

The role of PDCA cycle knowledge in the development of innovation services

ZUZANA ŠKUTCHANOVÁ

Department of Software Technologies, Faculty of Management Science and Informatics, University of Žilina, Žilina, Slovakia

Abstract: PDCA cycle model is frequently used in various organizations. The same is true in development of innovation. Organizations proceed by the steps - Plan, Do, Check and Act to achieve the desired result. However, during the use of PDCA cycle planning of skills is frequently forgotten and they are subsequently poorly or insufficiently utilized. The organizations then do not benefit fully from the potential of the knowledge of their employees to create new innovations or this knowledge is unnecessarily wasted. The aim of this article is to show the importance of planning employees' knowledge from the beginning of innovation in an organization.

1 Knowledge

Knowledge is a part of each process within an organization including service innovation. The term knowledge is understood as follows:

According to Drucker, knowledge and information are nowadays the only sensible source. The traditional production units – soil, labour and capital have not disappeared, they have merely lost their priority. The main producers of wealth are information and knowledge. [4]

Davenport-Prusak: “Working knowledge examines how knowledge can be nurtured in organizations. Building trust throughout a company is the key to creating a knowledge-oriented corporate culture, a positive environment in which employees are encouraged to make decisions that are efficient, productive, and innovative.” [3]

“Knowledge is therefore a prerequisite for the results of any conscious activity. When the business is a key category of success, being more important than the level of technical and technological security, access to resources and other prerequisites of a successful business” [3]

[10] states that “innovative businesses attempt to gain new knowledge e.g. via research and development centres or intern teams for development of new ideas. This supports increase in the number of employees to gain new knowledge and building intern networks for gaining and sharing knowledge.”

“Knowledge management is based on following those who know and development of a kind of business culture and technology which makes them speak up.” [2]

Managers on all management levels are expected to change invention to innovation. Knowledge and expert qualification of managers on all management levels ought to ensure professional help and motivation for employee teams during transformation of their thoughts into specific suggestions and solutions. [8]

2 Innovation

Innovation of services is a significant part of increasing service quality. To innovate services in general means to increase or perfect the current processes or even find a new way of service provision. Thanks to innovation the lifetime of the service is prolonged and its appeal in respect of the customer is increased. The evaluation of an innovation's benefit for an organization takes place after a period of time considering not only the monetary gain from the innovated service but also saved costs, time or rise of the company's image.

Innovation can be perceived as a process depicted by a succession of activities (Figure 1)

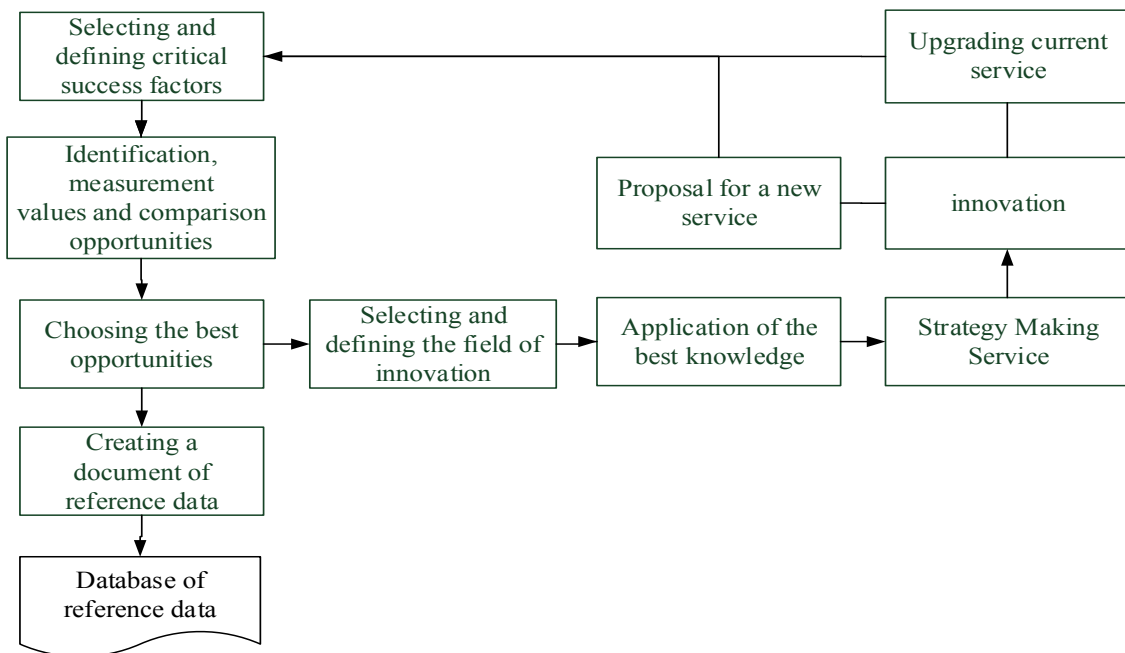


Figure 1 Innovation process (adopted according to: Slovak centrum of productivity)

The term **innovation** has several different meanings. Its author is Joseph A. Schumpeter [9] analysed business environment in which an organization is able to execute and is interested in “new combinations of development changes – innovations”.

