Relationship Identification between Seven-Step Planning Process and Plan-Do-Check-Act Cycle

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Ⅰ. Introduction

Seven-Step Planning Process and Plan-Do-Check-Act (PDCA) Cycle are approaches to make a decision problem solving, particularly focused on continuous improvement (CI) of quality processes (Barbara, 2008; Don Tapping, 2008). The step 1 of Seven-Step Planning Process is to make the mission or select a theme. The "Theme" is a brief description and statement of the weakness in the process, or the problem to be solved. And step 2 is on gathering facts about the problem and step 3 is to identify the Root Cause. The "Root Cause" is the most fundamental cause that one can discover producing the negative results in the current process. Step 4 is to bring together one's ideas

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of what is actually causing the problem and develop and implement an adjustment to the process and step 5 is to make sure the "solution" actually solves the initial problem. After step 5, Step 6 is to revise the existing process to incorporate the solution and step 7 is to suggest a new weakness to tackle, and communicate what learned (Barbara, 2008). Also, in the PDCA concept, Plan-Do-Check-ACT cycle was made by Walter Shewart in the 1920s first time and became common by Edwards Deming as Deming cycle. Deming named as 'Study' instead of 'Check' in PDCA (Don Tapping, 2008).

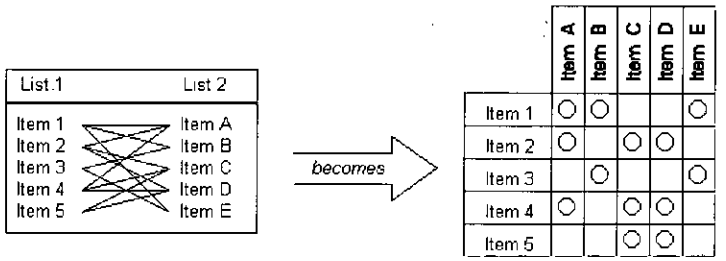
In the context of similar concept, the objective of this study is to identify the relationship between Relationship between Seven-Step Planning Process and Plan-Do-Check-Act Cycle as a idea.

Ⅱ. Relationship between Seven-Step Planning Process and Plan-Do-Check-Act Cycle

For the comparison between the two models, this study used matrix diagram method. The Matrix Diagram allows a many-to-many comparison of two lists (each list of PDCA and 7-Step Process), by changing the second list on its side to make a matrix.[1)]

1) http://www.syque.com/improvement/Matrix%20Diagram.htm

<Figure 1> Matrix Diagram



(Source: http://www.syque.com/improvement/Matrix%20Diagram.htm)

First, this study analyzed the comparison of Plan (P) and Step 1, 2, 3 (Seven-Step Planning) with relationship proposed by PDCA improvement cycle (figure) of lecture note_lesson 2. Thus, this study made the table with each list for the comparison as follows.

<Table 1> Lists of Plan (P) and Step 1, 2, 3 (Seven-Step Planning)

Seven-Step Planning Process	Plan-Do-Check-Act Cycle
1. Mission: Establish a Focus for the project 1.1 Who are the customers being served? 1.2 What are the needs of those customers? 1.3 What is the most important problem? 1.4 How will improvement be measured? 1.5 What is a one-sentence aim of the project?	Plan (P) P.1 Establish the idea, theory, or prediction. P.2 Define the problem. P.3. State the mission. P.4 Identify internal and external customers needs and wants P.5 Is the data available? P.6 Must a test be conducted? P.7 Localize the problem: what, when, where it occurs, who is involved. P.8 Identify the root causes and verify them with data. P.9 Identify and evaluate possible solutions that address the root causes. P.10 Plan a pilot solution.
2. Understand the Current Situation to Determine problem 2.1 What are the steps in the current process? 2.2 How can you gather pertinent information? 2.3 How much information should you gather? Where can you get the information?	
3. Determine and Analyze Root Causes 3.1 What are the possible root causes of the problem that has been identified? 3.2 How will you verify that these are root causes? 3.3 How do you determine the root causes?	

