RESEARCH ARTICLE

How Digital Transformation Improve Government Performance: The Mediating Role of Partnering Agility

JIANYING XIAO [1,2], HUI ZHANG [1], AND LIXIN HAN[3]

[1]Research Center of Digital Rural Service, School of Public Policy and Management, China University of Mining and Technology, Xuzhou 221116, China
[2]Research Center for Transition Development and Rural Revitalization of Resource-Based Cities in China, Xuzhou 221116, China
[3]School of Management, Lanzhou University, Lanzhou 730000, China

Corresponding author: Hui Zhang (zhangh@cumt.edu.cn)

ABSTRACT With the rapid development of information and communication technologies, digital transformation has already been underway in various fields around the world. In order to construct digital government and promote the modernization process of national management system and management capability, governments of different Countries have started the digital transition process. Government digital transformation has fascinated many experts and scholars, while there is little literature on the relations between digital transformation and government performance. Combining dynamic capability theory and cooperative agility variables, the analysis framework and corresponding structural equation model were constructed. An empirical study on the impact of digital transformation on government performance was made using systematic review and questionnaire survey materials. The results show that sensing capability, seizing capability, transformation capability and partnering agility have significant positive effects on government performance. Moreover, partnering agility plays a mediating role in the interactions of sensing capability, transformation capability and government performance variables. This paper enriches the research achievements in the field of government digital transformation and provides both theoretical and practical supports for the improvement of government performance.

INDEX TERMS Digital government, digital transformation, dynamic capability, partnering agility, government performance.

I. INTRODUCTION

With the in-depth development of the Fourth Industrial Revolution, human society is increasingly in a digital network where everything is interconnected. The rapid development of digital technologies such as cloud computing, internet of things, blockchain, artificial intelligence and 5G have had wide impacts on politics, economy and society. Various transformations such as government functions and behavior modes are also showing the state of exponential growth [1], [2]. In order to adapt to the development and to enhance the government's capacity of administration and service, local government departments have also started the process of digital transformation. Around the world, governments are launching a digital campaign. It is showed that the government's digital transformation has become an inevitable choice [3]. In terms of concrete concepts, digital transformation means that, with the support of digital technology, the organizational structure, administrative process and public service delivery methods have changed, and the governance mode and function performance of the government have been innovated. Currently, digital transformation development has been seen by governments around the world as a strategic necessity to improve service performance, enhance customer experience, streamline operations and create new business models [4], [5].

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Digital transformation has also received great attention from government and society in China. In terms of top-level design, the "internet plus government services" strategy has been officially confirmed by The State Council in 2016; In 2019, The Fourth Plenary Session of the 19th CPC Central Committee officially mentioned the concept of "digital government" at the central document level for the first time: "To establish and improve the rules on how to administrate using the internet, big data, artificial intelligence and other technical means. To promote digital government building, strengthen data sharing orderly, and protect personal information in accordance with the law". "Digital China" has been put forward in the Fifth Plenary Session of 19th CPC Central Committee in 2020. "We will accelerate the development of a digital economy, a digital society and a digital government, and use digital transformation to drive overall changes in the way of production, life and governance", stated in the state's 14th Five-Year Plan.

In terms of local practice, the pace of digital transformation has been started and corresponding successes have been achieved in some places. For example, "one network to do" construction in Shanghai, "digital government" construction in Guangdong province, "Run once at most" and "City Brain" construction in Zhejiang province and "Guizhou on the Cloud" in Guizhou province. The active exploration of digital transformation by local governments is not only conducive to the improvement of governments' own governance ability, but also helpful for the government functions transformation, meeting the public's political demands for building a service-oriented government. What's more, it is more conducive to promoting the construction of "digital China", improving the comprehensive strength and increasing the contribution of a community with a shared future for mankind: common counsel, common construction and common enjoyment.

In the context of the complex dynamics of the international environment and the increasingly diverse needs of domestic citizens, how to improve the performance of bureaucratic government has become a major issue of concern in academic circles. In an ideal condition, digital transformation will lead to a turnaround in government performance. At present, most studies on the digital transformation of government focus on such issues as: Influencing factors of digital transformation realization approach [6], the impacts of digital transformation [7], local practices [8], problems and troubles experience and inspirations. However, empirical studies to specifically show the effect and mechanism of digital transformation on government performance are inadequate.

This research will focus on and start from the Chinese story trying to find answers to the following crucial questions: what is the impact mechanism of digital transformation on government performance? Digital technology provides more possibilities for cooperation between different departments, but also puts higher requirements on partnering agility. Thus a new question was raised: what role does partnering agility

play in departmental collaboration play in the process of digital transformation promoting government performance? In order to answer questions, this study constructs and empirically tests the impact model of government digital transformation on performance based on the theory of dynamic capabilities. It is structured as follows. Section II reviews the existing research in relevant fields. Section III theoretically explains how to promote the high-quality development of digital government and proposes a model with six hypotheses. Sections IV and V empirically estimate the drivers with data from China and summarize the findings. Section VI discusses the implications and makes a conclusion. The results of this study will not only provide valuable information on the factors influencing government performance and quality development, but also put forward suggestions for other areas where government is undergoing digital transformation, including China.

