

Transition via Transactions: First steps in creating a customer driven organization

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Abstract

The hardest part of making the transition to a customer-based organization is the first few steps. This paper shows how to:

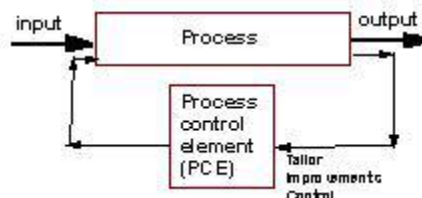
- Identify internal and external customers.
- Identify metrics to measure performance within the organization.
- Use transactions to ease the path to the new paradigm.
- Use transactions to minimize the resistance to change.
- View an organization as having two sets of internal customers, namely:
 - Vertical - the traditional reporting path in which the customer is the supervisor.
 - Horizontal - the production process path in which the customer is the next link in the production process. This customer may be internal or external.
- Set up evaluation criteria to measure the effectiveness of the person in dealing with their customers.
- Set up a reward and recognition system to reinforce the new paradigm
- Identify and eliminate non-value added transactions.

Mapping the organization into processes and transactions

The organization can be represented as shown in Figure 1. It consists of two elements:

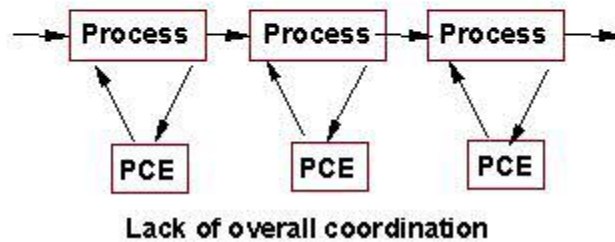
- A process which produces the products or services the organization sells to survive.
- A process control element which plans, organizes, directs and measures the production process. This is the traditional management element.

Figure 1 The organization as a process (ideal)



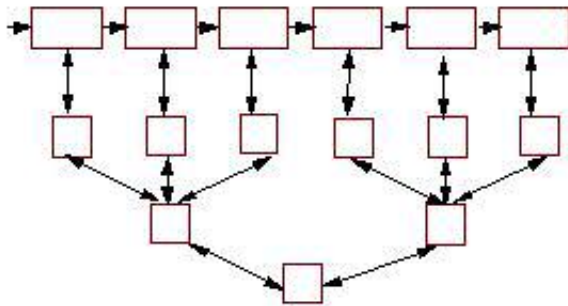
To analyze the organization from a transaction perspective, first decompose the single process block into several blocks in series as shown in Figure 2. However, this representation lacks some kind of control or coordination between the process elements. As an example, consider an organization producing statues of garden gnomes. The first production process element in Figure 2 is the molding process. Here the plaster is poured into the molds and the basic statues are produced. The production unit was having problems with their yield. The plaster was sticking to the molds and the statues were being broken as they were being removed from the molds. The department decided to improve the process, held several meetings and determined they needed to coat the mold to minimize the sticking. "Its just like coating a baking pan before placing the cake in the oven" said one of the workers. They spent several Saturdays on their own time experimenting with coatings and determined the optimal coating. They then instructed purchasing to procure the coating and implemented the change. The results exceeded their expectation, the yield increased to 99.8%, sticking was a thing of the past and breakages were reduced to 0.02% of the statues. However, at the time their yield went up, the next production process element (the paint shop) began to have problems and their yield went down. For some reason, the paint was smearing and taking a much longer time to dry. When the paint shop investigated the symptoms, they found the root cause was a coating of oil on the statues. In this situation, while the molding department reduced their defects, they did it at the expense of the painting department.

Figure 2 Ensuring better control



There needs to be some coordination between the process elements to avoid this situation and optimize improvements over the entire process. If the organization is large, there may have to be several layers of this type of additional coordination as shown in Figure 3. When Figure 3 is turned upside down, as shown in Figure 4, the drawing appears as the traditional hierarchical organization.

Figure 3 Ensuring control is effective



Identifying customers

Each box in Figure 4 contains a process element and each process element interfaces with other process elements by means of transactions. Thus, each of the lines between the boxes in Figure 4 identifies a transaction of some kind. Any element sourcing a transaction is a supplier, any element receiving a transaction is a customer. The location of suppliers and customers within and associated with your organization can be seen by mapping Figure 4 onto your particular organization chart and then analyzing the transactions. There are two types of customers, namely:

- **Vertical** - the traditional reporting path in which the customer is the supervisor.
- **Horizontal** - the production process path in which the customer is the next link in the production process.