Next, the list table was changed as a matrix form as the following <figure 2>. To show the relationship, QFD software (http://qfdcapture.com/) was used and analyzed as follows.

<Figure 2> Matrix relationship between Plan (P) and Step 1, 2, 3

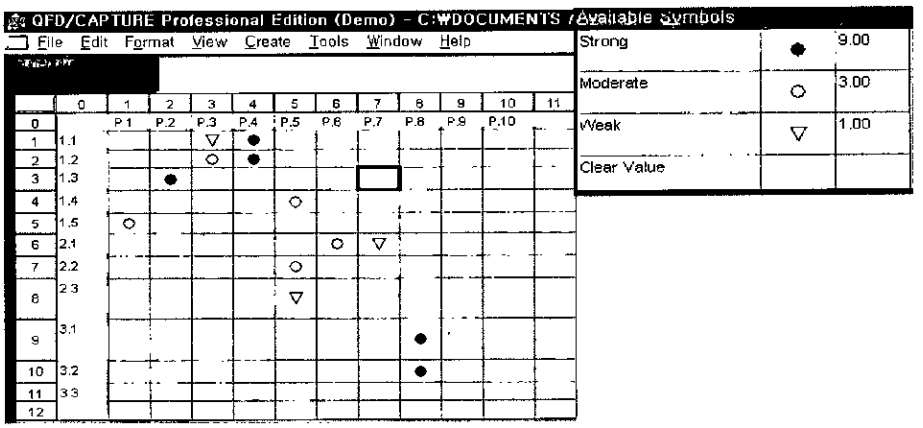


Figure 2 shows that 1.1(Who are the customers being served) has a strong relationship with P.4 (Identify internal and external customers needs and wants). However, this means that P.9. P.10 has no relationship with Step 3 of Seven-Step Planning Process and has a strong relationship with Step 4 of Seven-Step Planning Process. Thus, plan phase of PDCA may partly includes Step 4 contents of Seven-Step Planning Process.

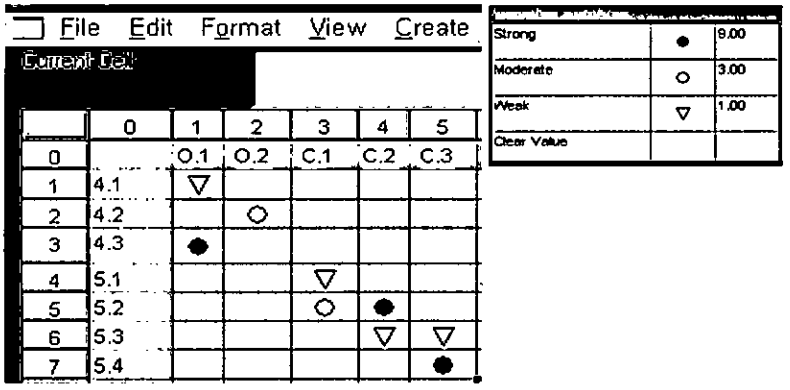
Equally, the comparison of Do (P), Check(C) and Step 4, 5 (Seven-Step Planning) were analyzed. Also a matrix form was constituted as follows.

<Table 2> Lists of Do (D) and Step 4, 5 (Seven-Step Planning)

Seven-Step Planning Process	Plan-Do-Check-Act Cycle
4. Mission:EstablishaFocusfortheproject 4.1 What solution(s) best address the root causes? 4.2 How do you know which solution to choose? 4. 3 How do you test your solution?	Do(O) O.1 Perform a small-scale test of the planned solution. O.2 Collect and analyze data as to its effect on the problem.
5. Evaluate and Improve Solutions 5.1 Were the root causes eliminated? 5.2 Was there improvement in the identified problem? How much? 5.3 What worked well? 5.4 What refinements are needed?	Check (C) C.1 Look at all the data gathered. Identify changes that occurred. C.2 Compare results with baseline data. Did improvement occur? C.3 What adjustments are needed?

