EasyChair Preprint

№ 9903

Value Creation Model of Social Organization System

Shuming Chen, Cuixin Hu and Xiaohui Zou

March 31, 2023

Value Creation Model of Social Organization System

Shuming Chen [1] Cuixin Hu [2] and Xiaohui Zou [3] [0000-0002-5577-8245]

[1] Tian Yanzhi Technology Industry Co., Ltd.,Building 7, No. 30, Shixing Street, Shijingshan District, Beijing (Jingxi Technology Finance Building 1001-2), 100041,China
[2] Chongqing Human Resources and Social Security Bureau Vocational Skills Appraisal Guidance Center, Building 3, North District, Human Resources Service Industrial Park,China
[3] Hengqin Searle Technology Co., Ltd.,No. 100, Renshan Road, Guangdong 519000, China
949309225@qq.com

Abstract. This article aims to re-understand the value creation model of social organization system from the perspective of AI. The method is: first, make a formal expression of the basic overview of social organization system value creation, and then give the functional expression of the social organization system value creativity model, and finally, clarify the Σ factor in the social organization system value creativity model , and further, try to clearly give the Π factor in the social organization system value creativity model, and give the Ë factor in the social organization system value creativity model. The result is: get a comprehensive summary of the social organization system value creativity model, and at the same time, give a social application summary of the social organization system value creativity model. Its significance lies in: through the simple analysis of the three types of factors of the value creativity model of the typical social organization system, not only the three types of value creativity models of individual, family and country and their instance factors are obtained in an unambiguous description. Moreover, several meaningful conclusions can be drawn from the value creativity model function of the social organization system. Thus, the cognitive results of the human brain are obtained, and the high-quality effects of re-created modeling-simulation can be obtained by the cognitive computing method of the computer.

Keywords: Cognitive Computing, Cognitive sciences and technology, Information presentation and metrics, Big data and intelligent information processing

1 Introduction

It aims to focus on the formal computing research of cognitive system , especially social organization system and its information processing. This article aims to re-understand the value creation model of social organization system from the perspective of AI.

2 Reviews

Although international evaluation agencies have paid attention to the problem of formal classification of organizations, and there are also micro-cluster analysis models, the overall macro-level situation is still unsatisfactory, especially the lack of formal methods that link macro-micro organizations [1]. The value creation of sustainable development, especially the provision of shareable value creation, the creation of social and financial value, is a focus of attention [2]. The value creation of intangible assets is far better than that of tangible assets [3]. AI autonomous agents and knowledge management attach great importance to formal expression [4]. Organizations can emphasize finance and its social value [5]. The result of increasing value creation with practical implementations in a specific industry is worthy of attention [6]. The value of feature-quantified organizations and their knowledge-sharing communities is very important [7]. In a society that emphasizes the role of enterprises, how to evaluate the value and development potential of a company is a factor that needs to be considered [8].In addition, from the following two comparative trend graphs, we can also see a spotlight in value creation research.

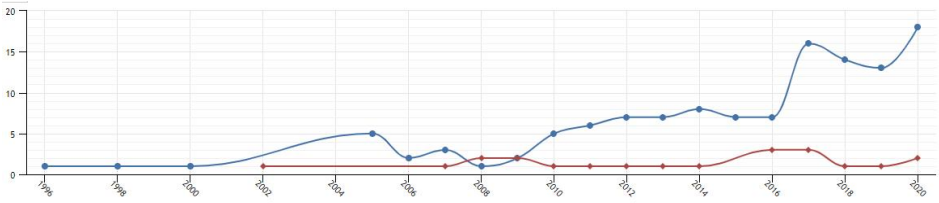

Fig. 1. Compared with value creation research, value creativity research is far from the latter.

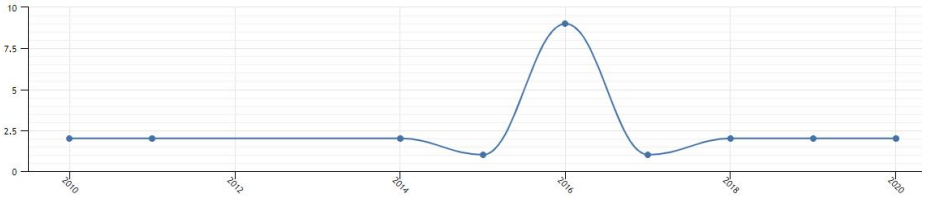

Fig. 1. Social organization research only peaked in 2016

3 Methods

The method is: first, make a formal expression of the basic overview of social organization system value creation, and then give the functional expression of the social organization system value creativity model, and finally, clarify the Σ factor in the social organization system value creativity model , and further, try to clearly give the Π factor in the social organization system value creativity model, and give the $\dot{E}$ factor in the social organization system value creativity model.

