
A Study of Green Balanced Scorecard Model

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Abstract: The Balanced Scorecard (BSC) is widely applied and it is playing a significant role as a tool for organizational performance evaluation and strategic management. With the increasing emphasis on the concept of green development, in addition to considering the impact of the environment on business performance and development, the BSC must also consider the impact of business performance and development on the environment. In this paper, based on the traditional BSC, I construct the Green Balanced Scorecard Model (GBSCM) with a new "environment and green" dimension, raising it to the same level as the other four dimensions. In turn, I divide the "environment and green" dimension into internal and external environments, soft and hard environments, and analyze it in terms of time and space dimensions, as well as its connotation and indicator composition. I extend the original internal processes to the outside of the organization and expand them into process dimension. Also, I extend the finance into value process and enhance it to form a sustainable GBSCM. This model can provide a thinking guidance model for green and sustainable enterprise development. In the GBSCM, the customer dimension is drawn at the top, indicating that the customer has the highest priority and that customer needs comes first. The learning and growth dimension and the environment and green dimension are at the bottom, indicating that based on the environment and green development, continuous learning and growth is the basis and foundation of sustainable development of enterprises. The process is where the business exists and the value is where the process results, so they are in the middle. Process, value, learning and growth, environment and green complement each other, so companies have their bread buttered on both sides. Enterprises learn and grow according to the concept of green environment and sustainable development. Vision and strategy pentagram points at the five dimensions of the enterprise, guiding the enterprise to maintain dynamic and balanced development in the coordinates of time and space, and then achieve the success of the five dimensions.

Keywords: Green Balanced Scorecard Model, Green Development, Environmental Management, Enterprise Responsibility, Value, Soft Environment, Hard Environment

1. Introduction

It has been twenty-five years since Kaplan and Norton first proposed the Balanced Scorecard (BSC). This performance evaluation and strategic management method, which is praised as "one of the greatest management tools in 75 years" by Harvard Business Review, has made a huge impact on the international management community. According to statistics, more than 70% of the world's top 1,000 enterprises have adopted the BSC for organizational strategy implementation, performance evaluation and other management activities, such as Sunco, Intel, and Mobil. The BSC has also been widely used in China, and its users have extended from enterprises to governments, universities, hospitals, etc.

The BSC was originally produced as a performance

evaluation method. But with the development of the times, the changes in environment and management requirements, it has gradually enriched as a form of strategic organization. It has gone through three stages. Phase I – the Balanced Scorecard (BSC) stage. In order to avoid the lag and one-sidedness caused by performance evaluation using only financial indicators, Kaplan and Norton [1] studied the performance management of 12 leading enterprises and proposed a new approach to performance evaluation based on four dimensions, including finance, customer, internal process, as well as learning and growth, namely the BSC. Phase II - the BSC plus strategic map (BSC+MAP) stage. In the process of combining strategy and BSC, many enterprises had too general and too vague indicators, which made it difficult to filter indicators and ineffective to implement the strategies [2, 3]. To address this issue, Kaplan and Norton [4] deepened the causal

relationships among the four dimensions of the BSC and proposed the strategic map as an auxiliary tool. They defined the strategic objectives from top to bottom within an enterprise by drawing a strategic map, and precisely refined the evaluation indicators of the four dimensions of the BSC. enterprises Phase III - the BSC, strategic map and strategy-centric organization (BSC+MAP+SCO) stage. As more and more adopting the BSC, Kaplan and Norton [5] found that enterprises that were able to achieve positive returns through the use of the BSC were, to varying degrees, linking the BSC to operating units and individuals around the organization's strategic goals. This has led to a new form of organization, the strategy-centric organization, which focuses on strategic goals, uses strategic maps and BSC as tools, and incorporates strategies as part of everyone's daily work.

