

The Same Group Effect and Management Exploration in the Enterprise Digital Transformation

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Abstract

At present, with the continuous promotion and application of digital economy, a large part of the domestic enterprises have chosen the digital transformation construction, the digital transformation work, in essence, is the real economy and digital technology depth, the focus of enterprise transformation is to solve the problems in the development of enterprises as the main line, by means of the application of digital technology, constantly promote enterprise digital development process, promote the development of industry to the digital aspects. Using digital tools to promote their own enterprise reform, and quickly promote the innovation of products and services, which has become the priority choice for many enterprises to obtain greater development space and competitiveness. The paper focuses on three aspects: first, whether the same group effect will occur in the digital transformation, the focus is on observing the social relations within the same group, and the third is the management mode needed by the enterprise during the digital transformation.

Keywords

Enterprise Management; Digitization; The Same Group Effect.

1. Concept and Theoretical Basis

1.1. The Concept of Digital Transformation

Gdner pointed out that the digital transformation of enterprises can be divided into two forms: the use of digital systems for the technical level, and the use of new digital platforms for the business. Introduce digital technology, such as 5G technology, cloud services, blockchain services, etc. At the business level, digital transformation must be integrated with Internet technology. If the support of business is lost, Internet technology can only be called an innovative project, which will no longer belong to the definition scope of digital transformation. In his book Digital Survival, Negroponte proposed an imaginary scenario, in which humans will live in a society made of numbers and information, and learn, communicate, and work in this social space. Some scholars also explain digitalization as the use of digital technology to restructure the current business model. They believe that digital technology can not only solve the cost reduction and efficiency of enterprises, but also bring new development impetus and development opportunities to enterprises. According to the development process of digitalization, digital technology is an upgraded version on the basis of information technology, which improves the level of information processing and application of enterprises, and further improves the utility and achievement of enterprises.

1.2. Digital Transformation of Enterprises

Research on the digital transformation of enterprises, It started in the early 2000s, For example, George Westerman, an American economist, The so-called digital transformation is actually the way of enterprises to improve their own production efficiency and operating profits through computer technology; besides, Some researchers believe that, Digital transformation is the innovation of the original operation mode of the digital technology and information revolution, Digital transformation of enterprises is only through digital technology and the information revolution, To be able to achieve their own performance in the digital age; After an analysis of 23 companies, Digital transformation is the use of information technology, computer technology characteristics, Change the structure of the original enterprise and the way the value is generated, Make comprehensive changes in real enterprises, In a way to enhance their own competitiveness. Based on the results of previous research and consulting various materials, the author believes that the digital transformation implemented by enterprises is a system process of using the combination of modern information technology, network, communication, and connection technology to promote the institutional reform and institutional reform of enterprises. The concept of digital transformation embodies the three characteristics of its connotation: First, Essentially, Digital transformation is the reform of their own organizations in order to adapt to the digital age, Including enterprise value positioning, enterprise social value creation form; 10 Second course, In terms of the content, Digital transformation is a systematic process related to the overall operation of the enterprise, Including enterprise development strategy, enterprise human resources management, enterprise industrial development and product production, The development goal of the enterprise is positioned as a new digital enterprise; "Third," In terms of the implementation methods, Digital transformation is based on the application of digital technology, To better adapt to the development opportunities brought by the development of the digital era. Therefore, in the process of transformation, enterprises should make reasonable strategic development plans to guide themselves to develop new strategic products and services and adjust their own operating status under the background of the new era. How to use digital technology reasonably and scientifically has become an important research subject.

Entity enterprise for the understanding of digital transformation there are many kinds, for example, some entity enterprise think, digital transformation is actually the use of digital technology, create a digital world, the perception of the chain, scene setting and intelligent equipment are composed of digital technology, the formation of the digital world will be reversed transmission enterprise reform and development in reality. This is a restructuring and innovation of traditional corporate management, business development, and operational models to achieve a better corporate vision. Researchers under the State Council, the report of the digital transformation is the enterprise policy makers of modern information technology and introduction, by means of information technology, the enterprise development needs the data sorting, storage process, used to break through industry barriers, improve the overall operation effect of enterprises, build a new type of digital economy system.