Formal Expression： Among the two formal expression methods, direct and indirect, the former is used below.

Functional Expression： Given a social organization system Ω, including N agents AI_n divided into three groups of agent (individual or group) positions, the same agent can belong to different positions at the same time: AI_{a1} and AI_{ai}

AI_{a1} and AI_{ai} are specific intelligent individuals or intelligent groups or social organization systems in the social organization system. Such agents play the role of "cumulative basic function factors" in the value creation of the social organization system, and are recorded as Σ factors; AI_{b1} and AI_{bj} are specific intelligent individuals or intelligent groups or social organization systems in the social organization system. Such agents play the role of "risk control factors" in the value creation of the social organization system and are recorded as Π factors; AI_{c1} and AI_{ck} are specific intelligent individuals or intelligent groups or social organization systems in the social organization system. Such agents play the role of "strategic amplification factor" in the value creation of the social organization system and are recorded as $\dot{E}$ factors. The basic form of the value creativity model function corresponding to the social organization system is:

$$\text{Vitality}(¤) = \left(b_1(AI_{b1}) \times b_j(AI_{bj}) \times \cdots\right) * \left(a_1(AI_{a1}) + a_{2i}(AI_{ai}) + \ldots\right)^{(1+c_1(AI_{c1})+c_k(AI_{ck})+\cdots)} \quad (1)$$

Including: $a_1(AI_{a1})$、$a_i(AI_{ai})$

$a_1(AI_{a1})$ and $a_i(AI_{ai})$ respectively are the Σ factors corresponding to intelligent individuals or intelligent groups AI_{a1} and AI_{ai} in the overall value creation $\text{Vitality}(¤)$ function of the social organization system; the value range is:

$$a_i \in (-\infty, +\infty) \quad (2)$$

Theoretically, a_i can also be based on the mapping parameters of the value quantity formed $\text{Vitality}(¤((AI_{bj}))$ in formula (1), namely:

$$a_i = \mathcal{L}\left(\text{Vitality}(¤\left((AI_{ai})\right)\right) \quad (3)$$

$b_1(AI_{b1})$ and $b_j(AI_{bj})$ respectively are the corresponding Π factors of the intelligent individuals or intelligent groups AI_{b1} and AI_{bj} in the overall value creation function of the social organization system; their actual influence is delayed, and the value range is:

$$b_j(t) = [0,1] \quad (4)$$

Theoretically, b_j can also be based on the mapping parameters of the value quantity formed $\text{Vitality}(¤((AI_{bj}))$ in formula (1), namely:

$$b_j = \mathcal{L}\left(\text{Vitality}(¤\left(\left(AI_{bj}\right)\right)\right) \quad (5)$$

$c_1(AI_{c1})$ and $c_k(AI_{ck})$ respectively are the corresponding $\dot{E}$ factors of intelligent individuals or intelligent groups AI_{c1} and AI_{ck} in the overall value creation function of the social organization system; their actual influence is delayed, and the value range is:

$$c_k(t) \geq 0 \quad (6)$$

Theoretically, c_k can also be based on the mapping parameters of the value quantity formed Vitality(¤((AI$_{ck}$))in formula (1), namely:

$$c_k = \mathcal{L}\left(\text{Vitality}(¤((AI_{ck}))\right) \quad (7)$$

In addition, formula (1) can also be used for comprehensive evaluation of other types of value creation, including: social organization system ○ value creation evaluation of sub-organization systems, social organization system ○ for each participating agent AI_n in a specific single event Evaluation of the value creation of the social organization system, comprehensive evaluation of value creation at all stages, and comprehensive evaluation of the integration of various social organization systems, etc. The follow-up part will analyze in detail the "cumulative basic action factor"- Σ factor, "risk control action factor"- Π factor, and "strategic amplification factor"- Ë factor.

Clarify the Σ Factor： Clarify the Σ factor in the value creativity model of social organization system

The basic concept of Σ factor： The Σ factor refers to: among the N agents AI_n of the social organization system, the sum of the cumulative effects of various daily tasks of a specific intelligent individual or intelligent group or social organization system in the entire life cycle of the social organization system; The value of a single task of a single agent AI_n can be positive or negative, that is, there are losses and gains in specific matters. The Σ factor is the basic content of the social organization system ○. The daily routine work of the social organization system ○ involved in life, work, management, production, technology, and operation, basically belongs to the category of the Σ factor.