II. LITERATURE REVIEW

In the dynamic environment of rapid technological development and progress, how to maintain the competitiveness and improve the performance of organizations has become a major issue of sustainable development. Organizations' rapid response to reintegrate and allocate internal and external resources is the key point. In this process, dynamic capability theory will provide important theoretical guidance. There are several definitions of dynamic capabilities in academia. Teece firstly proposed the concept of dynamic capabilities and defined it as: "The ability of an organization to integrate, construct and reconfigure internal and external resources to cope with a rapidly changing environment" [9]. Someone believed that dynamic capabilities are an organizational and strategic practice that can realize new resource allocation in the event of organizational changes [10]. Dynamic capabilities are the ability of an organization to purposefully create, expand or modify its resource base. In 2007, Teece further identifies the three dimensions of dynamic capabilities, which is defined as perception (sensing), fetching (seizing) and transition (transforming) [11]. "Sensing" is used to identify the environment opportunities and risks, "Seizing" refers to organizations mobilizing resources to meet their needs and seize strategic opportunities. "Transformation" means reallocating resources to maintain the continuous updating of the organization. This dimension division has been widely used by scholars.

It is generally believed that dynamic capabilities are an extension of the resource-based view (RBV) [12]. From a static research perspective, the resource-based view holds that an organization could maintain its competitive advantage as long as it possesses irreplaceable rare value resources [13]. But it doesn't explain how organizations respond to changing circumstances. Dynamic capability is emphasized by adjusting the resource base to adapt to changes of the dynamic environment, achieving dynamic optimal match of organization and the environment. At the same time, the dynamic

adaptation is beneficial for organizations to form sustainable competitive advantages in complex dynamic environments [14]. That is more conducive to the development of organizations. Therefore, dynamic capabilities are different from general capabilities in that they are strategic and higher-level capabilities [15]. Since proposed, dynamic capability has attracted attentions of many scholars. Currently, researches on dynamic capabilities mainly focus on influencing factors (organizational resources) [16], organizational culture [17], organizational structure [18], information technology [19], manager's cognition [20], [21], Employee skills [22], [23] and influence effects (organizational performance [24], organizational development as a research topic in strategic management field [25].

In the field of public administration, the research on dynamic capability is mainly reflected in the development of e-government. Firstly, the public sector, represented by the government, has to deal with the rapidly changing environment as well as general organizations, so dynamic capabilities are also very important for the public sectors [26]. Especially in recent years, with the rapid development of information technology, e-government and digital government construction has become the strategic orientation of government development. Klievink and Janssen proposed a five-stage model of e-government to joined up government development, and the development of each stage needs the support of dynamic capabilities [27]. Secondly, dynamic capabilities also play an important role in public value creation [28]. For example, in the establishment of government portal websites and Digital service teams [8], by integrating and redeploying resources, the government facilitates the flow of data and information, which not only improved the efficiency of government, but also met the diverse needs of citizens and created public values. Dynamic capabilities also affect the IT-enabled effectiveness of governments. The more dynamic the government is, the more efficient IT-enabled effectiveness will be [29].

For the government, digital transformation has actually been seen as an administrative reform [30]. Management processes will be redesigned through using information technology [31], which would help governments to deliver public services more effectively [32], screating greater public values. In this process, digital transformation has changed the internal structure and working procedures of the government [33]. Moreover, digital transformation has brought citizens closer to governments. More and more citizens would participate in government activities [34]. It could also boost public satisfaction with the government [35]. The relationship between government and citizens would be affected. The potential for cooperation or joint production between them has been explored [36].

It can be seen that the dynamic integration of internal and external resources is important in the government digital transformation. It is particularly urgent to promote the effective integration of resources, especially the efficient

cooperation with other external organizations and subjects. Current researches have analyzed such issues from the perspectives of dynamic capability and cooperation respectively. In this paper, a more systematic model will be constructed and demonstrated to provide reference materials for countries and regions such as China and other Asian countries, in the digital transformation stage.

III. THEORETICAL ANALYSIS AND HYPOTHESIS
A. THEORETICAL FRAMEWORK
According to dynamic capability theory, dynamic capability is the ability of an organization to integrate, construct and reconfigure internal and external resources in order to cope with the rapidly changing environment. According to Teece, the three dimensions are as follows:

1) SENSING CAPABILITY
Sensing capability is an ability of organizations to sense opportunities and threats, which is related to scanning, creating, learning, and interpreting activities. Facing the increasingly complex internal and external environment, organizations could feel the opportunities and challenges from inside and outside through observation and information collection. Sensing capabilities are analytical systems for organizations to learn, perceive, filter, shape, and calibrate opportunities. By perceiving changes in the environment, filtering thousands of information, and identifying opportunities and dangers, the cognitive load experienced by organizational decision makers could be reduced. This would play a key role in guiding the organization's strategic decisions.

