

# Continuous Improvement and Management Functions as a Tool for Military Strategic Control

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**T**his article proposes a new tool specifically tailored for military strategic control. It accomplishes this by analyzing and integrating the continuous improvement cycle, as it constitutes one of the most important and current tools available to improve organizations and military units, with management tools and techniques, as they are used by military strategists to implement efficient and controlled practices.

The world is increasingly dynamic, connected, and unstable from every point of view; new problems arise daily that military strategists must be able to solve or at least minimize effectively. Day-to-day activities also generate an inordinate amount of information which prevents the establishment of strict controls over the actions carried out by military units. It is precisely this inefficient control, or lack of a clear and concise control methodology, that increases the difficulty of achieving strategic goals. Jones and George point out that:

(...) one of the main tasks faced by a manager is to manage the organizational environment; that forces outside the organization create many opportunities and threats for managers and their organizations—additionally, within the organization, managers must address many of the opportunities and threats that can arise from using the organization's resources.<sup>1</sup>

Understanding the military unit as an organization and the military strategist as the manager, the latter must be able to have a broad vision, without limitations or restrictions of any kind, allowing him to have control over the desired strategic results. Also, it should be remembered that:

Artisans must train themselves to see, to catch the things that others miss. The same goes for strategy directors. Those who have a kind of peripheral vision are the best able to detect and capitalize on events as they unfold.<sup>2</sup>

Bearing in mind that “one of the main challenges in the field of strategy has been the development of tools that allow supporting the strategic decision-making process,”<sup>3</sup> it helps to be attuned to the innovation types: product, process, organizational, and marketing.<sup>4</sup> For the purpose of this article, innovation centers around

the control process used to achieve strategic results—innovation that, like the “search for productivity, quality and speed, has generated an extraordinary amount of management tools and techniques.”<sup>5</sup>

Tools should not be used simply because they are popular or because they are easy; instead, they should be used when they help achieve desired goals through controlled and evolutionary strategic growth. Strategic growth results from an awareness of the opportunities and needs created by changing population, income, and technology, to employ existing or expanding resources more cost-effectively. A new strategy required a new or at least remodeled structure for a growing company to operate efficiently.<sup>6</sup>

Just as a new strategy requires that new structure be operated efficiently, a control methodology is required that can be applied throughout the entire strategic process to maintain effective and continuously improved control—keeping in mind that “just to maintain its relative position, a company must move forward through continual growth and change. To improve your position, you need to grow and change at least twice as fast.”<sup>7</sup>

The necessary and urgent change that many organizations or military units require to achieve their proposed goals must revolve development of strategic planning. Armijo asserts that strategic planning is a management tool that supports organizational decision-making regarding the current work and the path they must follow in the future to adapt to the changes and demands imposed by the environment, in order to achieve greater efficiency, effectiveness, and quality in the goods and services they provide—it consists of an exercise for formulating and establishing priority objectives, whose main characteristic is the establishment of courses of action (strategies) to achieve them, key for decision making.<sup>8</sup>

Although it is true that, in the words of Pulgarín & Rivera, “companies therefore require tools that are easy to adopt and have a high impact,”<sup>9</sup> it is also important that they are tools based on good methodology, that provide a flexible and controlled process.

On the other hand, Mintzberg, Ahlstrand, and Lampel tell us that we are blind, and that strategic formulation is like an elephant: Since no one can see the whole beast, everyone seizes one part or another and follow in total ignorance of the rest.<sup>10</sup> This ignorance is what has perhaps prevented many professionals today from visualizing the possibility of integrating and innovating various methodologies or effective tools into a comprehensive solution.

Thus, it is necessary to contribute literature highlighting the importance of integrating the continuous improvement cycle with administrative functions as a tool for innovative and effective military strategic control. At the same time, it is important to keep in mind that it is essential to never neglect the role that

strategic leadership plays, since this is the ability of the CEO and senior management to communicate to their subordinates a convincing vision of what they want to achieve.<sup>11</sup>

