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A Comparative Policy Analysis in the E-Health Industry Between China and the USA

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ABSTRACT

With the problems of neonatal survival and aging of the population becoming increasingly serious, the voice that longs for a new model of the medical industry is pushed to the limelight in the society. Gradually, a neologism "eHealth" is perceived by the public. A number of countries believe the eHealth industry will be the most promising industry in the 21st century, and policies should be made to promote its development. From the view of the policy tools, this paper proposes a theoretical analysis framework for the eHealth industry to compare the policies of the eHealth industry between China and the USA, who respectively enacted "Healthy China 2030" and "Federal Health IT Strategic Plan (2015-2020)." The results illustrate that China prefers to use "demand side policy," which focuses on "legal and regulatory" and "public services." While the USA prefers to use "supply side policy," which focuses on "public services." Moreover, this study unscrambles the specific policy terms and provides the policy recommendations for the further development of the eHealth industry.

KEYWORDS

A New Model, Demand Side Policy, E-Health, Federal Health IT Strategic Plan (2015-2020), Healthy China 2030, Legal and Regulatory, Policy Tools, Public Services, Supply Side Policy

INTRODUCTION

With the arrival of the third revolution of science and technology, information and communication technology and bioengineering have been unprecedentedly developed. Based on the combination of the above two key technologies in some countries or areas at the end of the twentieth century, a new model of healthcare—eHealth has come into being. It focuses on making the electronic information

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convenient and available, through which patients can manage their own health and information, providers can offer high-quality healthcare to users, public health entities can improve community health, scientists and innovators can advance frontier research (DeSalvo, Wyatt, & Swain, 2015). With the gradually severe influence of aging population, as a result, eHealth quickly got the favor and support of the public, and it soon had been referred to the national strategy all over the world.

The United States is the forerunner of the Electronic Medical Records (EMR). In 2004, President Bush proposed a 10-year plan to establish national eHealth records. President Obama released the American Recovery and Reinvestment Act of 2009 (ARRA) in 2009. It provided hospitals and physicians who "meaningfully use" the EHR with financial subsidies (Blumenthal & Tavenner, 2010). Recently, ONC (The Office of the National Coordinator for Health Information Technology) has implemented Federal Health IT Strategic Plan (2015-2020) to promote the domestic development of the eHealth.

In order to catch up with this new trend, the eHealth policy in China was run through in the Tenth Five-Year Plan and the Twelfth Five-Year Plan at the primary stage. It represented the emergence of the eHealth in China and established a basic framework for the further development. In 2009, The Ministry of Health released Health Records Architecture and Data Standards (Trial). This was the first time for China to set national standards for the eHealth. In 2016, China's State Council issued "Healthy China 2030" as the guideline on propelling healthcare industry in China in the next 15 years.

In view of this phenomenon, this study conducts a comparative research of industry policy in the eHealth industry between China and the USA and investigates the industry policy involved in executing and developing in three different conditions. Meanwhile, this study also identifies the differences in how these two governments prioritize their industry policies to keep abreast of the new trends in science and technology and to satisfy the public's demand for healthcare.

RESEARCH ON THE EHEALTH INDUSTRY POLICY

With the aging population, a great number of medical problems arose, including increasing chronic diseases, information asymmetries between physicians and patients, difficult and expensive medical treatment and scarcity of professionals and family cares. The rise of the patient-centered eHealth system will provide modern healthcare and medical services to improve disease prevention and diagnosis through advanced network integration, consulting and medical systems. The development of the eHealth can be dated back to 1985, the web/internet or PDA's (personal digital assistant) were used to provide information. Then till 2004, with the term Web 2.0, which referred to the internet as an interactive medium that allowed users to not just passively consume information but also to upload it, used for the first time, social networks appeared that enabled contact among patients or healthcare professionals. Up to now, technology evolved into environmental systems, like wireless sensors that could be used to monitor and to provide real-time automated feedback at any place, space or time.

Combining health informatics with Telehealth and coordinating with some related elements such as E-commerce and E-learning (Wootton, Patil, Scott, & Ho, 2009) will make the eHealth benefit from Electronic Health Records (EHR), Remote Patient Monitoring and Treatment (RMT), telemedicine and mHealth so that it may revitalize the medical information exchanges more secure, acute, convenient and transparent (Ye & Wang, 2017). At the same time, citizens can electronically transmit, reserve and extract various clinical data by using it (Quesada-Arencibia, Perez-Brito, Garcia-Rodriguez, & Perez-Brito 2018).

