impact of dataism on society or human identity at large. Yet, the phenomenon has also been discussed in relation to its impact on science and academic research. In line with the assessment of Brooks, digital transformation is largely seen as being the catalyst for a new, fundamental development in science that is going to change the way that research is done & knowledge is acquired (Mayer-Schonberger, V., & Cukier, K., 2013). Kitchin goes so far as to call the development a data revolution in science (Kitchin, 2014). The term of the scientific revolution was first coined by Thomas Kuhn in his book *'The structure of scientific revolutions'*. Before that science was largely seen as a linear and cumulative process, where new knowledge is built upon previous findings. Kuhn challenged this in stating that, scientific communities are always dominated by a scientific paradigm that influences their worldview and guides them in subject and solution choice (Kuhn, 2012). A scientific paradigm is an *'accepted way of interrogating the world and synthesizing knowledge common to a substantial portion of researchers'* (Kitchin, 2014). It remains intact as long as the paradigm is useful in explaining phenomena in the outside world. If it is not able to do that anymore the paradigm and the knowledge associated with it disintegrate and make way for a new rivaling paradigm that is then picked up by the scientific community (Kuhn, 2012, Kitchin, 2014). In Kuhn's model the cause for the scientific paradigm to fail is always a shift in social reality, for example the discovery of a new phenomenon that cannot be explained. Modern scholars that follow Kuhn's ideas about scientific revolutions have started to question that point of origin. Rather, it is proposed that a scientific revolution is caused by the availability of new forms of data and measurement techniques (Hey et al, 2009). As Latour states, one only needs to *'Change the instruments, and you will change the entire social theory that goes with them'* (Kitchin, 2014). Gray uses that interpretation to divide the evolution of science into four different phases of scientific

paradigms that are associated with the emergence of new technology. The first phase is called 'empirical science' and involves the observation and description of natural phenomena with the naked eye. It was the dominant use of science before the Renaissance. The second paradigm is 'Theoretical Science' and is largely based on models and generalizations. The third paradigm emerged with the invention of computers and is called 'Computational or simulation science' (Kitchin, 2014). According to Gray, the emergence of even more sophisticated data-processing tools and the increasing prominence of digital data within our everyday lives, mark the beginning of a fourth paradigm, which Kitchin later dubbed 'Exploratory Science' (Kitchin, 2014, Hey et al., 2009). 'Exploratory Science' is defined as being data-intensive research that is largely reliant on statistical exploration & data-mining (Kitchin, 2014). Dataism as a belief in the quantification & tracking of human behaviour fits within the context of this paradigm.

2.2.2. What are dataist perspectives?

The emergence of the 'Exploratory Science' paradigm makes it increasingly plausible for dataist perspectives to find their way into scientific research & discourse. Building on the general definition by Van Dijk the literature review has revealed three more underlying dimensions of dataistic perspectives in science. These are the three characteristics that have been discussed the most.

1: Data is seen as a limitless source of knowledge

Dataistic perspectives support the view that the analysis of huge datasets is the definitive or most truthful form of scientific inquiry. The larger the dataset is the more accurate the knowledge gathered from it is going to be (Petri, 2020). Some researchers even go as far as to equate larger datasets with all data that could be possibly available (Balazka & Rodighiero, 2020). Even before the term dataism was even coined by Brooks, Boyd & Crawford warned that increased access to Big Data sets & sophisticated analysis methods could lead to assumptions that one only must gather enough data points to make a valid statement (Boyd & Crawford, 2011). Assumptions like that, it is argued, are problematic, because they overlook that the size of a dataset is ultimately not what contributes to science, but the meaning that is extracted from it. Data can never account for all possibilities and variations or be representative for all

people. In the time of digital transformation new data is generated every second and adds on a new perspective to the puzzle of the world. To expect a dataset to account for all of that even after it has already been collected is seen as a very questionable assumption (Balazka & Rodighiero, 2020). Rather researchers are urged to continue to use samples and be aware of their components & limitations to come to a meaningful result (Boyd & Crawford, 2011).

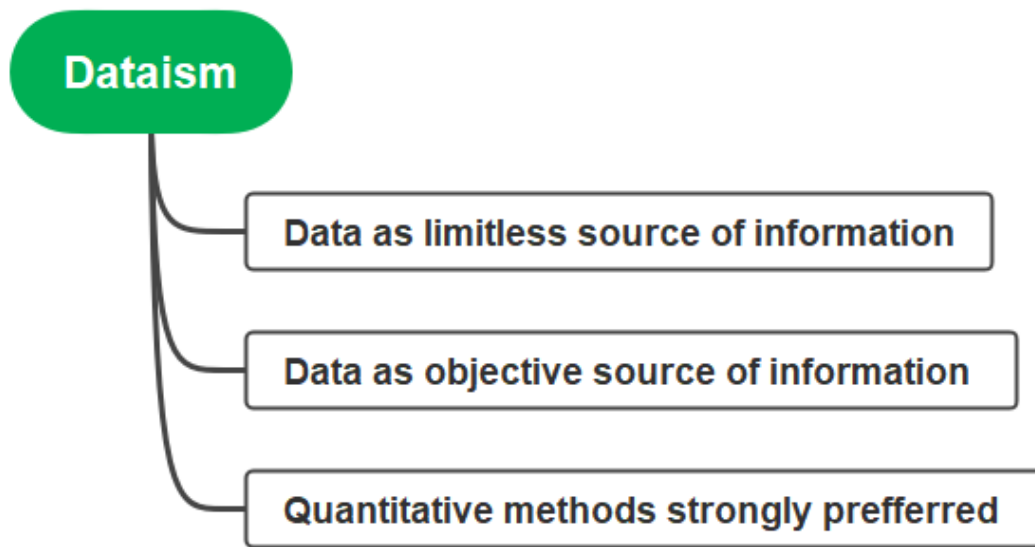
2: Data is seen as an objective source of knowledge

Dataism supports the view that datapoints are a natural phenomenon that can be viewed outside of the context in which they have been gathered and are analysed without a specific purpose in mind (Van Dijk, 2014). Data is seen as always predicting human behavior & social phenomena, essentially equating individuals with the data that they produce (Van Dijk, 2014, Boyd & Crawford, 2011). As larger datasets can be easily turned into mathematical equations and models, it therefore becomes increasingly attractive to just take them at face value and not consider the context, which ultimately diminishes their value for science (Boyd & Crawford, 2011, Van Dijk, 2014). Results presented in figures are seen to '*speak for themselves*' (Anderson, 2008) without the observer having to have any prior knowledge on the topic. Critics of these assumptions argue, that datapoints are not facts, but rather can be '*good or bad, better or worse, incomplete and insufficient*' (Gitelman, 2013). Furthermore, it is pointed out, that claims of objectivity of data are problematic, since every researcher that is working with a dataset ultimately has to interpret the patterns within it to conclude a result. With that their own personal imaginations and biases come into the equation. But even the data that is gathered can already be seen as a subjective compromise in which concerns of money, time and personal interest play a role (Balazka & Rodighiero, 2020). Data administering companies like Google or Twitter are also seen equally as neutral as the data that is extracted from them (Van Dijk, 2014). But, data administering companies have biases of their own - for example through constant and largely unknown rewriting of algorithms -, that remain largely unaccounted for in research (Balazka & Rodighiero, 2020). It is proposed, that quantitative methods should be combined with qualitative modes of interrogation to move away from the myth, that data is inherently neutral (Van Dijk, 2014).