## **Methodology**

Of vital importance is to determine the type of research design to be carried out since, according to Hernández, Fernández & Baptista: “research ideas represent the first approach to the reality that will be investigated or to the phenomena, events and environments to study”.<sup>12</sup> On the one hand Wentz, McLaren, Creswell, Hernández-Sampieri et al, and Kalaian, cited by Hernández et al., clarify that the term design “refers to the plan or strategy conceived to obtain the information that is desired in order to respond to the problem statement”.<sup>13</sup> On the other hand, Liu & Tucker, again cited by Hernández et al., mention that “transactional or cross-sectional research designs collect data in a single moment, in a single time”.<sup>14</sup>

For this research, the author implemented a non-experimental cross-sectional design. Specifically, a qualitative and descriptive approach was used, understanding that this aims to “investigate the incidence of the modalities or levels of one or more variables in a population.”<sup>15</sup> Through this research, the author intends to describe the importance of integrating the continuous improvement cycle and the functions of management. Available primary sources were used, such as “those that contain original information that has not been abbreviated or translated: theses, books, monographs, magazine articles, manuscripts.... also called first-hand information sources, and secondary sources, which contain reworked or synthesized data or information.”<sup>16</sup>

For the determination of the population, which is defined by Hernández et al., as the “set of all cases that agree with certain specifications,”<sup>17</sup> only organizations within which there was a close relationship with managers were taken into consideration. For this research, two Costa Rican and two Japanese companies were examined, a total of four organizations. The determination of the sample was based on the “non-probabilistic sample” principle, which Hernández et al, states as:

Here the procedure is not mechanical or based on probability formulas but depends on the decision-making process of a researcher or a group of researchers and, of course, the selected samples obey other research criteria.<sup>18</sup>

In this case, the sample, despite being a “subgroup of the population, from which the data is collected and must be representative of said population,”<sup>19</sup> on this occasion corresponded to 100 percent of the population.

The study was performed in three stages: The first consisted of analyzing primary and secondary sources; and then on a broader theoretical knowledge and a more grounded hypothesis regarding the importance of the integration of the continuous improvement cycle and management functions. Third, the tool that was developed was presented to the subjects under study, to better describe its benefits once put into practice. Thus, documentation of the data derived from the observation and empirical knowledge of the participants allow the results to be replicated in the military field.

### The Continuous Improvement Cycle

The continuous Improvement Cycle was developed by Dr. Edwards Deming, who is known as the “father of the third wave of the industrial revolution.”<sup>20</sup> Deming made his first version of the PDCA cycle (Plan–Do–Check–Action) in the 50s.<sup>21</sup>

After expressing dissatisfaction with his PDCA cycle on multiple occasions, by 1993 Deming developed his updated version, called the “Shewhart Cycle for Learning and Improvement,”<sup>22</sup> PDSA (Plan–Do–Study–Act—PHEA in Spanish); with emphasis is on Study versus Check “See Figure 1”.<sup>23</sup> Concentrating on predicting the results of the improvement, studying the actual results, and comparing them to possibly revise the theory (an approach very close to the scientific method), he emphasized that the need to develop new knowledge, through learning, is always guided by theory.



**Figure 1. Shewhart Cycle for Learning and Improvement**

*Source: Author<sup>24</sup> based on data from Moen & Norman.<sup>25</sup>*

By comparison, the Check phase of the PDCA cycle focuses on the success or failure of a plan, followed by necessary corrections to the plan in the event of failure. In other words, it pays direct attention to the meaning of the word

“verify”: it is verified if it is right or wrong and it is corrected. Moen and Norman mention that:

It is clear that Deming never fully embraced the PDCA cycle. PDCA and PDSA appear to be related only through the scientific method. From 1986 to 1993, Deming undertook to develop his PDSA cycle, which he always referred to as the Shewhart cycle for learning and improvement. It is used to learn, test, and implement.<sup>26</sup>

The PDSA cycle begins with the Plan step.<sup>27</sup> This entails identifying a goal or purpose, formulating a theory, defining success metrics, and setting a plan into action. These activities are followed by the Do step, in which the previously planned actions are implemented, such as conducting a military exercise or brainstorming to develop the strategy, among others. Next comes the Study step, where the results are monitored to assess the validity of the plan for signs of progress and success, or problems and areas for improvement. In this step, it is important to study the situation and make use of science to be objective with decisions. The Act step closes the cycle, integrating the learning generated by the entire process, which can be used to adjust the objective, change methods, reformulate a theory completely or expand the learning. In other words, plan again and thus continue the cycle. In an article recommended by The W. Edwards Deming Institute, Moen & Norman further discuss this process in full detail.<sup>28</sup>