The eHealth has 6 main systems, which include integrated health information systems, clinical information systems, secondary usage non-clinical systems, telemedicine and homecare systems, hospital information systems and GP (general practitioner) & other core systems, to play its role of public health & research support, health information, patient data management, healthcare delivery support, remote healthcare services and social care support, health education and to make sure that the values can be created and captured by the key players who consist of patients, providers, third-party

vendors, payers, infomediaries and regulators (European Commission, 2012). The developments of intelligent medical equipment, customized healthcare and preventive healthcare represent the future trend of the eHealth.

In this context, implementing and developing the eHealth are at the forefront of the debate. Recognizing the criticality that eHealth is the predominant model for healthcare in the 21st century, the governments and public alike have made great efforts to develop their respective eHealth industries. It is imperative for government to enact a series of innovation policies to guide, safeguard and promote the domestic development of the eHealth industry (Torrent-Sellens, Diaz-Chao, Soler-Ramos, & Saigi-Rubio, 2018; Xu, Wang, & Zhang, 2014; Song & Wang, 2013). Jin et al. (2016) revealed that uncertain industrial policies would lead to a series of uncertain outcomes, which were not conducive to the orderly development of emerging industries. Mars and Scott (2010) argued that there should be a global eHealth policy to promote eHealth and meet the universal needs. Hence, the primary task of facilitating the development of the eHealth industry is to formulate policies of the eHealth industry. Doing the research on the eHealth industry policy is proved to be urgent and meaningful.

Up to now, the authors could hardly find an accurate and generally accepted definition of the eHealth (Showell & Nøhr, 2012) given that it varied with the context in which the term was used (Oh, Rizo, Enkin, & Jadad, 2005), and it had gone through many transformations such as telemedicine, mHealth and digital health over the past few decades. Mitchell (1999) and Loman (1999) gave a specific and detailed definition to the eHealth in the early time. They stated that eHealth, which was a new term to describe the combined use of electronic communication and information technology in the health sector, was the application of e-commerce to healthcare and pharmaceuticals. Recently, through a review of previous studies, Showell and Nøhr (2012) described the eHealth as a structure that can be used to provide healthcare, as a process of delivering services by the use of digital resources, or as a result of achieving good health through electronic support.

The lack of a clear definition did not impede the progress in the eHealth research (Showell & Nøhr, 2012). A lot of definitions in some studies were referred to Internet (Mitsuhashi, 2018; Halwas, Griebel & Huebner, 2017; LaMonica et al., 2017; Athanasopoulou et al., 2017), such as Internet principles (Beaulieu & Beinlich, 2001) and Internet technologies (Athanasopoulou et al., 2017; Wyatt & Liu, 2002). Another part of definitions was referred to in terms of commerce (Liaw, Ashraf, & Ray, 2017; Oderanti & Li, 2018; Hove, Paek, & Isaacson, 2011; Li, Wang, & Yang, 2017). Based on the previous studies, this article defines the eHealth as a combination of information and communication technology and medical technology, which is a process of promoting the healthcare to informatization, digitization and electronization.

Although the eHealth has come into being in the public for a long time, there is a lack of systematic and deep studies on the eHealth industry policy. Spagnoletti et al. (2011) and Glasgow et al. (2014) just paid attention to the definition of the eHealth. They summarized the previous definitions of the eHealth and introduced methods to support further research of the eHealth. Some scholars conducted literature reviews to identify the problems of the eHealth industry and its related policies (Khoja, Durrani, Nayani, & Fahim, 2012; Black et al., 2011).

Then, some studies are relevant to the development of the eHealth industry and the eHealth policy in certain countries (Hypponen, 2012; France, 2011; Maclure, Paudyal, Addison, & Stewart, 2015). Kierkegaard (2015) and Patience and Toycan (2016) respectively revealed the development of the eHealth sector in Denmark and Nigeria, and realized that it is not enough to achieve a full scale of eHealth implementation which just relying on the deployment of the eHealth technologies. Some Chinese researchers explored the related standard, laws and successful governance experience of the eHealth field in EU and the USA, which were the important references for the Chinese further development of the eHealth industry (Tuo, Xu, Yang, Lan, & Shen, 2015; Ye & Wang, 2017).

In addition, a few researchers focused on the cross-national analysis of the eHealth industry (Irawan & Koesoema, 2015; Catan, Espanha, Mendes, Toren, & Chinitz, 2015). Especially for Currie and

Seddon (2014), they compared the eHealth records among 27 European Union Member States and pointed out why a one-size-fits-all approach to health IT was not recommended for EU Member States.

In general, the pace of the eHealth research could not catch up with the advances in technology. Not only were there rarely scientific researchers who concentrated on the eHealth industry, but sporadic studies were in allusion to the eHealth policy, and cross-national comparative analyses of the eHealth policy were even fewer. In this context, this paper proposes a comparative study between China and the USA on the eHealth policy. The authors aim to enrich the study of the cross-national analysis of the eHealth industry as well as provide pragmatic suggestions for the further development of the eHealth industry.