3: Quantitative research is strongly preferred over qualitative research

Out of the previously discussed assumptions, it is possible to synthesise a third one: dataistic perspectives tend to contribute to a bias in favour of quantitative methodology & data (Seoane, M. V., & Hornidge, A, 2020). Because datafication is a process that gradually transitions every aspect of the world into a quantitative data flow (Kobelieva & Nikolaienko, 2021), methods like statistical testing are seen as the only valid way to make sense of it. This can in extreme cases lead to a dismissal of theory and interpretation and attempts to move away from '*always understanding the deeper reasons behind how the world works to simply learning about an association among phenomena (...)*' (Cukier & Mayer-Schoenberger, 2013). Some scholars have even gone as far as to proclaim '*the end of theory*' (Anderson, 2008) or that the scientific method in itself has become obsolete due to the availability of Big Data technology (Kitchin, 2014). These assumptions are viewed as problematic, since they contribute to standing stereotypes about these methodologies, with qualitative research being reduced to just interpreting stories and quantitative research being seen as providing actual facts (Boyd & Crawford, 2011). Rather than contributing to a collaborative coexistence of different approaches, dataism has been pinned down to be detrimental and '*unless challenged will reinforce (...) tensions & arguments about the incommensurability between different philosophies of science*' (Seoane, M. V., & Hornidge, A, 2020)

Figure 1: The three dimensions of dataism



2.3. The ‘Paradigm Wars’ in Public Administration Sciences

Arguments such as these are much more prevalent in social sciences than in natural sciences, because they have a much greater variety of philosophies (Kitchin, 2014). Those arguments have come to be known as the so-called ‘Paradigm Wars’ (Oakley, 1999, Islam, 2011). Paradigm Wars are primarily fought between proponents of quantitative & qualitative methodology. Quantitative Methods can be broadly defined as research that *‘collects and works with non-numerical data that seeks to interpret meaning from these data’* (Punch, 2013). Quantitative Methods on the other hand are about the collection of numerical data, that then can be used to test causal relationships (Rana et al., 2021). On the surface the choice for a specific methodology is primarily based on practicality. Qualitative research usually is limited to a small number of cases, as it is physically impossible for a single person or even a team to examine over hundred different cases on the deep analysis level that is typical for this type of research. If a researcher is confronted with a subject that warrants the use of a large number of cases, they will naturally be drawn to use quantitative methods whose strong ability to generalize and statistical analysis tools make it an easy task to examine so much material (Greener, 2018). But, practicality and logic are not the only

reasons for choosing one of the methodologies over the other. The ontological and epistemological assumptions of the researcher also play a role (Al-Ababneh, M, 2020, Ospina et al., 2011). While these typologies by no means apply to every single researcher out there, quantitative and qualitative scholars tend to follow contrasting scientific orientations, post positivism & interpretivism (Ospina et al., 2011, Slevitch, L, 2011). Postpositivist follow a mode of inquiry from the outside and understand themselves as external observers to the object that they are studying. Interpretivist on the other hand employ the opposite approach and gather knowledge from the inside by viewing themselves and their own judgement as the instrument with which a phenomenon is measured (Ospina et al., 2017). As both orientations have their own 'research cultures' with different vocabulary, standards and practices (Ospina et al. 2017) the underlying division becomes more pronounced and strengthens the viewpoint of not simply seeing quantitative & qualitative methods as methods but two scientific paradigms that fundamentally oppose each other (Oakley, 2000, Byrman 2008).

People who adopt such a paradigmatic viewpoint of the dichotomy, attribute different, opposite values and characteristics to each methodology with the goal of making the other side look less desirable. Paradigmatic quantitative scholars for example have claimed that their approach is '*hard, objective and strong*' compared to '*weak, subjective and soft*' qualitative research (Islam, 2011). Feminist social scientist on the other hand for the longest time dismissed quantitative methods altogether, claiming that there is a natural association between feminist studies and qualitative research and '*quantitative research being earmarked as the work of the patriarchal devil*' (Oakley, 1999). But, the paradigm wars usually manifest themselves in less extreme and openly hostile ways, namely in a lack of acceptance for the validity of the other side's research approach and their results (Ospina et al., 2017). Some of the standard criticisms that paradigmatic quantitative scholars bring forward revolve around a perceived lack of scientific standard in qualitative research, seeing it as almost journalistic. For them qualitative results are way too subjective at best and totally random at worst (Melosik, Z, 2021, Whetsell & Shields, 2013). Qualitative critique against quantitative works on the other hand often revolves around identified or perceived claims of objectivity of their results as well as attempts to numerically

measure phenomena that in their view are not able to be quantified in that way (Melosik, Z, 2021, Islam, 2011)

While the need for some kind of public administration emerged with the establishment of the first formal governments in Ancient Egypt, the specialized study of Public Administration in a modern sense only started to establish itself at the beginning of the 20th century (McDonald et al., 2022). The history of methodological and epistemological development in the discipline is therefore much shorter than in other social sciences. In fact, before the turn of the millennium the discipline was often criticized for lacking true depth in theory and having deeply underdeveloped methodology, being primarily made up of conceptual and theoretical work and small-scale empirical studies (Kettl, 2000, Vogel & Hattke, 2022). Nevertheless, this did not prevent tensions between the proponents of the two methodologies from emerging. As it was viewed to give the young discipline more rigor & substance and therefore scientific legitimacy, an early movement tried to streamline the discipline into following one single dominant philosophy in the form of logical positivism, the precursor to today's post-positivism. This led to a degree of unintentional marginalization of interpretivist works (Ospina et al., 2017, Raadschelders & Lee, 2011). Despite the early assimilation attempts, qualitative methods & interpretivism have been well established within Public Administration Sciences for years. Positivism & quantitative methods have been increasingly challenged in the late 20th century, but nevertheless they remain dominant within Public Administration Sciences (Whetsell & Shields, 2013). With the maturing of the discipline in the 21st century more and more studies became empirical instead of theoretical (Vogel & Hattke, 2022) and analysis methods became much more sophisticated (McDonald et al., 2022). And even though quantitative methods already were the dominant methodology within the discipline, the literature review indicates that the new millennium brought a new wave of quantitative studies. In their 2022 analysis of the history of the longest running PA journal '*Public Administration*', Vogel & Hattke found out that quantitative methods and analysis tools became more and more popular within the journal as the century continued on, becoming equally if not more important than qualitative methods within the last decade. This is especially significant since prior to that the journal tended to emphasize qualitative methods more than other north-american PA journals (Vogel & Hattke, 2022). Raadschelders & Lee found similar results in their analysis of '*Public*

Administration Review a decade prior and observed a gradual trend towards quantitative statistical methods in a journal not primarily associated with quantitative research (Raadschelders & Lee, 2011).

