

# Framework of Strategic Learning: The PDCA Cycle

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Nowadays, strategic planning has to be permanent process and organizational learning should support it. Researchers in theories of organizational learning attempt to understand processes, which lead to changes in organizational knowledge, as well as the effects of learning on organizational performance. In traditional approach, the strategy is viewed as one shot event. However, in contemporary turbulent environment this could not be still valid. There is a need of elastic strategic management, which employs organizational learning process. The crucial element of such process is information acquisition, which allows refining the initial version of strategic plan. In this article authors discuss the PDCA cycle as a framework of strategic learning process, including both single-loop and double loop learning. Authors proposed the ideas for further research in area of organizational learning and strategic management.

*Key words:* PDCA cycle, organizational learning, knowledge, strategic management

## Introduction

Knowledge is seen as a critical organizational resource that provides a sustainable competitive advantage in a competitive and dynamic economy (e.g., Davenport and Prusak, 1998; Drew 1999; Foss and Pedersen, 2002; Grant 1996; Huang 2009; Lin 2007; Spender and Grant 1996; Wang and Noe 2010; Wen 2009; Xu and Bernard 2011). Particularly important is to identify potential knowledge gaps needed to create successful strategy (Zack 1999). Strategy planning is an information-intensive process, and as Makadok and Barney (2001) notice, 'It is, in many ways, ironic that research in the field of strategic management has proceeded for so many years without a theory of information acquisition.' The issue of information acquisition should attract as much attention as the strategy formulation process itself (Makadok and Barney 2001).

Organizational learning denotes a change in organizational knowledge. Theories of organizational learning attempt to understand the processes, which lead to changes in organizational knowledge, as well as the effects of learning and knowledge on behaviours and organizational outcomes. Argyris and Schön (1978) distinguished between single-loop and double-loop learning. In single-loop learning, individuals, groups, or organizations modify their actions according to the difference between expected and obtained outcomes. In double-loop learning, the individuals, groups or organization question the values, assumptions and policies that led to the actions in the first place. If they are able to view and modify those, then second-order or double-loop learning has taken place. In this article authors discuss the PDCA cycle as a framework of strategic learning process, including both single-loop and double loop learning.

### Organizational Learning

The learning theory is mostly inspired by an individual-oriented psychological field (Brandt and Elkjaer 2011, 26). Information processing and decision making in organizations are seen as something that is done by individuals, and processes that can be enhanced by individuals' learning. Individuals' learning outcome can then, by way of individuals' acting on behalf of an organization, be crystallized in organizational routines and values and become organizational learning. The idea is that individuals hold a mental model in their mind, which is an abstract representation of their actions. It is a mental model, which can be enhanced in order for individuals, and subsequently organizations, to reinforce information processing and lead to better decision making in organizations.

The idea, that an organization could learn was described by Cyert and March (1963). They presented a general theory of organizational learning as part of a model of decision-making within the firm and emphasize the role for rules, procedures, and routines in response to external shocks and which are more or less likely to be adopted according to whether or not they lead to positive consequences for the organization. They also presented the early version of the distinction between single and double-loop learning 'An organization [...] changes its behaviour in response to short-run feedback from the environment according to some fairly well-defined rules. It changes rules in response to longer-run feedback according to some more general rules, and so on' (Cyert and March 1963). The book written by Argyris and Schön (1978) was very important since it laid out the field as a whole very clearly and their distinction between organiza-

tions with and without the capacity to engage in significant learning. At the beginning, the theory was connected with adapting to changing environment and to provide prescriptive managerial techniques, later the learning organization has proved to be a powerful concept for organizational development (Agyris and Schön 1996; Pedler and Aspinwall 1998; Senge et al 1999).

Senge (1990) states that it takes five components to establish a learning organization – personal mastery, mental models, shared vision, team learning, and system thinking. What distinguishes learning organization from non-learning organizations is their focus on these five disciplines. Another normative modeller (Garvin 1993) claims that learning organizations are skilled at systematic problem solving, experimentation, learning from their own experiences and from others, and transferring knowledge.