POLICY ANALYSIS FRAMEWORK IN THE EHEALTH INDUSTRY

So far, studies focusing on the eHealth industry policy is too little to form an appropriate analytical framework or model. Taking into account that the policy itself can be used as a policy tool (Zhao & Su, 2007), and policy tools can dig much deeper into the content of policy text, which will be conducive to precisely and clearly identify the similarities and differences of the policies between the two countries. Meanwhile, drawing on the previous studies, for example, Huang et al. (2014) did a study using a framework of integrated policy-technology, which can display the interaction relationships between three types of policy tools, on wind turbine and solar PV industries. Lin et al. (2013), from the perspective of policy tools, performed a comparative analysis of innovation policy in the smart grid industry between China and the USA. Through the introduction of the policy tools for technology innovation, Zhang and Su (2001) applied policy tools to the software industry and put forward some policy implications.

According to these experience mentioned above and based on the analytical framework of Rothwell and Zegveld (1981), this study divides the policy of the eHealth industry into three types: supply side, environmental side and demand side, which consist of 12 specific policy tools as shown in Table 1. There is one note to be noticed that due to the development of society and the changes in industrial environment, the analytical model proposed by Rothwell and Zegveld (1981) can't be completely applied to the current eHealth industry. Hence, the analytical framework in this study was made a certain adjustment by Joseph Z Shyu[1,] and Kun Ding[12].

Supply side industry policy refers that through supplying the technical knowledge, human resources, market consulting and management skills to the public, government attempts to promote the research and development of the eHealth industry, and thus, in turn, propel the evolution of the eHealth industry. The supply side industry policy includes public enterprise, scientific and technical, education and information.

Environmental side industry policy is mainly that government makes use of legal regulation, finance, tax system and other measures to indirectly advance the research and development of the eHealth industry, so as to achieve the goal of impelling the progress of the eHealth industry. The environmental side industry policy can be divided into financial, taxation, legal and regulatory and political.

Demand side industry policy shows that government takes advantage of trade restrictions, government procurement and other actions to create the domestic and international market demand for the eHealth industry, and thus play a role in stimulating the development of the eHealth industry. The demand side industry policy consists of procurement, public services, commercial and overseas agent.

DATA SURVEY AND PATTERN MATCHING

In this paper, the U.S. data comes from "Federal Health IT Strategic Plan (2015-2020)", which from the national level, accounted for how the federal government viewed national current health IT landscape and articulated federal values and priorities, and it also identified government actions

Table 1. Government policy tools for industrial innovation

Dimension	Policy tools	Remarks
Supply side	(1) Public enterprise	Innovation by state-owned enterprises and institutions, focusing on developing new industries, pioneering in the use of new technology, joint developments with private enterprises
	(2) Scientific and technical	Engaged in scientific and technical research, support for research institutes; Developing learning society, professional organizations; Offering research grants in support of industrial innovation
	(3) Education	Government support for education and training at all levels, including general education, higher education at university and post-graduate levels, vocational education, apprenticeship programs, and continual education
	(4) Information	Government support in developing information networks of business intelligence for private enterprises, business centers, libraries, advisory and consultancy services, cloud databases, and liaison services
Environment side	(5) Financial	Government support and subsidy for industrial innovation, joint financial investments, provision of equipment loans, arranging third-party financing, loan guarantees and IPO assistance, and export credits
	(6) Taxation	Tax exemption and reductions for industrial innovation, R&D tax credits, capital gain tax exemption, personal tax allowances
	(7) Legal and regulatory	Patents and intellectual property management, regulatory agendas for environmental and health control, accreditation and certification management, anti-trust regulations and social justice supervision,award and prizes, and protocol standards
	(8) Political	Strategic planning of national innovation programs, regional development policies, awards and prizes for innovation, support of merger and acquisition, and think-tank and public consulting for policy exploitation, political and legal system for investment
Demand side	(9) Procurement	Central or local government purchases and contracts, R&D contracts, and technology transactions via government procurement
	(10) Public services	Infrastructural and institutional developments in science park development, facilitating market transactions, banking service, maintenance and management of innovation diversity and applications, provision of health insurance and services, transportation, and telecommunication, social transformation
	(11) Commercial	Trade agreements, tariffs, currency regulations, commercialization, industrialization of innovation
	(12) Overseas agent	Overseas representation for international trade and transactions, developing official organizations in support of internationalization of innovation

Source: Rothwell and Zegveld, 1981

that would be most impactful as they look to the future. Besides, Chinese data dates from "Healthy China 2030" which systematically illustrated the splendid blueprint and program of action for the construction of healthy China for the next 15 years.