After more than two decades' development, the BSC has become increasingly sophisticated and a mature management method, but it is also accompanied by many controversies. Norreklit [6] questions the causal relationships among the four dimensions in the BSC, including the issue of time lags in the causal logic and the fact that the four dimensions are correlated rather than causally related. Atkinson [7] and Kanji [8] argue that the BSC ignores the interests of stakeholders, such as suppliers. Jensen [9] and Meyer [10] criticize the excessive indicators of the BSC. Ittner et al. [11] believe that the validation of the BSC is mostly a case study and lacks large-scale testing. The empirical study of Frigo et al. [12] also shows that the effectiveness of the BSC is not significant in a large sample. Overall, these questions still focus on the impact of the BSC on the efficiency and effectiveness of business management, without critiquing and complementing from the perspectives of business-environment and business-society relationships. Today, when environmental problems are becoming more serious, and resources are becoming increasingly scarce, higher requirements are placed on business operations. Enterprises are required not only to produce green, protect the environment, and take social responsibilities, but also to operate effectively. Zheng Liqun [13] and Song Ziyi [14] et al. use the BSC to evaluate the corporate environmental performance. Shi Xinghui [15] and Sui Jing [16] discuss the feasibility and necessity of introducing environmental factors into the BSC. Zhu Jihong [17] and Wei Xinyu [18], on the other hand, provide several ways to introduce environmental factors into the BSC, such as addition method, integration method, etc. This paper argues that the original four dimensions of the BSC only take into account the enterprise's own behavior, but enough consideration is given to the relationship between the enterprise and the environment, enterprise ethics, social responsibilities, etc.

For example, some enterprises achieve economic growth by adopting the BSC while polluting the environment, which is against the requirements of the environment and society. Therefore, based on the traditional BSC and the concept of green and sustainable development, I not only add a new dimension of "environment and green", but also expand the original internal process into a process dimension and extend it to the outside of the organization. Meanwhile, I extend the

finance dimension into a value dimension. Further, I put forward the concepts of soft environment and hard environment, and specify their connotations and composition. Thus, a Green Balanced Scorecard Model (GBSCM) is constructed, which can provide a strategic thinking framework with a higher and more far-reaching vision to guide enterprises to develop in an environmentally friendly, green, and sustainable way.

2. The Environmental Perspective: Green and Sustainable Development

Business development cannot be separated from the environment, which has long been recognized by the academic community. Robbins [19], Zhou Sanduo [20] and other national and international management scholars have elaborated on the organizational environment in their works. The organizational environment can be divided into two categories: external environment and internal environment. Then, the external environment can be further divided into macro environment and industry environment. A proper understanding of the environment helps managers to allocate enterprise resources rationally and make the best strategic choices by "going after profits and avoiding disadvantages" and "building on strengths and avoiding weaknesses". Developing an organizational strategy is the first step in building a BSC. It can be found that the current BSC, which is a management tool to effectively connect organizational strategy with performance indicators, has been constructed with full consideration of the impact of various types of environments on enterprise performance, but ignores the impact brought to the environment during the development process of the enterprise. Enterprises are organizations aiming at "profit maximization", and many of their development behaviors are contrary to the of the natural environment and social environment requirements. For example, water pollution caused by various enterprises' wastewater dumping and lead overload in human body caused by heavy metal smelting not only affect people's health, but also easily lead to mass incidents affecting social stability and even leaving hidden dangers for the life of future generations. In view of this, scholars at home and abroad have conducted in-depth studies on enterprise environmental responsibility, analyzed the economic effects of enterprise environmental pollution behavior and the impact on the decision-making of consumers and investors, and proposed governance countermeasures in terms of legal systems, financial policies [21-26]. Obviously, both the natural environment and the public's demand for a harmonious environment have put forward higher requirements for business development. Enterprises should not only create economic benefits, but also realize positive natural and social environmental benefits, forming their own shared values [27]. Therefore, in this paper, the environment is subdivided into hard and soft environments based on the distinction between internal and external environments from the perspective of material and spirit, as shown in Figure 1.

The hard environment refers to hard factors such as material, physical, objective materials, production equipment, etc.; accordingly, the soft environment refers to soft factors such as spiritual, subjective social organizations' laws, regulations and rules.

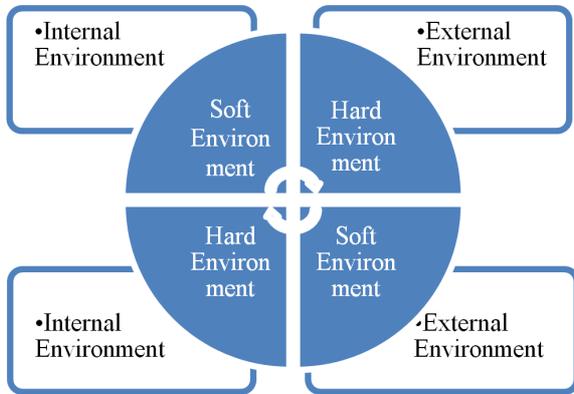


Figure 1. The connotation and composition of the environment.