From the perspective of the digital transformation and the actual operation effect, the further integration of modern technology and the actual commercial operation will eventually become the main mode of commercial operation mode. To carry out digital transformation, enterprises should make products suitable for consumer needs based on the data and information needed by customers, and provide more innovative content with better service quality, so as to build a new business model. Digital transformation is also known as the digital industrialization development of enterprises in China.

2. Empirical Analysis

2.1. Sample Selection and Data Source

This paper takes 2010-2020-21 as the sample data; the data comes from Guotai Junan database. In the data sample, the enterprises with incomplete data were screened. Among them, the evaluation of the enterprise transformation effect is the focus of this research. Therefore, this study was combined with the annual data report of enterprise development, and a total of 10,042 observed values were entered into the estimation model.

2.2. Variable Definition and Measure

The degree of digital transformation of an enterprise is studied according to the business data of the company for one year, and the analysis results can be used as the basis to measure the development of the enterprise. The main content of the annual report is to report the business situation of the previous year, and to make arrangements for the next work plan. The more keywords that frequently appear in the report, the more financial resources the company will invest in this area. According to the use of digital technology data, the progress of digital transformation of enterprises can be expressed by data. Therefore, the number of keywords and the analysis situation can explain the objective situation of its digital construction. The sample collection can be divided into three procedures: first, according to the website data, the annual report data of the sample company for 10 years statistics; second, the confirmation of the vocabulary of the digital technology, the vocabulary should include information, network, digital and other related words; third, the annual business operation of the listed company, the systematic analysis found that the keywords can be used as the new representative of the digital transformation of the enterprise.

The identification of the same group and the effect measurement of the digital transformation of the same group, the conditions of the same group, the same group should meet two aspects: first, the status between enterprises is equal, there is no who leads who; second, there is a certain transaction interaction between enterprises. The current situation is that the enterprises take the geographical location as the core to delimit the same group of enterprises, which means that the enterprises within a certain region are all the same group. This method is simple and convenient, but it is not reasonable, because, even for the enterprises with the same industry and the same region, there is not necessarily the actual trading activities between them. If it is classified into the same group, it may form some misunderstanding of its scope of influence. Therefore, in order to divide the same group more carefully, it is necessary to use the analysis of the business behavior of listed companies. Analysts usually observe listed companies in a certain field and find that there are a lot of connections between the members of the same group, whether in business or technology, they can interact with each other and cause a certain degree of same group influence.

In this analysis, the following assumptions are proposed:

Hypothesis a: The same group effect of digital transformation is more significant in enterprises with the middle resource base;

Hypothesis b: The same group effect of digital transformation is more significant in enterprises with middle dynamic capabilities.

2.3. Adjustment Variables

According to the above elaboration, the digital transformation of enterprises is also affected by different factors, such as enterprise resources, dynamic capabilities, network environment and market competition situation. So, the studies to put these variables into the estimation model.

2.3.1. Asset Scale

Asset scale refers to the general term of the total number of resources needed for the strategic transformation of an enterprise. In the normal operation process of an enterprise, the amount of working capital generated is the best example of the effect of the utilization of enterprise resources. In order to improve the stability of the study, the effect of the same group effect on the digital transformation, one is the size of total assets (AE) and the other is the amount of working capital (CH). In the study of this article, the total assets of the listed enterprises at the end of the year are added 1, and then the natural number is taken as its total assets scale, and the ratio between the total working capital generated by the enterprise and the total assets at the end of the year is taken as the cash flow level to measure the development of the company.

2.3.2. Dynamic Capability

Dynamic capability is one of the core components of organizational intelligence in the VUCA era, and it is also the proportion of enterprises in the market, which is the realistic reaction of the development power of enterprises. Therefore, in the study of the same group effect of dynamic ability on the digital transformation of enterprises, two sets of data can be obtained through their own calculation, namely (CP) and (MS). In the preliminary research data, the dynamic ability of the enterprise is calculated based on the intangible assets of the enterprise, invention patents and the number of employees with higher educational background.

