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CHANGE MANAGEMENT METHODOLOGY: SINGO MODEL

The article examines and summarizes information about the work and effectiveness of the model of Japanese scientific engineer Shigeo Shingo (1909–1990). Questions regarding the prerequisites for its emergence, development, and implementation in the management of Japanese enterprises and companies are addressed, as well as the potential application of this model in Ukrainian enterprises. The value system at enterprises is analyzed in the context of the Shingo model and its role in the involvement of employees in the process of transformation of production. The Shingo model is used to analyze the role of employees in the process of transformation of production. In the present circumstances of the transition of Ukrainian enterprises to a highly volatile stage of development, the significance of the subject matter is undeniable.

Value orientations and authentic models of employee behavior of developing enterprises become topical in the context of the need to move towards high productivity. It is therefore important to assess the degree of readiness of the economy for the transformation process, its ability to adapt to changes, and its potential speed of introduction of technologies and innovations. In this work, the effective structure of the production transformation process and the individual elements of the transformation are indicated. It is demonstrated the impact of innovative methods and methods of transformation on the speed of growth and development of productivity at enterprises. The material presented in the article encompasses significant aspects of the fundamental essence of the innovative nature of development based on the Shingo model.

Keywords: management theory, management system, change management, organizational development, management history, Shingo model.

МЕТОДОЛОГІЯ УПРАВЛІННЯ ЗМІНАМИ: МОДЕЛЬ ШІНГО

У статті проаналізовано та узагальнено відомості про роботу та ефективність моделі японського інженера-вченого Шігео Шінго (1909–1990). Обговорюються питання щодо передумов її виникнення, розвитку та впровадження в менеджмент японських підприємств і компаній, можливості використання цієї моделі на українських підприємствах. Проаналізовано систему цінностей на підприємствах у контексті моделі Шінго та її роль у залученні працівників до процесу трансформації виробництва. В сучасних умовах переходу українських підприємств до високоволатильної стадії розвитку актуальність теми є беззаперечною. Ціннісні орієнтації та автентичні моделі поведінки працівників підприємств, що розвиваються, стають актуальними в контексті необхідності руху до високої продуктивності. Тому важливо оцінити ступінь готовності економіки до процесу трансформації, здатність адаптуватися до змін, потенційну швидкість впровадження технологій та інновацій. У процесі аналізу літературних

джерел у даній роботі вказано ефективну структуру процесу перетворення виробництва, окремі елементи перетворення. Показано вплив інноваційних методів і методів перетворення на швидкість зростання і розвитку продуктивності праці на підприємствах. Викладений у статті матеріал висвітлює важливі аспекти сутності інноваційного характеру розвитку на основі моделі Шінго.

Ключові слова: *теорія управління, система управління, управління змінами, організаційний розвиток, історія управління, модель Шінго.*

Statement of the problem. The current geopolitical and economic trends of restructuring in the world economy create unique conditions for the creation and implementation of ambitious projects in various areas of human activity. This can be expressed in a collection of efficient practices and solutions that have been successfully employed in the selection of personnel, management, and capital development of organizations. This tendency was manifested in the post-pandemic phase of the development of industrial enterprises and in the conditions of sanctions pressure, when the geopolitical and economic context began to change rapidly.

Industrial enterprises with a clear value profile and the ability of managers to adjust their business to any changes proved to be the most resistant to intensifying competition, urgent restructuring of logistics chains, and revision of contractual obligations. Managers of such enterprises understand the importance of risk hedging and anticipate potential problems. For employees of such enterprises, corporate values become the main reference point during periods of rapid change and disruption of well-established processes.

It is a well-proven practice to turn to values during a “fever.” However, in accordance with. According to Budnik [1], it is imperative that these values are correctly formulated, formalized, and become a fully functional working tool within the operating enterprise by the time “X” arrives. Then, the team will quickly stabilize under any conditions, and the set of interrelated activities and work aimed at creating a certain product or service for consumers will be optimized. An increase in labor productivity will be outlined.

One example of a successful model in production is the Toyota concern, whose founder was Shigeo Shingo. The values of his system determine the actual

model of conduct of each individual in their workplace. The case of Shigeo Shingo's creation of the most successful mass production line serves as an exemplary illustration of management not only in the mechanical engineering industry but also in all enterprises associated with production processes.