After the introduction of 'environment and green' dimension into BSC starting from the vision and strategy formulation, Green Balanced Scorecard (GBSC) considers the benefit objectives of enterprises in both the natural ecological environment and the social environment, and provides a higher-order strategic management thinking model for the enterprises. On the basis of achieving a multifaceted balance among financial and non-financial goals, short- and medium-term goals and long-term goals, social responsibility and profit maximization, enterprises can achieve a balance between economic benefits, social benefits, and ecological environmental benefits.

3. Green Balanced Scorecard Model

The traditional BSC consists of four dimensions: finance, customer, internal process, learning and growth, which fully considers the value that the enterprise can bring to its shareholders, customers and employees, the enterprise's core competencies, the enterprise learning and growth, and related issues. It can more comprehensively integrate organizational vision with strategy and performance evaluation. Based on the traditional BSC, the GBSC adds the "environment and green" dimension, expands the process to the outside, and extends the finance to a higher order of value. It is different from the environmental management system that certifies the environmental performance of an enterprise only in terms of the natural environment [28]. Rather, it aims to combine the natural and social environmental benefits of enterprise activities with enterprise strategies, and to effectively interface with enterprise management activities such as R&D, design, and marketing. In the new "environment and green" dimension, it emphasizes the high level of environmental green sustainability, integrates environmental performance evaluation into enterprise performance evaluation, and builds a GBSCM. To conduct evaluation and assessment with this model, enterprises can avoid the consequences of short-term

enterprise behavior and expand the strategic thinking space for long-term sustainable development. This will better enable the relationship between the enterprise organizations and the environment to be in a dynamic balance of proactive and harmonious development and friendliness. The GBSCM is shown in Figure 2.

In Figure 2, the customer dimension is drawn at the top, indicating that the customer has the highest priority and that customer needs comes first. The learning and growth dimension and the environment and green dimension are at the bottom, indicating that based on the environment and green development, continuous learning and growth is the basis and foundation of sustainable development of enterprises. The process is where the business exists and the value is where the process results, so they are in the middle. Optimizing business processes and meeting customer needs, companies realize their own value creation in creating products and services for customers. Process, value, learning and growth, environment and green complement each other, so enterprises have their bread buttered on both sides. Enterprises learn and grow according to the concept of green environment and sustainable development. Vision and strategy pentagram points at the five dimensions of the enterprise, guiding the enterprise to maintain dynamic and balanced development in the coordinates of time and space, and then achieve the success of the five dimensions.

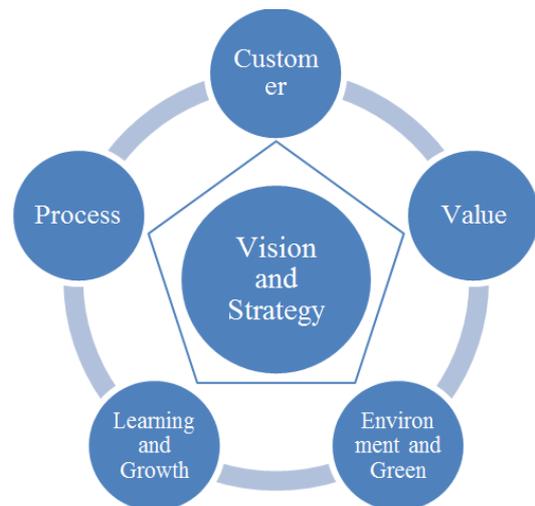


Figure 2. Green Balanced Scorecard Model.

3.1. Customer

Modern management theory believes that customer satisfaction is a critical factor affecting the competitiveness of an enterprise. It is also an important basis for enterprises to achieve their goals in financial dimension. Capturing and meeting customer needs and accurately responding to customer reactions is the key to gaining and maintaining valuable customer business. Relevant measurement indicators include market share, customer satisfaction, customer retention, customer profitability, and technical support assurance, which together constitute the content of customer dimension. The customer dimension is shown in Table 1.

Table 1. Customer dimension.

Dimension	Customer
Goal	Improving customer satisfaction, capturing and meeting customer needs, accurately responding to customer reactions
Indicators	Market share, customer satisfaction, customer retention, customer profitability, etc.

