

# The political economy of the digital age: A literature review on the interaction between citizens, enterprises, and the state

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**ABSTRACT:** Information plays an essential role in state governance. Digital technologies have transformed the process of collecting, utilising and disseminating information in the digital age, leading to changes in state governance and the content of political economy. This paper tries to comprehensively summarise the impact of digital technologies on state governance, with a focus on three questions: First, how does social media influence the relationship between the state and citizens? Second, how do platform companies influence the relationship between the state and businesses? Third, how does the digital government influence the relationship between the state and society? Generally, the existing literature reaches consensus on the following three points: First, although digital technologies enhance citizens' ability to supervise the government, they overall benefit the government by consolidating its power. Second, platform companies have an information advantage that easily places them in a monopolistic position, therefore regulation should be strengthened in order to protect citizens' privacy, promote market competition, and safeguard national security. Third, digital technologies are widely adopted in government departments, but that has also raised concerns among scholars about algorithmic discrimination and the possibility that the government may turn into a digital leviathan. In the concluding section, we put forward four suggestions for the future research.

**KEYWORDS:** State governance; digital age; social media; platform company; political economy

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## 1. Introduction

Information is a critical factor that influences the governance of every organisation. It has been demonstrated by economists that under the condition of information asymmetry, agents might engage in adverse selection, moral hazard, and holdup behaviour, thereby affecting incentive mechanisms, compensation structures, and organisational design (Gibbons and Roberts 2013). Information is equally crucial for state governance. Over the past 30 years, information and communication technologies (ICTs), exemplified by the Internet, have advanced rapidly. Notably, in the last decade, emerging digital technologies such as big data and artificial intelligence (AI) have given rise to the so-called digital economy, ushering humanity into a digital age<sup>1</sup>. 'Knowledge is power', a famous quote of Francis Bacon, has indeed manifested its power in the digital age. State governance, at its core, concerns the generation

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<sup>1</sup> There is no unified definition of the 'digital age' in the academic community. It is usually used to describe the phenomenon that economic activities and social interactions have been increasingly intertwined with digital technologies in the past decade, due to the popularisation of smartphones and the Internet, especially the advancement of big data and artificial intelligence technologies.

and distribution of power, which is also the central focus of the political economy research. Undoubtedly, the collection, use, and dissemination of information in the digital age will generate new dimensions of political economy. Although some papers in economics, political science, and public administration have analysed the impact of digital or information technologies on certain aspects of state governance, such as information control and distribution (Johnson and Acemoglu 2023; Qin, Strömberg, and Wu 2017; Tirole 2021), no survey is found in the economics literature that reviews the overall impact of digital technologies on state governance.

In the digital age, social media, platform enterprises, and the government have emerged as the three primary entities that wield and utilise digital technologies. The use of these digital or information technologies has not only significantly facilitated information collection and analysis by these entities, but has also reshaped the relationships between the state and citizens, the state and businesses, and the state and society. This, in turn, has profoundly altered the patterns and directions of state governance. Therefore, this paper chooses social media, platform enterprises, and the digital government as the primary subjects of study, and summarises the research outcomes in political economy from the perspective of state governance in the digital age before proposing some future research directions. We will focus on three key issues: First, how does social media influence the relationship between the state and citizens? Specifically, does the advent of social media empower citizens to strengthen their supervision of the government, thereby promoting democracy, or does it enhance government suppression of dissent, thus reinforcing government control? Second, how do platform enterprises affect the relationship between the state and businesses? This consists of the questions of how the government can prevent platform enterprises from gaining monopolistic power in the market, and whether the state can tame these colossal ‘second governments’ (Nie 2022) when they evolve into new types of multinationals. Third, how does the digital government impact the relationship between the state and society? The most important question is how to tame the government, a ‘digital leviathan’, when it possesses both information and power. We argue that how to address these three major issues is not only a critical focus of political economy<sup>2</sup> in the digital age but also significantly determines the performance of state governance.<sup>3</sup> Therefore, this study has both academic value and practical significance.

## **2. Social media and the relationship between the state and citizens**

### ***2.1. Social media and information control***

Social media can be employed both to consolidate government power and to express dissent, leading to debates over whether it ultimately weakens or strengthens government control (Shirky 2011). The recent developments in digital technologies such as big data and AI have intensified these debates, as these technologies may enhance the government’s ability to use social media to serve its own interests (Qin, Strömberg, and Wu 2024). In fact, oligarchies, democratic majorities, private platforms, and religious or other social organisations can all use social media for the purpose of social control, potentially exerting

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<sup>2</sup> ‘Political economy’ is a broad term. In this paper, however, we primarily analyse the interactions between the state and citizens or enterprises in the digital age, or in other words, how to explain and resolve the conflicts between them, instead of analysing all non-market phenomena.