According to [7] innovations are “most frequently interconnected with key attributes of industrial production (added value for the customer, preventing losses, non-verbal communication, efficiency of utilizing sources, lifetime cycle of a product, competitive edge, technologies and cyber world...) we come across daily in organizations which increase their successfulness on the market.”

Generally the term innovation means a positive change of status of a certain system. Innovations manifest themselves in various forms due to the nature of system or object they are related to.

From the business point of view we can deduce that innovation may concern any activity and area of organization. Management ought to ensure that innovation is dealt with complexly and in an interdisciplinary manner as an organic part of the overall innovation process.

According to [4] innovation is a “specific tool of businesspeople, a means for using changes as opportunities for distinguishing their business or services”.

3 PDCA cycle

PDCA cycle (Figure 2) – Deming cycle is used for increasing labour efficiency as well as support of improvement approach and its execution. The introductory step is planning (Plan). During this phase potential for improvement of the current status quo is examined and a plan for quality improvement is created. The resulting measures are employed in the Do phase. After their employment it is necessary to check whether the changes were successful – the Check step. This step examines whether the expected benefit is created in respect of the previously defined goals, or potential side effects and their evaluation. Measures for correction of discovered deviations, alternations of plans or improvement of systems are executed in the Act step. Improvement comes into force by continuous repetition of individual steps.

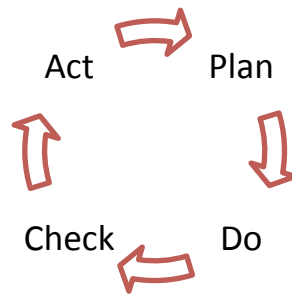


Figure 2 PDCA cycle

4 Utilizing knowledge in PDCA cycle

PDCA cycle is used as a tool for ensuring continuous improvement of a product¹. However, it is necessary that the Deming cycle is used also in case of knowledge (Figure 3).

The first step – Plan – represents a definition of what is to be measured. We also have to define individual areas of knowledge and use previously gained knowledge for exact definition of the problem. This step includes collection of data, i.e. collection of new knowledge. We need to specify who needs what kind of knowledge.

The second step of the cycle – Do – requires preparation of data as well as knowledge. It needs to be determined which employee needs what kind of new knowledge he/she can simultaneously use for correct preparation of data.

The third step of the cycle – Check – is supposed to analyse information, data and trends, to present and utilize information and implement preventive measures. During analysis of information, data and trends it is also necessary to analyse individual areas of knowledge. With the right knowledge a company can reach its goals or carry out preventive measures for reaching its goals. Along with presentation and utilization of information the employees have to present their knowledge as well as evaluate previously gained and used knowledge.

In the final phase of the cycle including identification of strategy for improvement of vision, needs, strategies and goals of the business, the companies need to identify individual knowledge necessary for creating vision, strategy and goals within an organization.