### **Strategic Management as a Learning Process**

According to Drucker (1974), strategy is ‘purposeful action.’ Strategy is also understood as long-range planning (Porter 1979). Strategy is defined as a unified, comprehensive, and integrated plan designed to ensure that the basic objectives of the enterprise are achieved (Xu and Bernard 2011). Strategy planning is an information-intensive process, which gathers data regarding both the organization and its environment, filters them, and interprets them in order to make strategic decisions (Makadok and Barney 2001). Strategy concerns with the future, which is uncertain. Traditionally the efforts in strategic planning are focused on eliminating this uncertainty by engaging experts whose are assumed possessing an extra knowledge. Strategic knowledge acquisition is a key element of creating superior performance – both on the company and on the business unit level (Pietrzak et al. 2015).

However, in practice, there is no any perfect knowledge during strategy formulation available. This causes the uncertainty and undermines the assumption of the pure rational model of decision-making. Idea of one-shot the best answer is replaced by concept of continuous and gradually development of strategy. As van der Heijden (1998) claims – since we agree that the uncertainty exists – the key to success became not one-shot elaboration of the best strategy but effective continuous process of designing strategy. Such process requires permanent strategic conversation. Putting uncertainty in strategic equation reframed strategic planning from single episode into permanent learning. It could be seen as organizational learning. This reasoning could be summarized by remark attributed to

Eisenhower: 'plans are nothing; planning is everything' (Cowley and Domb 1997).

Process of creating strategy must be iterative. Creation of the strategy is built on assumptions. According to the uncertainty and lack of perfect access to the information, such assumptions are not perfectly correct. The ultimate test for them is implementation of the strategy. During the process of the strategy execution, some opportunities could disappear while others arise and some action plans could become impossible, while others could become viable. In the consequence, an initial strategy may have to be modified (Peel 2012). How to organize strategic management process viewed in such way?

It seems that the PDCA cycle developed under Total Quality Management umbrella could be considered as a handy and useful model to frame such process. Nevertheless, the PDCA framework was originally developed by quality control movement, its application has not to be limited – in fact, it is a learning method (Cowley and Domb 1997; Maruta 2012). The feature of PDCA scheme is that it consists of both single and double loop learning – according to Argyris and Schön concept (1978). This feature is crucial for effective organizational learning during strategic management process.

### Strategic Learning Process Framed on the PDCA Cycle

The PDCA (plan-do-check-act) is an iterative four-step cycle used primarily as a scheme of quality improvement process. However, in fact it could be used as a framework of any management process, in this number – strategic management process. For example, Hoshin Kanri (Policy Deployment) – Japanese method of strategic management is based on the plan-do-check-act cycle (Cowley and Domb 1997; Babich 2002; Akao 2004). The plan-do-check-act cycle is also referred in the strategic management concept based on Balanced Scorecard (Kaplan and Norton 2008).

The PDCA cycle is commonly named as Deming or Shewhart cycle. Deming popularized PDCA during his lectures about quality control methods for Union of Japanese Scientists and Engineers in 1950s. PDCA was immediately applied in Japan under Deming cycle name. However, Deming always referred to it as the Shewhart cycle according to his mentor in quality control – Walter Shewhart. What are the origins of the PDCA cycle? There are two main opinions presented. The first one draws the roots of this concept from 17th century and the modern scientific method developed by Francis Bacon. Up to his times, science depended on deductive logic to interpret nature. Bacon proposed inductive reasoning – from observations to axiom

## Framework of Strategic Learning

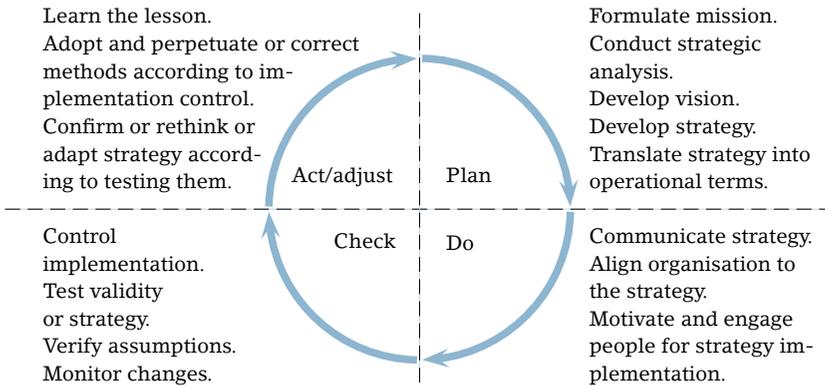


FIGURE 1 Strategic Learning Process Framed on the PDCA Cycle

and to law. His method can be expressed as hypothesis-experiment-evaluation and could be reformulated into plan-do-check-act (or adjust) cycle. The second opinion places the origins of PDCA in John Dewey work on education. Some authors mixed these both opinions – treating Dewey work as based on inductive method of Bacon (Cowley and Domb 1997; Babich 2002; Moen and Norman 2010; Maruta 2012).