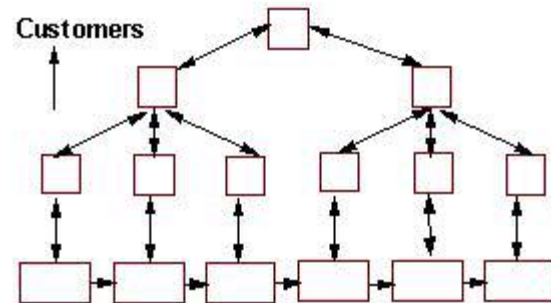
Each element in the organization may have either or both types of customers. For example, the elements in the actual production process have both vertical and horizontal customers, while the traditional middle management elements may only have vertical customers.

Identifying metrics

Little has been published on the topic of identifying the right metrics, because *the right metrics make your organization more cost effective and consequently provide you with a competitive edge.* The way to identify and use appropriate metrics is a multi step process as follows:

- Determine what constitutes a metric.
- Determine what the effect of the measurement is to accomplish.
- Identify a proposed metric.
- Use the metric to make a measurement.
- Examine the effect of using the metric. If the change is positive (heading in the desired direction), then keep using it. If the change is negative (undesired), determine if the metric is at fault, or if the measurement approach is wrong and take appropriate corrective action.

Figure 4 Structure of organization



Metrics

According to Joseph M. Juran, the ideal unit of measure[1]:

- **Provides an agreed basis for decision making** - Different people view things differently, and have different priorities. The metric must allow a meeting of minds.
- **Is understandable** - Metrics may not be understandable, perhaps because words do not have standardized meanings, or may require an educational background that is lacking.
- **Applies broadly** - For use to determine if an improvement has occurred.
- **Is susceptible to uniform interpretation** - The units used and types of errors must have been defined with appropriate precision.
- **Is economical to apply** - There is a tradeoff between the cost of making the measurements and the value of having them. The cost may depend on the precision, so care must be taken to specify the correct precision.
- **Is compatible with existing designs of sensors.** - If you can't measure it, there is little point in defining it as a metric.

Guidelines for identifying metrics

Guidelines for identifying metrics may be developed from the following graphical representation of the "*Cost of Quality*." [2] A process is performed by the implementation of a sequence of actions, by a number of people, using available resources over a specific period of time. Consider the Program Evaluation and Review Technique (PERT) representation of the generic process shown in Figure 5. There are three major milestones:

- **The start point (S)** where the process begins.
- **The test point (T)** or check point which confirms that the products which have been built, conform to specifications.
- **The end point (E)** which occurs when the products have been delivered to the customer.

Figure 5 Cost of the generic process (WBS element)

PERT representation

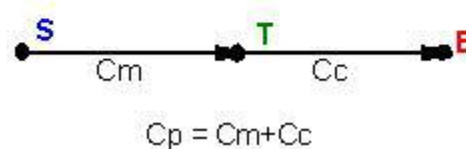


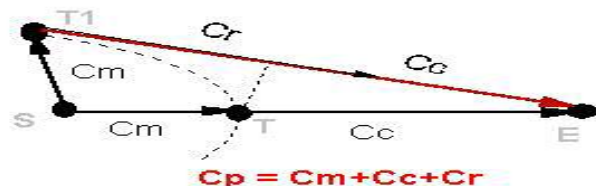
Figure 5 may also be viewed as a vector representation of the costs of the process. The process contains two categories of costs, the costs of manufacturing (C_m) and the costs to complete after the check point (C_c). Each category may contain fixed, and variable costs depending on the specific situation. The total cost of the process (C_p) is the sum of the costs in each category, namely C_m+C_c .

Now consider this representation as the cost of the baseline zero-defect process. ***The first category of metrics is those than can be used to reduce the cost of the baseline process without reducing the quality of the product.*** The effect of using these metrics on the line shown in Figure 5 is to shorten the length between Points S and E.