Figure 3 shows that 4.3 (How do you test your solution) has a strong relationship with O.1 (Perform a small-scale test of the planned solution). Also 5.2, 5.4 have a strong relationship with C2, C3 and so I think that matching between Do (D) and Step 4, 5 is very high.

<Figure 3> Matrix relationship between Do (D) and Step 4,



Finally, the comparison of Act (A) and Step 6, 7 (Seven-Step Planning) were analyzed. As a same way, a matrix form was constituted as follows.

<Table 3> Lists of Act (A) and Step 6, 7 (Seven-Step Planning)

Seven-Step Planning Process	Plan-Do-Check-Act Cycle
6. Implement Solution(s) Full Scale 6.1 What key steps in the new process should be monitored to make sure that problems do not recur? 6.2 What needs to be done to implement this change on a full scale?	Act (A) A.1 Take action on a larger scale as a result of the initial test. A.2 Make the change permanent. A.3 Describe the new process. A.4 Communicate it to everyone affected.
7. Capture Lessons Learned and Set Future Plans 7.1 Were objectives met? 7.2 Is further improvement needed? 7.3 What other problems remain? 7.4 What went well in the improvement process? What could be improved?	A.5 Provide training. A.6 Develop methods for monitoring and ongoing evaluation. A.7 What was learned as a result of the improvement project? A.8 How can we improve the improvement process itself? A.9 Continue with next improvement step in the process or close the project and identify the next one; return to Plan.

<Figure 4> Matrix relationship between Act (A) and Step 6, 7

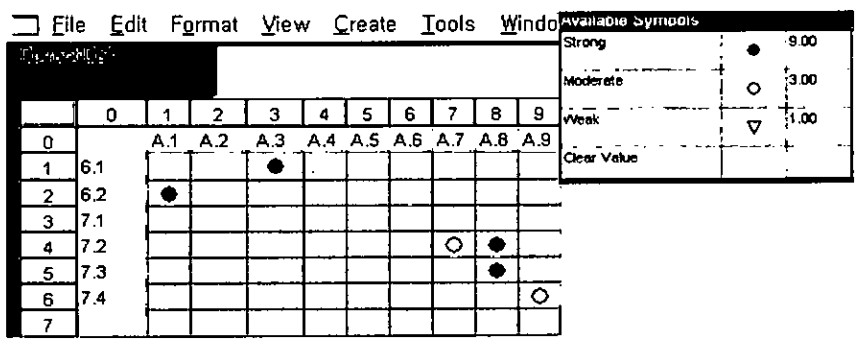


Figure 4 shows that each 6.1, 6. 2 have a strong relationship with A.3, A.1.

However, 7.1 (Were objectives met?) has no relationship with Act phase of PDCA cycle and also A4~A6 is independent lists with Seven-Step Planning Process.

Ⅲ. Results

Seven-Step Planning Process and Plan-Do-Check-Act (PDCA) Cycle are approaches to make a decision problem solving. So far, these concepts were separate approaches. In this context, the objective of this study was to identify the relationship between these concept as a idea. Thus, this study utilized the QFD concept in order to make a matrix that can analyze the relationship. Through this approach, this paper may be expected to make another concept as conceptual combination.

REFERENCES

Barbara A. Carkenord (2008). Seven Steps to Mastering Business Analysis, *J. Ross Publishing, Inc.*

Don Tapping (2008). The Simply Lean Pocket Guide - Making Great Organizations Better Through PLAN-DO-CHECK-ACT (PDCA) Kaizen Activities, *MCS Media, Inc.*

http://www.syque.com/improvement/Matrix%20Diagram.htm [accessed 04 Feb 2013].

http://qfdcapture.com/ [accessed 04 Feb 2013].