Broniewska (2007) links the PDCA to the cycle of organized management formulated at the beginning of 20th century by Henry Le Chatelier. Le Chatelier's cycle is based on idea of using science for better organization and consists of five stages: (1) select objective – (2) study means and circumstances indispensable for achieving objective – (3) prepare means and circumstances as needed – (4) do according to the plan – (5) check the results (Le Chatelier 1926).

The stages of the PDCA cycle could be interpreted as follows (compare: Cowley and Domb 1997; Babich 2002; Moen and Norman 2010; Maruta 2012):

- P *Plan* what you want to accomplish and define how you will know when it is accomplished. Do not proceed without a plan. Determine objectives (expressed in the measurable form) to be reached and methods to achieve them;
- D *Do* what have been planned. Carry out the test by implementing the methods according to the plan;
- C *Check* how well you accomplished the expectations. Observe the effects. Examine the results achieved. Are the objectives from the plan reached? Look for the possible deviation from the plan; Test the plan accordingly to the information gained during the

cycle. Is the reasoning underlying the plan still valid? Were any changes occurred?

- A *Act or Adjust*. What lessons could be learned from the cycle? Adopt and perpetuate methods, which were successful in reaching objectives. If not determine the root causes and correct the implementation. Is it reasonable to continue the plan? Are any adjustment needed in plan for the next cycle? Should the plan be adapted or rethought?

The circle goes round and round – the fundamental principle is iteration. By repeating the cycle the plan is confirmed or negated, our knowledge is getting richer, and process managed on the PDCA framework is continuously improved.

Originally, the Deming cycle was developed in manufacturing, however its application has not to be limited to the quality control issues. The PDCA cycle is in fact a learning method (Cowley and Domb 1997; Maruta 2012). According to the previous discussion about the need of strategic management conducted as continuous process of organizational learning – the PDCA cycle could be useful as a framework of such process. Figure 1 presents process of strategic management viewed as a permanent learning cycle framed on the plan-do-check-act scheme.

### **Plan Stage of Strategic Learning Process**

The mission is a statement defining why the organization exists. The vision defines the three- to ten-years goals of the organization. As opposed to the mission, which remains fairly stable over time-vision sets the organization in motion and drives the actions to the desired future (Babich 2002; Kaplan and Norton 2004). Vision is usually expressed in visionary terms and it should be stretched; however, it has to be also achievable and grounded in the real possibilities. This is why vision and strategy should be developed after conducting strategic analysis. Strategy means a choice of a set of activities in which a company wants to operate at a superior level in order to create a greater value to targeted customers and to create a sustained advantage over its competitors (Porter 1996). To make strategy actionable it should be expressed in operational terms what means translating strategy into objectives and measureable targets (Kaplan and Norton 2001). Measurability of strategy allows assessing the progress in the fulfilment of organization mission and in reaching its vision and is an important premise of the success of the strategy implementation. Monitoring strategy execution is highly complex task. Anything

is much easier to control if it is reduced to quantifiable measures (White 2004). According to the concept of double-loop learning of Argyris and Schön (1978) strategy could be seen as the theory which steers of actions done (Kaplan and Norton 1996; 2001; Steinmann and Schreyögg 2000) – compare figure 1, stage Plan.

### **Do Stage of Strategic Learning Process**

Putting strategic plan into day-by-day practice is based on the three pillars: communicating and educating about strategy, setting goals and linking incentives to strategic performance measures (Kaplan and Norton 1996) – compare figure 1, stage Do.