From the above, the policy texts of the two countries are not only highly authoritative but have many similarities in the aspects of the subjects, contents and objectives. Meanwhile, both two countries' policies contain guidelines and action principles to realize informatization, digitization and electronization of the medical industry. Therefore, doing a comparative study of these two policy texts is of great significance and value.

In this article, pattern matching is used to fit the eHealth industry policies of China and the USA into the policy analysis framework of Rothwell and Zegveld (1981). As shown in Table 1, it demonstrates three sides policies made up of 12 specific policy tools and uses example guidelines to explain how to use policy tools to match the corresponding industrial policies. However, there is a limitation in this study should be mentioned. Even though each policy tool has different function and can not have an identical impact on the development of the eHealth industry, they are still given the same weight. The authors make this hypothesis for two reasons: One is that each country has its own distinctive national conditions, resources and industrial structure in the eHealth industry. If the authors give the policy tools different weights without thorough consideration, it will be unlikely to get the precise results. The other reason is that there are few previous studies that used the analytical framework of Rothwell and Zegveld (1981) on the eHealth industry for us to refer to. It is difficult to originally create a criterion which is used to give the corresponding weight to each policy tool. Any minor errors will lead to research deviations in this field. Taking into account these two factors, it is reasonable to give the same weight to each policy tool.

FINDINGS AND DISCUSSION

The policy terms, which were specific implementations and most related to the eHealth industry, were extracted from "Healthy China 2030" and the Federal Health IT Strategic Plan (2015-2020). Through repeated proofreading and comparing, the authors matched the extracted policy terms with the 12 policy tools. All these tasks were done by 3 professors, 1 associate professor, 4 doctors and 5 masters.

The Analysis of the eHealth Policy in China

Based on the national official report, this paper gathers 34 policy tools used by the Chinese authorities. The initiatory classification results are shown in Table 2. The policy terms are extracted from the chapters of the Healthy China 2030 and the figures in parentheses represent that in this chapter how many policies are matched with the corresponding policy tools.

The Analysis of the eHealth Policy in the USA

The policy classification of Federal Health IT Strategic Plan (2015-2020) illuminates that the American government has applied 84 policy tools to promote the development of the eHealth industry. Table 3 has revealed the specific circumstances and details. The policy terms are the abbreviation of each objective in the Federal Health IT Strategic Plan and the figures in parentheses represent that under this objective how many policies are matched with the corresponding policy tools.

Cross-National Comparative Policy Analysis Between China and the USA

Table 4 and Table 5 detect the differences in the policy tools applied by China and the USA. Table 4 explicitly depicts the differences in amount, percentage and total of 12 policy tools and three categories of industry policy. Table 5 mainly shows the comparison of the rank of policy tools applied by China and the USA.

Table 2. Healthy China 2030 policies in China

Dimension	Policy tools	Policy terms	Q'ty	%
Supply Side	(1) Public enterprise	Promote the application of large data for health care (3); Strengthen the integration of sports and health and the non-medical health intervention (1)	4	12
	(2) Scientific and technical	Develop a new operational type of health services (1); Improve the construction of population health information service system (1)	2	6
	(3) Education		0	0
	(4) Information	Improve the construction of population health information service system (2); Promote the application of large medical data for health care (1)	3	9
Environmental Side	(5) Financial		0	0
	(6) Taxation		0	0
	(7) Legal and regulation	Improve the health insurance management service system (1); Deepen the reform of pharmaceutical and medical equipment circulation system (1); Improve the construction of population health information service system (3); Promote the application of large medical data for health care (5)	10	29
	(8) Political	Improve the construction of population health information service system (1); Promote the application of large medical data for health care (1)	2	6
Demand Side	(9) Procurement		0	0
	(10) Public services	Deepen the reform of pharmaceutical and medical equipment circulation system (1); Improve the construction of population health information service system (6); Promote the application of large medical data for health care (3)	10	29
	(11) Commercial	Develop a new operational type of health services (1); Improve the construction of population health information service system (1); Promote the application of large medical data for health care (1)	3	9
	(12) Overseas agent		0	0

"Healthy China 2030" which distributes most resources to demand side policy, whose ratio reaches 38%, and allocate 35% weighting to environmental side policy and then 27% to supply side policy (27). Further observation, for the 12 policy tools, the Chinese authorities focus on "public enterprise" (12%) and "information" (9%) in supply side policy. "Legal and regulatory" (29%) and "political" (6%) are the main actions in environmental side policy. As for demand side policy, the Chinese authorities pay more attention to "public services" (29%) and "commercial" (9%). Furthermore, "legal and regulatory" and "public services" are the Chinese authorities' highest frequently used policy tools, followed by "public enterprise". "Education", "financial", "taxation", "procurement" and "overseas agent" are ignored by the Chinese authorities.