Nevertheless, there has also been somewhat of a countermovement against an overly paradigmatic view of methodology in Public Administration, the movement of the so-called methodological pluralist (Ospina et al., 2017). Contemporary PA scholars largely insist that both ways of scientific inquiry are needed for the discipline to sustain itself & to ensure that diverse and fruitful research is conducted. The more methodological diversity within a discipline the better the outcome for all (McDonald, 2022; Groeneveld et al, 2015). They argue that the paradigm wars are just holding everybody back & prevent scientific advancement and the further methodological refinement of the discipline. Furthermore, they point out that both methodologies start out with different objectives and fill in the gaps in which the other is weak in. A purely paradigmatic viewpoint also ignores the combination of quantitative and qualitative methods in mixed methods approaches as well as collaboration between scholars of the different traditions (MacDonald et al., 2022).

When looking over the literature the status of the paradigm wars remains unresolved. Many believe that remnants of the conflict still remain, which could break out in a major debate at any time (Sengupta, S., 2017, Ospina et al., 2017) or that it has not been resolved at all (Melosik, Z, 2021). While mixed methods have been partially praised as a permanent solution to the conflict, they also were not able to truly break through into the field (Knappertsbusch, 2023). In fact, there are worries that the continuing dominance of quantitative methodology could help inflame the tension anew and could revive the old debates of the paradigm wars (Raadschelders & Lee, 2011).

2.4. Theoretical Expectations

Based on the concepts and discussions presented in the theory chapter a set of expectations for the up coming analysis of the Management, Society and Technology Bachelor program could be formulated. Whether or not these expectations are validated by the results, will be discussed in the analysis chapter.

- 1. Dataistic perspectives are reflected in the program**
- 2. Quantitative Methods are the dominant methodology in the program**
- 3. Dynamics of the paradigm wars are reflected in the program**

3. Methodology

The following chapter highlights the research methods utilized in this study and demonstrates how dataism in higher education is going to be operationalized for the following analysis.

3.1. Research Design

For this study an exploratory case study design has been used. Case studies are utilized '*to generate in-depth understanding of a contemporary issue or phenomenon in a bounded system*' (Coombs, 2022). They usually only concern a few numbers of cases, that are then studied on a deep analysis level. Exploratory case studies are usually employed, when one wishes to get an initial understanding of an unknown, new or under researched phenomenon. They serve as a first step of orientation for further research and the researcher usually starts their analysis on a relatively scarce theoretical basis (Chopard & Przybylski, 2021). The exploratory case study approach has been chosen for three reasons. First of all, case studies are ideal to answer interpretative research questions, that concern the 'how' and 'why' of a situation, like the research question of this study does (Yin, 2018). Furthermore, dataism is a relatively new concept, that has not yet been empirically researched in the education sector. An exploratory case study therefore could help illuminate the concept and gather first information. And thirdly, this information could then later be used as a starting point for further research and theory development (Yin, 2014).

3.2. The Case in question

This study concerns the Management, Society and Technology program, which is taught at the University of Twente in Enschede, The Netherlands. The program is offered by the Universities Public Administration department and concerns '*how governments and public organizations are managed in a society increasingly bound up by technology*' and describes its approach to be about '*Public Administration 3.0*' (BSC MS&T, n.d.). The program is an undergraduate program, that is taught over a three year period and ends with the students obtaining a Bachelor of Science degree. The students are taught in a system of quartiles. During the second year they are able to chose one of two specialization tracks, either in Public Administration or European

Studies, and in the third year they are able to choose electives, such as internships or exchange semesters (BSC MS&T, n.d.). This structure follows the requirements of the Twente Education Model TOM, which is unique to the university. With its explicit focus on technology in its curriculum it is especially interesting to look at dataist perspectives within its curriculum.

3.3. Data Collection & Analysis

This case study follows the approach of triangulation, which means, that data is going to be collected from different sources to ensure validity and a comprehensive overview of the research topic (Mishra & Rasundram, 2017). For this study three different sources of qualitative data are going to be utilized, which are used to answer the four sub questions.

The first source of data are semi structured expert interviews, that were conducted with practitioners of the Management, Society and Technology program, who are involved in the design and evaluation of the program. An expert can be defined as someone with long-time experience in a specific field or context (Mieg & Näf, 2006). These interviews provide a rich insight into the inner workings of the program as well as the personal perspectives of the people that organize and run it. The interview partners were directly contacted based on their position within the program framework and asked to participate. For the interviews an interview guide was used that was based on different selected topics, that the researcher wanted to address. Semi-structured interviews provide a good basis to gain additional information, since it is possible to diverge from the interview guide when new topics come up or new associations are discovered during the interview (Chauncey, 2014). The insights gathered from these interviews are primarily used to answer research questions 1, 2 and 4. The fully transcribed interviews as well as the interview guide can be found in the data appendix.

The second data source comes from a group interview conducted with two students currently enrolled in the MS&T program, that were chosen via convenience sampling. The decision to conduct a group interview instead of one-on-one interviews was made with consideration to the knowledge of the participants. There was the consideration that contrary to the experts, the students may not remember all details about their studies. Therefore, putting multiple people together could result in their individual

knowledge adding together or them even being able to remember more details during a relaxed discussion, instead of being put on the spot in an individual setting. The group discussion was meant to uncover students' perspectives, on how questions of methodology and analysis were handled during their time in the program and if applicable, contrast them with the perspectives of the practitioners to gain a comprehensive overview over the topic. While the turnout for the group discussion has unfortunately not been as high, as the researcher would have wished, the results of the discussion are nevertheless included in the analysis. The answers given are going to be used as supplementary information for all research questions.

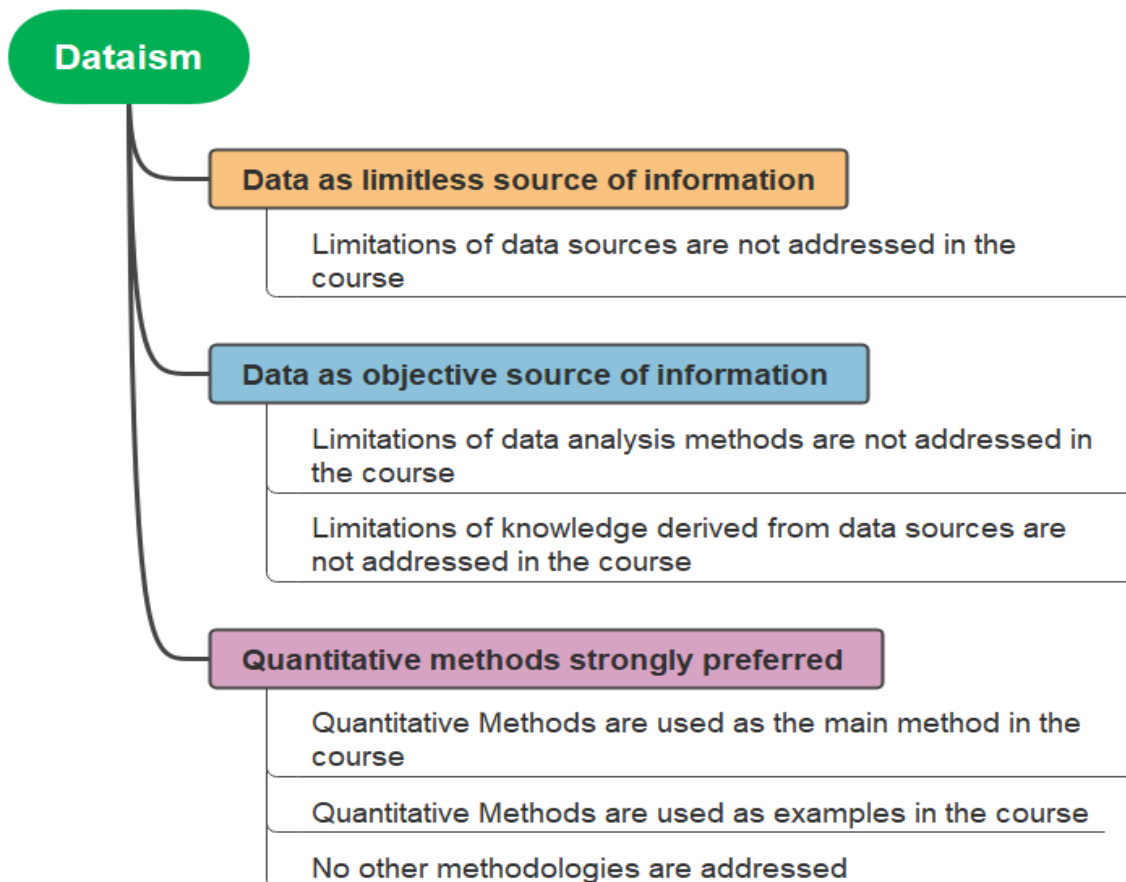
Both the answers from the semi-structured interviews as well as the group discussion are going to be analysed using a thematic analysis approach. A thematic analysis organizes the given data into different themes and helps to uncover ideas, perspectives and topics across multiple qualitative data sources (Braun & Clarke, 2012). This approach is fitting, as it is the intention to compare and contrast as well as identify common overlaps between different respondents to answer the research questions. The thematic analysis was conducted for both interview data sources by first organizing the data into codes. For that an inductive coding procedure was chosen, as it enables the researcher to investigate the data without any previous assumptions (Bingham, 2021). After that, the codes were placed together based on similarities and thematic connection to ultimately form an overarching theme. Using this approach eight themes have been identified within the interview data, that are going to help answer the research questions. The full breakdown of the themes can be found in the data appendix.