<sup>3</sup> Due to space limitations, this paper does not discuss how digital technologies affect income distribution, as that is not directly related to state governance.

a profound influence on societal structures. Therefore, the emergence of digital technologies has caused a common problem for all countries: Is social media an instrument for citizens to oversee the government, or a tool for the government to strengthen control?

Opinions among scholars diverge on this issue. Some argue that social media weakens government control because the emergence of digital or information technologies reduces the cost of collective action for citizens and enhances their ability to oversee the government (Qin, Strömberg, and Wu 2017). However, more studies suggest that social media strengthens government control for the following reasons. Firstly, information and digital technology advances enable the government to adopt new media control strategies (Qin, Strömberg, and Wu 2024). Social media retains the traditional media's function of information dissemination, and the development of information and digital technologies makes it possible to control news exposure on social media. News exposure on social media influences participants' news consumption behaviour, which in turn shapes their political opinions (Levy 2021). Secondly, recent advances in automated text analysis, machine learning, and high-performance computing have significantly reduced the costs of identifying key users and censoring information (Edmond 2013). The government can use these technologies to track and analyse online activities, gauge the public opinion, and mitigate potential risks (Edmond 2013). Finally, surveillance technologies and information technologies are complementary. The public sector can use advanced surveillance technologies to monitor people's behaviour while allowing free social media to collect information without fearing widespread protests. The feasibility of this strategy depends on the complementary relationship between online information and online actions (Qin, Strömberg, and Wu 2024). By 2018, over 30 countries had deployed digital monitoring tools, and this number is still rapidly increasing (Beraja et al. 2023).

In order to comprehensively examine the impact of information technologies on state governance, Tirole (2021) constructs a theoretical model of information control, and points out that social organisations with the ability to control information can achieve social control by binding agents' political, organisational, or religious attitudes to their social ratings. Furthermore, Tirole analyses the effect of the strength of social ties on the effectiveness of this control. When there are weak ties among citizens, the method of information control mentioned above enhances individuals' concern for their reputation, thereby promoting prosocial behaviour. However, in societies with strong ties, although the effect of information control still exists, the connections between individuals weaken the influence of social ratings on reputation, leading to a relatively weaker effect of information control in strongly connected societies.

## ***2.2. The impact of social media on the government–citizen interaction***

### ***2.2.1. The interaction between the government and citizens***

With the development of digital technologies, social media has emerged as a new channel for government information dissemination, and has been recognised as a technological innovation within the public sector (Mergel 2013). Unlike traditional e-government websites, which primarily facilitate one-way information dissemination with citizens passively receiving information, social media introduces the possibility for interactive, two-way communication (Mergel 2016). This change makes it possible for the government to incorporate citizens' information and opinions into the decision-making process (Mergel 2013). However, it remains a critical question whether the evolution of social media and the application

of digital technologies genuinely empower the public to influence policy formulation through such interactions with the government.

Scholars are divided on this issue. Some argue that social media enhances civic engagement, increases the responsiveness of public institutions, and fosters greater transparency and equity in decision-making processes (Bimber 1998). And Mergel (2016) identifies three significant transformations in governance resulting from the application of digital technologies and social media. First, social media has heightened government transparency and boosted public participation, as information disclosure by the government can build public trust. Second, the growth of social media has promoted collaboration and innovation within government agencies and between the government and other social organisations. Cross-departmental and cross-institutional cooperation enhances efficiency and innovation capacity. Finally, social media has streamlined communication between the government and the public, which helps facilitate government response.