2.3.3. Social Network Embedding

According to the relevant discussion of Chen Shihua et al., the degree of integration of enterprise to social network (W) is measured by the close link of enterprise managers and social network. If the manager of an enterprise also works in other enterprises at the same time, it means that the two enterprises belong to the same management system. Adding up the enterprises where the managers of the enterprise participate in the management is the density of the connection.

2.3.4. Industry Competition Situation

Using the existing research data, the Hufendal index is used to describe the competition situation of enterprises. In order to make the results clearer, the competition is measured by subtracting 1 minus the difference of the index.

2.3.5. Environmental Uncertainty

Research conducted by Ghosh et al. shows that they believe that the external environment of enterprises is unstable and the impact is uncertain. Firstly, the researchers shall analyze the difference between the income of the first five years and the current data of the enterprise as the non-positive sales revenue, and evaluate the stability and certainty of the environment in the enterprise of the enterprise in the middle of the adjustment of the environmental uncertainty; Thirdly, the ratio of the enterprise environment in the two cases is the environmental uncertainty (U) used in the study.

2.4. Control Variables

2.4.1. Digital Transformation Level of the Industry

Researchers divide enterprises belonging to the same group. In the similar development environment of enterprises, their businesses and technologies are similar, which makes the development means and strategies used by enterprises in the process of digital transformation also similar. However, this similarity is caused by the same developmental environment and association effects, and it is not related to the intrinsic connectivity of the same-group relationship. In order to reduce the impact of these commonalities, the level of digital transformation of enterprises is objectively described, as the level of digital transformation (SA) of the industry, and it is integrated into the estimation model as a controllable variable.

2.4.2. Corporate Governance Level

In the research of Bai Chongen et al., the method of principal component analysis was analyzed, he said, to build a comprehensive evaluation system that can reasonably measure the transformation of an enterprise. The corporate governance level score value (G) was obtained through the principal component analysis.

2.4.3. Other Control Variables

Various key areas of the observed enterprise factors, such as human resources management, asset structure, and R & D investment, may also affect the company's digital transformation work. Therefore, these factors should also be integrated into the research model as controllable factors. See Table 1 for details.

Table 1. Variable definitions and measures

attribute	name	symbol	measure
explained variable	Digital transformation level of focus enterprises	<i>DI</i>	The calculation method is as mentioned above, and the unit thousand point ratio
explanatory variable	The level of digital transformation of the same group	<i>P</i>	The calculation was performed as previously described
regulated variable	Total assets scale	<i>AE</i>	The total assets of the focus enterprise plus 1 to take the natural log
	Cash flow level	<i>CH</i>	The ratio of net cash flow from operating activities to total assets
	Dynamic ability	<i>CP</i>	The calculations were performed as described above and were obtained by principal component analysis
	market share	<i>MS</i>	The ratio of focus enterprise operating income and industry operating income
	Social network embedding	<i>W</i>	Number of executives working part-time in focus companies in other companies
	Industry competition intensity	<i>CT</i>	1-The Heffendahl index
	environmental uncertainty	<i>U</i>	The ratio of the standard deviation to the average of the abnormal sales revenue of the focus enterprises in the past five years is adopted to determine the environmental uncertainty faced by the focus enterprises in this year after the adjustment of the industry
	Industry digital transformation level	<i>SA</i>	See the instructions in the text for details
controlled variable	research input	<i>RD</i>	Focus enterprise R & D spending plus 1 take the natural log
	human resources	<i>HR</i>	The number of employees in the focus enterprise plus 1 takes the natural log number
	Corporate governance level	<i>G</i>	Principal component analysis was used to get the details shown in the text
	asset structure	<i>L</i>	The ratio of total liabilities to total assets at the end of the year
	administration cost	<i>CS</i>	The ratio of management expenses and main business income of focus enterprises

According to the data in Table 2, we can see that the research subject group should be composed of more than two enterprises, and there are 158 industries with the largest number of enterprises. Therefore, the enterprises of the same group should be in 28 enterprises on average. The average of enterprise digital transformation in this study increased from 1.210 in 2011 to 3.254 in 2021; meanwhile, while the digital transformation level of the same group increased from 1.155 in 2010 to 3.871 in 2020. As can be seen from the above data, after 11 years of development, the development speed of enterprises in the construction of digital transformation is faster and faster, but even in the economic transformation of enterprises in the same group, the process is still different.