The typical real world process however, produces products containing defects and can be depicted as shown in Figure 6. When the activity begins, it proceeds in a direction away from the baseline. The checkpoint now lies at Point T1 which at the same distance from Point S as Point T, but in a different direction. The typical cost to complete is represented as a line between Points T1 and E. This cost contains two elements, namely:

- Cost to complete after the checkpoint (C_c). These are the same as those in Figure 5.
- Additional costs to complete due to not being on the baseline (C_r) **which represents the cost of not doing it right in the first place, i.e., the cost of quality.**

Figure 6 Cost of the typical process (WBS element) with defects



The second category of metrics is those that can be used to reduce the number of defects The effect of developing and applying these metrics is to push the line between Points S and T1 in Figure 6 down toward the baseline.

Both categories of metrics must be used when attempting to identify metrics for transactions. It is easier to identify items to measure in the horizontal dimension or production process because when there is a physical handover of objects, the attributes of objects can be measured. In the garden gnome example, measurements can be made of the:

- Number of statues passing through the production process.
- Defective statues and other wastage of raw materials.

In the vertical dimension, the transactions tend to be control and status information pertaining to lower levels in the organizational structure and directives being passed

down from upper management. For status transactions, you can develop metrics based on the accuracy, relevance, correctness and timeliness of the information. For control transactions you can develop metrics based on the clarity, conciseness, relevance and timeliness of the information.

Developing the metrics

The first set of transaction metrics to develop are the defect reduction metrics. These act within the current state of the organization and are based on an analysis of the individual horizontal and vertical transactions. In general these will be improvements to the process and provide quick results.

Later, once they are in place, you can develop the baseline cost reducing metrics based on an analysis of the value added by each process box on the vertical transaction path when looking at the whole path as a system. This section of the change in general takes longer, and requires Reengineering and other major changes. It is where the re-organization begins and the resistance to change will be seen.

Identifying the non-value adding process element

Each process element in the organization should provide some added value along the horizontal or vertical path. When the organization is mapped into a chart typified by [Figure 4](#) and the inputs and outputs for each process element are measured, the change of value along the path may be seen. In the example, there is a change from raw materials to basic statues, to painted statues, then to statues ready for shipment, etc. in the horizontal path. However, the addition of value in the vertical path may not be readily identifiable. In general, you are likely to observe pockets of questionable functions, duplicated functions and other non-value adding activities. However, you must take care to find out why the apparently non-value adding process elements are present before attempting to discard them. The product from this analytical process is a set of facts that show exactly what each element in both paths is producing. The costs associated with each element may be obtained from your cost accounting system and the return on investment (ROI) of the element calculated. This scenario becomes the baseline for the transition to a customer driven transaction-based organization.

Having identified non-value adding or low ROI elements in the organization, do not downsize them without further analysis. The people in those elements may have non documented knowledge that is vital to the transformation or even to the survival of the organization. They may also swiftly become proponents of change

Identifying the Reengineering plan

Once the vertical and horizontal flows are identified a Reengineering or transition plan can be outlined. Sets of vertical and horizontal organizational elements may be combined into a process structure and the process then simplified. The optimal way to do this is to

set up a vision of a transformed organization and slowly migrate in a controlled manner as discussed below.

The change process

Change in the context of this paper is equated with process improvement which is generally depicted as being implemented in a "Plan Do Check Act" (PDCA) manner and drawn as shown in Figure 7. The use of "cycle" and "circle" imply that the organization assumes the same state periodically which leads to *activity-based thinking*. It may be true that the improvement team performs each action periodically. However, once an improvement is incorporated, the process is different. The texts on the subject generally do not mention the need for baselines and configuration control. Consequently, the results tend to be chaotic in a large organization with several simultaneous improvement initiatives in operation. *Process improvement must take place in a controlled manner and the changes in the process implemented at specific milestones*. There must not be any moving baselines. A better way to depict the process improvement process is by means of the process improvement spiral shown in Figure 8. The process improvement spiral is an iterative loop with baselines consisting of four steps[3]:

- **Plan** - Define the process, analyze the process, investigate alternative actions, and propose improvements.
- **Try** - Try out the proposed improvement on a small scale.
- **Verify** - Measure the results, and verify that an improvement took place.
- **Act** - Assuming an improvement took place, upgrade the process to incorporate the improvement (new baseline), and iterate back to "plan" for the next go around.

