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S-E-A-R-C-H! Your Ideas: A Structured Idea Generation Technique for Process Improvement

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Abstract:
The origin of process improvement can be traced back to 18th century, when Eli Whitney invented machine to remove seeds from cotton, making it the first automated process. Since then, the process improvement evolved over time, focusing on mass production to quality improvement to cost efficiency. Many methods such as Six Sigma, TQM, TPM, Lean, etc., along with its own stack of tools, were developed to improve the efficiency of the process improvements initiatives. Irrespective of the methods and its tools, every process improvement starts by understanding the problem, analyzing it, identifying solution, implementing it and sustaining it. While varied tools and techniques were created or adapted for identifying, analyzing problem and implementing solution, the area of identifying solution is left to the creativity of the human race. One of the most commonly used method for identifying solution – Brainstorming, comes with its own inherent flaws and fallacies. To counter the shortcomings of brainstorming and to create an analytical approach to idea generation, the S-E-A-R-C-H technique is introduced in this paper. In a much easy to remember mnemonics, the S-E-A-R-C-H technique would help both individual and team to come up with ideas that could improve the process and achieve the process improvement objective in short time.

1. Introduction

At the heart of any process improvement initiative lie the solutions to the problem. Solution should be identified, tested and implemented to create a new or modified process, improved in its efficiency. However, the most difficult yet often overlooked step in this process is solution creation – idea generation. 'It is certainly crucial, if only because the remaining steps just cannot take place without ideas to progress' (Nielsen Co, 1970). In any process improvement initiative, analyzing the root cause and evaluating and implementing solution are meticulously performed following a structured path. Yet very little emphasis is given to idea generation step. It is often left to the creativity and knowledge of individuals. It is suggested that "the generation of ideas is a relatively easy task and certainly not as difficult as is often made out" (Midgley, 1977). It is often viewed that individuals are capable of thinking and can come up with creative ideas given the time. Certainly, individuals can come up with many ideas, however, their quality, applicability and practicality is what makes a good idea. Many ideas created might not be practical given the process and the organization; some may not apply to all scenarios of the process, thus lacking robustness. Others may lack in its quality. Often these ideas instead to solve a problem, tend to create new complexities leading to another problem. However, ideas are evaluated meticulously, often resulting in selection of the best among the worst ideas and implemented to create new complexities. This highlights the necessity that to be successful in process improvement initiatives; one must be successful in creating new ideas.

2. Idea Generation

Ideation process typically follows idea generation, evaluation and implementation (Brown, 2008). While idea evaluation and implementation follow meticulously designed steps, idea generation is left to random chance. Not all is lost for idea generation. There are various techniques currently being followed, mostly with development of new product or services, to create ideas. Some of them may be an individual activity while others look up to teamwork for identifying solutions. However, they more often than not result in solutions that lack quality and applicability. Other times, it might take longer than expected to come up with solutions or ideas for the process problem. Organizations would tend to approach this through random idea submission procedures. Employee suggestion system is not new to the modern world. The first recorded implementation of suggestion system in the West was in 1770, when the British Navy devised a system to solicit information from its frontline sailors (Robinson and Stern, 1998). Guised as a crowd sourcing means of innovation and idea generation, organization would allow individuals to submit ideas, which may directly or partially address the problem. This approach purely relies on chance and on individual's interest to contribute. By considering no time bound approach for idea creation, organizations risk missing the widow of opportunity for improving the process.

One of the most commonly and widely used method for idea generation is brainstorming. It is often referred as one of the contemporary management tools that help to bring out the hidden potential of the employees. The key assumption is that individual possesses distinctive skill and competency, when put to collective use would bring about a variety of ideas to solve the

problem. However brainstorming may be extremely time-consuming. If the competency assumption is questioned, the ideas generated may not be of sufficient quality (Dugosh et al, 2000). Presence of senior managers or other influential person in the brainstorming team might hijack the idea generation process. Experiments conducted to compare ideas developed in brainstorming found that number of ideas produced in group brainstorming is less than the sum of ideas produced individually (Diehl and Stroebe, 1991). This "productivity gap" suggests that group brainstorming is less productive than individual brainstorming. Also, researchers suggest that the quality of idea produced through group brainstorming is less than that of individual brainstorming (Mullen et al., 1991).

3. S-E-A-R-C-H Technique

As an alternative to brainstorming, the S-E-A-R-C-H technique described below would be highly result oriented and would provide individual or team to come up with high quality ideas that are practical and implementable. The S-E-A-R-C-H mnemonics stand for *Standardization, Externalization, Automation, Replacement, Combination* and *Hang on*! Each of these strategies would generate ideas for process improvement initiatives by creating a focused approach.

