

The Construction of Non-profit Organization Credibility: A Dynamic Model Based on Information Disclosure and Public Participation

Zijun Wang

New York University, New York, The United States

zjwangqd@gmail.com

Keywords: Non-Profit Organization Credibility; Information Disclosure; Public Participation; Dynamic Model; Synergistic Effect

Abstract: This paper focuses on the credibility of non-profit organizations, constructs a dynamic model based on information disclosure and public participation, and investigates the interaction mechanism between these two factors and their impacts on credibility. The research findings indicate that information disclosure and public participation will enhance credibility through synergistic effects, and there is a threshold effect: The marginal effect increases significantly after breaking through the critical value. Additionally, costs limit information disclosure, and the characteristics of low-cost and high-response channels influence effective public participation. To ensure system stability, relevant personnel must balance the synergistic effects with the speed of credibility loss; the optimal strategy involves coordinating both factors to achieve this balance. The study offers a theoretical framework and practical solutions for enhancing the credibility of non-profit organizations.

1. Introduction

1.1 Research Background

Globally, non-profit organizations play an important role in promoting social progress, environmental protection and public welfare. Due to their diverse funding sources and complicated operational processes, non-profit organizations often face credibility challenges. In today's world of diverse information access channels, the public expects greater transparency and participation from non-profit organizations. Disclosing information and encouraging public participation have become essential to building the credibility of non-profit organizations.

In recent years, with the development of digital technology, many countries have issued relevant policies and regulations, requiring non-profit organizations to improve the level of information disclosure and public participation to enhance their credibility. In this context, it is particularly necessary to develop a dynamic model for measuring and enhancing the credibility of non-profit organizations.

1.2 Research Significance

Aiming at the key issues in the credibility construction of non-profit organizations, this study analyzes the interaction between information disclosure and public participation. This study has significant academic and practical significance. From an academic point of view, it will provide a new perspective for the conceptualization of the credibility of non-profit organizations. In addition, it uses a dynamic model to analyze its evolution process, which enriches the theory.

From a practical point of view, improving the credibility of non-profit organizations will not only help them attract more resources but also enhance the public's understanding and recognition of their missions and projects. The analysis and suggestions mentioned in this study are helpful for non-profit organizations to obtain practical strategies to better manage their credibility, thus enhancing their organizational performance and social influence.

1.3 Research Purpose

The purpose of this study is to develop a dynamic model of the credibility of non-profit

organizations based on information disclosure and public participation, and to deeply analyze its internal mechanism and evolution characteristics. Specific objectives include: first, the composition and influencing factors of the credibility of non-profit organizations are discussed theoretically, and the roles of information disclosure and public participation are clarified. Second, constructing a model reveals the dynamic relationship between information disclosure, public participation, and their influence on credibility. Finally, optimization strategies and policy suggestions are put forward to help non-profit organizations effectively enhance their credibility.

This study offers a practical framework for non-profit organizations regarding information disclosure and public participation. It provides theoretical support for policymakers and researchers to further explore related issues.

2. Theoretical Foundation

2.1 The Concept and Composition of the Credibility of Non-profit Organizations

The credibility of non-profit organizations refers to the trustworthy image and reputation established by organizations among the public and stakeholders. Their credibility is closely tied to the organization's survival and development, serving as the basis for obtaining resources and achieving its goals [1]. The credibility of non-profit organizations primarily hinges on transparency, which refers to the openness of the organization in its financial, operational, and decision-making processes. This transparency forms the basis of public trust in the organization. Non-profit organizations must demonstrate credibility, and one significant component of that credibility is accountability [2]. It refers to the organization's responsibility for its actions and decision-making, and its ability to provide reasonable explanations when necessary.

Furthermore, social influence constitutes a pivotal element of credibility, encompassing the organization's capacity to accomplish its mission and the tangible value it generates for society.

Organizational ethical compliance refers to the degree to which the organization operates by the legal and ethical framework. This component of credibility is particularly salient, as it directly affects the organization's public trust. By analyzing these elements, we can have a deeper understanding of how non-profit organizations can effectively build and maintain their credibility.

2.2 Theoretical Framework of Information Disclosure

Information disclosure is a mechanism to show its operational conditions and financial transparency to the outside world in non-profit organizations, and it is an important means to enhance credibility. The theoretical framework of information disclosure principally encompasses the concepts of information asymmetry theory and transparency theory. The theory of information asymmetry posits that organizations must proactively mitigate the information disparity between themselves and their stakeholders, thereby enhancing information symmetry through the dissemination of comprehensive financial reports and project progress updates [3].

Transparency theory posits that the transparency of an organization directly impacts the public's trust in it, and non-profit organizations must consciously enhance the scope and depth of their information disclosure. Information disclosure can be accomplished through various channels, including regular reports, public audit results, and real-time online updates. The establishment of a robust information disclosure mechanism, the provision of comprehensive content, and the facilitation of seamless channels are prerequisites for cultivating public trust in non-profit organizations, thereby enhancing their credibility [4].