3.2. Process

In this dimension, managers need to identify the key internal processes that the organization excels at. These processes help business units deliver a value proposition that attracts and retains customers in target market segments and meets shareholders’ expectations for superior financial returns. The process perspective of GBSC extends the focus from the inside to outside the enterprise, incorporating the external supply chain system into the process, emphasizing the win-win or even multi-win concepts, and aiming to establish long-term friendly cooperative relationships with suppliers. This process perspective also pays attention to environmental protection and conservation in the actual operation process. The “three wastes”, noise and other problems generated in the internal production and operation of the enterprise not only have a

negative impact on the surrounding environment, but also affect the image of the enterprise, and thus have a negative impact on itself. Therefore, when redesigning internal process indicators, relevant environmental performance indicators can be integrated with them. For example, ‘three wastes’ emissions, waste treatment, recycling production, environmental protection publicity, etc. can be incorporated into the process dimension or the internal environmental dimension. The implementation of these environmental standards and technical entry threshold indicators will directly affect customer-level performance, which in turn will affect the ultimate financial performance and strategy implementation of the enterprise. In this way, the balance between the original dimensions is further balanced while integrating environmental indicators into the process dimension. The process dimension is shown in Table 2.

Table 2. Process dimension.

Dimension	Process
Goal	Focusing on environmental protection and conservation and considering external processes on the basis of original goals
Indicators	Incorporating “three wastes” emissions, waste treatment, recycling production, and environmental protection publicity into process dimension or internal environment, environmental standard level

3.3. Value

Derived from the original financial basis as value. Finance is the monetized form of enterprise value. Financial performance is expressed primarily through whether the current enterprise strategy and its implementation improve the ultimate operating results of the business. Rational economic man assumes that the pursuit of the financial goal of maximizing economic benefits is the primary goal of an enterprise in formulating its development strategy, and subdivides the specific financial goals according to the different development stages of the enterprise. The main expression is the profitability of the enterprise, including indicators of operating income growth, productivity improvement, capital utilization and risk management. The finance performance in the GBSC is not only closely related to environmental factors, but also considers the social and ecological values presented by the enterprise. This is manifested by the common values formed on the basis of the common interests of society at large - the focus on enterprise

social and environmental responsibility, which requires companies to spontaneously consider social and environmental interests while realizing their own interests, prompting them to adjust their production and operation models, and thus influencing the mechanisms for realizing enterprise interests [29]. Once an enterprise ignores the pressure of external public opinion and simply considers economic interests, it will be pressured by public opinion and will stop moving forward under the general trend of development, or even gradually die out. From this point of view, paying attention to the impact of environment performance on financial results is to provide important basic data, so that enterprises can adjust their development strategies in a timely manner according to changes in the internal and external environments.

And from the perspective of the environment, enterprises should moderately consider the social value, environmental value and ecological value presented at the regional and national levels as social organizations. The value dimension is shown in Table 3.

Table 3. Value Dimension.

Dimension	Value
Goal	Maximizing enterprise value" that incorporates environment factors, considering social and ecological values
Indicators	Revenue growth, productivity improvement, capital utilization and risk management, social benefits, ecological benefits, environmental benefits, etc.

3.4. Learning and Growth

The learning and growth dimension is an evaluation of the enterprise's ability to achieve sustainable growth which is the infrastructure that must be built if the enterprise is to create long-term growth and improvement, and the driving force that drives the other four dimensions to achieve superior results. Performance indicators of this dimension include evaluating employee competencies, evaluating enterprise information competencies and rating motivation, empowerment and collaboration competencies. Integrated with the environmental performance indicators, the evaluation of the learning and growth dimension includes the number of employees

receiving environmental training, the number of environmental training sessions, the quality of the work environment, and health promotion activities. It is important to note that the key to driving the implementation of the learning and growth dimension is the support of the top managers and the broad participation of the employees. Through employees' conscious actions and the evaluation and suggestions from the learning feedback, the enterprise can modify the GBSC indicators and promote its continuous improvement, which is also a reflection of enterprise learning and growth. The learning and growth dimension is shown in Table 4.

Table 4. Learning and growth dimension.

Dimension	Learning and growth
Goal	Evaluating the ability of an enterprise to achieve sustainable development
Indicators	Evaluating employee competencies, evaluating enterprise information competencies and rating motivation, empowerment and collaboration competencies, the number of employees receiving environmental training, the number of environmental training sessions, the quality of the work environment, health promotion activities, etc.