The third source of data are textual course materials from the MS&T program. This includes course & module manuals, lecture slides as well as introductory pages on the university platform canvas. These data sources are used to answer research questions 2 and 3, which are concerned with the influence of dataistic perspectives in the program. The chosen course materials give an excellent overview of the contents of each course within the program. It needs to be stated, that not all materials from the courses of the MS&T program could be obtained. Of a total of 45 courses, 33 have been fully analyzed. While this is still the majority of possible cases, it still is possible that the result would look different, if all courses were included in the dataset.

The manuals and introduction pages give an insight into the most important objectives and the structure of the course, while the lecture slides reveal which topics and methods are actually taught. This also makes it possible to determine whether or not the course in question could be considered dataistic. For this purpose, a coding procedure needed to be developed. But this could only be done, with a previous operationalization of the concept of dataism.

An operationalization turns an abstract concept into observations, that can be measured or coded (Potter, 1995). The starting point for the operationalization are the three dimensions of dataism, that have been discussed in the theory chapter, '*Quantitative Methods strongly preferred*', '*Data as objective source of knowledge*' and '*Data as limitless source of knowledge*'. Each of these rather abstract dimensions needs to be broken down into indicators that can be observed in the course materials. The indicators are going to be derived from the discussions completed in the theory chapter. The first dimension "*Quantitative Methods strongly preferred*" cannot simply be measured by observing, whether or not a course mainly uses quantitative methods, as this would equate quantitative methods in general with dataism. Therefore, two other indicators have been added – quantitative methods being also used as examples in the course and other methodologies not being addressed. Only if all three of those indicators can be observed for a course, this single dimension of dataism is present. '*Data as an objective source of information*' also has to be broken down into two indicators. In the theory chapter it has been discussed, that this dimension includes a

Figure 2: The indicators of dataism



tendency to view results of data analysis as objective as well as the methods that are used for gathering it to be accurate. This can be operationalized for the course materials by looking if the limitations of these aspects of data analysis have been addressed or not. And finally, '*Data as limitless source of information*' implies the belief that data sources themselves are limitless in scope and accuracy. An indicator for that would be, in accordance with the indicators for the second dimension, if the limitations of data sources are not addressed. This framework has been followed throughout the entire coding procedure of the course materials. A course is only considered dataistic, if all six indicators are present, as only then all three dimensions are properly represented. The results and codes are going to be presented in the following section. The detailed coding scheme can be found in the data appendix.

4. Analysis

In the following section the results from the analysis of the course materials as well as from the thematic analysis of the interviews are going to be presented. For the sake of a better reading experience the results are going to be broken down according to the sub questions. When citing the interviews, the respondents from the expert interviews will be referred to as A, B and C, whereas the respondents from the group interview are labelled X & Y.

How is the Management, Society & Technology programme organized & run?

The thematic analysis of the expert interviews reveals, that the Twente Education Model is the most influential factor when it comes to the organization of the MS&T program, with the theme appearing a total of 40 times in the data. TOM was introduced in 2013 as a deep rooted change in the curriculum and has been adopted by the program since then (Interview A, p. 5). The change was demanded by the Dutch Ministry of Education under whose oversight the program is. According to B, the demand was made because of financial constraints in the wake of the 2008 financial crisis, which *'required from universities as such to develop their own unique identity and profile'* (Interview B, p.5).

When asked about the concrete changes to the program, which came with TOM, the experts primarily stated, that with the introduction of modules a change in the relationship between colleagues came about. As an illustration C compared the situation to the way that things are done in what they call 'a normal program': *'Basically, what you do is pull together a curriculum and make sure that every teacher contributes to that particular coursework within the curriculum. But when we offer modules, teachers suddenly need to collaborate'* (Interview C, p.7). The program is organized and run by a set of collaboration processes between different stakeholders. The broadest would be the learning objectives, which are cited as the build-up on which basis the decisions about the content of the modules are made (Interview A, p.11). These learning objectives are formulated in a collaborative process, which includes the program director, the program committee and the examination board as stakeholders (Interview A, p.15).

On the module level, the learning objectives guide and influence the development process of the individual components (Interview B, p.13). Within the structure of a

model, three different types of courses need to be organized: theory, research methods and the project (Interview A, p.11). Within the constraints of the module, the module coordinator has the oversight over all of the lectures offered in the module and needs to keep the learning objectives and the continuity with the other modules in mind (Interview B, p.13). But, as B states, (...) *at the same time, a lecturer has the autonomy to organize her course or her module component in line with her own insights* (Interview B, p.13). They state, that there is trust in the competences of the individual lecturers and that the decision to give an assignment and the nature of that assignment lies ultimately with them (Interview B, p.13).

While they do acknowledge the impact, TOM had on the collaboration between stakeholders at the university, C also sees the negatives of such constant processes. They state that TOM *'makes education much more intense (...) than it used to be'*. For them, the transaction costs increased massively (Interview C, p.7) They put forward, that the collaboration processes can be very easily put on hold by a single individual in the committees that just blocks everything, which can be detrimental to academic progress (interview C, p.7).