2) SEIZING CAPABILITY
Seizing capability could be understood as an organization's ability to seize opportunities or respond to threats. Teece (2007) pointed out that once a new opportunity or threat is perceived, organizations must respond by providing new products, processes or services [11]. At the same time, building consensus, making effective decisions and investing organizational resources are also effective measures to seize opportunities. In the application of this capability, the organization's business process patterns could be fully planned.

3) TRANSFORMATION CAPABILITY
Transformation capability refers to the ability of an organization to make strategic changes and realize transformation. Sensing and seizing capabilities could help to create and find opportunities. While, to implement the strategy of digital, organizations also need transformation capability, in order to realize the strategic changes [37]. Transformational capabilities require organizations to implement organizational decisions and plans by redesigning business models, realigning resources, and improving organizational practices after sensing and seizing opportunities; to maintain competitiveness and improve organizational performance by reallocating its internal and external resources. Being transformational

means that, an organization has the ability to guide and implement new business processes so that changes could be executed in a timely and effective manner. Transformational capabilities ensure that an organization could respond in a rapidly changing environment by supporting the organization to continuously update its resources and structures strategically [38].

4) ANALYSIS FRAMEWORK

Since it was proposed, dynamic capabilities have been applied and developed by many scholars at home and abroad, and once became one of the active research topics in the field of strategic management. As a strategic measure of local government development, digital transformation plays an important role in building digital government, improving national governance capacity and modernizing governance system. In the process of government digital transformation, the application of digital technology is conducive to building and strengthening dynamic capabilities. Dynamic capability is closely related to organizational strategic change and performance development.

In the implementation process of the construction plan of digital China, the digital transformation not only promotes the dynamic improvement of government departments, but also provides opportunities for their efficient cooperation with other organizations, which provides a double-effect drive for the improvement of government performance. The government digital transformation of China has just started, and the tasks it faces are relatively difficult. From the perspective of system, the paper put forward the analysis framework of this paper with such logic as "dynamic capability-cooperative agility-government performance": Based on the dynamic capability theory, introducing the cooperative agility factor, to explore the impact of digital transformation on government performance, considering the actual situation in China (figure 1).
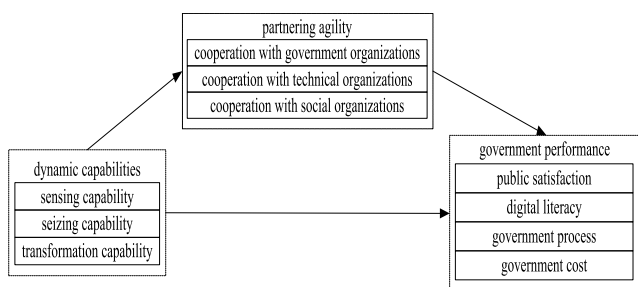

FIGURE 1. Diagram of analysis framework.

B. RESEARCH HYPOTHESES
1) SENSING CAPABILITY AND GOVERNMENT PERFORMANCE

Sensing capability refers to the government's ability to perceive opportunities and threats. This ability is associated with scanning, creating, learning and interpreting activities.

In a rapidly changing environment, Sensing capability could help organizations anticipate the latest digital trends [39]. Previous studies have shown that, with the help of information technology, the government could perceive the changes of internal and external environment and the needs of the citizens it serves [40]. In addition, through new digital devices and channels (such as software platforms, operating systems, network services, etc.), Sensing capabilities could help the government collect information from all aspects [41]. Mergel et al. point out that governments are using technology to deliver public services to perceive and adapt to the changing needs of citizens better [8].

The effects of environmental recognition and information circulation brought by sensing capability provide the basis for the scientific decision-making of government and the improvement of office efficiency. For example, the digital transformation of government could help governments to better detect the real-world's complexity before implementing policies, to discover patterns in the data and improve prediction accuracy and reduce the cost of trends or future events by adopting actor-based computational models combined with large-scale data. This will undoubtedly help the government to reduce administrative costs and improve administrative efficiency. Actually, in the field of strategic management, many studies have confirmed the positive impact of perceived capabilities in dynamic capabilities on organizational performance [42], [43]. Based on the support of the above research results, this study puts forward the following hypotheses.

H1: Sensing ability has a positive effect on government performance.

2) SEIZING CAPABILITY AND GOVERNMEMT PERFORMANCE

Seizing capability refers to the government's ability to seize opportunities or respond to threats, including those activities that help organizations provide new products, technologies and services [11]. Technological change has created new opportunities for the development of the government, and the application of information technology has made the government develop in the direction of openness, transparency, simplification and effectiveness [44]. Studies show that, when sensing the opportunities presented by digital technologies, the government would implement a series of measures to seize the opportunities and achieve strategic change. For example, by strengthening the application of information technology [31] and promoting the construction of infrastructure [45], it would innovate the way of providing public services [46], so as to meet citizens' expectations that the government use new technologies to provide services.