The **purpose of the study** is to study management in the context of change and transformation of the value system according to the model of the Japanese scientist Shigeo Shingo; to determine the prospects and conditions of changes over time in modern developing companies.

Recent research and publications. Numerous experts, both domestic and foreign, have made significant contributions to the study of change management, including F. Guillard, R. Daft, L. Greiner, D. Kelly, D. Kotter, K. Levin, O. Vykhansky, K. Voronkov, A. Yegorshin, O. Kozhevina, V. Nagayev, I. Petrova, O. Tashlykova, G. Shirokova, and others. However, research on the topic of change management necessitates ongoing advancements in both theory and practice.

Presentation of the main material. Based on the professional experience of Japanese scientist and engineer Shigeo Shingo (Shingo), the transformation model emerged in the mid-1800s and gradually developed its own philosophy, tools, and methodology. As a result of its implementation by followers, it underwent numerous changes [1].

The following organizational change management systems were developed by Shigeo Shingo and served as the foundation for his model:

1. Assurance of quality at the origin.
2. generating benefits for the customer.
3. utilizing no stocks.
4. The quick replacement of dies system (SMED).
5. Personal presence at work as a basis for decision-making (Gemba).

All forward-thinking industries currently use the quality system, also known as quality assurance at the source, which was created as a substitute for the statistical methods of quality management that are widely used worldwide. A feedback system that responds instantly should be developed in order to eradicate

flaws. Three techniques are included in this 100% control: source control, self-checking, and sequential testing. A subpar product cannot be moved to the following stage of production using this system.

Shingo, one of the creators of the Toyota company's "Lean Production" principles, put forth this quality-related philosophy [2]. In developing the System of Value for the Client (Consumer), which serves as the foundation for "Lean Production" [3, 4], Shingo made the case that a service or product only gains value when all of its components are produced directly. The process's foundation in this instance is thought to be the unavoidable creation of value for the client, provided that losses and any wasteful activity that uses up too many resources without adding value are eliminated.

Because inventory could impede production flow and prevent it from being "accelerated" to full capacity, Shingo thought Zero Inventory Operations were feasible. Buffer stocks were only required to handle potential abrupt changes in production volumes because excess inventory could be avoided by balancing and standardizing the production flow.

Shigeo Shingo's name was closely linked to the Toyota concern's work in the 1960s. He established a solid reputation as a top expert in the fields of transformation and optimization thanks to his indisputable achievements in the Japanese market. He was asked by the company to shorten the time it takes to switch out equipment. The Quick Changeover System was developed in this manner. The first task, which competitors had already accomplished, was to cut the press changeover time from four to two and a half hours. Shigeo handled the task brilliantly after studying the production. A few months later, he got a proposal that was structurally similar but fundamentally different: it called for cutting the changeover time from 2.5 hours to 3 minutes.

The practically intractable task was finished in a record month. He personally developed the SMED (Single Minute Exchange of Dies) system [5] based on this knowledge. Shingo suggests a distinct separation of functions based on how feasible they are to carry out. Next, a review of all the steps taken to

drastically cut down on the amount of time spent on each unit during the readjustment process. Shingo maintained that the removal of adjustments and the mechanization of production through standardization are essential, as are standardization, optimization, and the use of additional tooling.

Shingo believed that management should be done on the shop floor, not in an office. There is even a special term for this – *gemba* – a system of decision-making based on personal presence at the workplace. According to Shingo, when a problem arises, first of all, you need to go to *gemba*; check the equipment associated with the workplace; take countermeasures on the spot; look for the root cause; standardize operations to avoid repeating mistakes.

These five systems are components of a broader collection of related instruments. Using the Shingo methodology to transform a company involves a set of guiding principles that serve as the cornerstone of the entire enterprise rather than adhering to a single program.

Shingo used the three elements of the organization–systems, tools, and results–as the foundation for his management system. He believes that there is no direct correlation between the processes and the outcomes of work. Through the tool component, there is continuous direct communication and feedback between the systems and results. Given that it guarantees the completion of the assigned tasks, it would appear that such a theory already has the right to exist. But this is not the case. The business can only operate in the short term without an element that connects all of the aforementioned elements; it lacks the capacity to think and act strategically.