Table 3. Federal Health IT Strategic Plan (2015-2020) policies in the USA

Dimension	Policy tools	Policy terms	Q'ty	%
Supply Side	(1) Public enterprise		0	0
	(2) Scientific and technical	Empower health management (1); Improve health care quality (2); Increase usability of ehealth information (2); Accelerate the commercialization of innovative technologies (4); Disseminate on health IT research (3); Implement Interoperability Roadmap (1); Increase user and market confidence (2)	15	18
	(3) Education	Empower health management (3); Improve healthcare quality (1); Support the delivery of healthcare (3)	7	8
	(4) Information	Foster partnerships (2); Improve health care quality (1); Support the delivery of health care (1); Increase usability of ehealth information (1); Advance technical standards (1); Advance a communications infrastructure (3)	9	11
Environmental Side	(5) Financial	Improve healthcare quality (1); Support the delivery of health care (1); Accelerate the commercialization of innovative technologies (1); Disseminate on health IT research (1)	4	5
	(6) Taxation		0	0
	(7) Legal and regulation	Empower health management (1); Support the delivery of healthcare (1); Protect and promote public health (1); Increase usability of ehealth information (1); Implement Interoperability Roadmap (3); Protect ehealth information (5); Advance technical standards (6); Increase user and market confidence (3)	21	25
	(8) Political	Improve healthcare quality (1); Support the delivery of health care (1); Protect and promote public health (1); Increase usability of ehealth information (1); Protect ehealth information (1)	5	6
Demand Side	(9) Procurement		0	0
	(10) Public services	Empower health management (1); Foster partnerships (3); Improve healthcare quality (1); Support the delivery of health care (2); Protect and promote public health (6); Increase usability of ehealth information (1); Accelerate commercialization of innovative technologies (1); Disseminate on health IT research (1); Implement Interoperability Roadmap (1); Protect ehealth information (1); Increase user and market confidence (2); Advance a communications infrastructure (2)	22	26
	(11) Commercial	Protect ehealth information (1)	1	1
	(12) Overseas agent		0	0

Source: Authors' elaboration

Nevertheless, "Federal Health IT Strategic Plan (2015-2020)" prefers to use supply side policy, whose percentage is 37% and the major policy tool in this side is "scientific and technical". Second, distributing 36% weighting to environmental side policy, with the most resources distributed to "legal and regulatory" (25%). The last is demand side policy (27%). In this side, "public services" (26%) is the crucial policy tool. As for the American government, "public services" is the most prior policy tool. "Legal and regulatory" is ranked second, followed by "scientific and technical". "Public enterprise", "taxation", "procurement" and "overseas agent" are neglected by the USA.

Table 4. Comparison of the policy tools between China and the USA

Dimension	Policy tools	China		USA	
		Amount	%	Amount	%
Supple Side	(1) Public enterprise	4	12	0	0
	(2) Scientific and technical	2	6	15	18
	(3) Education	0	0	7	8
	(4) Information	3	9	9	11
	Sub-total	9	27	31	37
Environmental Side	(5) Financial	0	0	4	5
	(6) Taxation	0	0	0	0
	(7) Legal and regulatory	10	29	21	25
	(8) Political	2	6	5	6
	Sub-total	12	35	30	36
Demand Side	(9) Procurement	0	0	0	0
	(10) Public services	10	29	22	26
	(11) Commercial	3	9	1	1
	(12) Overseas agent	0	0	0	0
	Sub-total	13	38	23	27
Total		34	100	84	100