Figure 7 Shewhart cycle

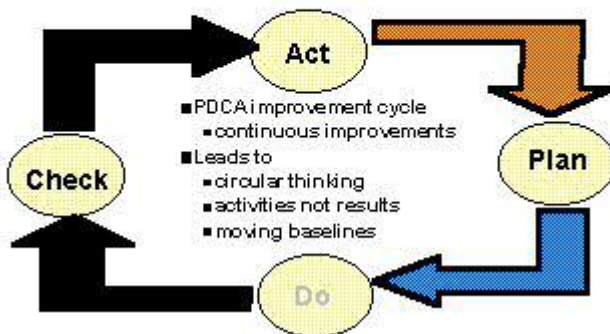
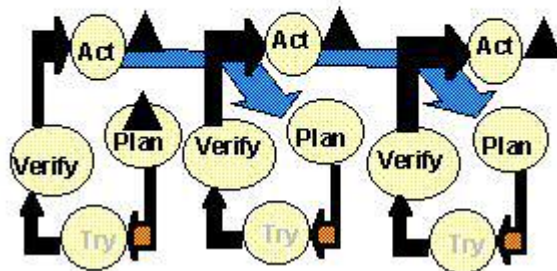


Figure 8 Process improvement spiral



The "iterative" term in the definition means that it is a continuous process in itself. The loop may also be in several stages at any time. For example, if two sets of actions are proposed to improve two different aspects of a process, one action might be in the "do" part of the cycle, while the second action is still in the "plan" section.

Process improvement has to be performed by a separate team of people working interdependently with the team who are in the process. The process improvement team debriefs the process team (who have the best knowledge about the process but are usually under pressure to deliver the product), and gets full disclosure and suggestions for improvement from the process team. The process improvement team analyzes the information and suggestions from a system's perspective to determine the effect of the proposed improvement on all the elements of the process. The process must then be upgraded at specific milestones in a controlled manner, rather than on an ad-hoc basis. Conceptually, upgrading a process is little different from upgrading a product release or making an organization change. Each action is an upgrade of a system and must be handled in an appropriate manner (process change requests, impact assessments and configuration control).

The transition process

There is no point in starting to change an organization unless you have a vision of what the changed organization will look like. This picture does not need to be complete and 100% detailed, in fact it shouldn't be that detailed. This is because you will learn things during the process of change that will modify the vision because you will learn more about what is happening both within and without the organization. ***Don't forget, that while you are changing the organization, the outside world is also changing.*** You can thus change the details of the vision at well-defined milestones along the road of change. In fact, you should change the vision at these milestones. If you put together a plan for transitioning to meet today's needs, and it's going to take three years to make the change, at the end of the change, the organization will be three years out of date. The approach is to set up the change so that it gradually converges to the point where it's needed.

The techniques are to prioritize the changes, then implement the changes based on the highest priorities. Reevaluate the priorities at the milestones and make the corresponding changes to the next set of activities. This is the same budget tolerant approach to designing a major computerized system in the aerospace and defense industries[4].

While no two companies' business situations are identical[5], there are methodologies that can be employed to perform the paradigm shift in an effective manner. **The change does not have to be chaotic.** Do not radically change everything in the organization at the same time. **The change must be gradual and made with care.** Start with a vision of the desired result and work backwards along the transition path via identifiable milestones to the present. For example, the sequence for implementing a transition from the current paradigm to the 'customer-driven process organization' paradigm is as follows:

- Communicate the need to change.
- Identify the current processes performed by the organization.
- Baseline the current state of the organization.
- Create the draft vision statement.

- Create the transition plan.
- Design the Reward and Recognition System (RRS).
- Pilot one process transition to the new paradigm.
- Implement the RRS.
- Baseline the change.
- Evaluate the experience
- Update the transition plan
- Start the transition cycle for the next process.

Support and resistance to change

Even where top management may be perceived as having the commitment to change, and can "communicate the vision," and the people at the lower levels in the organization are willing to try it, in many instances, middle management resist the change and the change fails. For example, in a survey of 1000 companies by Achieve International, more than 33% of the companies reported sabotage or internal resistance to these initiatives[6]. Most blamed middle managers for impeding quality (75%) and team efforts (70%). This resistance is because there seems to be nothing in it (the new system) for them.

You will encounter three types of people in the organization when implementing the change. They are those:

- **For the change** - who will make it happen if given the chance, whatever it takes. They tend to be the people involved with the process who can see the defects and want to initiate improvements. Implement the first change with these people. They will make it work. If you reward them visibly, you will set up the next batch of people to implement the next change.
- **Who are undecided** - they are sitting on the fence waiting to see which way the wind is blowing. The goal is to move them to your side of the fence so they support you.
- **Against the change** - they have no motivation to effect the change. The goal is to make them amenable to the change by first moving them to the undecided camp.