In addition, some scholars found that by adopting digital technology, the government could overcome bureaucracy, enhance the capacity of public organizations and officials, and reduce administrative costs [3]. Researchers found that, strengthening the valuable asset of knowledge management, cultivating the knowledge and skills of staff are conducive to improving the efficiency, capacity, creativity, innovation

and service quality of government. It is believed that, the above measures are conducive to the learning and growth of civil servants themselves, and also conducive to further meet the public needs and improve public satisfaction. In addition, previous studies have confirmed that grasping ability has a positive impact on organizational performance [47]. Based on the above research results, this paper puts forward the second research hypothesis:

H2: Seizing ability has a positive impact on government performance.

3) TRANSFORMATION CAPABILITY AND GOVERNMENT PERFORMANCE

Transformation capability includes the activities of redesigning business model, realigning organizational resources and improving organizational practices, which could help to realize organization's strategy renewal or change. Having the ability to transform means that organizations are able to innovate continuously to achieve the ongoing process of digital transformation [8]. Transformation capability is helpful for organizations to respond to the rapidly changing environment and is the key factor for organizations to realize transformation and gain competitive advantages [39].

In the process of government digital transformation, existing administrative processes, business procedures, organizational structures and public services would be comprehensively redesigned. Research by Gong et al. shows that, the application of digital technologies, such as the implementation of Enterprise Architecture, could strengthen the construction of government information systems and infrastructures, encourage the government to redesign government business processes and service delivery methods, and help the government to create flexibility [4]. Furthermore, it would effectively respond to the changing environment, thereby promoting the sustained and stable development of the government. Through empirical study, Bousdekis and Kardaras found that, readjusting data information resources of government departments and promoting information flow to achieve interoperability among departments are important criteria to measure the success of government digital transformation [48]. These are helpful to avoid "data barrier" and "information island" and are powerful measures to improve the administrative efficiency of governments. In addition, Sousa-Zomer et al. demonstrated the positive effect of digital transformation capability on improving organizational competitiveness and performance through empirical studies [49]. Based on the above research results, the third research hypothesis has been put forward:

H3:Transformation ability has a positive effect on government performance.

4) DYNAMIC CAPABILITIES, PARTNERING AGILITY AND GOVERNMENT PERFORMANCE

Organizational agility is based on the theoretical research of dynamic capabilities, which is considered as a dynamic capability necessary for organizations to operate in a highly dynamic environment [50]. Teece et al. believe that organizational agility could be achieved by using the dynamic capability framework to reduce the occurrence of risks and uncertainties [51]. Organizational agility has been widely used to study the impact on organizational performance [52], [53], [54]. Sambamurthy et al. divide organizational agility into three dimensions: customer agility, operational agility and partnering agility [55]. Combined with the research theme of government digital transformation, this paper selected partnering agility as a mediating variable to specifically study the mediating role of partnering agility in the impact of dynamic capabilities on government performance.

Partnering agility means that organizations explore and take advantage of innovation opportunities by integrating and utilizing relevant resources, assets, knowledge and capabilities of partners [55], which also facilitates organizations to quickly identify suitable partners or modify existing partnerships [56]. Partnering agility emphasizes the interaction between an organization and its partners. Organizations with superior partnering agility benefit a lot from sensing and seizing more opportunities by leveraging the resources of their partners [57]. The governance model of co-production enables governments to provide better public services and meet the expectations of citizens through crowdsourcing. Scupola and Mergel found that government's digital transformation success means having high dynamic capability which helps a lot to the co-production between the government and different stakeholders, such as citizens, enterprises, technology suppliers, NGOs and other government departments. Including different types of stakeholders in the digital transformation process, taking the form of co-development of digital strategies, collaboration with different organizations, co-financing and co-provision of services and data, could improve the quality of government services and create public value [58]. Liu et al. showed that partnering agility is positively correlated with organizational performance, and cooperation with partners would improve the value of organizational products or services, thereby improving organizational performance [57], [59]. It can be seen that by cooperating with other organizations and making use of their technology, knowledge and other resources, the government could play the role of partnering agility to improve government performance. Therefore, this paper proposes the following hypotheses:

H4a: Partnering agility has a positive effect on government performance.

H4b: Sensing capability positively affects partnering agility.

H4c: Seizing capability positively affects partnering agility.

H4d: Transformation capability positively affects partnering agility.

Based on the above theory analysis and hypothesis, the research model of the performance impact relationship of the government's digital transformation is constructed (figure 2).
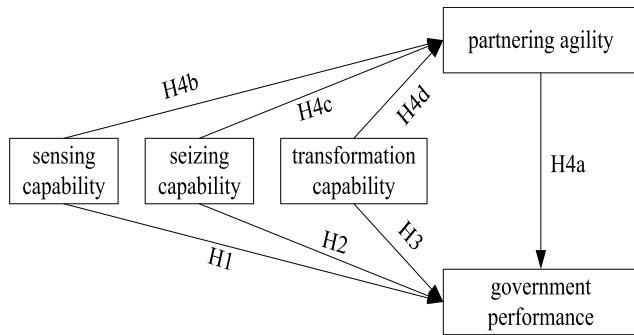
FIGURE 2. The research model of the performance impact relationship of the government's digital transformation.