Implementing the strategy should begin with education of those people who are engaged in strategy execution – to make it a part of their everyday job (Kaplan and Norton 1996). Any novel idea or change – even if it is of the high quality – require acceptance from those who are responsible of bringing it to life out. Otherwise, its potential value will never be realized. This rule could be expressed in an equation popularized by Steve Kerr: ‘Quality’ times ‘Acceptance’ equals ‘Effectiveness.’ To gain acceptance for the strategy it must be communicated. Before managers and employees can execute the strategy, they must accept it. In order to accept the strategy employees must understand it, what could be reached by communication and education (Niven 2005). Organization could use many diversified channels of communication, such as distribution of brochures or newsletters, holding meetings, posting bulletin boards, groupware and electronic bulleting boards etc. The basic aim of them is to win both the hearts and minds of the employees for engagement in the strategy implementation (Kaplan and Norton 1996; 2001).

The next pillar is aligning the various component parts of the organization in one line with the strategy. This activity is particularly important in the bigger firms, which consist of multiple businesses and support units. The challenge is to synchronize the various component parts of such organizations to create integration and synergy. The crucial mechanism of alignment is cascading of strategic goals into lower levels of the company hierarchy (Kaplan and Norton 2006).

Important factor of strategy implementation success is also creating link between strategy and motivation system. There is a quite common belief that incentives could be used to increase motivation. At least incentives tend to increase the focus of employees (Niven 2008). There are two possibilities to link incentives with the strategy – an explicit connecting with the strategic targets, formula-based

system or to allow executives to set rewards subjectively basing on own evaluations of the employees' engagement in strategy implementation (Kaplan and Norton 1996). Besides of such forms of compensation it should be stressed the role of intrinsic motivation, which is associate with commitment in entrepreneurial and creative behaviour. Managers can create intrinsic motivation by appealing to people's need to work for a successful organization that makes a positive contribution to the world. The key form of addressing such desire is communication of mission, vision and strategy (Kaplan and Norton 2006).

### **Check Stage of Strategic Learning Process**

Strategic management needs to be controlled as any other managerial process. It should be stressed that strategic control should consist of several forms of controlling activities. Steinmann and Schreyögg (2000) differentiate three types of strategic control: implementation control, premise control and strategic surveillance – compare figure 1, stage Check.

Implementation control should consist of monitoring strategic thrust and milestone review (Jeyrathnam 2008). To control strategic thrust means monitoring progress of strategic actions. Milestones are critical points in strategy implementation or mediatory goals on the strategic trajectory (Steinmann and Schreyögg 2000; Jeyrathnam 2008). Thus, milestones review could be interpreted as monitoring of targets accomplishment. At the check stage, any deviations from course of action and established targets should be register. It is important do not focus attention only on ex post checking (feed-back) but also to predict any difficulties what allow to take counter actions in advance (feed-forward).

However, in contemporary circumstances of complex and turbulent environment, organizations conducting their strategies have to cope with uncertainty. Strategies are built on premises, which are never perfectly correct. In such context strategy should be treated as a clear view – based on the available knowledge and defensible assumptions – of what it seems possible to reach within a given set of constraints. As the knowledge and circumstances changes – it is possible and even should be facilitating to change strategy if needed (Kaplan and Norton 1996; Steinmann and Schreyögg 2000; Peel 2012). Strategies may seems be valid when they were defined and launched, in the sense that they are built on the best available evidence. However, test of the implementation in the real world and the new knowledge captured could undermine the validity of

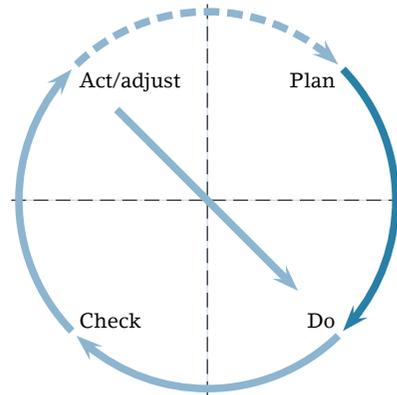
strategies. As Kaplan and Norton pinpointed, business conditions are changing (1996). New chances and threats arise constantly while others disappeared (Kaplan and Norton 1996; Peel 2012).