2.3 Theoretical Basis of Public Participation

Public participation refers to the active involvement of stakeholders in the decision-making processes of non-profit organizations, which is an important way to realize democratic governance and enhance the credibility of organizations. Its theoretical basis mainly covers participatory democracy theory and social capital theory. The theory of participatory democracy emphasizes the significance of public involvement in the decision-making process, thereby enhancing the legitimacy

and response rate of such decisions and fostering a stronger sense of responsibility and belonging among the public. Participation in decision-making processes enables the public to articulate their needs and expectations, while monitoring the legality and compliance of activities [5-6].

Social capital theory points out that through public participation, organizations can establish a network of trust, cooperation, and mutual benefit, thus enhancing their social capital. Different degrees of participation may have different effects on the organization's credibility. Improving participation channels from simple information reception to active involvement with deep cooperation will significantly enhance the organization's credibility, image, and influence in society.

3. Construction of the Dynamic Model

3.1 Model Hypothesis and Definition of Variables

In the process of constructing a dynamic model involving the credibility of non-profit organizations, the first step is to make some assumptions to simplify the complex situation. These assumptions include the following aspects: Firstly, the credibility of non-profit organizations is influenced by two factors: information disclosure and public participation. Secondly, the transparency of information disclosure and the depth of public participation are pivotal factors that enhance the credibility of the organization. Furthermore, the interplay between information disclosure and public participation warrants consideration, as the addition of one behavior may influence the effect of another.

These are the key variables defined based on the assumptions: The credibility index (CI) is a metric that quantifies the public's perception of the trustworthiness of non-profit organizations; Information disclosure degree (ID) is used to measure the degree of organizational transparency and information symmetry; The degree of public participation (PD) is indicative of the extent and scope of public participation in organizational initiatives. These variables can comprehensively describe the dynamic characteristics of the credibility of non-profit organizations and provide a basis for further analysis.

3.2 Dynamic Relationship Model

The dynamic relationship model focuses on how information disclosure and public participation influence credibility and interact with each other. In the model design, the information disclosure (ID) is regarded as a variable that can directly improve the credibility index (CI), but also indirectly affect the degree of public participation (PD), because information disclosure enhances the public's understanding and trust in organizational activities and the decision-making process.

The degree of public participation (PD) is another important factor affecting the credibility index (CI), and active participation fosters a stronger sense of identity and responsibility, which in turn enhances credibility. Public participation, in turn, affects information disclosure because high-quality participation requires more information support. The two-way relationship improves credibility, a dynamic evolution process.

3.3 Model Integration and Expansion

When integrating the dynamic relationship model between information disclosure and public participation, we introduce dynamic equations to express the combined effect. This model can analyze how information disclosure and public participation enhance each other, thereby increasing the credibility of non-profit organizations. It can also evaluate their performance under various resource constraints through expansion. When expanding the model, we consider external factors such as policy changes, technological progress, and economic environment. These factors may indirectly affect the organization's credibility by influencing the manner of information disclosure and public participation, as well as efficiency and cost.

In addition, it is suggested that the model consider adding a feedback mechanism, in other words, how organizations adjust their information disclosure and public participation strategies to maximize their credibility. The dynamic model of integration and expansion provides both a theoretical and empirical framework for strategic decision-making in non-profit organizations. This model assists

these organizations in maintaining and enhancing their credibility within a complex and rapidly evolving environment.

4. Analysis of the Model and Mechanism

4.1 Model Stability Analysis

4.1.1 Equilibrium Solution

The equilibrium point signifies the stable state in which the credibility of the system remains constant over time. At this juncture, the credibility change rate is equivalent to zero ($\frac{dC}{dt} = 0$). Based on the comprehensive dynamic model:

$$\frac{dC}{dt} = \alpha D + \beta P + \delta DP - \gamma C,$$

let the change rate be zero, and the credibility level C^* in the equilibrium state can be directly solved. After substituting the equilibrium conditions, we get:

$$\alpha D + \beta P + \delta DP - \gamma C^* = 0,$$

and we can get:

$$C^* = \frac{\alpha D + \beta P + \delta DP}{\gamma}$$

It indicates that the credibility C^* under equilibrium is determined by information disclosure (D), public participation (P) and their synergistic effect (δDP). A positive correlation is observed between C^* and these variables. Conversely, a negative correlation is observed between C^* and the credibility attenuation coefficient γ . That is, the accelerated deterioration of an organization's credibility, attributable to information lag and trust erosion (as indicated by the magnitude of γ), results in a corresponding decline in credibility levels attaining a state of equilibrium. The research findings directly reflect the role of information disclosure and public participation in maintaining and stabilizing credibility, as well as the restrictive influence of the attenuation effect.