IV. MATERIALS AND METHODS

A. EMPIRICAL APPROACH

In view of the advantages of structural equation model in the analysis of multiple causal relationships, this paper uses structural equation model method to empirically test the impact of digital transformation on government performance. It includes two models, the measurement model analyzes the relationship between observed variables and latent variables, and the structural model analyzes the relationship between latent variables. In this paper, the hypothesis test of the proposed research model is carried out in combination with the discussion of government performance, digital transformation dynamic capabilities, partnering agility and corresponding observation variables. The relationship between variables is expressed by the following three matrix equations:

Measurement models are

$$X = \Lambda_X \xi + \delta, \tag{1}$$

$$Y = \Lambda_Y \eta + \varepsilon, \tag{2}$$

Structural model is

$$\eta = B\eta + \Gamma\xi + \zeta. \tag{3}$$

In the equation, $\delta, \varepsilon, \zeta$ are the measurement error terms; X represents the latent variable of external derivatives, ξ is the latent variable vector, Λ_X is the component Matrix of X on ξ, representing the relationship between exogenous index and exogenous latent variable; Y represents the inner latent variable, η represents the inner derivative latent variable vector, Λ_Y is the component Matrix of Y on η, representing the relationship between endogenous indicators and endogenous latent variables; Coefficient matrix B describes the interaction between latent variables η, coefficient matrix Γ describes the influence of external latent variables ξ on internal latent variables η.

B. VARIABLE SELECTION

The design of the questionnaire is based on the theoretical hypothesis of dynamic capability, which aims to investigate the dynamic capabilities of governments' digital transformation and analyze the drivers of government preference. The survey subjects are civil servants. The survey contents include: (1) basic information of civil servants, including gender, age, education level and working years; (2) the hypothesis variables, including ① sensing capability (SNC), involving three observation variables, respectively is "can you feel the internal and external environment changes brought about by digital technology (SNC1)"; "can you identify the opportunities and threats posed by digital technology (SNC2)"; "Can you timely grasp the changes in citizen demand information(SNC3)" [60]. ② seizing capability (SIC), involving three observation variables. They are "Government departments have seized the opportunity to strengthen the application of digital technology(SIC1)" "civil servants are encouraged to take part in the study and exercise of digital skills and literacy(SIC2)" "being able to work actively with other organizations (SIC3)" [61]. ③ transformation capability (TC), including three observation variables, "using digital technologies to deliver services to citizens and innovations in business processed (TC1)" "government data sharing, cross-domain collaboration, and resource resetting are realized (TC2)" "New management methods would be Innovated and applied in the future (TC3)" [27]. ④ partnering agility (PA), including "communicating with other departments could enhance the flow of information between governments and reduce information differences (PA1)" "it is possible to technologically innovate the service of government departments by cooperation with technical organizations (PA2)" "it is possible to enlighten new management methods of government departments by cooperation with social organizations (PA3)" [56]. ⑤ government performance (UGP), including "digital government is beneficial to reduce administrative costs (UGP1)" "digital transformation is conducive to increasing public satisfaction (UGP2)" "digital transformation is conducive to improving administrative processes (UGP3)" "digital transformation is conducive to enhancing the digital literacy of civil servants (UGP4)" [62].

C. DATA SOURCE

The data used in the following empirical study is from public servants' survey data and 274 valid questionnaires were collected from Jiangsu Province. Two cities in southern and northern Jiangsu were selected respectively for data collection. Then the effective data collection is sorted out to obtain the preliminary statistical information. Reliability and internal consistency of the samples were tested by the reliability test. Applicability of the samples to the research object was judged. Confirmatory factor analysis (CFA) was used to test the aggregate validity of the scale and the structural validity of the research model. Likert5 scale was used to measure the theoretical variables of dynamic capabilities and government performance.

Table 1 shows demographic profiles of the respondents. There are slightly more males, accounting for 58.4%, considering that male employees pay more attention to such issues. More respondents between ages of 31 and 50 were chosen because they are the main force. More than half of the

TABLE 1. Demographic profiles of the respondents.

Variables	Types	Sample size	Ratio (%)
Gender	Male	160	58.4
	Female	114	41.6
Age	Under 30	50	18.2
	31–40	92	33.6
	41–50	90	32.8
	Above 50	42	15.3
Education background	Below College degree	15	5.5
	College degree	49	17.9
	Bachelor's degree	149	54.7
	Above Bachelor's degree	60	21.9
affiliations	Provincial level or above	3	1.1
	Prefectural municipality	196	71.5
	County level	70	25.5
	Below county level	5	1.8
Management level	Director level or above	5	1.8
	Section chief	51	18.6
	Section member or below	218	79.6

TABLE 2. Reliability and principal component analysis.