3.5. Environment and Green

An enterprise is closely related to the environment in which it operates, and the two cannot be separated. Strategic management theory believes that an organization's ability to maintain a holistic and synchronized alignment with the external environment is a key factor in ensuring business success. The "environment and green" dimension combines natural environmental benefits and social environmental benefits with enterprise strategies, while enterprise environmental protection and social performance belong to the study of enterprise social responsibility. A large body of domestic and international research literature shows that there is a complex relationship between enterprise social responsibility and enterprise performance. However, in general, the majority

of the literature confirms that enterprise social responsibility is positively related to business performance [30, 31]. In reality, many enterprises separate social responsibility from business operations and lack strategic thinking at the natural and social environmental dimension. This is reflected in the lack of a sharp and accurate perception of the external environment in the field of social responsibility, which makes it difficult to take timely action or to respond hastily due to external pressure, resulting in little gain in the social responsibility activities of enterprises. Therefore, it is significant and far-reaching to incorporate the "environment and green" dimension into the BSC to form a sustainable development system compatible with environment management. The "environment and green" dimension is shown in Table 5.

Table 5. Environment and green dimension.

Dimension	Environment and green	
Goal	Hard environment: harmonious and sustainable with nature	Soft environment: harmonious and sustainable with people and society
Indicators	Energy saving and emission reduction, environmental standards, cleaner production, Resource recycling and other environmental benefits, ecological benefits, etc.	Production safety, labor protection, labor disputes, social responsibility, enterprise reputation, external image, enterprise ethics, etc.

The "environment and green" dimension in the GBSC is not only the harmony and sustainability of the hard environment with nature, but also the harmony and sustainability of the soft environment with people and society, and the embodiment of enterprise social responsibility and enterprise ethics.

Given the ambiguity of the concept of enterprise social responsibility and the dynamic complexity of environmental factors, as shown in Figure 3, the internal and external environments, the soft and hard environments of the

organization, are unfolded in the spatial and temporal dimensions. According to different temporal combinations of space (organization, region, country) and time (near, medium and long term), the temporal superposition of various environmental factors is considered comprehensively, as shown in Figure 4. Consider enterprise environmental and social responsibility indicators as comprehensively as possible, and then construct them scientifically and reasonably.

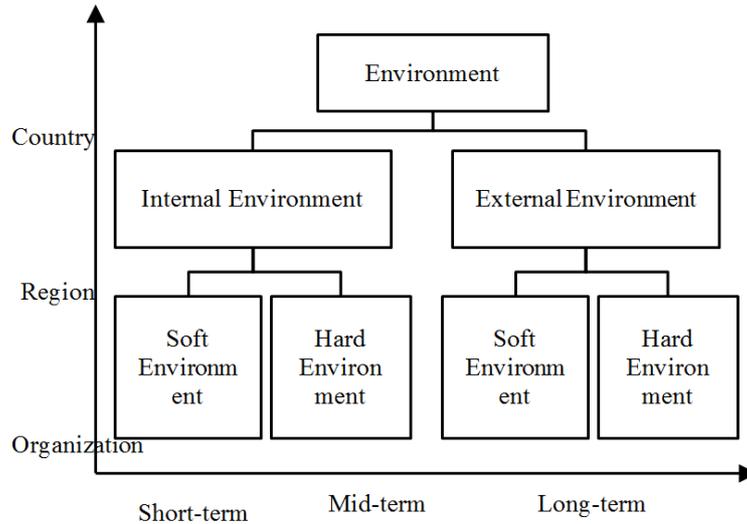


Figure 3. Temporal and spatial changes of environment and green dimension.

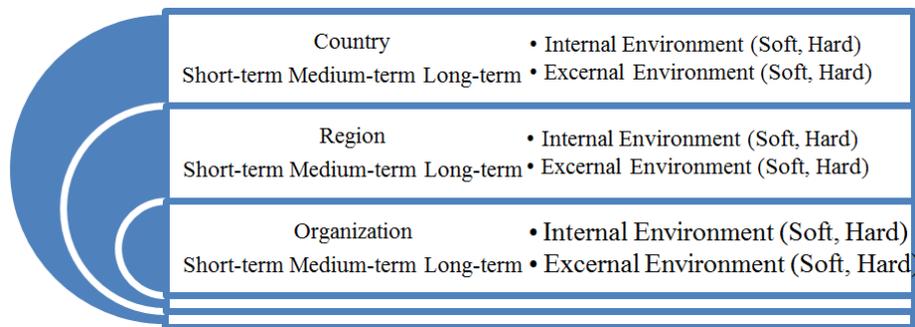


Figure 4. Time and space superposition and synthesis of environment factors.