Basic characteristics of Σ factor： The Σ factor illustrates the importance of daily value creation management and control in the social organization system. The total value is accumulated by each Σ factor bit by bit; once the daily work is implemented, the accumulation of achievements will form the value fundamentals of the social organization system ○ .From the cumulative logical analysis of a single Σ factor, the success or failure of each node Σ factor will not have a fatal impact on the overall value of the social organization system; the loss of temporary value will not affect the social organization system too much. The fundamental level of value realization; simply put, the Σ factor determines the basic disk.

Analysis of Σ Factor Examples： Take an independent technological innovation company as an example. In its development process, the current specific work of each team and each employee belongs to the category of Σ factor, typical types: ① Technical Σ factors, such as: Quaternary Geological Drilling Modeling Module, 3D BIM Quick Modeling Module, Pipeline Modeling Module, Mountain Torrent Simulation Modeling Module, Technical Framework of Fire Code Knowledge System, Survey BIM Platform Module, etc. ②Production Σ factors, such as: large area geological modeling model project, 3D BIM intelligent rapid modeling model project, 3D BIM intelligent rapid modeling training material standard document system, model project video production standard technical system, etc. ③Marketing type Σ factors, such as: a large central enterprise design institute highway system market development layout, a certain regional land market development layout, etc.④ Enterprise management Σ factors, such as: institutional system construction, talent echelon construction, company brand construction, company standard operation system construction, etc. ⑤ Social resource type Σ factors, such as daily maintenance of relations with a large national association, maintenance of relations with early investors, etc. ⑥ Financial Σ factors, such as: financial scheduling supervision, cash flow supervision, reasonable tax avoidance implementation, capital operation, etc.

Clearly Give the Π Factor： Clarify the Π factor in the value creativity model of social organization system

Basic concept of Π factor： The Π factor refers to: among the N agents AI_n of the social organization system, AI_{bj} specific intelligent individuals or intelligent groups or social organization systems are implemented for various difficulties and risks at each key node in the entire life cycle of the social organization system Effective management and control. The Π factor by itself will not bring new value to the social organization system, but it can ensure that at a certain risk point, whether the accumulated value of the social organization system will return to zero (resulting in the sudden death of the social organization system) Or crash) to control the extent of loss.

Basic characteristics of Π factor： The Π factor emphasizes that in the social organization system, there must be an agent AI_n aimed at timeliness and decisiveness to manage the overall risk of the system, and to ensure whether the value formed can continue or be suddenly suspended. At a specific time or stage of work, the success or failure of the Π factor can determine the life and death of the entire system; therefore, once the Π factor appears, the social organization system must do everything possible to resolve risks. The formation Π factor of a certain node has a delay in its risk outbreak point, which may be delayed at a special time point. The Π factor does not bring new value creation to the system, but only manages the system to overcome specific difficulties, avoid risks, or reduce risks. The final death or suspension of the social organization system is essentially determined by the specific Π factor; simply put, the Π factor determines life and death.

Π factor example analysis： Taking an independent technological innovation company as an example, the cash flow risks and legal risks faced during its development all belong to the category of Π factors, typical types: ①Cash flow risk Π factor: There have been several typical Π factors in the development process of this technology company, including mid-2015, early 2017, early 2018, and early 2019. The key role of cash flow risk Π factors exists; all are due to Only the concerted efforts of relevant key personnel can solve and overcome these obstacles. ②Legal risks/factors: For example, the company is closed due to legal disputes in specific markets, policies, and cooperation. ③Core health risks/factors: specific backbone health problems lead to sudden collapse of the company's operations, etc.

Give the Ë factor： and give the Ë factor in the value creativity model of social organization system

The basic concept of Ė factor: The Ė factor refers to: among the N agents AIn of the social organization system, there are K specific intelligent individuals or intelligent groups or social organization systems. There are strategic layout opportunities at specific key nodes in the entire life cycle of the social organization system. The seemingly trivial strategic layout will bring huge value growth to the social organization system in the future. Ė Factor implementation requires forward-looking, and the advanced layout and implementation of strategic points determines the maximum possible value realization space of the intelligent system in the future.