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
SNC 1	0.012	0.135	0.076	0.092	**0.824**
SNC 2	0.144	0.109	0.070	0.063	**0.837**
SNC 3	0.269	0.115	0.253	0.076	**0.657**
SIC 1	0.103	0.041	0.177	**0.770**	0.125
SIC 2	0.164	0.006	0.047	**0.844**	0.050
SIC 3	0.125	0.246	0.072	**0.747**	0.055
TC 1	0.187	0.107	**0.772**	0.077	0.146
TC 2	0.071	0.106	**0.833**	0.082	0.083
TC 3	0.190	0.198	**0.706**	0.144	0.120
PA 1	0.175	**0.747**	0.247	0.098	0.170
PA 2	0.201	**0.823**	0.140	0.110	0.136
PA 3	0.272	**0.779**	0.073	0.095	0.096
UGP 1	**0.655**	0.198	0.017	0.308	0.016
UGP 2	**0.719**	0.136	0.220	0.111	0.189
UGP 3	**0.814**	0.222	0.138	0.056	0.071
UGP 4	**0.696**	0.204	0.208	0.106	0.282
Cronbach's alpha coefficient	0.793	0.801	0.753	0.750	0.746
Explained rate of variance	15.368%	28.869%	41.991%	54.901%	67.726%

respondents have bachelor's degree, only 5.5% respondents have junior college degrees or less, meaning that the educational level of the respondents is relatively high. Samples from prefectural municipality accounts for 71.5%, because digital transformation at local government is an important part during the digital revolution wave. About for the management level, we choose more section members. Because they are the providers of front-line work and service, and they are familiar with practice.

V. RESULTS

A. TEST OF VALIDITY AND RELIABILITY

Using SPSS21.0, indicators for KMO and Bartlett test of the theoretical assumptions, the results is that, KMO values 0.852, which is greater than the critical value of 0.8, Bartlett ball test statistics observed values is 1566.799, chi-square value significant probability P is close to 0. So the null hypothesis is rejected, that is the correlation coefficients matrix is significant difference with the unit matrix. Such results showed that the questionnaire has good reliability and validity of structure and suitable for the further factor analysis.

Using Cronbach's alpha coefficients to respectively measure the factor level and total table of internal consistency and stability, the results showed that, the government performance, partnering agility, transforming capability, seizing capability, sensing capability subscales' Cronbach's alpha coefficients were 0.793, 0.801, 0.753, 0.750 and 0.746. The total table Cronbach's alpha coefficient value is also higher

than the critical threshold value of 0.7, the total table and table's reliability are better, it is concluded that the credibility of observation scale about theoretical assumptions is good (table 2).

B. CONFIRMATORY FACTOR ANALYSIS

Principal component analysis was used to test the main factors proposed by the theoretical hypothesis. The output of five factors and their measurement items are consistent with the former study design. The factor cumulative variance interpretation rate was 67.726%. It can be seen from the factor load matrix after rotation that the measure term has a high load on its own factor and a low load on other factors, which shows that the sample data has a good validity. Factor variables assumed according to the theoretical analytical framework has passed the test (table 2).

From the validity of the measurement model (table 3), the standard factor loadings were all above 0.5, the composite reliability values (C.R.) of the five factors were all above 0.7. The average variance extracted values (AVE) of five factors were above 0.5. The above results are in line with the criteria verified by Fornell [63], the factor loading value must be above 0.5; the combined reliability must be above 0.6; the average variance extracted must above0.5. That means, the test results of combined reliability and convergent validity of the model are good.

C. MODEL TEST RESULTS

According to the test results of the overall fitting degree of the modified model, the chi-square value is 152.567, which is not significant at the level of 0.05. RMSEA value reaches

TABLE 3. Combined reliability and convergent validity of research model.

Latent variable	Observable variable	Normalized factor loading	Combined reliability (C.R.)	Average variance extracted values (AVE)
SNC	SNC 1	0.689		
	SNC 2	0.767	0.752	0.503
	SNC 3	0.668		
SIC	SIC 1	0.695		
	SIC 2	0.747	0.754	0.503
	SIC 3	0.689		
TC	TC 1	0.733		
	TC 2	0.688	0.753	0.504
	TC 3	0.709		
PA	PA 1	0.736		
	PA 2	0.819	0.808	0.584
	PA 3	0.734		
UGP	UGP 1	0.569		
	UGP 2	0.699		
	UGP 3	0.770	0.800	0.504
	UGP 4	0.781		

FIGURE 3. Structural equation model diagram of the performance impact relationship of the government's digital transformation.

the critical standard of less than 0.05. AGFI value is 0.906, greater than 0.8, which is close to the ideal value of 1, indicating that the model's absolute fitting effect conforms to the standard. Values of the model's goodness of fit index IFI and CFI are all greater than 0.9, reaching the critical value of fitting, which indicate that the model's goodness of fit is good. Parsimony index shows that, the CMIN/DF value is 1.623, which falls within the value range of $1 < NC < 3$, reaching the critical value standard of fitting, indicates that the model has a good goodness of simple fitting.