Some other researches are concerned with the problem of 'echo chamber' or 'filter bubble'. 'Echo chamber' describes a phenomenon in which a bounded, closed media space potentially amplifies the information being transmitted within it while isolating that information from any counterarguments (Jamieson and Cappella 2008). And 'filter bubble' refers to the personalisation of recommendations by search engines and social media, which creates a unique information world for each of us (Pariser 2011). Sunstein (2018; 2001) points out that the 'echo chamber' or 'filter bubble' caused by social media will prevent people from understanding perspectives different from their own, which might contribute to polarisation and cause significant political impact. Existing research indicates that social media does indeed make it more likely for people to encounter information that aligns with their political views (Arguedas et al. 2022). Gentzkow and Shapiro (2011) conduct an empirical study on this issue. They use survey data to calculate online and offline isolation indices and find that there is indeed an echo chamber effect for online news sources. Furthermore, the isolation resulting from online news consumption is comparable to that from offline news consumption. However, there is no consensus yet on whether this echo chamber effect exacerbates political polarisation (Zhuravskaya, Petrova, and Enikolopov 2020). Boxell, Gentzkow, and Shapiro (2017) use survey data of voters in the United States to study trends in political polarisation. Their findings show that the increase in polarisation is most pronounced among demographic groups least likely to use the internet and social media, which does not support the hypothesis that social media exacerbates political polarisation. While Fletcher, Kalogeropoulos, and Nielsen (2023) use survey data from seven countries including Austria, Denmark, Germany, Norway, Spain, the United Kingdom, and the United States to evaluate the ideological tendencies of media audiences based on whether they obtain information from a single news source. The results show that among the seven countries, the United States has the highest degree of polarisation, where over 10% of the respondents rely solely on partisan news sources. The United Kingdom has the lowest degree of polarisation, where 2% of the respondents are found in the left-leaning echo chamber and 5% in the right-leaning echo chamber.

Also, some scholars discuss to what extent the development of social media and the application of digital technologies can genuinely benefit underrepresented groups and effectively drive policy change (Chadwick and May 2003; Lindner and Riehm 2011). The development of social media has indeed amplified the voice of the common people (Bartlett 2015), but the probability of polarisation caused by

the echo chamber effect also brings the concern about the damage to democracy, such as the potential rise of populism due to ‘populist policy capture’ (Acemoglu, Egorov, and Sonin 2013). The social media era has increased ordinary citizens’ access to media and lowered their search costs. As a result, as noted by Campante, Durante, and Sobbrío (2018), new political parties or grassroots movements might leverage the internet and new technologies to attract disillusioned voters, thereby altering their political influence. In this way, social media allows marginalised groups to escape from the ‘response trap’ in the process of policy making, but it may also lead to a shift in public policy from one extreme, elitism, to the other, populism (Gui, Nie, and Wu 2023).

### *2.2.2. Citizens’ political participation*

Citizens can influence policy-making through various forms of political participation, including voting, protesting, and engaging in political discussions (Campante, Durante, and Sobbrío 2018; Zhuravskaya, Petrova, and Enikolopov 2020). There is growing scholarly interest in understanding how the development of social media and the application of digital technologies impact these forms of political engagement.

Prat (2018) analyses the influence of media organisations on voters’ behaviour. The study shows that if the media outcome is unbiased, voters are more likely to select the candidate based on their actual preferences when the sources of media information become virtually infinite. However, when voters have limited attention bandwidth, media organisations can sway voter decisions through selective reporting, thereby making the election outcome benefit a specific candidate. This study also highlights how the competition and cooperation among media owners can further impact electoral results.

Many researchers also explore the effect of social media and digital technologies on protest activities and government repression. Some studies show that the advent of digital and communication technologies has significantly increased the possibility of protests (Christensen and Garfias 2018; Enikolopov, Makarin, and Petrova 2020; Manacorda and Tesei 2020; Qin, Strömberg, and Wu 2024). The mechanisms of this influence are diverse. Firstly, the development of digital and communication technologies, as well as social media, has reduced the coordination costs for the public, making it easier to overcome the collective action dilemma (Christensen and Garfias 2018; Enikolopov, Makarin, and Petrova 2020; Manacorda and Tesei 2020). Moreover, the impact of digital technologies on protests is influenced by the stage of economic development. For example, Manacorda and Tesei (2020) find that mobile phone technologies significantly boost protest activity, particularly during periods of economic downturns. In addition, the role of social media in facilitating information dissemination is well-documented, though its effectiveness in promoting protests via enhanced information flow remains contested. For instance, Enikolopov, Makarin, and Petrova (2020) use the Russian data to analyse this issue and find no evidence to support the opinion that social media enhances information transmission. In contrast, Manacorda and Tesei (2020) demonstrate that digital communication technologies do facilitate political mobilisation by improving information flow in Africa. Finally, Christensen and Garfias (2018) argue that the ease of information dissemination through digital technologies makes governments more cautious in deploying repressive measures, because this kind of actions may provoke greater public outrage and larger protests.

Social media and digital technologies also play a significant role in shaping citizens’ political discussions. Levy (2021) conducts a field experiment on Facebook to assess how news exposure on

social media influences participants' news consumption behaviour and changes in political opinions. The study finds that changes in the news content people encounter on social media influence their news choices. Furthermore, exposure to news with opposing viewpoints can reduce negative perceptions of political parties with differing stances. It is also found that the algorithmic design of platforms tends to limit people's exposure to opposing views, which might contribute to ideological polarisation.