The basic characteristics of Ė factor: Ė factor emphasizes opportunity and strategy, forming a magnification of value; Ė factor is something that can be met but cannot be sought, seemingly simple and irregular to follow; Ė factor is a specific agent AIn in the social organization system, which sets opportunities and strategies , Vision and other integrated products after the integration of wisdom. Only at a specific time or stage of work can Ė factor achieve a successful strategic layout; if the strategic time point is advanced or delayed, Ė factor's strategic value creation opportunities may be lost. Once the strategic layout is successful, although it is difficult to see specific benefits in the short term, it will have a profound value impact on the future of the system and form a huge value amplification effect; simply put, the Ė factor determines the maximum value potential.

factor example analysis： Take an independent technological innovation company as an example. The various strategic technologies, talents, corporate structure, social resources, capital, etc. possessed during its development all belong to the category of factors, typical types: ①Strategic technology factor, typical subcategories: Algorithm theory system category original by independent technology company; High-threshold intelligent technology modules such as geological body intelligent modeling, point cloud intelligent classification modeling, 3D BIM rapid intelligent modeling; I3D intelligent development framework, distributed object database, cross-tool platform bottom interface seamless intermodulation container technology and other integrated underlying technologies; National invention patent technologies that integrate core technologies and business models. ②Strategic talents factor: It mainly refers to how independent technology companies can focus on various complementary world heroes that can form resonance with independent technology companies through the work of strategic talents and factors on a global scale; The core entrepreneurial personnel of independent technology companies are all strategic talents. ③ Strategic company structure factor: The corporate constitution, platform strategy and framework, and industrialization framework of independent technology companies will form a valuable and meaningful strategic company structure factor in the future. ④Strategic social resources factor: The close strategic cooperation relationship cultivated between independent technology companies and well-known domestic associations will form a valuable and meaningful strategic social resource factor in the future. ⑤ Strategic capital factor: Independent technology companies' own industrialized capital system, etc., will form valuable and meaningful strategic capital factors in the future.

4 Results and Discussion

The result is: get a comprehensive summary of the social organization system value creativity model, and at the same time, give a social application summary of the social organization system value creativity model. As a result, a comprehensive summary of the social organization system value creativity model:

Comparative analysis of the three types of factors of Σ, Π and Ë： The Σ factor determines the fundamentals of the development of the social organization system, the Π factor determines the risk, life and death of the social organization system, and the Ë factor determines the maximum value creation of the social organization system. Starting from the essential logic of the three types of factors of Σ, Π, and Ë, the evaluation and cognition of the value creation of job roles corresponding to different agents in the social organization system can be systematically optimized and straightened out. Some seem to be reasonable. The typical misunderstanding: ①According to the risk control factor (Π factor), due to the particularity of risky work, once you have gone through it, you will pass it, leaving little valuable traces at the company level; it will often affect the importance and value of previous risk work Lack of sufficient knowledge. ②For the strategic magnification factor (Ë factor), due to the advanced nature of the strategic layout, it is not necessary to do the work; and the realization of value is delayed, often lacking sufficient recognition of the importance and value of the previous strategic factor work know. ③ Regarding the cumulative basic factor (Σ factor), they often only recognize the importance of their own work, fail to see the overall needs of the overall situation, strategy, and long-term work, and lack sufficient awareness of current risks and future trends. Based on the value creativity model of the social organization system, it lays a theoretical foundation for solving the relatively fair and reasonable distribution logic within the organization system under the transparent logic framework: ① Cumulative basic action factor (Σ factor): The short-term value is the main factor and the medium-term value is supplemented to reflect the realization of related values. ② Risk control factor (Π factor): The medium-term value is the main factor and the short-term value is supplemented to reflect the realization of the relevant value. ③Strategic amplification factor (Ë factor): The medium and long-term value is the main factor, and the short-term value is the supplement to reflect the realization of the relevant value. In addition, the Σ factor of the social organization system ¤ value creativity model helps the system ¤ recognize the value of the screw and provides a quantitative analysis method; only these Σ factor basic work has accumulated to a certain degree, and the collaboration between each other to a certain level, The system can form a fundamental system with self-survivability (market competitiveness), otherwise risk control, strategic layout, etc. cannot be discussed.

At the same time give a summary of the social application of the social organization system value creativity model： The value creativity model of social organization system, oriented to the fields of sociology, economics, management, human resources, etc., provides quantifiable evaluation, improvement, optimization, and implementation of the value creation of each agent in the organization for the social organization system. The model method has far-reaching industry application prospects. It can be expected that the value creativity model of social organization system: It can provide quantitative methods for talent training at all levels of the country; Provide quantitative methods for the selection of talents in various fields for the whole society; It can establish a systematic value distribution system for the organization system and provide a quantitative method; It can establish a value contribution evaluation system for each position and provide a quantitative method for the organizational system; It can build a scientific human resource management system for the social organization system and provide quantitative methods.

Table 1. Three kinds of factor,formal expression with functional expression.