**Figure 2. Structure of ISO 9000: 2015 with the PDCA cycle**

Source: Author generated<sup>29</sup> from International Organization for Standardization (ISO) data.<sup>30</sup>

Although “over the years, Deming had strong beliefs about the PDCA cycle and clearly wanted to distinguish it from the PDSA cycle,”<sup>31</sup> many continue to officially use the PDCA cycle. A clear example of this is ISO 9000:2015. Figure 2 depicts how this standard makes use of the PDCA cycle for its respective structure.

The PDCA cycle's steps are:

- Plan: establish the objectives of the system, its processes, and the resources necessary to generate and provide results in accordance with the requirements
- Do: implement what was planned
- Verify: monitor and (where applicable) measure processes and resulting products and services against policies, objectives, requirements and planned activities, and report on results
- Act: take actions to improve performance<sup>32</sup>

The term “continuous improvement” is directly associated with quality excellence, understanding that quality is the “degree to which a set of inherent characteristics of an object meets ISO requirements.”<sup>33</sup> Thus, military units who continuously improve their operations will, without a doubt, achieve consistent quality. Quality can be used as an effective tool for operational efficiency. Therefore, the military strategist must understand that specialization in the activities carried out, the simplification of operations, and the standardization of processes and procedures will facilitate the creation of value in a military industry through innovation. Furthermore, the new insights acquired via the creation of value propels product, service, and relationship innovation with one's customers (or allies).<sup>34</sup> Strategists must form and execute strategies using creativity and constant innovation.<sup>35</sup>

Throughout this process, it is essential that the strategist pay attention to the recommendations of specialists in the field, such as Rocha, Reis, and Peter, who stated:

It is necessary to establish indicators that allow a consistent evaluation of the effectiveness of the logistics management of the organization, review compliance with the established goals and objectives, detect failures, and be able to execute corrective action plans based on the results of these indicators, as well as continuous improvement plans.<sup>36</sup>

Serna mentions that “a company that enjoys advantages over its competitors in terms of . . . cost or technology, will generally be able to also maintain a high profit margin.”<sup>37</sup> For a military unit that can take continuous improvement, and therefore quality, to a higher level, this translates into achievement of a competitive advantage.

Strategy is needed in the planning process (Plan) to analyze relevant internal and external factors of a military unit, with the intention of directing concrete actions that seek a clearly established goal, such as the element of surprise, to obtain a competitive advantage against an enemy. Strategy is required in the execution process (Do) to keep collaborators and leaders who are executing the strategy motivated and to know how to train them to perform their tasks better. Furthermore, Strategy is needed to know the process or procedure to follow when

researching information (Study), to understand a situation without clearly exposing any vulnerability to the enemy. Finally, Strategy is also needed to be able to make decisions to surprise, confuse, or deceive enemies (Act).

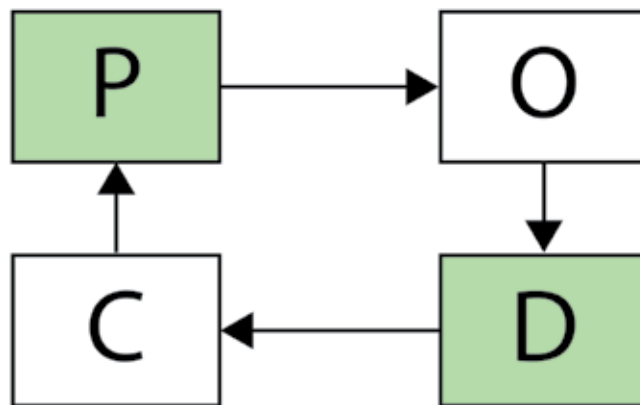
Thus, the PDSA and PDCA cycles are clearly related to Strategy. In choosing one or the other, it is necessary to review again at the beginning of this section the explanation of the difference between the two, a difference that derives from the third stage: “Verify” or “Study”.