Table 5. The weighted priority of policy tools applied by China and the USA

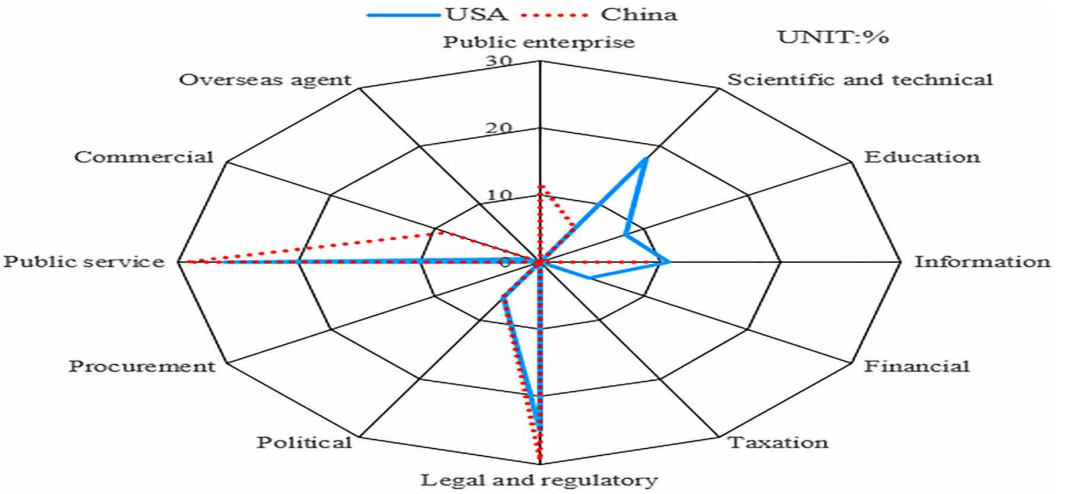
China			USA		
Priority	**Policy Tool**	**Weight**	**Priority**	**Policy Tool**	**Weight**
1	Legal and regulatory	29%	1	Public services	26%
1	Public services	29%	2	Legal and regulatory	25%
3	Public enterprise	12%	3	Scientific and technical	18%
4	Information	9%	4	Information	11%
4	Commercial	9%	5	Education	8%
6	Scientific and technical	6%	6	Political	6%
6	Political	6%	7	Financial	5%
8	Education	0%	8	Commercial	1%
8	Financial	0%	9	Public enterprise	0%
8	Taxation	0%	9	Taxation	0%
8	Procurement	0%	9	Procurement	0%
8	Overseas agent	0%	9	Overseas agent	0%

To more intuitively view, this study puts the policy tools applied by China and the USA together in one graph. Figure 1 demonstrates the similarities and differences of the policy tools, which are severally used in three sides policies by China and the USA.

CONCLUSION

From the view of policy tools, this study uses text analysis method and statistics to compare "Healthy China 2030" with "Federal Health IT Strategic Plan (2015-2020)", which are respectively enacted by China and the USA. Empirical analysis and comparative analysis results are summarized as follows.

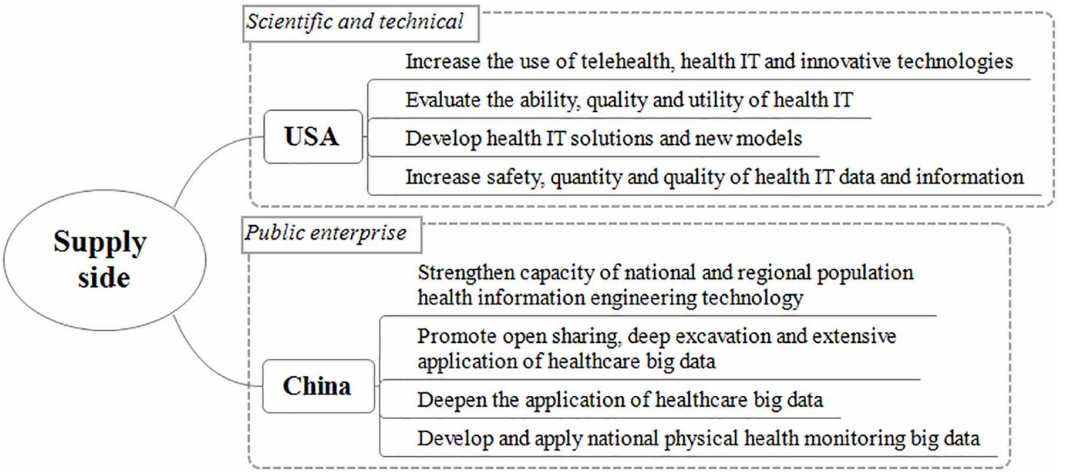
Figure 1. Comparative distribution ratio of the eHealth policy tools between China and the USA



In supply side policy, Federal Health IT Strategic Plan focuses on "scientific and technical" and its specific policy terms such as "increase the use of telehealth, health IT and innovative technologies" and "develop health IT solutions and new models" are partly shown in Figure 2. It is clear that the American government depends on the innovation and development of technology to promote the development of the eHealth industry and the use of health IT. Referring to the Atlas of eHealth Country Profiles (World Health Organization [WHO], 2015), there is a mature medical system in the United States, such as the foundation of the Telehealth programmes, the establishment of the national mHealth programmes and the use of social media. Therefore, it is used to encouraging private enterprises to facilitate the development of the eHealth industry instead of the government. Having not exploited the big data in the eHealth industry (WHO, 2015), the American government is absorbed in continuing to promote technological innovation. Hence, all the individuals like enterprises, research institutions and universities can be the subjects of the action which will fully mobilize the whole society to participate in propelling the technological innovation and development of the eHealth industry.

On the contrary, Healthy China 2030 pays attention to "public enterprise", with the policy terms like "develop and apply national physical health monitoring big data", "deepen the application of healthcare big data", etc. Thus, the development of the eHealth industry in China is more likely to be driven by the government. Due to the poor medical foundation (WHO, 2015), the government mainly relies on policy formulation and public goods investment to provide all the public with medical services rather than depending on the technological innovation, which will take a long time

Figure 2. The emphasis of policy tools in supply side policy between China and the USA



with expending a lot of resources. In particular, both plans constantly emphasize the importance of health data and information exchange.