### *2.2.3. Government response*

The government can address the challenges posed by public political participation by providing institutionalised channels for citizen engagement and implementing information control measures. The application of digital technologies has provided necessary tools for the government to refine the institutionalised channels, strengthen information control, and enhance their digital surveillance capabilities. Scholars try to explore the impact of the development of digital technologies and governmental control strategies.

Different scholars have different views on the social impact of government-provided institutional channels for public participation. The traditional view is that providing institutionalised participation channels for citizens can reduce non-institutionalised protest behaviour. For example, Chen, Pan, and Xu (2016) use the online field experiment to measure the government's response to citizens' social welfare demand, and find that preventing collective action is an important incentive for local governments to respond to residents. However, some scholars believe that institutionalised and non-institutionalised channels do not act as substitutes. Zheng and Meng (2021) analyse the relationship between government responsiveness and social protests in China, using extensive data on citizen complaints and local government response from the national online platform Leaders' Message Board on People's Daily Online since 2008. Their study suggests that institutionalised and non-institutionalised channels act as complements. Enhancing government responsiveness does not necessarily diminish social protests; on the contrary, it can lead to increased social unrest by raising citizens' awareness of their rights and lowering their expectations of government countermeasures. This finding is significant for understanding the resilience of citizen participation.

In the era of traditional media, the existence of biases provided the government with the possibility to control information, and the rise of social media has made it possible for the government to implement information control through media censorship. Though media censorship has always been a target of criticism, Chen and Yang (2019) argue that it can indeed help maintain political stability and foster public trust in the government. Through an analysis of the data from Sina Weibo, Qin, Strömberg, and Wu (2017) demonstrate that social media can serve as an effective tool for identifying corruption. Both the government and social media users benefit from the efforts to combat local corruption and the abuse of power by local officials. In China, social media has played a constructive role in public affairs by enhancing the public's access to information, facilitating participation in public debates, coordinating collective action, and addressing local issues.

### **3. Platform enterprises and the relationship between the state and businesses**

#### ***3.1. Platform power and government–business relations***

Digital platforms are defined as a collection of digital resources that enable value-creating interactions between external producers and consumers (Parker 2016)<sup>4</sup>. In the digital age, information is power. Platform enterprises may possess significant informational advantages over governments, functioning even as ‘second governments’ (Nie 2022). Culpepper and Thelen (2020) describe the political influence wielded by certain platform companies as ‘platform power’. The relationship between platforms and governments has also become increasingly complex, and the international influence of digital enterprises cannot be overlooked.

This relationship involves competition, collusion, and collaboration. In competitive scenarios, technology platforms attempt to leverage their vast user bases and market dominance to influence policy and regulatory decisions, and governments use legislation and regulatory measures to protect national and public interests. For instance, on 25 February 2021, the Australian Parliament passed a law mandating tech platforms, such as Google, to pay for using Australian news. Despite the fact that Google threatened to withdraw services from Australia, a compromise was eventually reached. This event highlights the complex dynamics between global tech platforms and national governments.

In instances of collusion, platforms and political entities may exploit data and technologies to sway the public opinion for specific political objectives. In 2013, Edward Snowden revealed that some digital platform companies colluded with state intelligence agencies to condone illegal access to citizens’ privacy. It triggered an international eruption of loathing towards surveillance capitalists. The leaders of tech giants such as Google have publicly apologized for this (Zuboff 2019).

The collaboration between platforms and governments means that the two parties negotiate with each other and reach mutually beneficial agreements. In 2020, the European Union partnered with tech giants like Google to combat the spread of fake news and misinformation. This agreement required these platforms to enhance news moderation, reduce the dissemination of misleading information, and improve transparency and reliability. This event showcases a collaborative effort to tackle global challenges. The complex and evolving relationship between platforms and governments not only shapes the dissemination of and access to information, but also profoundly impacts the development and governance of the global digital economy.

The international influence of digital enterprises is also increasingly significant. On the one hand, many digital firms provide products or services across borders via the global internet, posing challenges to traditional tariff systems, regulatory frameworks, and ideological controls. On the other hand, as noted by Culpepper (2015), even though many scholars pay attention to the power of great nations, they often overlook how the structure of global capitalism allows large corporations to become key political actors on the international stage. Future research may focus more on agents, including states and large corporations, as central political actors, rather than simply demonstrate how the capitalist structure uniformly benefits all business entities over non-business actors.