According to the estimation results of model parameters (table 4), all the hypotheses passed the test. Specifically, Governments' sensing capability, seizing capability, transformation capability and partnering agility in digital transformation process directly affect the government performance with action coefficients of 0.178, 0.184, 0.204 and 0.394, respectively. The first three factors indirectly affect the government performance by influencing the governments' partnering agility. Governments' sensing capability, seizing capability, transformation capability and partnering agility in digital transformation process directly affect the partnering agility with action coefficients of 0.256, 0.175 and 0.323. Structural equation model diagram of the performance impact relationship of the government's digital transformation is shown in figure 3.

VI. DISCUSSIONS AND CONCLUSION

With the increasing complexity of the international environment and the growing and diversified material and cultural needs of the public in China, how to improve the performance of bureaucratic government has become a major issue concerned by academic and government departments. The continuous development of information technology has put forward the requirements of transformation and upgrading, reform and innovation in different fields of society. To adapt
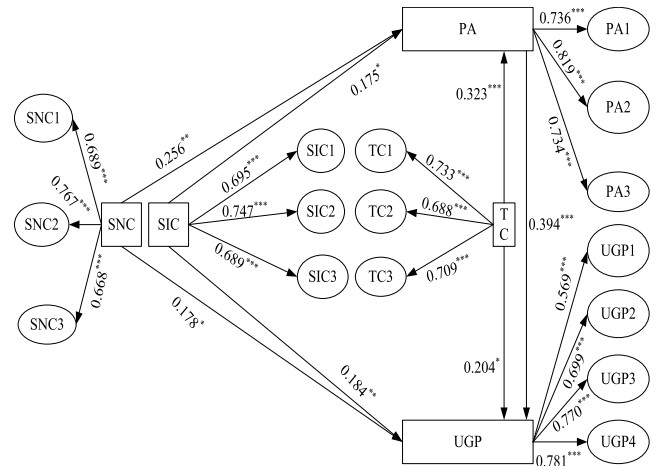
to the new technologies development, more and more local governments are implementing digital transformation. Ideally, digital transformation will lead to a turnaround in government performance. While, there is a lack of relevant studies to confirm the effect and mechanism.

With the purpose of exploring the impact mechanism of digital transformation on government performance. The results show that, sensing capability, seizing capability, transformation capability and partnering agility have significant positive effects on government performance. In the influence path of sensing capability, seizing capability and transformation capability on government performance, partnering agility plays a mediating role.

A. SENSING CAPABILITY, PARTNERING AGILITY AND GOVERNMENT PERFORMANCE

Government sensing capability has a positive impact on its performance. That is, governments can promote performance improvement by improving their ability to perceive opportunities and threats.

On the one hand, through new digital devices, software platforms, and operating systems, the government can play the role of sensing capability to collect information from all aspects. According to the data information and other resources it has mastered, Governments could identify and grasp the changes of internal and external environment quickly, predict and regulate the development trend of society accurately, avoid possible risks and focus on the development of things which are beneficial to the society, so as to help the government to make scientific decisions and professional implementation. This process will reduce administrative costs and improve administrative efficiency.

On the other hand, by perceiving and responding to the needs of the public in a timely manner, the government can establish a positive image and improve public satisfaction [35]. At the same time, partnering agility will play a mediating role in this influencing process. The active

TABLE 4. Research hypothesis testing results.

Research hypothesis	Unstandardized coefficient	Standardized Coefficients	Standard Error	critical ratio	P
SNC--PA	0.267	0.256 **	0.089	2.984	0.003
SIC -- PA	0.190	0.175 *	0.086	2.226	0.026
TC -- PA	0.382	0.323 ***	0.107	3.561	0.000
PA-- UGP	0.367	0.394 ***	0.078	4.702	0.000
SNC--UGP	0.172	0.178 *	0.076	2.274	0.023
SIC--UGP	0.186	0.184 **	0.073	2.562	0.010
TC-- UGP	0.225	0.204 *	0.092	2.437	0.015

注：*p＜0.05, **p＜0.01,***p＜0.001

cooperation with other departments, enterprises, NGOs and other organizations could make the environmental identification and information circulation effects of the government's sensing capability better played, and make beneficial contributions to the improvement of government performance [8]. For example, communication with other government departments could avoid the barriers of "data barrier" and "information island", promote the circulation of government information, and thus improve the efficiency of government work. "Outsourcing" the construction of technical facilities to high-tech enterprises is conducive to accelerating the construction of government infrastructure, and making use of more professional technical facilities to promote the function of government sensing capability to get fully played.

B. SEIZING CAPABILITY, PARTERING AGILITY AND GOVERNMENT PERFORMANCE
The results show that seizing capability has a positive effect on the improvement of government performance by partnering agility. After perceiving opportunities or threats, governments could seize opportunities or avoid risks by implementing a series of measures that contribute to the provision of new products, technologies and services and promote the improvement of government performance. With digital technology advancing by leaps and bounds, cloud computing, blockchain, artificial intelligence, 5G and other information and communication technologies are being widely used, which provides an advantageous tool for the government to implement digital transformation. Through cooperation with technology research and development departments, government departments have realized the integration of digital technology and government business in stages and steps, and accelerated the process of government digital transformation by strengthening the application of information technology [64], promoting new infrastructure, matching new technologies, and innovating public service delivery methods.