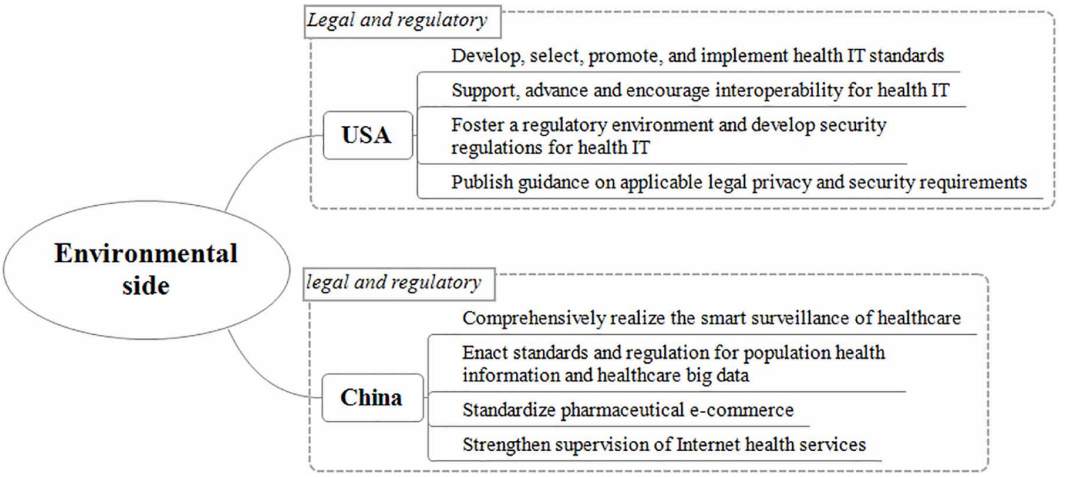
In environmental side policy, Healthy China 2030 tends to use "legal and regulatory". Representative policy terms are "comprehensively realize the smart surveillance of healthcare", "standardize pharmaceutical e-commerce" and the like. The Chinese authorities adopt the formulation of standard systems and laws and regulations to regulate the application of the eHealth and to protect the privacy and information of patients, which can propel the perfection of the eHealth services as well as supervise the eHealth industry so that people can share their information without concern.

Being similar to China, Federal Health IT Strategic Plan is also inclined to "legal and regulatory" and it formulates numerous practical policy terms to support the plan. For example, "support, advance and encourage interoperability for health IT" and "develop, select, promote, and implement health IT standards". In addition to setting a series of standards and regulations to create a safe environment and monitor the eHealth industry, the American government focuses on the protection of intellectual property rights in medical technology so that domestic companies can be protected from infringement of international products and more individuals will be attracted in this area. This point also can be reflected from which the USA pays more attention to "Financial" than China, which will stimulate and draw more subjects to devote to the eHealth industry with the aid of funding.

Besides, the American government is aware of the importance of the interoperability as well. The implementation of the interoperability can facilitate uniform access to the eHealth information for doctors and patients that will reduce or even eliminate the asymmetric information between doctors and patients. Patients are able to definitely understand their illness and check whether the doctor's prescription is reasonable from the cloud database. What's more, full chain interoperability is pivotal to enabling businesses in the eHealth industry to create and capture value (Bhatt, Gooch, Dent, & Sylvia, 2017) (Figure 3).

In demand side policy, once again, China keeps the same pace with the USA and their primary policy tools both are "public services". The policy terms include "collaborate with industry and public stakeholders", "expand the capacity of the public health and community supports", "build up a population health information platform" and so on. More information is portrayed in Figure 4. The Chinese authorities mainly focus on the construction of public platforms, systems and institutions to raise the overall medical level and to promote the development of the eHealth industry. Except for emphasizing the importance of the infrastructure construction, the American government also encourages the collaborations among industry and other public stakeholders. At the same time, the

Figure 3. The emphasis of policy tools in environmental side policy between China and the USA