Understanding the origins of platform power is vital for analysing the relationship between platforms and governments. Companies with platform power derive their influence not from policymakers but from

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<sup>4</sup> To avoid repetition, the platforms we are discussing here do not include social media platforms mentioned earlier, such as Facebook, but rather refer to platform companies like Google and Amazon.

user endorsement (Culpepper and Thelen 2020). This power is closely linked to a company's economic scale, and achieved by providing goods, services, and information to an expanding consumer base (Culpepper and Thelen 2020). A well-designed digital platform can attract complementors, forming an organisational ecosystem that operates through the platform and its users to create value (Gawer and Cusumano 2014). Firstly, successful platforms grow by attracting users and service providers, generating network effects that often result in a 'winner takes all (or most)' outcome. Secondly, users may develop path dependency, leading to lock-in effects that make switching platforms difficult (Tiwana 2013). And finally, successful platforms benefit from the long-tail market, where abundant complementors provide users with a wide array of choices (Brynjolfsson, Hu, and Smith 2010). The owner of a successful platform gains considerable power in its relationship with users (Kenney, Serhan, and Trystram 2020).

Understanding the sources of platform power can reveal its vulnerabilities and provide leverage for regulating this power. Culpepper and Thelen (2020) assert that platform power resides in companies with significant economic scale, and these companies benefit from the respect of policymakers, not through lobbying, campaign contributions, or the threat of divestment, but through consumer acquiescence. Consumers themselves can become a potent force against regulatory threats to platforms. The relationship between platforms and users can be either allied or adversarial. When users act as consumers, a strong alliance forms, empowering platforms to resist regulation. However, incidents such as privacy breaches can disrupt this alliance, prompting users to recognise their role as citizens and oppose platforms. Such events provide opportunities to dismantle the platform–consumer alliance. The regulation of platforms primarily focusses on two aspects: antitrust regulation and data regulation.

### ***3.2. Antitrust regulation and platform organisation design***

The market dominance of large enterprises, particularly in the digital platform sector, has generated significant concerns with their competitive practices and influence over markets. On the one hand, the network effect and the economies of scale often result in oligopolistic or monopolistic markets, creating substantial entry barriers for new competitors. Tirole (2023a) highlights that platform companies achieve market dominance through the network effect and the economies of scale, raising issues related to monopolistic behaviour, such as high prices, diminished innovation, and the potential abuse of dominant positions against emerging competitors. On the other hand, platforms will generate vast amounts of data that can be analysed, leading to the possibility of power shifting towards entities capable of extracting value from such data (Kenney, Serhan, and Trystram 2020). The organisation and ownership of the data, as well as the beneficiaries of digital platform adoption, have become critical areas of focus (Wang and Dai 2024). Consequently, many scholars and policymakers advocate for regulating large tech platforms and implementing more rigorous antitrust measures.

To enhance market competitiveness and equity, various countries and regions have introduced relevant policies (Tirole 2023a). For instance, the European Union's Digital Markets Act (DMA) introduces a series of regulations intended to establish a stable regulatory environment for the fast-evolving digital market. However, challenges remain in adapting regulations to emerging technologies and business models, including AI and blockchain (Tirole 2023). Vergne (2020) explores antitrust considerations within the context of these new technologies. He uncovers a causal link among a platform's core technologies, the organisational structure of platforms, and the growth patterns of digital platforms,



where the core technologies including blockchain and machine learning and the organisational structure can be either decentralised or distributed. He suggests that the antitrust policy should refocus its analytical and regulatory efforts from the corporate to the data level. Vergne (2020) argues that the understanding of how digital platforms grow and accumulate market power requires distinguishing between decentralised and distributed organisations. While decentralised organisations decentralise authority and communication within the organisation, distributed organisations decentralise decision-making processes. Blockchain and machine learning represent two pivotal data-processing technologies for digital platforms: blockchain enables platforms to be both decentralised and distributed, exemplified by Bitcoin and MakerDAO, while machine learning favours centralised communication and decision-making, as seen in companies like Amazon and Tencent Holdings.

### ***3.3. Data regulation and data ownership***

AI's rapid development enables platforms to better understand user information, thereby providing more precise services to users (Varian 2019). However, it also raises concerns over issues such as privacy invasion (Cheng, Varshney, and Liu 2021) and the manipulation of user behaviour (Cohen 2019). The use of data by companies or social organisations to manipulate consumer behaviour can have considerable negative consequences.