Besides of uncertainty and complexity bundled with strategic decision, planning requires unequivocally for recommending any direction of actions. Thus planning artificially reduces uncertainty and complexity. Continuous validation of strategy is needed in order to balance the risk generated by such reduction. 'The purpose of premise control is to monitor regularly whether the assumptions underlying a strategy generated during the time of formulation are valid [...] if these assumptions are not valid there is a need to change the strategy to make it effective' (Jeyrathnam 2008). Strategic surveillance is undirected form of strategic control. Task of strategic surveillance is generalized and overarching monitoring of organization and its environment looking for possible events which are likely to threaten the strategy. In other words, this is watching symptoms of crisis of the strategy (Steinmann and Schreyögg 2000; Jeyrathnam 2008). Those both form of control described above allow to test validity of strategy by verifying underlying assumptions and by monitor changes which threatening it.

### **Act/Adjust Stage of Strategic Learning Process**

By examining the progress in strategic thrust and checking accomplishment of the results, managers can look for the successful implementation or for deviations from the plan. In this way the lessons about strategy execution could be learned – successful methods should be adopted and perpetuated. In the case of deviations – corrective actions should be taken in order to reaching planned objectives component – compare figure 1, stage Act/Adjust. Such procedure could be explained as single-loop learning according to the concept of Argyris and Schön (1978). In this type of learning the theory, which steers of actions done – namely the strategy – remain stable in the sense that the objectives and targets are constant. Any departure from the planned course of actions is interpreted as a failure to be remedied (figure 2, arrow from 'Act/Adjust' to 'Do'). Such single-loop learning process does not require validating and rethinking of strategy (Kaplan and Norton 1996; Steinmann and Schreyögg 2000). In this case, strategy (plan) remains exogenous category from the learning process point of view, what is stressed by the dark colour of the arrow on the figure 2.

Contemporary organizations have to become capable of double-loop learning (Kaplan and Norton 1996). In this type of learning the



**FIGURE 2**  
The Single- and Double-Loop Strategic Learning Framed on the PDCA Cycle

theory (strategy) do not remain constant any more. Premise control and strategic surveillance discussed above could be seen as a basis of such strategic double-loop learning which facilitate critical assessment of the strategy (Kaplan and Norton 1996; Steinmann and Schreyögg 2000). According to the results of testing validity of strategy (verifying strategic assumptions and monitoring changes) strategic plan is confirmed, adapted and rethought component – compare figure 1, stage Act/Adjust. In this case, strategy (plan) became endogenous category from the learning process point of view, and starts to be driven by Act/Adjust stage, what is stressed by the arrow, which illustrated this relation (figure 2, dashed line). To sum up, single-loop learning process is based on DCA cycle: implementation of the strategy (Do) – monitoring progress of initiatives and accomplishment of targets (Check) – fixing or correcting methods (Act/Adjust). However, in the complex world suffered from uncertainty it would not be enough. In such world, strategy could not be treated any more as being graven on tablets of stone. Validity of strategy must be permanently tested and according to this strategic plan should be confirmed, rethought or adapted. As the result – contemporary strategic management must be treated as a continuous learning process based on both single and double-loop method framed on the PDCA cycle (figure 2).

### Conclusions

In the complex and uncertain environment traditional approach based on one-shot best strategy, planning could not be longer valid. Strategic planning and management have to be permanent and dynamic process as such it must be a form of collective organizational

learning. Organizational learning helps organizations to enhance their practices and to prosper in a dynamic and competitive environment. According to Argyris and Schön's (1978) model such learning process, have to be based on double loop learning. The useful framework for strategic organizational learning could be PDCA cycle, which allows following both single and double loop learning.

Authors are convinced that further research in the area of organizational learning and strategic management is needed to better understand the relationship between those fields of interest. Interesting framework of such research seems to be the plan-do-check cycle, which is useful form of Bacon's reasoning: hypothesis-experiment-evaluation. Following the PDCA cycle allows conducting both form of strategic learning: single-loop and double-loop learning. The procedure of single-loop learning is quite well developed in theory and intuitively used by practitioners of strategic management. However, the double-loop strategic learning seems to remain the challenge both for scientists and for practitioners. Future studies could look at this problem, particularly at methods of facilitating strategic organizational learning, and the impact of it on strategic outcomes. The Balanced Scorecard methodology and particularly strategic maps seems to be very promising area of research. In addition, studies of the strategic learning process in the public sector seem to be very interesting. The abstract of this paper was presented and published at the MakeLearn & TIIIM 2015 International Conference.

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