New technologies and new management methods have created a space for innovation and made government departments more open, convenient and efficient. For example, the government's innovation performance has been improved and high-quality local economic and social development has been promoted through digital transformation in Zhejiang province, Shanghai municipality and Guizhou province.

The digital transformation of governments is also conducive to improving the digital literacy of civil servants [23]. Specialized technical equipment requires specialized servants to operate. In general, government departments have departments or personnel specifically responsible for the operation and maintenance of information technology equipment. Sometimes, technical training is organized as needed to enhance civil servants' capabilities to improve government performance.

C. TRANSFORMATION CAPABILITY, PARTNERING AGILITY AND GOVERNMENT PERFORMANCE
Under the mediating effect of partnering agility, transformation capability also positively affects government performance. The digital transformation of the government not only involves the application of digital technology among departments, but also requires the government to readjust resources and realize the comprehensive reform and development of organizational structure, administrative process and business procedures, which is also the embodiment of the transformation capability [3]. Through cooperation with other departments or organizations actively, the government could integrate internal and external resources to accelerate the process of digital transformation, and help the government cope with the complex and changing dynamic environment effectively. The implementation of "co-production", Public-Private Partnership (PPP) and other modes could be considered as the performance of government's partnering agilities [32]. Using these models appropriately would undoubtedly accelerate the process of government digital transformation and improve the quality of government services.

Within the government, the implementation of digital transformation is beneficial to break the barrier between departments brought by bureaucracy, promoting the circulation and sharing of government resources, improving the flexibility of government organization structure and the efficiency of administrative process. For the public, governments' digital transformation has enabled citizens to enjoy more convenient business procedures and public services with better quality [6]. On the whole, digital transformation is conducive to promote government reform, reduce administrative costs, improve administrative efficiency, improve public satisfaction, promote civil servants' own learning and

growth, which is of great significance to improve government performance.

D. CONCLUSIONS

Based on the dynamic capability theory, this paper combined the actual situation of China and the factors of partnering agility, then proposed a research model creatively to explore the influence relationship among dynamic capabilities, partnering agility and government performance in the process of governments' digital transformation in China.

The sensing capability, seizing capability, transformation capability and partnering agility of government digitization have direct and positive impacts on government performance. Meanwhile, the effect of government digital dynamic capability on government performance is affected by the mediating variable of government partnering agility. The central government has put forward a strategy to modernize its governance system and capacity in China. The digital transformation of governments is an important link and inevitable trend. In this process, the cooperation between government departments and other organizations is particularly critical. Furthermore, the development of digital transformation in governments will help improve the global governance system and address global issues such as the COVID-19 pandemic more effectively.

This study, to the best of our knowledge, is academically novel by providing a new perspective to learn how digital transformation improve government performance and constructing an analysis model with dynamic capability theory and partnering agility. Despite these innovations, it is still limited, mainly reflecting on the data. Situation of Jiangsu Province was studied as a whole. Data from regions with different levels of economic development were not examined separately. We will continue to devote into the aspect of organizational agility in the future. The governments' digital transformation and the quality improvement of government performance will be investigated and studied from a more comprehensive and systematic perspective. It is of great significance to carry on a classification research for the economic and social development of different functional areas. It is believed that the continuous and in-depth study of this topic will also help governments to further explore the issues of adaptability and compatibility in global development cooperation.

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JIANYING XIAO received the Ph.D. degree in public administration from the Huazhong University of Science and Technology. She was a Visiting Scholar with the University of North Carolina at Chapel Hill focusing on smart governance. She is currently an Associate Professor and the Director of the Digital Rural Service Research Center, School of Public Policy and Management, China University of Mining and Technology. She is responsible for a number of projects, such as the National Social Science Foundation Project and the Jiangsu Social Science Foundation Project. She has authored and coauthored more than 20 scientific publications in research journals and government journals. Her research interests include digital governance, public service, and rural revitalization.

HUI ZHANG received the Ph.D. degree in public administration from the Huazhong University of Science and Technology. He is currently the Vice Director of the Digital Rural Service Research Center, School of Public Policy and Management, China University of Mining and Technology. He is responsible for a number of projects, such as Philosophy and Social Science Foundation of Education Department of Jiangsu Province and Xuzhou Social Science Foundation Project. He has authored and coauthored more than 15 scientific publications in research journals and press. His research interests include government data opening, e-government, and digital governance.

LIXIN HAN received the bachelor's degree from the China University of Mining and Technology, Xuzhou, China. She is currently pursuing the master's degree in public administration with Lanzhou University. She has authored and coauthored several articles in research journals. Her research interests include e-government and government data opening.

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