3.5.1. Spatial Performance

This reflects the radiation effect of the economic, social, and ecological benefits of the enterprise in spatial dimension. Spatial performance is grounded in the internal and external environment faced by the enterprise and is the geographical radiation range of organizational performance. From another perspective, spatial performance is also the radiation of enterprise soft environment requirements in terms of geographical factors. The internal and external environments faced by enterprises from micro to macro mainly cover job environment, departmental environment, organizational environment, profession field environment, industry environment and social environment, etc. [32] [33]. The first three environmental elements together constitute the internal environment faced by the organization, and the last three categories constitute the external environment faced by the organization, of which the social environment is the general environment faced by the organization. Industry environment and profession field environment are the special environments faced by the organization, including suppliers, customers, competitors, government, and social groups. According to the stakeholder theory, enterprises need to perform different responsibilities to different stakeholders. Being responsible to shareholders should strive to achieve earnings; Being responsible to consumers should provide green services; And

being responsible to society should protect the ecological environment of green development. The combination of these enterprise responsibilities requires enterprises to focus on environmental management effectiveness and integrate it at the strategic level. The resulting enterprise performance will form a huge driving effect, radiating outward with the enterprise as the center, driving the development of the enterprise, the surrounding area and even the whole region, forming a circular and sustainable development concept, achieving a win-win and multi-win reciprocal effect, forming the spatial influence, visibility, and attractiveness of the organization, and producing a brand effect.

3.5.2. Time Performance

This reflects the dynamic changes and development trend of economic, social and ecological benefits of the enterprise in the time dimension. Time performance often involves all aspects of an enterprise's operating environment. It requires consideration of the entire life cycle of the enterprise's survival and development, resulting in an environmental level of time performance radiation. The core of time performance lies in linking the concept of enterprise sustainability to long-term profitability. It should be noted that although there is an upper limit to the environmental responsibility of enterprises, this limit is not fixed. As far as micro enterprises are concerned, at different stages of development, the scope of their

environmental responsibilities will be expanded due to the different scale of the enterprises, their ethical level and their ability to undertake environmental responsibilities. As enterprises grow, they internalize their environmental responsibilities as part of their strategic management, forming a strategic evolutionary framework that includes defensive strategic adaptation, reactive strategic adaptation, conventional strategic adaptation, and preventive strategic adaptation [34]. In this process, the form of environmental responsibility undertaken by enterprises has greatly increased, and the level of social responsibility undertaken is also increasing. Thus, the different stages of strategic adaptation patterns promote the enterprise from the initial immature state to the mature state of continuous growth, gradually forming the organization's time impact, and even ripple the organization's future historical reputation. It is important to note that the environmental time performance of an enterprise often involves a "time lag". In order to eliminate the "time lag" problem of environmental responsibility, we should find ways to increase the cost of environmental responsibility in an indirect way or reduce the cost of environmental responsibility in a direct way. This is not only beneficial for enterprises to overcome short-term enterprise behavior and seek long-term development, but also to improve the allocation of social resources.

3.5.3. *Hard Environment and Soft Environment*

In the context of green development with low-carbon technology as the core, green and sustainable development has become a new requirement for enterprises to achieve success. Enterprises are required to focus on improving their environmental performance, which is a concrete manifestation of their social responsibility. Based on the existing research results, enterprise environmental performance can be summarized as a series of actions and measures to prevent environmental pollution, reduce ecological damage, improve ecological quality, and cultivate enterprise environmental awareness on the basis of the existing environmental vision, and measure the effectiveness of enterprise environmental management through relevant financial and non-financial indicators. The examination of environmental performance of enterprises should grasp two aspects: first, the impact of enterprise behavior on the natural environment [35], and second, the impact of environmental behavior on the organizational capabilities of enterprises, where the organizational capabilities include coordination, service, management control and other aspects. The former is a hard environment requirement for business production and operation, while the latter is a soft environment requirement. From the perspective of the hard environment, enterprises should take the route of sustainable development, trying to achieve the goals of energy conservation and emission reduction, clean production, recycling, and zero pollution in the actual production and operation, focusing on production safety, strengthening labor protection, zero injury, and preventing overworking death. The product should be green and safe in the process of use, which is also a requirement for building a resource-saving and environment-friendly society.