¹ ISO 9001 – product = hardware, software, service, processed material

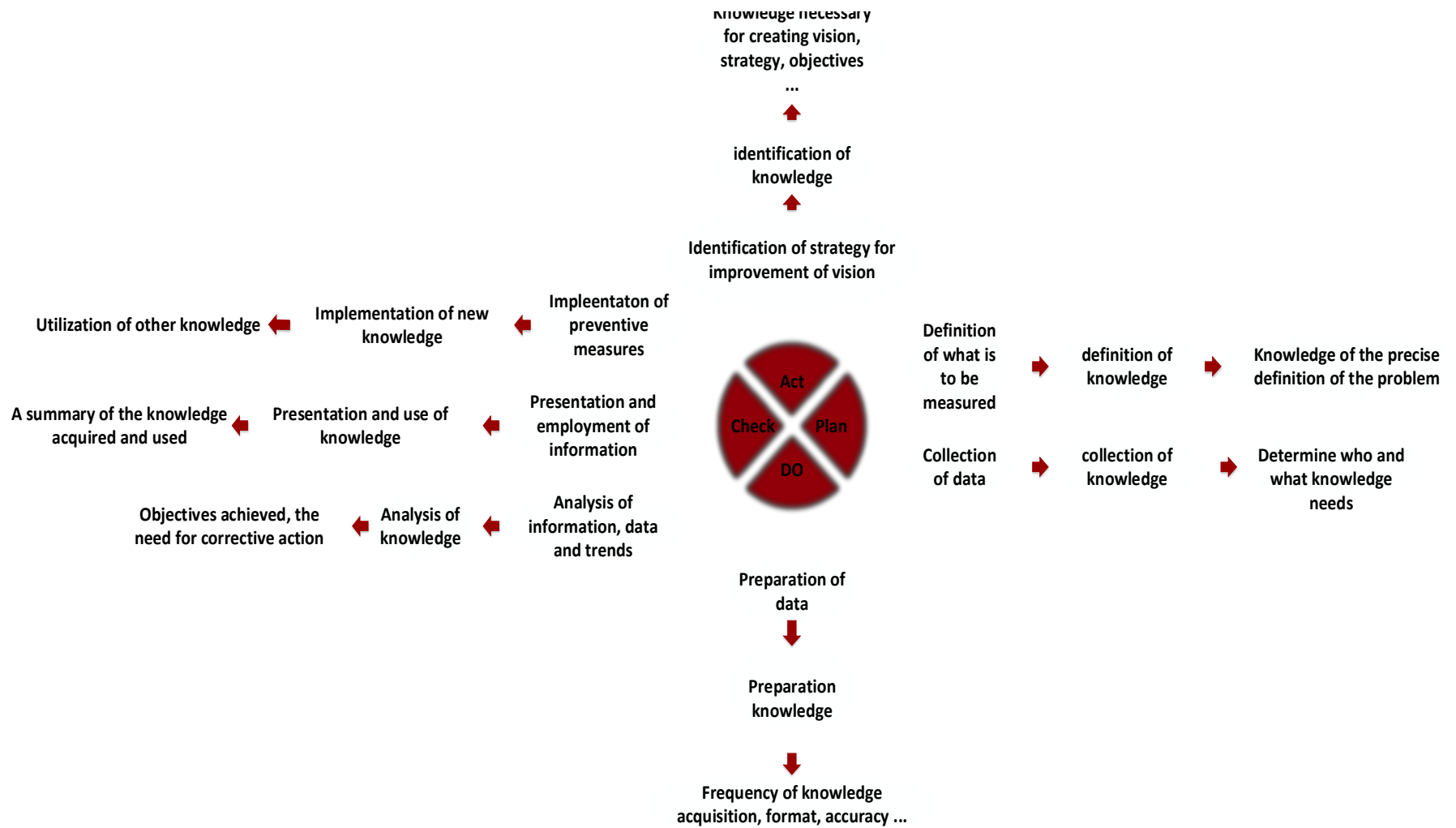


Figure 3 Importance of knowledge within PDCA cycle (according [1])

Different type of knowledge is thus used in the individual steps of PDCA cycle (Chart 1).

Chart 1 Knowledge in PDCA cycle

	Part	Knowledge of employees	Knowledge of managers
Plan	- Definition of what is to be measured	- Tacit knowledge	- Knowledge for employing managerial skills - Know-how
	- Collection of data	- Communication skills - Language skills - PC skills	- Communication skills - Language skills - PC skills - Knowledge of statistics - Knowledge of the right criteria
Do	- Preparation of data	- Pc skills - Language skills	- Knowledge for evaluation of criteria
Check	- Analysis of information, data and trends		- Communication skills - Managerial skills - Statistical skills - Knowledge for correct evaluation
	- Presentation and employment of information		- Communication skills - Presenting skills
	- Implementation of preventive measures	- Knowledge for carrying out superiors' orders	- Application knowledge
Act	- Identification of strategy for improvement of vision	- Theoretical knowledge for consensus between employees and managers – understanding managers' vision	- Theoretical and practical knowledge for creating business strategy - Theoretical knowledge for correct definition of terms

5 Conclusions

PDCA cycle is employed in numerous organisations within innovations. By continuous employment of PDCA cycle organisations define their needs, gain all necessary data and check the correctness of their decisions. However, none of these steps could be carried out without utilizing the knowledge of employees and managers of an organisation. Only by employing knowledge – whether tacit or gained for the purpose of the given project – in every single step of the Deming cycle the organisation is able to set correct goals and gain all necessary data for fluent proceeding of projects and activities within the organisation. Also during examination and evaluation the employees need to utilize their knowledge for correct evaluation and setting of new goals in accordance with the organisation's goals.

By correct employment of knowledge the organisation not only prevents wasting it or failing to benefit from it, but also increases its competitive ability on the market, improves customer relations and increases its innovative performance. By introducing knowledge management the organisation gains access to development knowledge and production of new products as well as shortens the product development cycle and increases the support and management of organisation's innovations.

Acknowledgements: This paper is supported by VEGA n. 1/0363/14 - Innovation management.

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Contact data:

Zuzana Škutchanová, Ing.

Department of Software Technologies, Faculty of Management Science and Informatics, University of Žilina, 010 26 Žilina, Slovakia

Zuzana.skutchanova@fri.uniza.sk