Table 2. Overview of sample enterprises and the same group determined by analyst tracking

a particular year	observed value	The digital transformation level of the sample enterprises			The number of enterprises included in the same group network			The level of digital transformation of the same group		
		average value	least value	crest value	average value	least value	crest value	average value	least value	crest value
2010					4.023	2	19	1.155	0	7.445
2011	20	1.210	0	14.727	16.482	2	109	0.938	0	6.855
2012	150	1.343	0	19.896	25.634	2	83	1.303	0	12.851
2013	315	1.506	0	19.431	26.935	2	91	1.311	0	12.504
2014	523	1.665	0	21.725	27.354	2	108	0.97	0	12.201
2015	1085	1.512	0	25.357	19.95	2	128	1.372	0	15.961
2016	1011	1.795	0	24.265	21.52	2	137	1.672	0	14.024
2017	1129	1.952	0	26.853	25.829	2	158	2.395	0	15.953
2018	1367	2.125	0	28.129	36.062	2	128	2.2	0	16.239
2019	1626	2.603	0	28.964	36.09	2	140	2.453	0	19.849
2020	1623	2.795	0	29.392	38.245	2	154	3.871	0	20.916
2021	1290	3.254	0	30.324		2			0	
Full sample	10041	2.26	0	30.324	27.934	2	158	2.434	0	20.916

Table 3. Descriptive Statistics for the Primary Variables (N=10041)

variable	average value	standard deviation	least value	crest value
<i>DI</i>	2.26	5.092	0	30.324
<i>P</i>	2.434	5.121	0	20.916
<i>AE</i>	22.258	1.274	19.231	28.52
<i>CH</i>	0.047	0.07	-0.586	0.454
<i>CP</i>	0.046	1.094	2.961	62.587
<i>MS</i>	0.035	0.083	0	0.977
<i>W</i>	5.207	2.651	0	31
<i>CT</i>	0.874	0.133	0	0.986
<i>U</i>	-0.886	3.162	-19.74	21.076
<i>SA</i>	2.222	2.943	0.215	13.987
<i>RD</i>	17.909	1.536	0	25.025
<i>HR</i>	7.906	1.209	3.401	13.165
<i>G</i>	0.217	1.77	3.682	16.76
<i>L</i>	0.407	0.196	0.008	1.352
<i>CS</i>	0.153	5.193	0.001	0.522

In the process of digital transformation, the influence of the same group on individual enterprises is delayed by one stage. Therefore, the period corresponding to the observed value of the focus enterprise is from 2011 to 2021, and the period corresponding to the observed value of the same group group is from 2010 to 2020.

As can be observed from the data in Table 3, for the industry in the same group, the average digital transformation water is 2.434, 2.222 and 2.260 respectively, the minimum values are 0, 0.215 and 0 respectively, and the maximum values are 20.916, 13.987 and 30.324 respectively.

2.5. Management Exploration of Enterprise Digital Transformation

From the three aspects of enterprise governance, management platform and enterprise organization reform, this paper analyzes the changes of enterprise management in digital transformation, and puts forward the corresponding transformation methods and system design ideas.

2.5.1. Build a Rapid Integration Governance System based on a Standardized Platform

Carry out digital transformation construction, help promote the business transformation and upgrading of enterprises, ensure the effective implementation of digital construction of enterprises, to provide management guarantee. Combined with the three levels of transformation and construction, in the subject of governance, enterprises give full play to the guiding role of the Party committee, use the management mechanism of "three meetings and one layer", constantly improve the control ability of the enterprise, and give full play to the executive function of the board of directors in decision-making and managers.