Next to TOM two other factors have been cited by the experts, as to having an influence on the developments in the program. Two respondents mention the programs identity as a bachelor of science program and its specific technology-focussed dimension. Before TOM was adopted, the program has been described as a broad public administration program with ties to sociology, economics and other subjects, but that the introduction of TOM demanded a stronger focus on technology, which was adopted in form of the MS&T program in 2016 (Interview B, p.5). B further elaborates, that due to the program being a Bachelor of Science program, a certain amount of time in the curriculum needs to be devoted to research methods. *'You will have to teach research methods by law, if you like (...) Because otherwise you don't qualify as a Bachelor of Science program, as they put it* (Interview B, p.5). A validates that view, as they affirm that research methods have always been a central component in the learning objectives of the program (Interview A, p.5).

Interestingly enough, in the student interviews, the position of the program as being technology focussed, did not seem to have had any affect on the study choice of those asked. X even bluntly answered, that they did not even know about that aspect of the program (Interview D, p. 6). Rather factors such as convenience, adventure and the

Universities role as an international university motivated those decisions (Interview D, p. 3, 4).

The other impacting factor is the regulation through the Dutch Ministry of Education. B talked about the ministry not only motivating the change to a larger technology focus, but also regularly inspecting the program (Interview B, p.9). The final influencing factor on the decisions that are made within the program, is the instructors own understanding, of what skills the students should ultimately learn through their lectures. This is an important dimension, because, as previously mentioned, in their role as lecturers on the module level they have autonomy to design their own courses. The experts state that they wish for the development of more abstract skills in students, rather than them knowing about one specific topic or learning one specific skill. According to C, '*A bachelor program trains students to obtain an academic attitude much more than a specialized competence for later*' (Interview C, p.19) Other learning goals for the students, that have been mentioned are critical thinking skills (Interview B, p.17), openness to new experiences and an attitude of life long learning (Interview A, p.33) as well as interdisciplinary skills and '*metacognitive competencies in dealing with flexibility, with insecurity*' (Interview C, p.19). It can be observed, that those individual teaching goals fit into the objectives and goals of the *Education in the 21st century* paradigm.

Overall it can be said that the MS&T program is organized through a system of reoccurring collaborative processes between different stakeholder in and outside the university, which are framed by the structure of the TOM model, legal requirements, the universities technology identity and the personal teaching goals of the instructors.

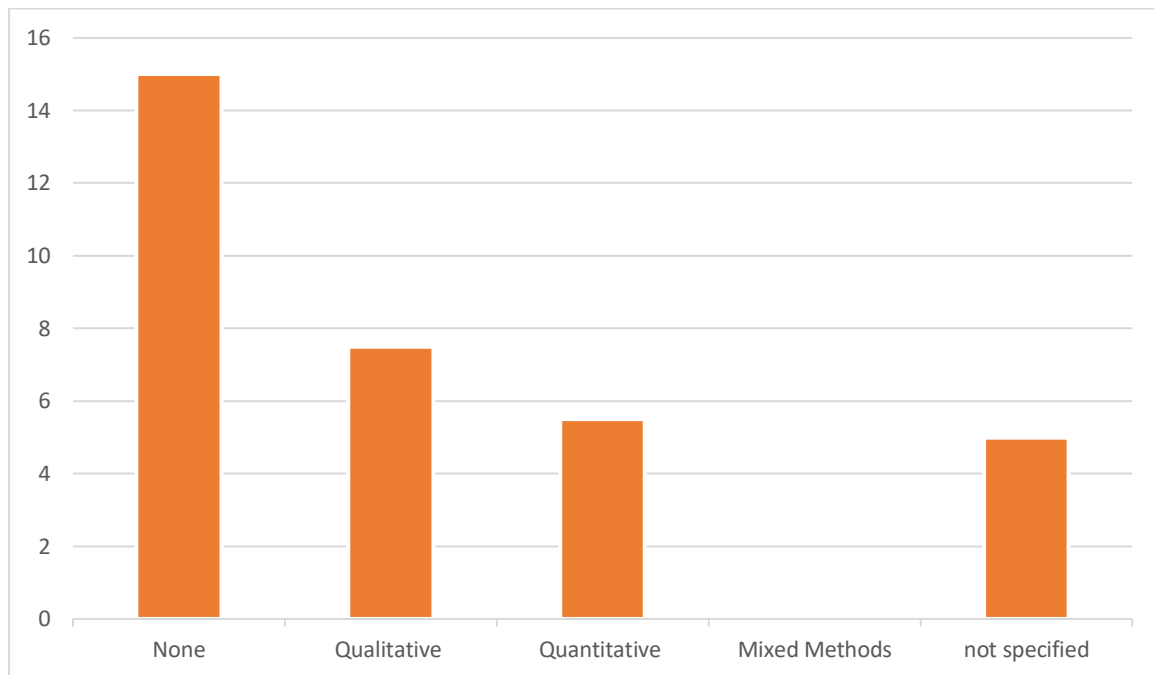
To what extent are dynamics of the paradigm wars reflected in the program?

From the interview answers it can be derived, that all the expert respondents can be described as methodological pluralists. They all employ a view, that indicates that they are open to different methodological approaches and value them equally. A for example states multiple times, that when we think of data analysis there is the tendency to always think about quantitative methods, but qualitative methods are also included in that (Interview A, p. 7). Furthermore, two of the three experts point out, that the motivator for the decision of which methods should be used, should always be the research question and nothing else (Interview A, p. 7, Interview C p.15).

For some of the respondent's methodological pluralist views are connected to a larger attitude towards life in general. *'Sometimes you do have as an individual person a preference for one method or for the other. But, I do think that it is important to realize and to acknowledge towards ourselves the need to keep our view open to what the other possibilities are and also to other paradigms. If we stick with our view as defined at one point in time and we just ignore or fundamentally reject things'*, A can be quoted (Interview A, p. 33). C continues, that using different methods ultimately makes one a different person as they provide one with different perspectives about the world (Interview C, p.19). These viewpoints are consistent with the individual teaching goals the experts stated in the last section.