Table Head	Table Column Head: Formal Expression with Functional Expression		
	Three kinds of factor	Formal Expression	Functional Expression
A as Σ	clarify the Σ factor	$AI_{a\,l}$ and $AI_{a\,i}$	Accumulation function
B as Π	clearly the Π factor	$AI_{b\,l}$ and $AI_{b\,i}$	Risk control function
C as $\dot{E}$	clearly the $\dot{E}$ factor	$AI_{c\,l}$ and $AI_{c\,i}$	Magnification function

$$Vitality(¤) = \left(b_1(AI_{b1}) \times b_j(AI_{bj}) \times \cdots\right) * \left(a_1(AI_{a1}) + a_{2i}(AI_{ai}) + \cdots\right)^{(1+c_1(AI_{c1})+c_k(AI_{ck})+\cdots)}$$

5 Conclusions

Its significance lies in: through the simple analysis of the three types of factors of the value creativity model of the typical social organization system, not only the three types of value creativity models of individual, family and country and their instance factors are obtained in an unambiguous description. Moreover, several meaningful conclusions can be drawn from the value creativity model function of the social organization system. Thus, the cognitive results of the human brain are obtained, and the high-quality effects of re-created modeling-simulation can be obtained by the cognitive computing method of the computer.

Instance factors of family value creativity model： In the family system, the typical work content that related individuals or organizations can form the cumulative Σ factor are: daily family life, getting along, etc. In the family system, the typical work content that related individuals or organizations can form risk/factors are: betrayal of marriage, domestic violence, etc. In the family system, the typical work content that can be formed by related individuals or organizations as strategic factors include: giving birth to children, supporting specific careers, etc. **Instance factors of national value creativity model：** In the national organization system, the typical work contents that related individuals or organizations can form the cumulative Σ factor include: daily operation of the country, economic development, social governance, border order protection, etc. In the national organization system, the typical work contents that can be formed by related individuals or organizations are: territorial integrity, political legitimacy, military controllability, and social stability. In the national organization system, the typical work content that related individuals or organizations can form strategic factors include: specific political figures, specific strategic technology industries, specific social system governance systems, etc. **Instance factors of individual value creativity model：** In an individual agent, the typical work content that can be formed by related individuals or organizations that can accumulate Σ factors are: daily healthy life, study, work, etc. In an individual agent, the typical work content that can be formed by related individuals or organizations are: drug use, gambling, game addiction, suicide, etc. In the individual agent, the typical work content that can be formed by related individuals or organizations are: family background, meeting nobles, choosing opportunities in the times, and creating specific inspirations.

Some Conclusions on the Model Function of Value Creativity of Social Organization System: 1. The social organization system value creativity model function is an original formula born in China. It provides a powerful theoretical analysis tool for the evaluation of social organization system value creativity, as well as management, decision-making, and benefit distribution based on this. .2. Social organization system value creativity model function can be widely used in various social organization systems, including but not limited to family organizations (family, family), political organizations (political parties, government, departments, etc.), economic organizations (enterprises, Interest groups, etc.), cultural organizations (associations, theater troupes, etc.), military organizations (troops, etc.), religious organizations, etc.; and used for the evaluation of value creation of sub-organization systems in the social organization system ¤, the social organization system ¤ targets a specific single event The value creation evaluation of each participating agent in AI $_n$. 3. The value creativity model function of social organization system, although it is only a basic mathematical function at present; but based on this, for the calculation, analysis and evaluation of the value creativity of various social organization systems, a series of subsequent system studies can be constructed The formula system and theoretical system are further original and developed into a new discipline-"Quantitative Analysis of Value Creation in Social Organization System".

References

1. Espadoto, M. et al. Deep learning multidimensional projections. Information Visualization 19 (2019): 247 - 269.
2. Grieco, Cecilia et al. Measuring Value Creation in Social Enterprises. Nonprofit and Voluntary Sector Quarterly 44 (2015): 1173 - 1193.
3. Pirson, Michael Andreas. Social Entrepreneurship - A Model for Sustainable Value Creation. (2010).
4. Córdova, F. et al. Cognitive Strategic Model applied to a Port System. ISC Int. J. Inf. Secur. 11 (2019): 73-78.
5. Gu, Jessica et al. Simulation of an Organization as a Complex System: Agent-Based Modeling and a Gaming Experiment for Evolutionary Knowledge Management. (2016).
6. Liu, S. et al. Using a social entrepreneurial approach to enhance the financial and social value of health care organizations.Journal of health care finance 40 3 (2014): 31-46 .
7. Guidi, M. et al. An empirical approach to a community based integrated waste management system: a case study for an implementation and a start of community engagement model for municipal waste in Bolivia. (2016).
8. Dankulov, M. M. et al. The dynamics of meaningful social interactions and the emergence of collective knowledge. Scientific Reports 5 (2015): n. pag.