Shingo claims that this connection is made possible by culture, which includes the fundamentals of fostering communication amongst the organization's departments, client and supplier communication strategies, established business relations standards, and more. People are each company's cultural guarantors, and when developing an effective management model, one should rely on them.

It is essential to comprehend that the company's functional structure consists of team members, managers, and leaders. You can accurately determine the level of involvement in the transformation process by being aware of the existence of distinct layers of management. All participants in the process are engaged in the "propaganda" of culture, to use a broad definition. However, it is important to realize that managers are primarily responsible for advancing and reaffirming the company's cultural values. Their primary responsibility should be to create, unite, and promote values, beliefs, and behavior. Such acts result in a disorderly, unmanageable issue if management is not clearly involved and controlled.

Shingo created three guidelines for changing a business's management system, following which will enable you to create a culture and properly rely on it to create a successful and long-lasting enterprise.

First rule. Ideal actions lead to ideal outcomes. First and foremost, a capable manager needs to get rid of the conceptual conflict that has developed in his mind. It is possible to digitize and standardize the concept of ideal behavior and results.

Second rule. Behavior is shaped by systems and goals. The requirements for establishing a culture of ideal behavior are put into practice by this rule. It is important to know exactly how and what will be used to construct the ideal behavioral system. Only within the parameters of its implementation is each system accountable for its direction. Standards, reporting, feedback, and a list of improvements are some of the subsystems that make up the system, which is not an indivisible element. The right to refer to such a set as a properly functioning system is called into question when at least one of these subsystems is absent, as it violates the proper principles of connections and processes.

Third rule. Ideal behavior is determined by principles. This is one of the most important rules.

A pre-developed algorithm of action frequently proves irrelevant in new circumstances due to the constant changes in society, the economy, and the entirety of human factors. The company's operations can only remain true to the intended plans and strategies if a set of principles has been previously discussed and

approved by all parties involved in business processes. "Principles" ensure the stability of the business system and minimize losses and damages when established business processes are disrupted (due to standard business processes not adapting well to changes).

These guidelines provide a strong basis for developing a corporate culture. Their observance has the power to change and impact the organization. However, in this case, it is important to realize that establishing a culture, values, and principles for their own sake is pointless and detrimental to the company as a whole.

A crucial component of the company's transformation is the application of the Shingo model's tenets. Shingo's concept is that, even if you buy new equipment, run your business in a busy area, and use the newest production accounting techniques, all of this will only help the company achieve its operational and tactical objectives at the expense of the company's eventual downfall if you do not develop your thinking within the framework of Shingo's guiding principles. Because it determines the company's success, corporate culture is something that every business must maintain. But culture has many facets, just like any other phenomenon.

The development of an organization can be aided or hindered by its "character" attributes. Additionally, the second business will be more productive if everything is handled by bureaucratic means in one and employees participate in the production process in another. Creating a positive work environment will help with two things: first, it will reduce employee turnover because people will be less likely to leave a company where they feel comfortable, and second, it will make it easier to find new hires because they will want to join such a team. Stress, discomfort, ambiguous procedures, poor communication, and a lack of opportunities for professional advancement are common reasons why people search for new employment.

Businesses successfully accomplish their strategic objectives and elevate their corporate culture by implementing the Shingo methodology. An

organization's culture is dynamic. Consequently, it is critical for management to monitor, assess, and control the culture of the company.

Shigeo Shingo's works brilliantly address each of these issues. Results are at the top of the pyramid-shaped set of guiding principles. The sources of cultural change are at the base of the pyramid, followed by the principles of continuous improvement in the middle, and enterprise coordination at the top (Fig. 1). Although implementing the plan can set the groundwork for future long-term success, it does not ensure the development of an ideal business model. Guiding principles of the Shingo model [5]:

1. Enterprise Coordination (Think Systemically; Provide Value to Customers; Provide Consistency of Purpose)
2. Continuous Improvement (Aim for Excellence; Embrace Scientific Thinking; Ensure Quality at Source; Flow and Pull Value)
3. Sources of Cultural Change (• Treat Every Person with Respect • Lead with Equality).