In the background of the continuous development of social informatization, first, we should establish the potential awareness of digital governance, actively respond to the social changes brought about by information technology, focus on the construction of digital governance system, and improve the digital leadership of enterprises, so as to better promote the strategic drive of enterprises. Second, to create a unified organizational culture, with digital transformation as the goal of enterprise development, to set up a new code of conduct for all workers. At the level of system management, the enterprise constantly improves the internal management system, innovation, finance, risk control and other systems, to ensure the safe operation of the enterprise. Opportunities and challenges brought by digital transformation, enterprises should constantly innovate their internal management mode. Third, enterprises should pay more attention to the protection of big data information to improve the security of data. In the basic management level, enterprise management about worker management, post management, job management, basic project management, is the foundation of the normal operation of digital transformation of enterprises to focus on the management mode and enterprise organization and management update, on the basis of solid foundation management, cope with the construction of digital demand, the enterprise functions, work mode and worker management to make more suitable for the development of change. At the same time, do a good job of talent incentive, for the company to do a good job of digital talent reserve and training.

2.5.2. To Build a Managements Platform based on Digital Transformation

Many state-owned enterprises hold the country's important resources, involving the interests of more, from national security to people's life, all key areas and industries are involved, its in the process of operation has a lot of practical experience and industry experience, however, the connection between various industries is not stable and no separate system. Enterprises should strengthen knowledge management, manifest industry knowledge, form the process and management mode of qualified standards, and build industry communication platform to form more industry knowledge, so as to develop new economic growth points.

2.5.3. Promote Organizational Change based on Value Symbiosis

According to relevant research, it can be seen that in the context of digitalization development, the development of enterprises does not achieve the desired goal, not because of the knowledge of digitalization, nor because of the lack of understanding of digital development strategy, and also is not due to the crisis brought by digitalization. The most essential reason is that the company's organizational ability and institutional Settings can not meet the needs of digital construction. If the enterprise wants to stand firm in the era of digital development, it is necessary for the enterprise to change its organizational structure. In the era of digital economy, the reform of enterprise management has ushered in the fourth revolution, from the original process "process organization" to "ecological organization", "value symbiosis" will become the foundation of organizational management and business development. How to deal with the organizational change under the digital economy has become a new issue. First, in the dynamically changing market environment, the reform of organizational structure can develop new functions, no longer only relying on a role in the organization; second, digital technology brings many possibilities to the development of enterprises, which requires the organization, system and external environment to directly build symbiosis and create value; finally, if enterprises want to obtain higher organizational efficiency, it should strengthen the coordination within the organization and find solutions to the problems encountered through continuous cooperation.

3. Summary and Suggestions

After the above analysis, it can be seen that the digital transformation of enterprises will bring very obvious same group effect. Facing the strategy of digital transformation, enterprises should strengthen cooperation and reference to achieve practical results. At the same time, enterprises should have sufficient basic resources and dynamic capabilities, so as to dilute the results of active imitation and learning on the basis of their own conditions and environment.

Combined with the practice of enterprise digital transformation and the practice of management mode, the following suggestions on the effect of the same group of digital transformation and management change are as follows.

3.1. Plan Paths According to Enterprise Characteristics and Resource Status, and Continuously Iterate and Upgrade

The digital transformation strategy and implementation plan of an enterprise must be closely combined with the industry where the enterprise is located, its own characteristics, the existing resource capacity of the enterprise, and the enterprise culture atmosphere. Different enterprise resources, different risks and costs, different strategies for transformation; different enterprise management modes, different modes of digital transformation; and different basis of digital transformation, different objectives and tasks of digital transformation stage. For example, enterprises with limited digital foundation may have to do digital pilot first, and then take the speed as the guiding principle to scale the mature cases; the enterprises with heavy digital historical burden can give priority to digital capability upgrading, platform upgrading, integration, and then, implement specific projects, strengthen project control and ensure the implementation; the enterprises, the expansion of digital capability should consider how to realize the digital continuous innovation, agile lead, and virtuous cycle of technology and management. Therefore, it is necessary to combine the development strategy, establish phased and systematic hierarchical goals, further identify the requirements and constraints of digital transformation capacity, formulate a feasible digital transformation promotion plan in combination with the enterprise capacity at the present stage, and combine with milestone management and stage task analysis to effectively promote the achievement of the goals.

