

THE BALDRIGE FRAMEWORK AS A STRATEGIC INSTRUMENT IN THE CRITICAL INFRASTRUCTURE PROTECTION (IMPLEMENTATION OF BEHAVIORAL ANALYSIS)

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Abstract: The aim of the following article is to outline the Baldrige framework as a useful instrument in the strategic management process of the critical infrastructure protection, by providing beneficial information regarding the current organizational state and formulate guidelines to the decision-makers in connection to the needed future changes and improvements. The first part of the article outlines the concept, main role, elements, advantages and disadvantages of the strategic framework. The Baldrige consists of seven elements (so-called categories), which are detailly explained in the article:

- *Leadership;*
- *Strategy;*
- *Customers;*
- *Workforce;*
- *Operations;*
- *Measurement, Analysis and Knowledge Management*
- *Results*

They are in alliance to the main goals and core values of the Baldrige framework such as: systems perspective; visionary leadership; valuing the personnel; organizational trainings and knowledge improvement; focus on success; management of innovation; societal contributions and responsibilities; ethics and transparency; value delivering, etc. The second part of the article presents the behavioral analysis as an instrument for improvement of the critical infrastructure protection, along with its role and function. A structural model of behavioral analysis program is presented with its main elements – team of experts; algorithm; eligibility criteria; monitoring and behavioral analysis; notification.

Last but not least, the article presents an example of the application of the Baldrige framework in the assessment process of the hypothetical application of behavioral analysis as an instrument for improvement of the critical infrastructure protection. It analyses the seven categories of the framework in regards to the implementation of program based on behavioral analysis.

Keywords: Baldrige framework, Strategic management, Critical infrastructure, Behavioral analysis systems

1. INTRODUCTION

The critical infrastructure facilities are vital elements of the nowadays' society due to their crucial importance for the normal functioning of the economic, political social and even environmental life of every given country. Their successful protection is a central issue of the process of maintenance and improvement and as such requires significant measures in order to be achieved. The introduction of appropriate strategic instruments could facilitate the accomplishment of stable and secured conditions for normal functioning of the critical infrastructure facilities. As such instrument could be outlined the Baldrige framework which provides an insight about different important for the critical infrastructure criteria and through that influence the decision-making process by providing opportunities for future developments.

2. THE BALDRIGE FRAMEWORK – CONCEPT, ROLE, ELEMENTS, ADVANTAGES AND DISADVANTAGES

The strategic management is a process of evaluating the internal and external environment, planning and implementations activities (incl. creating business models, developing strategies, forming competitive tactics, building appropriate organizational structure, developing management culture, steering the organization through corporate governance, etc.), all aiming the maintenance or improvement of competitive advantage and stability of the future undergoing business processes (Sammot-Bonnici, T., 2015).

Considering that, the introduction of adequate instrument in the strategic management on organizational level is an important step in the process of successful performance of the strategic plan and execution of the main goals and responsibilities set by the decision-makers.

A beneficial instrument for that matter is the Baldrige framework. It is considered to be a comprehensive instrument for monitoring and assessment of performance and detect existing issues and challenges (ACCA Global website, The Baldrige Performance Excellence Model). It facilitates any given organization to improve its results, both from financial and non-financial point of view, to reach its goals and, most importantly, to become more competitive as a result of aligning of all developed and integrated strategic plans, processes and decisions. Through this framework's implementation could be enhanced the organization's capability and effectiveness, hence improved the organizational sustainability. All that, combined with the strong workforce, delivers an increased value to the customers and stakeholders in general (Tennessee Center for Performance Excellence website, The Baldrige Excellence Framework).

The framework considers the uniqueness of each organization and is not developed in order to put every one of them under a common denominator. It takes into an account the different industries and activities, the variety of strategic processes and challenges, the necessity of diverse competences of the specialists working in every single organization. However, there are seven universal elements, so called categories, for performance of the Baldrige framework which are illustrated on *Graph 1. Categories in the Baldrige framework*. They are essential elements of the framework and are in constant cooperation with one another in order to meet the main aims and conceptual values of the instrument.

Graph 1. Categories in the Baldrige framework



More detailly they are explained as follows:

- **Leadership** – it covers organizational aspects like governance, ethical issues and social responsibilities. In compliance to the framework is the development of core values like visionary leadership and focus on the future;
- **Strategy**– focuses on the strategic directions of the organization, as well as the execution of the different action plans in regards to them. This category could include formulation of prospects for development and management based on facts and innovation;
- **Customers** – examines whether and how the organization is covering the customer's expectations, industry and market requirements, business needs, etc. One of the most important value in the Baldrige framework is the build of satisfaction and positive relations with the customers, or the so-called “customer-driven excellence”;
- **Workforce** – outlines the matter in which the organization engages and manages the involved in the working processes individuals, including their qualifications, potential and prospects for aligning them with the main goals of the organization. Crucial here are the opportunities for additional personal learning and valuing the workforce, as well as, the relations with internal and external partners;

- **Operations** – examines the conduction of the main operations regarding the fulfillment of the set strategies and goals of the organization. That could be production or delivery activities, management and marketing processes and last but not least, safety and security actions;
- **Measurement, Analysis and Knowledge Management** – emphasizes on the need of conduction of assessments and analyses of key financial and statistical data, organizational, management or strategic information and through that defines systems perspectives;
- **Results** – focuses on the assessment of the organization's performance and the possible improvements in the key business areas such as financial performance, marketing and advertisement, customer satisfaction, operational efficiency, competitive advantage, leadership and others. It is mainly developed in accordance to focusing on results and creating a value (Hobcraft, P., 2017).