Shingo's philosophy (sometimes referred to as the "Shingo pyramid") is based on two fundamental ideas: respect for each individual and equality in management. The team has a great deal of respect for the management, which is hidden beneath the seeming simplicity of such statements. The employees will treat the deputy director of production with more respect than they would other top managers if, for instance, he arrives at work every morning a few hours before the workday begins, greets the night shift employees, keeps an eye on how well the night outfit is performing, and talks about equipment usage issues.

Employees will always be more enthusiastic about the chance to work overtime and test new equipment with their involvement. Communication with the team is a fundamental and evident fact that establishes the conditions for transformation and yields more effective outcomes. Shingo thought that providing safe working conditions, training employees, involving everyone, and giving them more authority were further guidelines for altering the culture [6].

Two factors contribute to the success of the Japanese Shingo model: the commitment of Japanese workers to the company's goals and the absence of conflict between management and production. When business activities are coordinated, a single production strategy is formed. A strategic vector-based action that aims to boost the overall company's efficiency can yield a very high result. Shingo's concept is straightforward: behavior patterns must be altered in order to start down the path of development. The most challenging aspect of any change is this; for many, it becomes an impossibility.

The majority of managers in domestic businesses today actively invest only in turnover, oblivious to the dangers of a massive decline in worker productivity. Consequently, there was a decline in the quality of the products and a drop in profits, all while the company's reputation was deteriorating. All of this is due to the fact that employees are currently "X" morally unprepared to handle problems that require an immediate solution in a crisis. Such a management model results in a major and detrimental failure.

Consequently, an emergency production transformation is required, and special, highly compensated managers are employed to adjust the enterprise's operating mode in an emergency, primarily relying on basic necessities. The organization's budget is being consumed by the recurring emergency situations and the lack of work with the other levels of the pyramid. Managers must make sure that the business operates methodically and that the motivations of all levels of Maslow's pyramid "work" simultaneously if they want their employees to be able to "in the long run" qualitatively perform their job responsibilities [7, 8].

Employee engagement, job satisfaction, and organizational commitment all have a significant impact on labor productivity. Employee involvement in achieving daily results is significantly increased when projects are implemented to introduce a new behavioral model at industrial enterprises using the Shingo model as an example. This leads to an increase in labor productivity. Simultaneously, methods for carrying out such projects ought to be grounded in a certain scientific and practical foundation and carried out methodically, starting with focus groups,

the creation of the "Book of Values," the consolidation of value attitudes, a program for the actual application of values, and gradual, painstaking adjustments to the model of the entire management pyramid.

The Shingo model is applicable outside of the manufacturing industry as well. Since the understanding of the organization as a system determines the set of problems of various business types in the management system, these problems are essentially the same. These systems enable the development of a company's human capital with the right understanding of reality and preparedness to operate under circumstances of business-wide change. By analogy with the manufacturing business, "providing a model haircut service in a hairdressing salon" will therefore also set itself the task of increasing efficiency and scaling. Furthermore, the implementation of the model's principles in the case of medium-sized businesses proves to be far more effective because capital turnover is quicker and cost control dictates the development strategy of this company—in other words, "every penny counts."

Conclusion. A successful manager's primary responsibility is to create an enterprise management model that is optimal in order to adjust and transform the organization ahead of time in the event of a crisis [8]. For the most part, the Shingo Model addresses today's problems. The model eloquently illustrates the causal connections among corporate culture, principles, management systems, and tools.

Many industrial corporations worldwide now acknowledge the Shingo model as a reference model of organizational excellence, guaranteeing the outstanding success and competitiveness of businesses that prioritize ongoing self-improvement through employee behavior modification.

The Toyota company's undeniable authority has vividly confirmed the Shingo methodology for organizing production and behavior as a crucial aspect of business [9]. Many of the practical and philosophical techniques and tools discussed in the article effectively regulate the management system of any organization, thanks to Shigeo Shingo's innovative methods. These tools can be

used in the domestic practice of transforming the management systems of organizations.

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