The digital transformation of enterprises is a continuous process, which needs to timely evaluate the effect of the implemented transformation in different stages of development, and repeated iteration and continuous optimization. So to combine milestone operation mechanism, timely enterprise digital transformation stage assessment, from digital consciousness culture formation, operation management ability, product and service mode, transformation of talent construction results, enterprise receivable development, according to the evaluation results, adjust or formulate the next stage of digital transformation work plan, repeated iteration. In the era of digital economy, data has become a new factor of production, and has also become one of the core drivers for the improvement of enterprise value. Data has become an important strategic asset of the enterprise. Therefore, the key link of the digital transformation of enterprises is the accumulation, development and utilization of data, the formation of a data-centered management system, product and service system, and the flow of talents, capital and materials around the data flow.

In the process of transformation, we should pay attention to the accumulation of data resources, and we should still adhere to the business as the core and product and service innovation as the main line. On the basis of realizing the collection of data resources and the interactive circulation, we should further explore the data value, innovate the enterprise business ecology, and realize the jump of enterprise value. Of course, the whole process is usually supported by the way of building a digital transformation platform, through which the platform provides the application scenario, capability service, data integration, technology component, resource sharing and other capabilities, and supports the stage jump and continuous evolution of the digital transformation work. Optimize the resource guarantee system, the implementation of the "top project" and the full participation in the implementation of digital strategy in addition to the change of ideology, the organizational management mode and organizational structure are also facing transformation. The transformation of enterprise organization and management involves organizational culture, organizational form, leadership and talent ability. From the perspective of how to promote and implement the digital transformation of enterprises, the IT department alone cannot complete it, so we must lead the decision and promote, and through the "top leader" project to do a good top-level design and systematic promotion.

In addition, digital transformation is an all-round, all-chain and full-participation reform. Every link and every post of the enterprise involves digitalization, which requires full participation of the enterprise. Enterprise leaders shall be able to respond to, embrace and create changes, discover the potential digital transformation opportunities of the enterprise, identify the benefits and benefits of digital transformation opportunities, and be able to guide or control the specific digital implementation; enterprise digital transformation technology realization experts shall be able to manage or realize the digital process, manage or realize scenario-based application, manage or realize data value, and provide the IT resources guarantee; enterprise employees shall have digital thinking and consciousness, understand the connotation of digital transformation, and ensure the implementation of the transformation.

3.2. Reasonable Measures to Strengthen Enterprise Competitiveness and Do a Good Job in Digital Transformation

Enterprises will be able to use the resources, according to the actual situation of domestic enterprise development and development plan, constantly introduce the current digital module and matching technology equipment into their production link, the annual budget, the introduction of digital technology equipment into the plan, as an important budget items.

The investment and cost of enterprises in the early stage of digital transformation are large, and the idle funds and human resources can be utilized. In the work of digital transformation, it is necessary to invest large capital and technical resources in the early stage to buy high-end technical equipment. Enterprises should make full use of their own linkage mechanism,

gradually adapt to the big situation of digital development, with better service standards and work quality, to cope with the changing operating market environment, and build digital enterprises.

In order to gradually enhance the competitiveness of the enterprise, It shall make overall use of the internal resources of the enterprise, Build a network service platform to provide better services for enterprise production, Constantly promote the development of network information technology, Gradually let the digital equipment in the production link of the enterprise to play a greater advantage, Improve the economic benefits of enterprises; Upgrade the infrastructure of the enterprise, To enhance the internal impetus of the enterprise, Abandon previous non-automated production, Relying on Internet technology to optimize the internal management processes, Enhance technology research and development efforts, Technical transformation of the production workshop, Realize the data sharing of information analysis and processing link and product manufacturing link.

Domestic enterprises should re-examine and build their own business model, create a new transaction mode under the new economic environment, integrate the original production equipment and digital equipment of the enterprises, and improve the competitiveness and production capacity of the equipment. The data of big data information platform plays a great role in the development of enterprises. Big data information can strengthen the communication and cooperation between different departments, and realize digital development in different levels and links.

At the same time, the use of cloud services can enable enterprises to better meet their own development needs and improve the quality of their products and services.

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