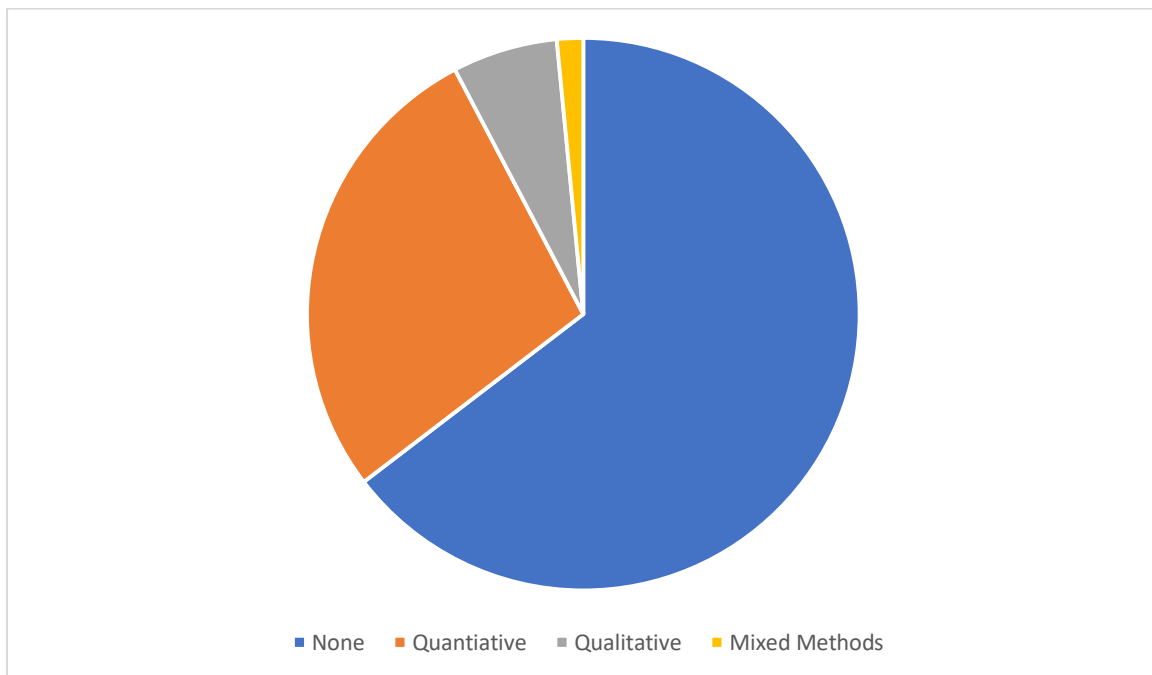
A even goes so far as to say directly, that the paradigm wars have been overcome, stating that *'In my book, the discussion quantity versus quality data sort of rounded off around 1996 with the Book of Sidney and Verba about Multi-method research. But again, sometimes it's just this artificial distinction which for some reason still keeps grounds in academic research'* (Interview A, p.31). Another respondent also adds, that it is their goal to gradually work towards a more mixed methods curriculum (Interview C, p.5). If we now look at the results of the textual analysis, when it comes to the distribution of quantitative and qualitative methods, it can be seen that Figure 3 actually reflects that mindset to an extent. The figure includes all types of courses in the program. Counted as using methods are the main methods courses, theoretical courses, that discuss them and theoretical courses that use them in a graded assignment as well as the projects.

Figure 3: Distribution of main research methods



As can be seen, in the group of the examined courses, the majority do not use research methods at all. But, amongst those, that do, qualitative methods do have a slight advantage over quantitative methods. It is also curious, that even though mixed methods have been cited positively by the experts, no course actually uses mixed methods as its main research method. The predominantly pluralistic viewpoints of the experts as well as the numbers of the textual analysis, indicate, that the program does not have paradigmatic tendencies and, that a sufficient balance between the different methods is provided. This would also refute the assumption from the literature, that quantitative methods are more common than qualitative ones. Nevertheless, it could be insightful, to look into it in more detail, by also considering the number of example studies that are qualitative or quantitative. In Figure 4, it can be observed, that while the majority of courses also do not use empirical studies as examples, that quantitative studies are used much more often, than qualitative ones, with mixed methods, again, being almost not present at all. So, while the relationship between qualitative and quantitative methods appears to be balanced on the main courses, it is rather one-sided, when it comes to supplementary usage of research methods.

Figure 4: Use of example studies in the program



From the interviews it is possible to infer that two of the three respondents nevertheless perceive a slight imbalance between the methodologies in favour of quantitative methods. C explains, that before the introduction of the TOM model the validity of non-statistical analysis approaches was not recognized. They state, that *'there was this very strong tendency (...) that quantitative methodology was the only methodology that was a valid methodology (...) in the Twente perspective of Public Administration'* (Interview C, p.5).

Even though, according to them much more qualitative methods have been added since then, they state later in the interview, that in the year 2021, more quantitative methods have been taught, than they personally would have liked (Interview C, p.). B also makes a similar statement, in *that I would have liked our program to put a little bit more emphasis on qualitative research, but due to all sorts of constraints that appears very difficult* (Interview B, p.17). So, it appears that while considerable improvements have been made to accommodate qualitative research, it is still not viewed as being ideal. A on the other hand showed themselves to be satisfied with the offering of methods in the program (Interview A, p.19).

In the interviews, two reasons have been given, for why the experts perceive the program to struggle with including qualitative methods. The first one would be, that the program itself does not have the capacity to offer methods courses independently and

instead has to rely on the methods department CODE to provide them (Interview B, p.5). And CODE, as C states, is specialized on quantitative methods and *'So if you really want to hire people to teach research methods (...), you are hiring quantitative design specialists here'* (Interview C, p.5). The other reason is, that the curriculum is too small to allow for much more methods courses being added. Qualitative Methods such as Ethnography are not offered, because *'we don't have space for that in our program'* (Interview B, p.17).

But, B continues, that this should not be the aim of the program, as the added methods courses ultimately go to the expense of content based courses, which they perceive as the most important aspect of the program. They state, that their goal was always to keep the methods courses as small as possible (Interview B, p.17). C follows that viewpoint as well in answering that *'what is more important is building an academic perspective (...) using different approaches, than using statistics or whatever'* (Interview C, p. 13) which is again in line with the teaching goals the experts have expressed.

The interviews with the students on the other hand indicate, that they are more interested in getting a practice oriented, frequent methods education. When asked about the methods courses, X criticized that, *'you were supposed to learn all the formulas, which I think is a bit obsolete, because no one in their real job is going to manually use the formulas.'* (Interview D, p.16). Furthermore, both students wish for more practice-focused and most importantly more constant research methods courses (Interview D, p.10, 19).

Contrary to the theoretical assumption, dynamics of the paradigm wars are not reflected in the MS&T program. It is important to note, that a tension is observed by two of the three experts, yet the overwhelmingly methodological pluralists' viewpoints of the practitioners and the balanced distribution of research methods are enough indicators for a healthy balance between the paradigms.

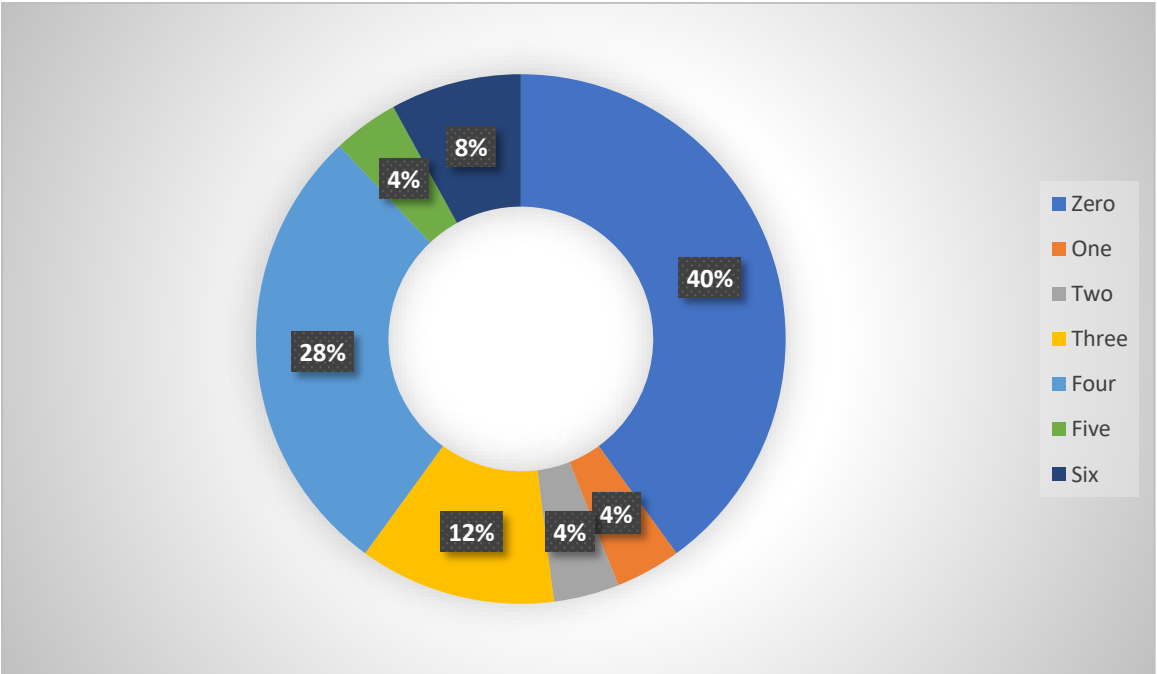
To what extent are dataist perspectives reflected in the curriculum?