- **Standardization** – This strategy would aim to reduce variation in the process by creating a standardized procedure of operation. Standard in itself means the best possible way of doing an activity. Hence, generating ideas focusing on standardizing the process would help in developing procedures that would be the best possible way of executing the process. Standards have its root in commerce and since then spread to all field of science. In communication systems, standards are a necessary interface for establishing connectivity and flow of information (Baskin et al, 1998). Similarly, standards in processes would help in creating a necessary interface aiding in smooth process flow. Users of standards can be classified to creators and seekers. Standard creators are ones who establishes the benchmark for the process while standard seekers adapt the best practice to match the benchmark process. While generating ideas for standardization, team or individuals may look upon ways through which they could create a standard or adapt an existing standard procedure which would improve the process efficiency.
- **Externalization** – This is typically the make or buys decision that the organizations take. One of the possible solutions is to outsource the process that does not add value. Ideas may be generated to see the possible ways through which the process can be removed from the company's internal process flow and replaced with external product. According to Khumalo (2006), the make or buy decisions are to be performed with due consideration given to the competitive advantage of the organization, cost control, supply market availability, risk and cultural impact. When undertaking buy decision, organizations must ensure that gap in the operation is filled by vendor's resources and that the externalized process would not give away competitive advantage. On the cost front, the idea to buy from vendor should fulfill the criteria that the cost of transacting with the vendor be less than in-house production cost. Organizations must also consider that the suppliers environment before deciding on externalizing the process output. There should be sufficient suppliers available and can be accessible without much cost or time involved. The externalized process should not be a specialized one where supplier gains domination and may increase the cost pressure in the future.
- **Automation** – One of the most common and widely accepted solutions to process improvement is automation. By eliminating the manual efforts, this solution would provide better results with less time. Idea generation may focus on the means through which the process can be automated or semi-automated. Automation in manufacturing industry is defined by "Automatic control of the manufacture of a product through a number of successive stages; the application of automatic control to any branch of industry or science; by extension, the use of electronic or mechanical devices to replace human labour" (Oxford English Dictionary, 2006). Satchell (1998) provided a more generic definition for automation as "Automation is the replacement of human activity by machine activities". Ruff et al in 2002 described three levels of automation. While it is defined for remotely operated vehicles, the concept is equally applicable for all processes. The three levels include manual control – where the operator initiates the automation and controls the entire process, management by consent – an approach where automation proposes action but cannot undertake it without explicit consent by the operator. And the third type is management by exception – where automation is initiates and proceeds without any consent by the operator. However, the operator would have control to interrupt or stop the process through explicit command. Automation can be applied to all activity types like planning, enabling, executing, monitoring and control. The entire process flow can be sequenced to perform without any manual intervention. For instance, an IT enabled planning system may provide instructions for execution to an automated production system, which would provide input to monitoring system. The feeds from monitoring system are looped back to planning system for effective control, thus creating a complete automated production flow.
- **Replacement** – Replacement ideas would focus on removing the troubling process step and replacing it with another process activity. It would redefine the process flow by elimination of the process step and would substitute another activity in its place, to add value to the process flow. Substitution in economics term refers to goods that replace one another as per market condition. Similarly, a substitute process would mean to replace the existing process in order to create better efficient output. Replacements are discussed extensively with respect to machines for over 100 years. However, replacement of processes is not widely studied (Hofstede et al, 2007). While business process replacement talks about complete upheaval of the process, replacement in this context is confined with a strategic means of developing ideas towards improving the process. Replacement ideas may include changing the method or input material with another method or material to obtain efficiency.
- **Combination** – Combination is a means through which the troubling process step can be coupled with another process step so as the combined output is better than the sum of the individuals. Ideas should be generated to see the possibility

of combining the process with another process step. The mathematical theory of combination (Newton's theory of combination) states that there are two types of combination – permutation and combination. Permutation refers to the order in which objects are selected while combination does not give preference to the order of selection. Both permutation and combination can be selected with or without repetition of objects. The same theory can be applied generate ideas. Solution for improvement may be identified by considering repetition process steps or by redefining the order of processing. Combination might also refer to condition where a new process is added to an existing one as such the combined output value is greater than the value generated by existing process.

- **Hang on** – One of the possible and practicable solutions is hanging on to the current process. This idea should always be placed alongside other solutions. If none of the other solutions are practicable and effective, this idea should be selected to best suite the current scenario. "To do nothing is within the power of all men" states Samuel Johnson. Experiments conducted to understand the status quo suggests that decision makers most often prefer no change scenario (Samuelson and Zeckhauser, 1988). The bias is influenced by the strength of preference and the number of choices available. This would have heavy bearing in idea evaluation stage. With too many alternatives for improvement, team or individuals would tend to prefer a state of no change, thus leading to no improvement in the process. However, by including status quo as a strategy for idea generation, team and individuals would take cognitive approach in selecting the choice of no change. This would provide an opportunity to study improvement failure conditions and on what situations should status quo be adapted. Inadvertently this would provide a means for identifying criteria for idea evaluation.

4. Conclusion

The S-E-A-R-C-H method of idea generation is a result driven, focused approach, aimed at producing practical solutions in a time bound manner. It is considered time bound because, within a given timeframe if no quality solutions are identified then the current state would be continued (*Hang on!*) with due cognizance. Unlike brainstorming, the approach can be adapted across all organizational settings. Brainstorming works better with highly motivated and capable team. The S-E-A-R-C-H method would provide strategies for any team to come up with ideas and may also be taken up by individuals in undertaking process improvement initiatives. While the approach presented here considers idea generation from the perspective of process improvement, the S-E-A-R-C-H method is equally applicable in all possible idea generation scenarios such as product development, service development, etc. One of the pit falls of brainstorming is that, it generally believes that more the numbers of ideas generated, irrespective of their quality, the greater the likelihood of producing effective and radical solution. However, greater the number of alternatives provided, the team would tend to select a status quo or no change solution, unconsciously. We may not be possibly discerning the optimum number of ideas for a given set of team size and for a given situation. However, considering status quo as an option with clear understanding would provide the team with opportunities to list and evaluate possible solutions.

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