On one hand, firms manipulating consumer behaviour through data can disrupt market competition and distort consumer welfare. Acemoglu et al. (2023) construct an AI-driven model of online behaviour manipulation to analyse this issue. The platform dynamically offers one of  $n$  products to users, allowing them to gradually learn about product quality. The users' learning depends on the product's 'glossiness', which refers to attributes that make the product appear more attractive than it actually is. AI tools enable platforms to learn about glossiness and engage in behaviour manipulation. This research shows that when glossiness is present in the short term, AI benefits consumers; but when glossiness persists in the long term, users suffer welfare losses due to behaviour manipulation. In addition, as the number of products increases, the platform can reinforce behaviour manipulation by presenting more low-quality but glossy products.

On the other hand, the use of user data by social organisations for behaviour manipulation can lead to issues of social polarisation and division. As personal data become increasingly digitised, individuals of all ages are frequently exposed to privacy vulnerabilities, such as data breaches, data security losses, and cyberbullying (Turel, Qahri-Saremi, and Vaghefi 2021). Tirole (2023b) constructs a social behaviour framework concerning 'safe spaces' to analyse the manipulation of citizen behaviour by digital technologies from a social behaviour perspective. This research emphasises the importance of privacy. Safe spaces refer to environments where individuals can share their behaviour with like-minded people without being discovered by groups holding different opinions. The research shows that safe spaces can act as both sanctuaries for individuals and as tribes that reinforce group identity. These spaces can lead to social division and polarisation, causing individuals to behave more aggressively within these spaces, which in turn exacerbates greater social division. Therefore, from either an economic or a social development perspective, information transparency is not always beneficial, as it may distort individual behaviour. Obviously, the protection of data and privacy is particularly important.

Given the increasing importance of data and digital assets in the global economy and politics, some scholars are calling for governments to enhance regulation and oversight. They emphasise the need for

measures to strengthen the protection of personal data and privacy. Additionally, they advocate for limiting the power of large tech companies in controlling markets and acquiring competitors (Muldoon 2022). Many countries and regions have also introduced relevant policies, such as the European Union's General Data Protection Regulation (GDPR), which emphasises personal privacy and data protection problems. In addition to strengthening regulation over digital enterprises, some researchers explore the problem on data regulation from the perspective of ownership and control of digital assets, and analyse how to use digital technologies to empower citizens. Muldoon (2022) points out that there are two reform plans to democratise the digital economy: data ownership democracy and digital socialism. Data ownership democracy is a political-economic system characterised by the broad distribution of data capital among citizens. This system draws on the tradition of property-owning democracy and existing empirical approaches, combining some municipally owned digital infrastructure and collective data ownership with personal data to empower individuals in the digital realm. This allows the public to better control their data and better utilise the value created by the data. Digital socialism describes a form of social (or collective) ownership of organisations and productive assets in the digital economy, aiming to curb the dominance of tech companies and achieve public control over digital services. In digital socialism, the means of production of digital services are socially owned, while the development direction of individual enterprises can still be decided by all of their employees. It aims to end the exploitation of workers and users while addressing the significant wealth inequality in the digital economy. Unlike the liberal approach (regulating data markets to protect individual rights), both systems emphasise collective ownership, wealth redistribution, and participatory mechanisms to ensure greater public control over their digital lives (Muldoon 2022).

## **4. The digital government and the relationship between the state and society**

### ***4.1. The application of digital technologies in the public sector***

Digital technologies, such as blockchain, big data, e-government platforms, and AI, have subtly and profoundly influenced our daily lives and social structures (Busuioc 2021). The blockchain technology, through distributed ledgers, offers governments new opportunities to enhance transparency, prevent fraud, and build trust in the public sector (Batubara, Ubacht, and Janssen 2018). Ølnes, Ubacht, and Janssen (2017) examine the blockchain technology application and highlight its impact on fostering innovation and transformation in government processes. They emphasise that to fully realise the potential benefits of blockchain, a well-structured governance mode is crucial. Governments can adopt the blockchain technology in a demand-driven approach, and adjust administrative processes and introduce governance frameworks to achieve its full potential.

Al-Sai and Abualigah (2017) point out that big data can provide powerful tools for the government to drive digital transformation, enhance citizen participation, improve service quality, and foster government innovation. They state that the government can utilise big data to analyse user behaviour on social networks, including their browsing, click and purchase histories, to help the government understand citizens' habits and interests and predict their needs, thereby providing personalised services and improving the efficiency of public services.