These categories cover different critical issues like: innovation and modernization; digital economy; cybersecurity; resilience and flexibility; hiring highly competent workforce; capitalization; risk management, etc. (National Institute of Standards and Technology website, About the Baldrige Excellence Framework). In that way the categories present the organization with a broaden understanding of these important aspects and through that enable it to focus on the performance results, support the maintenance of goal-oriented perspective for the organization and promote the goal-based diagnosis, grounded on profile of performance-oriented strengths and opportunities for future improvement (Hobcraft, P., 2017).

Moreover, the Baldrige framework is based on specific core values and concepts such as: systems perspective; visionary leadership; valuing the personnel; organizational trainings and knowledge improvement; focus on success; management of innovation; societal contributions and responsibilities; ethics and transparency; value delivering, etc. (National Institute of Standards and Technology, Baldrige Performance Excellence Program).

The Baldrige framework has numerous advantages like simplicity and low cost for conduction. It is also applicable for every kind of organization, both private and public companies, no matter the size and type of business operations. The performance of the framework enables to be identified strengths and opportunities for future improvements, facilitates the allocation of resources and improves the communication, productivity and efficiency in the organization. One of the most beneficial aspects of the Baldrige is its comprehensiveness and overall inside view over all processes in an organization through aligning the framework's categories. In combination with other strategic management instruments, it could provide a wide-perspective solution for the fulfillment and assessment of the organization's goals.

However, a couple of drawbacks could also be stated. The lack of universal steps for implementation and conduction of the framework could be considered as both negative and positive aspect. From the one side is the opportunity to apply it in accordance to the organization's interests and abilities. On the other side is the lack of universal guidelines to set the tone how to use Baldrige framework most adequately. Another disadvantage is what for many is considered as an inconvenience – the long-term process which includes learning and improvement, requiring a serious dedication and commitment from the leaders and all involved in the process individuals.

3. THE BEHAVIORAL ANALYSIS INSTRUMENT IN THE PROTECTION OF THE CRITICAL INFRASTRUCTURE

The critical infrastructure could be presented as an element, system or parts of it, situated in a particular country, which is of essential importance for preserving its vital public functions and the safety, security, health, economic or social welfare of all citizens. In case of its destruction or impairment, serious negative consequences could arise as a result of its inability to maintain its normal functioning. The protection of the national critical infrastructure is a matter of a strategic importance for ensuring the national security of the country in its entirety (Gechkova, T., 2021). The critical infrastructure is exposed to numerous risks for its safety and thus threatening its normal and effective maintenance. Various examples of that could be given – terrorist attacks, illegal actions, natural hazards, unexpected malfunctions of assets, withdrawal of customers, loss of personnel, etc. In the recent years cybersecurity threats are becoming more and more popular – from cybercrimes to theft of personal data. The energy sector, along with the transport, telecommunication, critical manufacturing industries and public services sectors are most vulnerable to cyber-attacks (Allianz website, Cyber Attacks on Critical Infrastructure).

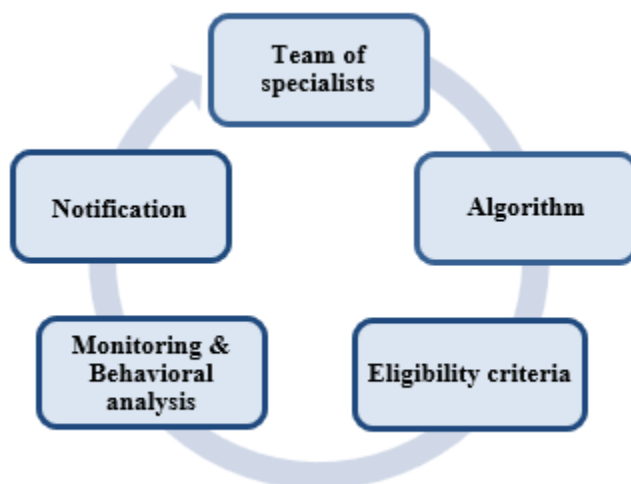
Considering all that, the development and implementation of innovative methods for protection should be performed in accordance to the new and more sophisticated threats that arise. The behavioral analysis is an example of proactive and modern instrument to facilitate the critical infrastructure protection. It is based on analyzing external behavioral traits in order to detect hostile or suspicious person. It could be applied by law enforcers for interrogation, search for evidence and clues, detection of aggression and others (Harvey, M., 2018).