The transaction analysis approach should tend to overcome the resistance at least for those personnel in non-value adding elements.

The Reward and Recognition System

The failure to institute an appropriate RRS is a major cause of most of the failures in Business Process Reengineering (BPR) and Total Quality Management (TQM).

Performance evaluations are discouraged for many reasons including the following:

- **The system is at fault** and people's performance cannot improve within the boundaries of the system. Deming's "Red Bead Experiment"[7] is often quoted to reinforce this interpretation. However, people are an important part of the system

and what they do and how they do it must be measured to be improved. Deming's comments about changing the system have been conveniently forgotten. For example, in the Funnel Experiment [8] the optimal solution was to change the system.

- **Half the people will always be performing below average.** This argument has been used as a shield for poor performance. The fallacy in the argument is the definition of average. The systems perspective is to define the average for the industry, not for your organization. The goal is to position your organization as far above the industry average of organizations as possible.

The organization's RRS must reinforce behavior that is in accordance with the values of the organization[9]. People's behavior is explained by several theories including[10] which postulates two opposing types of behavior (Theory X and Theory Y). The difficulty in reconciling the two types of behavior may be because they are not so much opposing, as perhaps two ends of a situational continuum[11]. As a result the same person can exhibit Theory X behavior in one situation, and Theory Y behavior in another. My children provide a perfect example of this continuum. The aim of the RRS should be to gently move employees toward the Theory Y end of the continuum and maximize the overlap of their goals and values with those of the organization. The evaluation criteria you choose to achieve this purpose are critical. Consider using some of the following:

- **Individual contributions to their project** - Based on the contribution of each member of the team to the development of the product and the improvement of the process. Both attributes may be measured by managers and peers.
- **Team spirit** - Based on how each member of the team works together with the team and contributes to the success of the team. These attributes are measured by peers.
- **Contribution to company growth and reputation** - Based on volunteer work on proposals, adopted suggestions for process improvement in areas outside the person's work area; how they grow and improve other people in the project; letters of commendation and awards from customers and sources external to the organization.
- **Personal growth** - Based on letters of commendation and awards from sources within the organization; courses taken, conferences attended, technical journal articles published, and conference papers presented.
- **The seven habits** of highly effective people[12].
- **Negotiation skills** and other such skills for working with people[13].

Reward and recognition is an ongoing process. Evaluation of personnel takes place at appropriate times. The evaluation criteria must be posted and known to all employees. An evaluation is made on each criterion. The reason for the evaluation against each criterion is documented (also important for legal and regulatory compliance reasons). The grading of the employee with respect to the evaluation criteria must be objective and fair. Each evaluation may be made by several different people and the results for any specific criterion may be a weighted sum of all the evaluations. The evaluations for each criterion may be plotted as a bar (pareto) chart. Each criterion also has upper and lower limits just

like a Statistical Process Control (SPC) chart. The upper and lower limits are set so that normal behavior is within the limits. If the RRS is working correctly, most evaluations should fall within the upper and lower limits, i.e., the process is in control and people are doing their jobs properly. Any situation in which an employee receives evaluations outside the limits is to be investigated. Exceeding the upper limit may show excellence, falling below the lower limit shows something entirely different. Each is a symptom of a problem that has to be investigated.

The evaluations also have to be checked over time to learn if there is an abnormal pattern. For example there may be a supervisor who never gives a certain employee a good evaluation. A single mediocre evaluation may be out of phase with other elements of the evaluation. Today's technology can perform "pattern checking" on evaluations to weed out this situation.

Summary

Making the transition to a customer-based organization is a difficult process characterized by resistance to change, chaos and inefficiency. However there is a better way and the transaction approach can be used to identify the non-value adding elements in the organization. Once they are identified, the process can be Reengineered and implemented in a controlled manner. At this time, the process of Reengineering into the new paradigm may receive lesser resistance than in conventional approaches, because it becomes in everybody's interest to be part of a value adding transaction. The transition must be reinforced with a change in the organization's RRS to reward behavior appropriate to the new paradigm.

Your journey begins with the first few steps, and those steps are to identify and improve all the transactions within your organization.

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