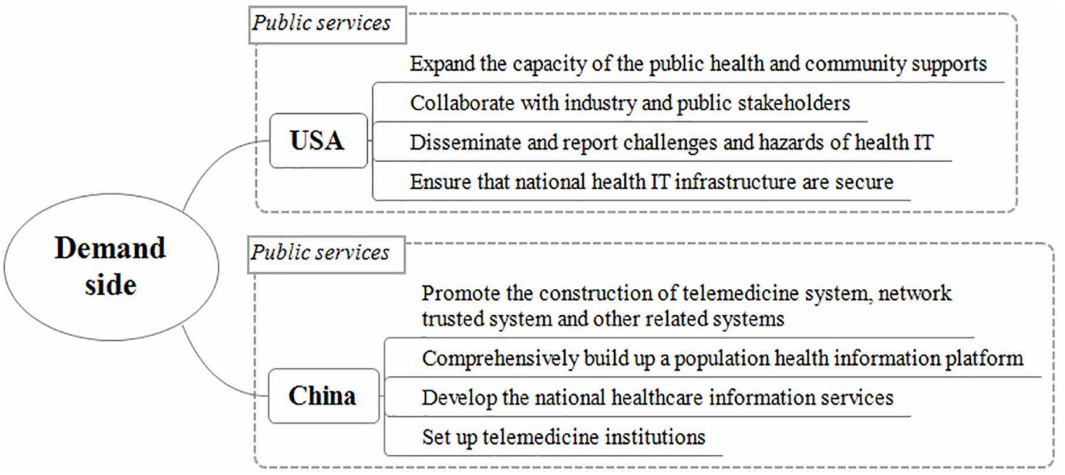
American government never stops disseminating opportunities, threats and other messages about the eHealth so that the populace can more accurately realize the knowledge and information of the eHealth.

Noticing that China pays more attention to "Commercial" than the USA, it can be affirmed that the Chinese authorities plan to improve the access to the healthcare and raise the medical level of the state as soon as possible by the means of significant amounts of funding and policies (WHO, 2015).

This study reveals different plans applied to the eHealth industry between China and the USA through text analysis method and policy tools method. For both China and the USA, the three sides policies are all involved in the plans. China focuses on the demand side policy and distributes the most resources to "public services" and "legal and regulatory". While the USA tends to prefer to apply the supply side policy with the most resources to "public services".

Based on the comparison of the 12 policy tools in three sides policies applied by China and the USA, China pays more attention to the demand side policy. That is, the Chinese authorities attempt to set a series of industrial policies to reduce the uncertainty of market and to guide the direction of

Figure 4. The emphasis of policy tools in demand side policy between China and the USA



industrial development, which can rapidly improve the foundation and level of the eHealth industry, so as to make sure that every citizen has access to superior healthcare.

On the contrary, the intention which the USA focuses on the supply side policy is that through formulating a series of correlative policies, which are concentrating on the talents, capitals, technology, knowledge, information of industrial development, to fully mobilize the enthusiasm of all individuals to dedicate themselves to the eHealth industry, which will bring about more technological innovation and advance the development of the eHealth industry.

Overall, although both countries have exploited three sides policy tools, there is an imbalanced structure of utilized policy tools, which distributes most resources to several policy tools but ignores some effective policy tools. To some extent, it may cause an overflow phenomenon. Too much use of target-planning tools only works on setting goals and guiding directions, yet less help to the actual operational level (Huang, Su, Shi, & Cheng, 2011).

The results from the analysis of the policy terms reveal that the American policy attaches most importance to collection, analysis, interpretation, protection, sharing and use of information in the eHealth industry, especially for the interoperability of information in circulation. Stephanie and Sharma (2016) elaborated the process of how the information flows in the eHealth network. In this information flow, players mainly play two roles in the eHealth network: one is as the suppliers to supply the health information to the network, the other is as consumers to consume the information in the network, and these two roles frequently co-occur. The eHealth network combines, aggregates and distributes health information to provide added value to its stakeholders. A superior eHealth network can stimulate the sharing of information which will promote collaboration and maximize benefits.

IMPLICATION

Based on policy tools method adapted from Rothwell and Zegveld (1981), this study provides a theoretical analytic framework of the eHealth industry policy. It shows and compares the eHealth industry policies between China and the USA, which clearly detects the similarities and differences in the eHealth industry policies applied by the governments of China and the USA. Results indicate that due to the different national medical conditions, the eHealth policies of China and the USA have presented diverse emphases. A lack of advanced technology and a weak foundation in medical sector have forced the Chinese government to promote the development of the eHealth industry from national level without pertinence. As for the USA, the abundance of medical technology and resources allows it to encourage individuals to take part in driving the development of the eHealth industry as well as creating enterprise profits and realizing individual value. Secondly, the information flow is the highest priority in the eHealth industry. Well addressing various problems of the information flow is more likely to grasp the opportunities for the development of the eHealth industry (Jimenez & Bregenzer, 2018). Finally, in light of the facts that both China and the USA have neglected the use of some policy tools, such as “taxation”, “public procurement” and “overseas agent”, it may provide a prospective target for future research in this subject.

In this study, the research is conducted under the limitation that 12 policy tools are given the same weights albeit they are more likely to exercise different influence over the development of the eHealth industry.

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