To answer this research question, the results of the coding procedure of the course materials have been examined. For this study a total of thirty three courses have been analyzed based on the six indicators established in the methodology chapter. As previously mentioned, these indicators reflect the presence of the three dimensions of dataism and therefore only a course that fulfills all six indicators is going to be considered to reflect dataistic perspectives. While this operationalization accounts for all three dimensions, it nevertheless has some limitations, that need to be addressed before presenting the results. The limitations are connected with the four indicators, that are fulfilled when something does not occur (for example, that no other methods are addressed in the course). This could lead to a situation, where courses count as dataistic or fulfill the criteria of a lot of indicators, despite in reality having very little of the characteristics associated with it. Most vulnerable to this limitation seem courses, that use research methods in form of an assignment or as the main assessment of the course, but apart from that not addressing methods or data in any form because they are focussed on Public administration theory and concepts. In contrast to that, methods course usually deal with data and methods by virtue of being a methods course. The same is the case for the project, where methods are actively applied. Purely theoretical courses, that nevertheless count as using methods, also tend to discuss them in detail during the lectures.

This limitation of the operationalization needs to be kept in mind and could potentially distort the results. To get a better perspective on how much this is actually the case, the results are going to be presented in two steps. In the first part the theoretical courses with practical components are omitted from the results presentation. Furthermore, a graph is going to be presented, which shows the distribution of indicators across courses. In this way it can be seen how many courses have fulfilled how many indicators for dataism. In the second step, the full results are provided together with an updated graph. This allows to easily compare between the two groups and see, if the exclusion of the practice courses actually had an impact on the results.

For the sake of better readability, the results are presented in the order of how many indicators for dataism have been found in the materials of a course. The courses with the lowest numbers of indicators are at the bottom and those with the most are at the top. In the data appendix they will be presented in chronological order. From the table 2 sets of information can be inferred. First of all, that a considerable number of courses do not fulfill any indicator for dataism and secondly, that a total of two courses fulfill all six and can be considered dataistic. Figure 5 also reveals, that courses that fulfill no indicators actually consist of the largest group and that courses that fulfill four indicators make up the second largest group.

Figure 5: Distribution Indicators without practice courses



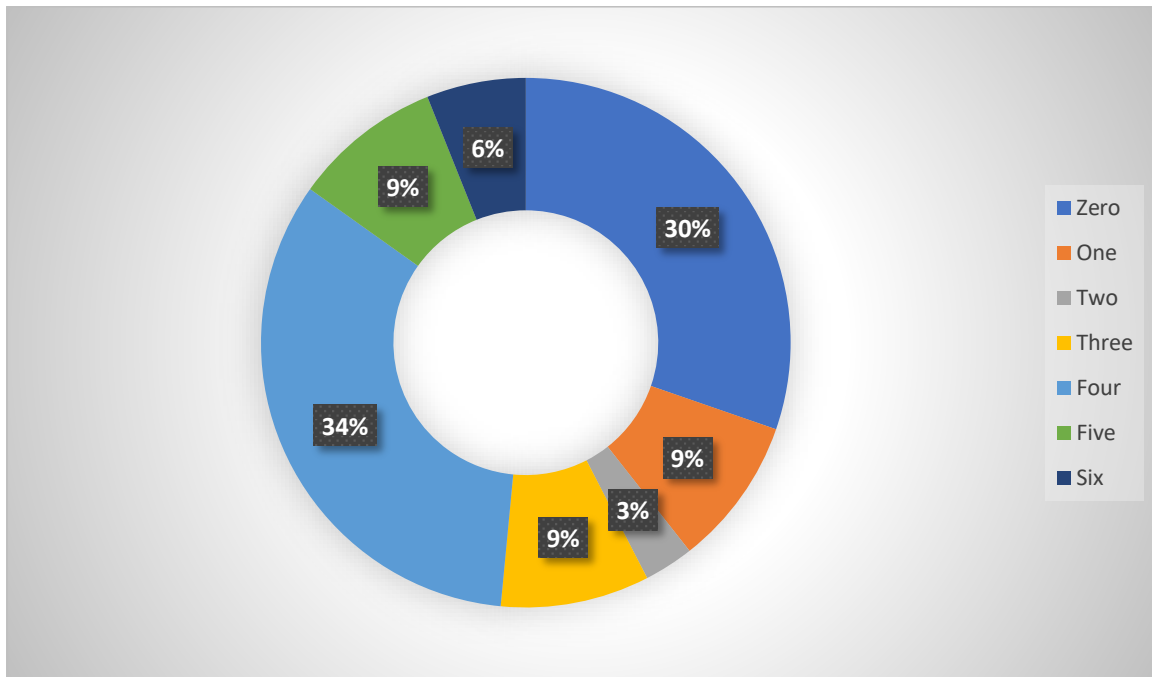
When looking at the full results for dataism now and compare them with the previous findings, it can be seen, that in the distribution of indicators a change occurred. Courses with zero indicators are no longer the largest group, rather they have been overtaken by the courses with four indicators. The number of courses with five indicators has also increased. This would speak for the previously proposed assumptions, that the inclusion of the practice courses would lead to an increase in courses that fulfill a high number of indicators.

Table 2: Results Dataism all courses.

<i>Course Type</i>	<i>Main Research Method</i>	<i>Example Research Method</i>	<i>Other Methodologies addressed</i>	<i>Limitations data results addressed</i>	<i>Limitations data analysis methods addressed</i>	<i>Limitations of Data sources addressed</i>
<i>Method Course</i>	Quantitative	Quantitative				
<i>Content Course</i>	Quantitative	Quantitative				
<i>Content course with practical component</i>	not specified	Quantitative				
<i>Content course with practical component</i>	Qualitative	Quantitative				
<i>Content Course</i>		Quantitative				
<i>Method Course</i>	Quantitative	Quantitative				
<i>Project</i>	Quantitative					
<i>Project</i>	Quantitative					
<i>Content course with practical component</i>	Qualitative	<i>Qualitative</i>				
<i>Content course with practical component</i>	Qualitative					
<i>Content course with practical component</i>	not specified					
<i>Content Course</i>		<i>Quantitative</i>				
<i>Content Course</i>		<i>Quantitative</i>				
<i>Project</i>	not specified					
<i>Project</i>	Qualitative					
<i>Method Course</i>	Qualitative					
<i>Project</i>	Qualitative					
<i>Content Course</i>		<i>Qualitative</i>				
<i>Methods Course</i>	Quantitative, Qualitative	Quantitative, Mixed Methods				
<i>Content course</i>		<i>Quantitative</i>				
<i>Content course with practical component</i>	not specified					
<i>Content course with practical component</i>	not specified					
<i>Content Course</i>						
<i>Content Course</i>						
<i>Content Course</i>						
<i>Content course</i>						
<i>Project</i>						

Interestingly enough though, the result that is ultimately crucial for the answering of the research question is not affected by the increased number of courses included in the results.