Jiang, Meng, and Zhang (2019) analyse the social impact of increased online participation among Chinese citizens, using the shock from the implementation of an e-participation platform by China's

government in 2008. Their findings suggest that online citizen participation has made the government pay more attention to social welfare policies and expand the coverage of minimum subsistence allowances. These results underscore the potential of online participation as a significant mechanism for enhancing governance quality.

AI-based decision-making is considered fairer and less discriminatory compared to human decision-making because it is not influenced by personal subjectivity. AI is widely used in high-risk areas such as recruitment, education, law enforcement (e.g. policing), and the judiciary (e.g. bail and sentencing) (Busuioc 2021). Busuioc (2021) finds that police violence in compliance with AI recommendations is more likely to be accepted by the public, as the actions are driven not by individual attitudes and biases but by algorithm-supported decision-making.

#### ***4.2. The impact of the government's application of digital technologies***

The government's application of digital technologies can impact corporate innovation. Beraja, Yang, and Yuchtman (2023) use data on the Chinese government's AI procurement and demonstrate that the government's demand for digital technologies drives technological innovation in related companies. This innovation not only meets the needs of the government but also promotes the development of the commercial market, while enhancing the export potential of these technologies. This innovation is possible because through public security procurement contracts, the government provides vast amounts of data and allows AI companies to access and leverage them, which in turn drives their innovation in the development of commercial AI software (Beraja, Yang, and Yuchtman 2023). Beraja et al. (2023) also find that China's AI technology export can influence other countries' adoption of digital technologies.

The application of digital technologies also affects the governance of officials. In China, digital technologies have also been closely integrated with the governance of officials. Since the 18th National Congress of the Communist Party of China, two significant shifts in official governance have occurred: one is the shift in emphasis from incentives to supervision in terms of governance methods; and the other is the shift in focus from economic development to comprehensive development in terms of assessment content. Li and Nie (2024) develop an organisational economics model to explain the impact of information technologies on the governance mechanisms for officials. They suggest that information and digital technologies have reduced the costs of higher-level governments' supervision over lower-level officials and decreased the information asymmetry between them. This will lead to two changes: on the one hand, the higher-level governments will use supervisory methods more frequently to reduce the incentive costs; on the other hand, the higher-level governments will adopt diversified evaluation indicators rather than merely the economic indicator.

The digital government also has an impact on social ethics and morality. The widespread application of AI algorithms in the public sector also presents several challenges in practice, including problems of accountability, ethics, social acceptance, and algorithmic biases. First, algorithms are applied to high-risk decisions that can significantly impact individuals' lives, which, however, highlights the importance of accountability (Busuioc 2021). The opacity of algorithms allows humans to evade direct responsibility, as these algorithm systems are often automated and their decision-making processes are not transparent, making it challenging to assign blame when algorithms make errors or exhibit biases (Busuioc 2021). Second, the application of AI algorithms has to consider ethical and social acceptance issues. Hohensinn

et al. (2024) explore whether the public's perception of the ethicality of police behaviour changes when police officers follow AI robot recommendations. The study finds that human– robot collaboration in public policing seems to be accepted only to a limited extent. Police violence is unacceptable when a robot supports the action; in contrast, it is perceived as more ethical when the police officer disagrees with the robot's order. Lastly, although algorithms are often promoted as 'neutral', they can amplify historical biases present in the training data, leading to unjust decisions (Busuioc 2021; Khan, Shoaib, and Arledge 2024). Numerous examples prove the existence of algorithmic biases: a proprietary algorithm widely used in the courts of the United States to predict recidivism in bail and sentencing decisions is flagged by ProPublica as biased against Black defendants (Angwin et al. 2016); and the use of facial recognition algorithms in policing may lead to wrongful arrests and discrimination against already marginalised groups (Garvie and Frankle 2016). There is currently an insufficient number of mechanisms in place to monitor and correct errors in AI systems (Busuioc 2021). Actions triggered by incorrect algorithmic predictions can be reintroduced into the training data, reinforcing the original faulty predictions and creating a negative feedback loop (Khan, Shoaib, and Arledge 2024).