4.1.2 Condition for Stability

System stability refers to whether the system can automatically return to the equilibrium state when the external disturbances cause the credibility to deviate from the equilibrium point C^* . In order to analyze the stability, it is assumed that the deviation of the credibility from the equilibrium value is $\Delta C = C - C^*$. The change rate of the deviation can be expressed as follows:

$$\frac{d(\Delta C)}{dt} = \frac{dC}{dt} - \frac{dC^*}{dt}$$

Since C^* is an equilibrium value ($\frac{dC^*}{dt} = 0$), this formula can be obtained by substituting it into the original model:

$$\frac{d(\Delta C)}{dt} = -\gamma \Delta C$$

The above formula shows that the change rate of deviation is negatively correlated with the deviation amplitude ΔC . In the event that $\gamma > 0$, and $\Delta C > 0$ (i.e., credibility exceeds the equilibrium value), it can be deduced that $\frac{d(\Delta C)}{dt} < 0$ (i.e., deviation will be reduced). If $\Delta C < 0$, (i.e., credibility is lower than the equilibrium value), it can be deduced that $\frac{d(\Delta C)}{dt} > 0$ (i.e., deviation will be expanded to the equilibrium value). The core condition of system stability is $\gamma > 0$, which means that there is a natural attenuation trend of credibility.

It is necessary to ensure that the synergistic effect of information disclosure and public participation is not permitted to exacerbate the deviation. When $\alpha D + \beta P + \delta DP - \gamma C^* < \gamma C^*$ (i.e., the synergistic effect does not exceed the attenuation constraint in the equilibrium state), the disturbance will not cause the system to diverge, further consolidating the stability. It indicates that even if the organization enhances its credibility through information disclosure and public participation, it needs to control the pace to match the decay rate in order to maintain stability.

4.2 Analysis of the Marginal Effect of Information Disclosure

4.2.1 Threshold Effect of Information Disclosure

The threshold effect of information disclosure refers to a critical value (D_0). When the level of information disclosure (D) is lower or higher than this value, its marginal contribution to credibility (C) will change significantly. In conjunction with the dynamic model, when D is less than D_0 , the public faces challenges in comprehending the organization due to a paucity of information and the absence of crucial elements, such as core financial data and project effectiveness. At this point, the marginal effect ($\frac{\partial C}{\partial D} = \alpha + \delta P$) of information disclosure is minimal. For instance, when only rudimentary registration information is disclosed, it becomes challenging for the public to comprehensively grasp the organization's essence, thereby constraining the potential for marginal trust improvement.

When $D > D_0$, the public's perception of an organization's professionalism and commitment to public welfare is significantly enhanced by the provision of additional information, including details regarding capital flow and the decision-making process. At the same time, the synergistic effect (δDP) begins to increase. Therefore, based on sufficient information, the public will participate in supervision more effectively and further strengthen their trust in the organization. At this point, the marginal effect increases with D , and each additional unit of information disclosure increases the credibility by a larger margin. The threshold D_0 typically pertains to the fundamental satisfaction of the public's information needs. For instance, it encompasses essential information regarding finance, projects, and governance, which serves as the crucial point to activate the increasing marginal effect.

4.2.2 The Cost Constraint of Information Disclosure

There are explicit and implicit costs in information disclosure, which will constrain its marginal effect. Explicit costs encompass human and technical inputs required for information collection, collation, and publishing, such as building an open platform and third-party auditing. Implicit costs involve the risk of privacy breaches or misunderstandings stemming from improper information processing. Cost (K) shows a marginal increasing trend with the increase of information disclosure level (D). That is, $K = f(D)$ and $f''(D) > 0$ (The second derivative is positive).

According to the model, although the increase of D will enhance the credibility through αD and δDP , when D exceeds a reasonable range, the cost growth rate may exceed the revenue growth rate of credibility. For example, excessive disclosure of trivial internal process information not only increases the burden on organizational operations but also reduces people's reading efficiency due to information redundancy, thereby weakening the effectiveness of information transmission. As a result, the "net marginal effect" of information disclosure (credibility increment minus cost loss) will decrease or even turn negative. In practice, it is necessary to balance the depth of disclosure and the cost to avoid a resource mismatch caused by out-of-control costs, which can damage the organization's sustainability and credibility.

4.3 The Adjustment Mechanism of Public Participation

4.3.1 The Impact of Participation Depth

The depth of public participation is defined as the extent of public involvement in organizational affairs, and is characterized by varying degrees of engagement, ranging from minimal to substantial involvement. The former involves the passive receipt of information and simple feedback, while the latter involves decision-making consultation, supervision, implementation, and the co-construction of resources. They have a significant impact on the synergy between information disclosure and credibility.