### **Management’s Functions**

First, it is necessary to understand what management is with regards to military units. Jones and George state:

Management’s job is to help the organization make the best use of its resources to achieve its goals. How do managers achieve this goal? Performing the four major managerial functions: Planning, Organizing, Directing, and Controlling.<sup>38</sup>

Mintzberg mentions that these functions (referred here as the PODC cycle, see Figure 3) were first introduced by the industrial Frenchman Henry Fayol in 1916.<sup>39</sup> Similarly, these four functions currently help structure the activities that must be carried out by military strategists more effectively and efficiently. It is essential that military units have professionals responsible for making strategic decisions who know and understand the PODC cycle.<sup>40</sup>



**Figure 3. PODC cycle**

*Source: Author<sup>41</sup>*

In any military unit, a strategist must be able to effectively plan the activities that the unit, work teams, or collaborators need to carry out at any given time.

Once plans exist, the strategist needs to organize all the activities to be carried out. Once a plan and all its activities have been organized, the strategist can then assign responsibilities to the team that will execute them. When directing, a strategist must carefully analyze the resource allocation strategy to ensure activities are carried out harmoniously. While a military unit is being directed along its planned path, progress must be controlled in order to adjust the plan if unforeseen events occur.

To guarantee effective and efficient development of activities, committed, disciplined military strategists are needed who know how to work as a team, be able to motivate at the right levels, and in short, lead. Serna states that:

A committed management is required, one that is not afraid of change and motivates the participation of the members of the company in the achievement of the proposed objectives and goals. Management must be very sure of the direction it gives the company. In addition, it must be willing to face challenges, to be flexible when required and know how to permanently adjust to the demands and dynamics of change imposed by the environment.<sup>42</sup>

This applies to military units as well as companies, if strategists are not able to create units that are flexible to the environment—in other words, units that can handle change quickly and effectively—it is very likely that these units will cease to exist during a crisis. Another factor to consider with the ability to change is the response time to a situation. Treacy and Wiersema point towards “response speed as a key value. . . . [to] continually reduce the interval between our need and when it is satisfied.”<sup>43</sup> Due to emergence of new technologies, users inside and outside the military become more and more demanding, thus response time becomes essential.

In short, strategy is undoubtedly necessary to develop the PODC cycle. PODC functions must be put into practice through strategic processes, since these functions are the heart of management, which, in turn, keeps a military unit or strategy directed towards achieving strategic results.

### **Integration of continuous improvement and management's functions: The P2DCHAVO or P2DCHAE0 cycle**

Change is constant, and that change must be well planned, organized, directed, verified, and studied methodically so it may be executed in a controlled manner, when the time is right. Pulgarín and Rivera expand on this approach by identifying behavior as a key factor:

(...) The current strategy tools are not exploratory but behavioral, they are based on simulation processes and system dynamics that allow for super-reactive



organizations capable of quickly adapting to environmental conditions, as well as co-creating possible futures.<sup>44</sup>

Of course, at all times, control of the situation must be ensured as far as possible, so tools that help the strategist with the control of behavior in the face of environmental situations are of great value. The PDCA tool has achieved widespread adoption because;<sup>45</sup> it “allows an organization to ensure that its processes are properly resourced and managed, and that opportunities for improvement are identified and acted upon.”<sup>46</sup>

For Gryna, Chua & DeFeo, “the importance of quality (...) has resulted in it becoming a fundamental priority for most organizations.”<sup>47</sup> It is expected that a management system can guarantee a balanced and constant continuous improvement process that guarantees quality assurance and therefore the success of the military unit. As Evans & Lindsay indicate:

In a general sense, quality assurance refers to any planned and systematic activity aimed at providing (...) products (goods and services) of appropriate quality, together with the confidence that the products satisfy the requirements (...). Quality assurance depends on excellence (...).<sup>48</sup>

In the previous quote, there is a correlation between management functions and continuous improvement which, for ISO, is a “recurring activity to improve performance.”<sup>49</sup>

So, how can we achieve the integration of management functions and continuous improvement? The continuous improvement cycle established by Dr. Edwards Deming refers to: Plan, Do, Check, Act; with a later modification, in 1993, that replaces Verify with Study, thus: Plan, Do, Study, and Act. On the other hand, management’s main functions are Plan, Organize, Direct, and Control. However, the implementation of both concepts in strategic planning can generate a multiplier effect, by their integration:

$(P H V A) \times (P O D C) = ACME$  (Strategic Improvement Controlled Environment—from their acronyms in Spanish), which reduces mathematically to  $P^2 HO VD AC = ACME$ , where:

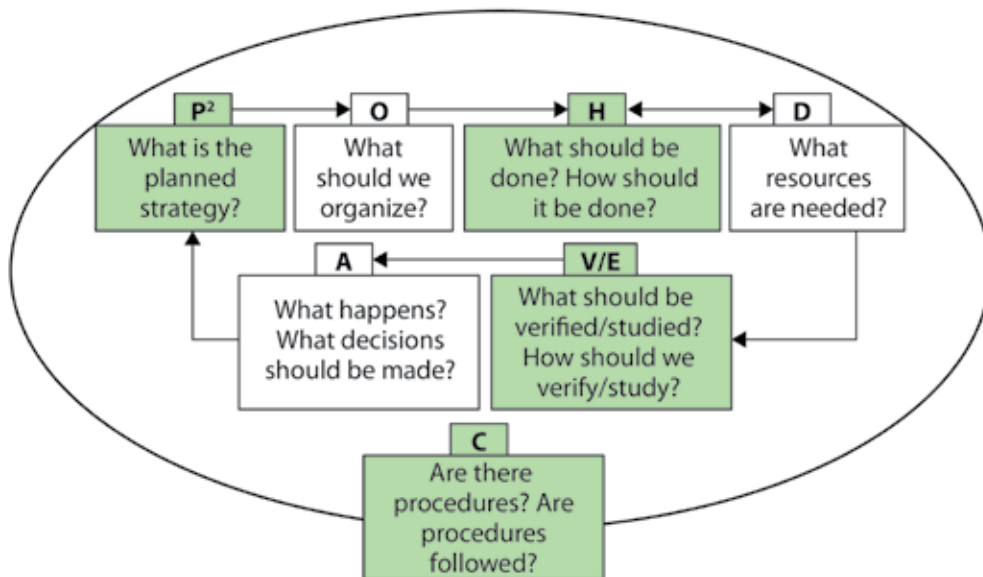
- P: Plan
- H: Do
- O: Organize
- V: Verify
- D: Direct
- A: Act
- C: Control

It's important to remember that at any given moment V can be substituted by E. When this happens, the P2DCHAVO or P2DCHAE0 loop will change its focus. The mathematical approach of this equation, and its name “P2DCHAVO”, is due to Dr. Fermín Franco, a specialist in mathematics for the industry.

From the analysis of both concepts and the observation made with subjects under sampling, we proceed to explain the equation  $P^2 \text{ HO VD AC} = \text{ACME}$ , obtaining the following:

Planning ( $P^2$ ) squared indicates that it is essential that all processes or activities are always planned to facilitate other processes. The Do/Organize (HO) expresses that to be able to Do, you must first Organize, as you cannot do something if it is not previously organized and planned. Verify/Direct (VD) indicates the importance of knowing how to direct resources and assign responsibilities, in order to be able to later verify. The reverse can also occur, since Verify can be used to study the environment to find out how resources should be directed (understanding “resources” as humans, material, and machinery, among others). In the case of the Act/Control (AC) stage, it is essential to have Control of the environment to be able to Act, if one is not capable of having control of the activities or processes, it will not be possible to have the capability to Act to correct situations effectively.

In the following figure you can see this cycle:



**Figure 4. P2DCHAVO/P2DCHAE0 cycle**

Source: Author<sup>50</sup>

Therefore, from the equation  $P^2 \text{ HO VD AC} = \text{ACME}$ , the P2DCHAVO or P2DCHAEAO cycle can be used as a tool for controlling strategy. The order of the factors does not alter the product, as the arrangement of the letters was made with the aim of establishing the name.

Explaining this cycle from a strategic point of view, it is necessary, first, to Plan the activities that are intended to be executed. Once planned, they must be Organized so that they can be Done. While these are executed or done, they must be Directed effectively; conversely, after organizing them, activities/resources must be directed so that the actions can be carried out (hence the “two-way arrow”). While being directed, activities should be Verified, or Studied. It is possible to Study for training purposes as well. After having Verified or Studied the process, it will be possible to Act objectively if the initial Plan needs rethinking and thus, restarting the cycle (explaining P2).