#### ***4.3. The concerns over a digital leviathan***

More importantly, there are concerns that the government may use digital technologies to strengthen control over society. Some discuss the possibility of whether the development of digital technologies will lead to the rise of a digital leviathan. The term 'digital leviathan' refers to the state's use of digital technologies to manipulate people's behaviour for the purpose of social control, leading to the erosion of human rights (Langford 2020; Mann and Iazzolino 2021). With the advancement of social networks, AI, and facial recognition technologies, people's concerns about the transparency of their lives have intensified. While these technologies make the prospects of the civil society more promising, excessive information collection poses threats to citizens' human rights (Tirole 2021). By 2018, more than 30 countries (15 of which are regarded as 'authoritarian') had deployed digital surveillance tools, and this number is rapidly increasing. Zuboff (2019) introduces the concept of 'surveillance capitalism' to probe into the global prevalence of the social credit system (SCS). While Xu, Kostka, and Cao (2022) find that public opinion polls in China show that support for the SCS stems from the recognition of its social benefits, while there is limited awareness of its negative effects. It is worth noting that the digital leviathan may exist not only in the form of a government, but also in the form of a large platform enterprise. For example, platform companies like Google can use massive user data and advanced algorithms to monitor user behavior, and even use users as experimental subjects for algorithms, ultimately controlling user information and behavior (Zuboff 2019). This responds to the point mentioned earlier that in the digital age, large platform enterprises may become 'second governments'. How to regulate these platform enterprises has become one of the major challenges for state governance in the digital age.

### **5. Conclusion and suggestions for future research**

Over the past three decades, the world has witnessed remarkable advancements in digital technologies, including the swift rise of social media, platform enterprises, and the digital government, all of which have led to profound transformations. These changes present new challenges for state governance while

also injecting fresh perspectives into traditional political economy research. To better understand the political economy in the digital era, this paper draws on a vast body of economic literature, along with selected works from political science and other disciplines, to analyse the impact of digital technologies on the relationships between the state and citizens, the state and enterprises, and the state and society, focussing on three key actors: social media, platform enterprises, and the digital government. Generally, the existing literature reaches consensus on several points. First, while digital technologies can enhance citizen oversight over the government in specific areas, it predominantly strengthens governmental centralisation. It is important to acknowledge that, to date, the government remains the largest holder of data and information. Second, digital technologies have expanded the scope and depth of government–citizen interactions, but it may also lead to the rise of populist policies. Third, platform enterprises, which have surpassed traditional firms in many ways, now possess greater informational advantages, thereby reinforcing their monopolistic market positions. Fourth, whether it is to protect citizens’ personal privacy, promote market competition, or safeguard national security, the stringent regulation of platform enterprises is imperative. Fifth, the widespread application of digital technologies within government departments raises two core concerns: algorithmic discrimination and the possibility for the government to evolve into a digital leviathan.

There is no doubt that digital technologies, especially those driven by AI, will continue to pose rapid and significant challenges to state governance. While academic research in this area is emerging quickly, theoretical developments still lag behind practical applications. For example, there are few field experiments or large-scale econometric analyses assessing the impact of AI in government settings. Therefore, scholars focussing on state governance in the digital age should feel a sense of urgency. The lack of robust theoretical frameworks could lead to misguidance in practice. Unlike corporate governance, failures in state governance can have severe, even irreversible consequences. Based on the existing literature and China’s extensive practice in digital governance, we believe that the following issues should be prioritised in future research agendas. First, how can we balance the protection of citizens’ personal privacy with the development of social media and platform enterprises? Clearly, overly stringent data protection can impede the effective use of data and stifle platform growth. Therefore, the foremost governance challenge in the digital era is to determine how the government can formulate optimal dynamic regulatory policies tailored to their digital economy’s developmental stage. Second, how can effective forms of democracy be developed through digital technologies? The advent of digital technologies may render the traditional ‘democracy vs. non-democracy’ dichotomy obsolete, as the line between democracy and populism can be perilously thin. In this context, ‘authoritarian’ states as defined by the West may be able to explore viable democratic practices by expanding government–citizen interactions through digital technologies. Third, we need to reconsider the role of platform enterprises as ‘second governments’. As more government and public affairs are outsourced to platforms (for example, Chinese citizens can now pay social security and utility bills via Alipay), should these platforms be regulated as ‘quasi-public enterprises’ that are more than profit-driven entities? Fourth, by drawing on the successes and failures of corporate AI applications, how can governments mitigate algorithmic discrimination and advance citizen equality in their AI implementations?

The digital age is perhaps the closest humanity has ever come to a utopian vision. For a long time, humanity has grappled with two opposing narratives: the utopic narrative and the dystopic narrative (Chatterjee and Sarker 2024). The former embodies an idealistic vision of the future, while the latter

represents a cautionary stance against a potentially dystopian reality. We believe that the interplay of these two forces will guide humanity towards a world that is both intelligent and deeply rooted in rationality and humanity. This dynamic is, we believe, the driving force behind the study of political economy in the digital age.

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