Behavioral analysis is particularly beneficial for organizations and facilities with a significant number of individuals in its territories like airports, harbors, transportation stations, undergrounds, cultural venues, educational and

healthcare institutions, telecommunication structures and others. The timely detection of suspicious or aggressive individuals is of significant importance in the preservation of security of the critical infrastructure facilities. That could be achieved through behavioral analysis based on checklist and reference list of hostile traits (Navarro, J., 2014).

Behavior analysis could be applied through programs based on it. In general, they have a certain basic structure (presented on *Graph 2. Structure of the Behavioral Analysis Program*). The starting point is the appointment of teams of specialists in the field (IT experts, employees with experience in the behavioral analysis, specialists in the field of security) who carry out various activities in order to formulate the main structure and elements of the program. After that, an algorithm is developed in accordance to which the program is going to operate (for example, 30 suspicious behavioral traits which the algorithm should observe and detect. Once that stage is complete, the program is implemented and then it starts to monitor the individuals in its territory. Eligibility criteria should also be defined and taken into an account during the surveillance process. That could be 10 of those 30 suspicious traits that a person is permitted to express but for 10 and more the program should notify the security officers. The suspicious individuals are to be separated and subjected to additional checks and interrogation by the security specialists.

Graph 2. Structure of the Behavioral Analysis Program



4. EXAMPLE OF APPLYING BALDRIGE FRAMEWORK

(Assessment of Behavioral Analysis in the Critical Infrastructure Protection)

This part of the article presents a hypothetical example of the application of the Baldrige framework in the assessment process of the application of behavioral analysis as an instrument for improvement of the critical infrastructure protection. The example follows the behavioral analysis program as a hypothetically implemented instrument for critical infrastructure protection and arising from which an analysis is made based on Baldrige framework considering the seven previously explained categories. The information regarding the example is presented as follows:

Example

Type of organization: Critical infrastructure “Z” with a significant number of customers and personnel in its territory;

Issue: Potential threats for the security of “Z” due to difficulty in maintaining high level of safety considering the constant presence of substantial number of individuals and the necessity for timely and adequately detecting criminal or hostile persons;

Instrument to be analyzed: Behavioral analysis program;

Method used: Baldrige framework;

Examined area: Assessment based on the seven categories of the Baldrige framework.

Performance of the Baldrige framework

For the purposes of the article and the given hypothetical example, the seven categories of the Baldrige framework are presented from the point of view of the critical infrastructure “Z” and are analyzing the application of the behavioral analysis program:

Leadership

Behavioral analysis program is undoubtedly an innovative and relatively new instrument. Its implementation requires a significant managerial and proactive attitude, including preparations needed for applying it. Without appropriate visionary leadership that not only would not be possible to be achieved, but it would not even be considered as an opportunity. A certain level of dedication and risk is to be undertaken in order to develop and implement such instrument and take a maximum advantage of it. Moral and ethical issues should also be considered before and during its application.

Strategy

Once the vision for implementation of behavioral analysis program is created and the decision is made, an effective and efficient strategy needs to be formulated, including plan for implementation, subsidizing the process of development and subsequent expenses, required trainings for personnel, expected results, hypothetical problems and others.

Customers

The customers of “Z” are looking not only for goods and services of high quality but also for a custom-friendly attitude, social responsibility, safety and security, and all of that provided at an affordable price. The application of behavioral analysis should have a positive effect over the provided goods or services to the final consumers. If that is not achieved, a certain prioritization should be made. When it comes to critical infrastructure, which is the case of “Z”, high level of security is extremely important in order to keep the customers satisfied, attract new clients, and in this way improve the reputation of the organization.

Workforce

This is a category with a significant effect over the process of introducing and maintaining behavioral analysis program. While most certainly qualified and highly competent experts are needed, constant improvement and additional learning is also required. If the workforce is not able or eager to achieve the desired results in this process, then the conduction of behavioral analysis might not be possible.

Operations

As already explained, the implementation of new instrument requires the execution of numerous operations. This could even become a constant process, undergoing through different activities. Behind those operations stands formulated strategy and personnel, consistent of competent specialists. The process should be monitored during and after its fulfilment in order an adequate assessment to be made and subsequent actions taken.

Measurement, Analysis and Knowledge Management

This is a crucial category in the framework because it provides insights of the effect of the implemented behavioral analysis program and through that sets the tone for future proceedings, developments, adjustments or withdrawals. It must be performed dutifully and regularly in order to prevent arising issues and manage to react adequately towards different challenges in advance.

Results

Final element of the Baldrige framework which could turn into a starting point of another process depending on the results. This category provides the decision-makers and the stakeholder with an information about the outcomes of the performed framework, and in this way enables them to make conclusions, formulate future plan and tactics and conduct their leadership in the most suitable and appropriate way according to that.

5. CONCLUSION

The Baldrige framework is a useful instrument for testing the idea of potential enhancement in different business aspects, including the safety and security of a given organization. It could be beneficial in assessing whether a particular instrument (in this case behavioral analysis program) is successfully applied in the protection process of the critical infrastructure and formulating guidance for the decision-makers, concentrating on the future strategic improvements. That is why the Baldrige framework is recommended in this article as a suitable instrument for analyzing and evaluating the behavioral analysis programs as an innovative security mechanism for critical infrastructure protection.

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