When the degree of participation is minimal (P is less than P_0), the public is mostly "information recipients". Although there is information disclosure, it is difficult to interact effectively based on limited information, and the synergy effect (δDP) exhibits a marked weakness, as evidenced by a low δ value, which limits marginal improvement in credibility. If they only collect opinions through questionnaires, the participation is low.

When the critical value is exceeded ($P > P_0$), the public becomes a "co-governance subject", which can give suggestions and supervise the implementation based on the disclosed information. The synergistic effect is significantly enhanced, forming a positive cycle, and the δ value increases with the degree of participation. This critical value pertains to the public's actual right to intervene, such as through decision-making hearings and project oversight, which is essential for achieving synergistic advancements.

4.3.2 Effectiveness of Participation Channels

The effectiveness of public participation channels has a direct impact on the extent of participation level (P) transformation, thereby constraining the synergistic effect of information disclosure and participation (δDP). An effective channel should possess the characteristics of "low cost and high response": low cost means that less time and energy are spent on it, such as using an online interactive platform, and high response means that the organization handles and provides feedback on opinions on time.

When the channel is effective, the participation threshold is lowered, the actual participation level (P) is improved, and it forms a linkage with information disclosure (D), so the public can interact efficiently based on the disclosed information. At this point, P is more proximate to "actual effective participation," and the δ value in the synergistic effect is augmented accordingly.

If the channel is deemed invalid, for instance, if the feedback channel is obscured and the opinions are unresponsive, the participation cost will escalate, the actual effective participation (P) will diminish, and the synergy effect (δDP) will be mitigated. It will result in a disconnection between information disclosure and public participation, thereby hindering the transformation process. It can be seen that channel effectiveness is the key to connecting the two, which directly determines the effectiveness of synergy implementation.

4.4 The Role of the Dynamic Equilibrium Point

4.4.1 Optimal Strategies

Dynamic equilibrium point $C^* = \frac{\alpha D + \beta P + \delta DP}{\gamma}$. It shows that the optimal strategy needs to realize the cooperative matching between information disclosure (D) and public participation (P). The optimal combination of D^* and P^* should be found to maximize $\alpha D + \beta P + \delta DP$ without breaking through the constraint of the attenuation coefficient [7]. On the one hand, it is necessary to raise D to the threshold D_0 first to activate it; When the degree of participation is high ($P > P_0$), D should be deepened synchronously to amplify the synergistic effect (δDP), and the optimal ratio of "disclosure" and "participation" should be formed.

4.4.2 Policy Intervention

Policies should focus on reducing resistance and strengthening equilibrium stability. First, it is suggested that standardized information disclosure templates (such as mandatory disclosure of core financial and project data) should be adopted to reduce the implementation cost of D and push D closer to D^* . Second, it is necessary to establish convenient channels for participation (such as online interactive platforms), lower the threshold of public participation, and raise the P value to an effective range. Third, there is a need to establish a feedback mechanism and amplify the synergistic effect. In addition, through third-party evaluation and monitoring of γ (the credibility decay rate), the intervention can be adjusted in a timely manner to ensure that the system converges to the equilibrium point.

5. Conclusions and Suggestions

5.1 Major Research Conclusions

The dynamic model constructed in this study reveals that the core of non-profit organizations' credibility construction lies in the coordination of information disclosure (D) and public

participation(P). They are not isolated, but rather enhance credibility significantly through the synergistic effect (δDP). There is a threshold effect: when the information disclosure exceeds the critical value D_0 and the depth of public participation exceeds the critical value P_0 , the marginal effect increases significantly. Moreover, information disclosure incurs costs. Excessive disclosure may weaken the net effect due to the waste of resources. The effectiveness of public participation depends on the channel with "low cost and high response"; otherwise, it will lead to the attenuation of synergy. The system's stability must be maintained by achieving a balance between the natural attenuation coefficient (γ) of credibility and the synergistic effect. This indicates that credibility construction is a prolonged process necessitating continuous adjustment rather than a unidimensional enhancement.

5.2 Policy Advice

In order to promote the credibility of non-profit organizations, policies need to focus on collaborative optimization: firstly, it is necessary to formulate information disclosure standards, clarify the contents of "finance, projects and governance", push organizations to break through threshold D_0 , and reduce disclosure costs through third-party auditing. Secondly, it is imperative to construct an online interactive platform, simplify the participation process (including one-click feedback and real-time query), enhance the effectiveness of channels, and promote public participation to overcome P_0 . Thirdly, it is suggested to establish a participation feedback mechanism, incorporate the response rate of public suggestions into the assessment, and strengthen the synergy coefficient δ . Fourthly, it is crucial to introduce third-party evaluation and dynamically monitor the decay rate of credibility, which facilitates guiding organizations to adjust their strategies and ensures the system converges to an equilibrium point.

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