The last stage, Control (C), indicates that the entire strategic process must be executed within a Controlled environment. To further refine the term “controlled environment”: Strategists must control the way in which activities are planned and organized, the methods used to carry out such activities or tasks, the way in which strategic management directs resources, the way in which activity outcomes are verified or studied, and the procedures used to act if required.

The processes of Planning, Organizing, Doing, Directing, Verifying or Studying and Acting are standardized through documented procedures for each stage, with standards for the way each is planned, organized, done, directed, verified or studied, and acted upon. These procedures will depend on each military unit. They must be standardized procedures that dictate how essential activities must be carried out without being too specific, as otherwise they will not work for all strategies. For example, procedures to determine how to plan, organize, do, direct, check, or study and act on a strategy related to an air attack will not be the same steps procedures for an attack by sea. Thus, procedures must be established that allow the strategist to follow a standard methodology that can be adapted to each specific strategy that is going to be developed.

It is important to have the support of other members of the unit to achieve success. Evans, J. & Lindsay point out that “with the support of managers, the Japanese integrated quality into their organizations and developed a culture of continuous improvement (which the Japanese sometimes call *kaizen*)”.<sup>51</sup>

If it is possible for the strategist to effectively execute this P2DCHAVO or P2DCHAEAO cycle, it will be possible for him to reach ACME, which, directly or indirectly, will influence the success of the desired strategy.

Figure 5 demonstrates the importance of integrating continuous improvement and management functions as a tool for strategic control:



This process provides the strategist the wherewithal and structured communication necessary to achieve a more controlled understanding of situations that are occurring or could arise. This, in turn, would enable the strategist to foresee the need for “an increase in the demand for new connections in the form of subcontracting, company mergers and strategic alliances”.<sup>53</sup> All this leading the strategist to make decisions that, in many cases, “require a break with the patterns and traditions of the past (...) and entering new and uncharted paths.”<sup>54</sup> When this hap-

pens, the strategist must have a sufficient capability for change and the ability to motivate his team so that, together with discipline, control and understanding, he can achieve that desired *kaizen* or ACME.

## **Findings**

In personal life, in a work project or in a military unit, good management is always essential. If the activities that are carried out are not well managed (Planned, Organized, Directed and Controlled) it is very difficult to follow a successful course of action. If activities are not planned effectively, or if they are not verified or studied, it will be difficult to act correctly when adverse situations arise, which will lead to reactionary and ineffective decision-making.

With the help of the equation  $P^2 \text{ HO VD AC} = \text{ACME}$  or the P2DCHAVO or P2DCHAE0 cycles derived from this equation, the strategist will be able to have an integrated tool to allow for effective management, while continuously improving through a simple control methodology. Something easily observed the study's subject's implementation.

In addition to planning, organizing, and directing resources to enable actions to be carried out, the P2DCHAVO cycle also focuses mainly on verifying if any activity or stage of the process is correct or incorrect, and act on them accordingly. On the other hand, the P2DCHAE0 cycle, in addition to planning, organizing, and directing resources to enable actions to be carried out, focuses on the study of activities occurring during the process, whether correct or incorrect, in order to document and make use of science -either through direct research or via experts on the subject- in order to improve the methods used. The application of one cycle or another will depend a lot on the environment in which a military unit finds itself and the degree of urgency required.

It is important to find ways to continually improve activities and strategy, as it will be otherwise difficult to achieve good strategic results. As Treacy & Wiersema rightly state:

(...) today they want more of those things they value. If they value low cost, they want it lower. If they value convenience or speed (...), they want it easier and faster. If you're looking for cutting-edge design, you want to see art advance.<sup>55</sup>

This can only be accomplished by methodically preparing to meet these need expectations, via effective management and strategy. On many occasions strategists choose to diversify in the industry they are in, to seek positive results from different strategies. Ansoff mentions that:

Companies diversify to compensate for technological obsolescence, distribute risk, use excess production capacity (...), etc. In deciding whether to diversify, management must carefully consider its perspectives of future growth.<sup>56</sup>

Whether through a structured or emergent strategy, it will always be essential for the strategist to have a vision of the future, to shape decisions being made in the present.

Despite the complexity involved in the number of variables determining the future, forecasting the future based on decisions made today could help avoid problems that could easily have been prevented or minimized by having adequate control. ▣

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