From the perspective of the soft environment, enterprises should exert their influence and devote themselves to building a good enterprise culture. They can reduce conflicts, reduce labor disputes, establish healthy and friendly development relationship with related parties, play their role of model belt and radiation, and shape a good enterprise image and reputation.

As a new dimension, the "environment and green" dimension was incorporated into the BSC model for the first time, and the original internal processes and the meaning of finance was expanded and extended, thus constituting the five closely related dimensions of the GBSCM: customer, process, value, learning and growth, environment and green. Among them, the realization of enterprise value objectives is customer-centric. To improve customer satisfaction, enterprise and their employees need to learn and grow together, enhance their environment awareness, optimize internal and external processes, combine relevant hard and soft environmental indicators, improve their production and operation processes, and realize lean production. The environment is divided into internal environment and external environment, including both soft and hard aspects, and unfolded according to space and time. Spatially, it needs to consider the development relationship between the organization itself, the region in which it is located and the country (including other countries). In terms of time, it is important to consider the relationship between immediate, medium-term and long-term development. These five aspects cover the key factors in the production and operation process of the enterprise, and through scientific management and evaluation will form a spiraling rolling cycle, thus promoting the enterprise to achieve green and sustainable development. In the actual application process, the indicator system should be increased, decreased and adjusted scientifically according to the environmental condition of the enterprise, the requirements of ecological civilization construction, as well as the enterprise's own technology level, development stage and strategic positioning. Only then can we build a GBSC for enterprises in various temporal and spatial combination modes to achieve the best dynamic sustainable development of enterprises and the environment, and then form a green development model of coexistence, co-creation, co-build and win-win.

4. Conclusion

The traditional BSC builds a strategic performance management and evaluation system from four aspects: finance, customer, internal process, and learning and growth, while ignoring the influence of environmental elements in the production and management process of an enterprise. In the real context, the trend is to focus on environmental management and enterprise social responsibility, and enterprises must pay attention to and clarify the importance of environmental management. Therefore, this paper incorporates environmental dimensions into the BSC evaluation system and builds a GBSCM with the concept of

sustainable development as holistic, dynamic and perpetual, by adding new dimensions, extending and deriving the original dimensions on the basis of the original system. The hard environment focuses on the natural environmental protection and the natural environmental performance obtained by the enterprise, while the soft environment aims to emphasize the social responsibility and enterprise ethics of the enterprise to establish a healthy and friendly development path. Spatial performance radiation is based on the enterprise and radiates outward from near and far. Depending on the scope of radiation, enterprises can establish friendly development relationships with external environments such as their regions or even countries. Time performance radiation is based on the enterprise's own development stage, to determine the social responsibility that the enterprise should play in different periods, so as to form a short-term, medium-term and long-term performance target level for the benefit of the present and future generations. In conclusion, the GBSCM not only provides a strategic thinking framework for enterprise green and sustainable development, but also is an effective thinking tool for achieving green strategic management.

5. Suggestions

The subsequent research includes three dimensions.

First, the soft environment. Research on the composition and classification of internal soft environmental factors and external soft environmental factors, including national, regional and enterprise levels, combining with research results on enterprise ethics, social responsibility, labor relations law, environmental protection law, etc.

Second, the hard environment. Research on the composition and classification of internal and external hard environmental factors, including national, regional and enterprise levels, combining with the research results on industrial production capacity, production process level, natural environment, environmental carrying capacity, environmental protection technology, etc.

Thirdly, constructing specific GBSCM. Through the cases, based on the development stage and strategic positioning of countries, regions, and enterprises, add, subtract and adjust the index system scientifically to build reasonable country-specific, region-specific, industry-specific and enterprise-specific GBSCM.

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Biography



Lei Zhanbo received the PH.D degree in Management from Xi'an Jiaotong University in 1996. From 2005 to now he is a professor at School of Public Policy and Administration. In 1996, Based on the three-dimensional structural system of A. D. Hall, he originated the four-dimensional structural system of system engineering methodology and proposed the E-T, E-L matrix, which emphasized the importance of environmental analysis. He established a four-dimensional Knowledge structure model of human resources, put forward the concepts of environmental knowledge, process knowledge, functional knowledge and logical knowledge, and clarified its distribution rules and characteristics.