Figure 6: Dataism Results with practice courses



Only two courses of a total of either 25 or 33 fulfill all six indicators for dataism. This would correspond in a proportion of either eight or six percent, which both can be considered negligible. Dataist perspectives are ultimately only reflected in a margin of the curriculum of the MS&T program. Therefore, the final theoretical expectation is not reflected in the results of the analysis.

What are the opportunities and challenges of dataist perspectives in Public Administration Sciences?

Now that it has been established that dataistic perspectives are currently not an issue in the MS&T program, the question remains how this could potentially change in the near future. To address this problem, the respondents were asked what they expect the MS&T program to look like in the future. Two of the three experts talked about their perception of datafication processes and what those could mean for the program in the future. A states that *'definitely the role of technology is going to be much higher. Well, the recent developments of generative AI have very significant consequences at a societal level, but also for education'* (Interview A, p. 21). They anticipate that the program will have to adapt to unexpected external events.

What can also be inferred from the interview responses is a wish to have topics of Big Data and AI feature more prominently in the curriculum. Two respondents address how the structure of the program has prevented an implementation of the changes they regarded as necessary. C states that they would have liked to include a data science course but that it has always been difficult to make space in the program for more content (Interview C, p.5). B, on the other hand, explains that plans for the implementation of changes towards more big data centric methods education were delayed. They emphasize that there were plans to introduce it together with the more technology-focussed curriculum in 2016. (Interview B, p. 7). The respondent explains that there are two reasons why data analytics are not yet part of the curriculum. Firstly, there are disagreements with CODE, whom they claim *'is still very much traditional social sciences based'*. And secondly, experts that could teach data analytics that suit the program are quite rare. Respondent B points out that the program does not need people that just know how to work with the data but rather what they call *'intellectual Public Administration scholars'* that *'include the critical reflection of new data analysis methods'* (Interview B, p.7). Nevertheless, they are confident that the program will ultimately succeed in hiring those specialists. Nevertheless, two of three respondents point out that despite the wish to incorporate elements of data analytics into parts of the program, this would only be feasible on an elementary level and not suffice to fully prepare students to handle large datasets competently. As respondent A points out, *'What we need to remember is, that it usually takes time and life and work experience to understand how these things work out'* (Interview A, p.33). Respondent C also

shares this viewpoint, stating that *'to become fully, let's say, competent in that field, it requires three years of a bachelor and one year of a master and'* that they do not wish to ruin the formative years of students only to rigorously train them to become data analysts (Interview C, p. 19). It can be inferred from those answers that once again it is seen as much more important for students to obtain general critical thinking skills instead of developing specialized skills on a technical tool.

Finally, A addresses how, in their view, datafication influences science . They point out that technology already has a huge impact on the way that research is conducted and *'that what we would have to consider carefully is to ponder the consequences of (...) big data'* (Interview A, p.25). In connection to that, they talk about the relationship between theory and data and how it has been altered by the recent developments. For them, a problematic pattern emerges, when it comes to interpreting data:

'Well, basically, if you just have a big chunk of data, which you put in and you don't know, what's the structure of the data, what are its characteristics, what are the limitations of the data, to what extent are data complete or not. You don't know what is in. You can't rely automatically on whatever the machine says, because you don't know what you put in.' (Interview A, p.27)

This quote reflects one of the dimensions of dataism – data as a limitless source of knowledge – and actively refutes it, while also recognizing, that it is already a type of thinking that has a considerable track record.

Questions of AI, Big Data and datafication appear to be very much on the mind of the experts from the MS&T program. Datafication processes are recognized as to having an enormous impact on society, as they are deemed important enough to attempt to introduce to the program, a program that has struggled with making space for new content. Yet, while the necessity of teaching data analytic is recognized, the respondents still explain their motivation in line with their overarching learning goals of wanting to give students critical reflection skills. A blind rush towards employing datafication like by people driven by the data-driven public administration paradigm can therefore not be inferred. As challenges dynamics of dataism have been recognized as already existing problems, that need to be tackled.

5. Conclusion

In this exploratory case study the main research question ‘How are dataist perspectives influencing education in the Management, Society and Technology program?’ was investigated. The goal was to (a) provide an operationalization for the concept of dataism, (b) apply it to the curriculum of the program and (c) put the results into context together with insights derived from expert interviews and a group discussion.

The analysis of the course materials revealed, that dataist perspectives are only present in a minimal number of courses, refuting the expectations from the theory. Enriched by the conducting of the expert interviews a few possible explanations for the minimal role of dataist perspectives could be worked out. First of all, one of the most important indicators for dataism, a strongly paradigmatic view of methodology in favour of quantitative research, is not reflected in the viewpoints presented by the interviewed experts. Secondly, the teaching goals that they formulated for their students also work against the persistence of dataism, as they aim for a critical, academic attitude amongst students that is at odds with dataistic viewpoints, that simply accept the data that is thrown at them for what it is. And thirdly, it is also possible, that the continuous collaboration between university stakeholders could keep dataistic perspectives at bay, as they ensure that a different range of voices and viewpoints are heard and are a breeding ground for critical discussion and necessary conflict.

To summarize and answer the main research question, it can be stated, that dataism has minimal influence in the program, but has the potential to gain momentum within the next decades with the increasing datafication processes in society. The program should be careful to not be swept away by them.

This study has enriched the field by conducting one of the first empirical studies, that studied dataism within a real-life setting as well as uncovering how it operates - or in this case not operates - in the context of higher university education. The study has the strength of truly diving into the underlying dynamics within the program and gather a rich source of information specific to the study program. Furthermore, the results can also be of interest for people outside of the University of Twente, as it provides a first tentative investigation of the issue and it can be inferred that dataistic perspectives are not as common in university education as the theory implies.

Nevertheless, it needs to be kept in mind, that it is not possible to truly generalize the results of the study beyond the boundaries of the MS&T program. The limited number of data sources used cannot serve as a reliable basis for results in other contexts. Especially considering that the Twente Education Model is a unique model, that is specific to the examined case.

Next to the general limitations that have been addressed in the methodology chapter, some other potential weaknesses need to be mentioned. The study is very much examining a moment. The course materials are all for the Bachelor cohort of the year 2023. Therefore it can very much be, that the course materials offered to the younger students already include changes in the curriculum.

For further research, the operationalization of dataism should be reworked & supplemented with further dimensions and applied to other contexts, so that multiple different perspectives can be gathered and observed if the results are consistent. Furthermore, a follow up study at the University of Twente in ten or twenty years would also be interesting, to see how datafication trends have influenced the curriculum then.

While this study ultimately was not able to provide strong proof for the dataistic perspectives in a real-life context, Dataism is not irrelevant or too abstract to be cared about. Rather the continuation of technological development will make it matter, if not today then in the future.

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7. Data Appendix

The Interview Transcripts, detailed coding results and Interview guides are provided in the data appendix.