

Standardized Approach for Effective Management of Workforce Capacity

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Abstract — *Poor delegation management typically results in rework and quality issues that drive the high labor cost of any industry. The main cause of this problem is that management does not count with a standardized approach to assess their workforce capacity effectively. As part of this research, a standardized approach and a decision-making tool are developed in an effort to reduce uncertainty when delegating a particular task. The study shows that by creating a standardize approach, managers are capable to delegate task effectively, potentially reducing labor cost and improving productivity. The study also demonstrated that managers would be more effective when using decision-making tools that provide better planning and help them in identifying strengths and areas of improvements of their employees.*

Key Terms — *Delegation, resource allocation, productivity improvement, decision making.*

INTRODUCTION

The success of any athlete, musician or artist lies on the skills they possess and the capacity each individual has to develop for a particular area of their profession. The same behavior can be observed in the workplace of any individual. Each employee in an organization has a unique set of skills and experiences that help them perform better than their peers in a particular task. For this reason, it is essential for managers to effectively assess workforce capacity and to master resource-allocation techniques. In this paper, the approach to effectively assess workforce capacity is investigated. Hypotheses were based on the belief that effective workforce assessment will result in productivity improvements and labor costs reduction. In addition, the methodology presented herein will help managers to identify areas of improvement to

encourage employees to be competent and stay motivated.

Objectives

The purpose of this study is to achieve the following objectives:

1. Identify at least three variables that affect the effective usage of workforce capacity in any industry.
2. Define a standard methodology capable to assess employee's ability to take and complete new tasks effectively.
3. Explain the pros and cons of implementing a standardized methodology for work delegation.

LITERATURE REVIEW

Why effective delegation is so important? “Without delegation, an organization would be forever bound by the limitations, physical, intellectual, time, etc. And without delegation, managers would be less able to manage the important processes and resources related to their jobs” [1]. Reference [1] establishes that 250 managers and supervisors were interviewed to understand why they should delegate and how can they do it effectively. Through the collected answers, the main reasons to delegate tasks were:

- Increase productivity and distribute workload,
- Improve satisfaction and motivation of the employee,
- Build trust and confidence,
- Help employees to develop competencies to be successful in their job.

In addition, decision-making tools can be effectively used for human resource allocation in product development projects [3]. Per Eaton’s study [3], different human characteristics such as motivation/satisfaction level and desired career path were considered. Reference [4] also considers

different variables such as personality, level of interest/stress, team willingness and others. Hence, results from [3] and [4] are used to evaluate the benefits and weaknesses of the methodology to be designed at the final stages of this study.

METHOD AND DESIGN

Research Methodology

This paper aims at investigating the use of decision-making practices and tools to assess workforce capacity and effectively delegate tasks. In order to do this, the management method used for this investigation is the PDCA (plan-do-check-act) cycle. Refer to Figure 1 for the method followed in this research. This method was essential to identify design flaws and improve the model by testing and controlling the variables used to develop the standardized methodology for effectively assess workforce capacity.

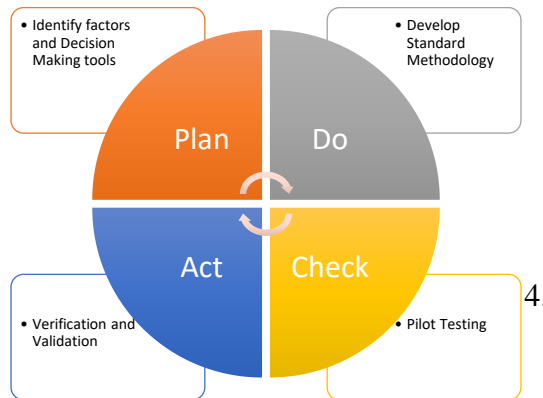


Figure 1
Plan-Do-Check-Act Cycle

Standardized Methodology

This study focused on identifying the different variables that affect task delegation management in order to develop a standard methodology capable to assess the workforce capacity for any particular industry. Managers need to have an in-depth knowledge of the task to be performed and also know the skills needed and workload of the person to delegate the task [2]. Therefore, during the planning phase, the variables shown in Figure 2 are

identified as the key factors that managers need to delegate tasks effectively. These variables are:

1. **Skills:** Employees will be sorted in three different levels of expertise (beginner, average or expert). Managers will based the assignment of these levels of expertise according to the experience and tasks already accomplished by their employees.
2. **Work Load:** Managers will also have a workload matrix with the scheduled tasks for each individual on their unit. This information will be used to identify if the employee with the desired skills is available to execute the job in a given time frame.
3. **Labor Cost:** the labor cost will be used to ensure the tasks can be performed without exceeding the current budget.

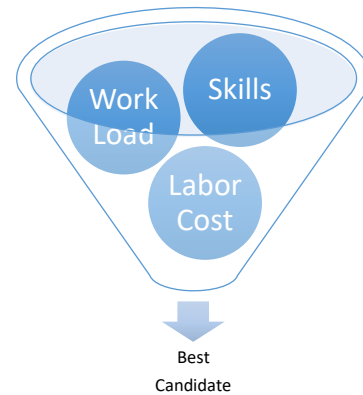


Figure 2
Variables for Effective Task Delegation

During the development phase, Microsoft Excel was selected as the decision-making tool to develop the standard methodology. This platform provided an excellent data storage and facilitated the iteration process between the three variables previously established (skills, labor cost, and workload) to select the best candidate for the job.

Tool Design

An Excel spreadsheet was developed to identify the best candidate to delegate and complete a particular task effectively. For this particular design, hypothetical data from a firm called IT Borinquen is

created to test the decision-making tool and verify that it works as intended.

IT Borinquen counts with 10 employees that are capable of working with 6 different tasks. The manager of this firm is required to collect and input the following parameters to the database prior to run the model:

- **Week to execute work:** to help the spreadsheet verify the availability of each employee to execute the work in a given week of the current workload matrix.
- **Workload Matrix:** a matrix was created to specify the amount of tasks currently scheduled per week, (refer to Table 1). Employees were allowed to work a maximum of three tasks per week to promote motivation and end-product quality. Colors in the matrix below represent the availability of each individual for a given week (not available (red), conditionally available (yellow), and available (green)).

Table 1

Employee Workload Matrix

Employee	W1	W2	W3	W4	W5
Juan	1	1	1	2	2
Fernando	3	1	1	3	3
Rosa	2	2	3	2	2
Maria	1	2	1	1	1
Pedro	2	1	3	3	1
Manuel	2	1	1	1	1
Jose	3	2	2	2	2
Ana	3	1	1	1	3
Luis	3	1	2	2	2
Patricia	2	2	1	1	1

- **Skills needed:** to specify the level of expertise per each task. The scale goes from one to three; one being the less experienced employee and three being the expert.
- **Time required per task:** the average time that each employee spent to finish a particular task needs to be recorded to calculate the labor cost.
- **Wage per hour:** The wage per hour of each individual is multiplied by the amount of time spent per task to calculate the labor cost to complete the job.

DISCUSSION

Figure 3 shows a data entry form that will help managers inputting the data needed into the model. The task section in this form was pre-populated with the task of the company (for IT Borinquen the tasks are: Operational Procedure, Programming, Debugging, Graphics, Training and Project Management). In addition, the form provided with a drop-down menu to select the level of expertise required for the job to be delegated. After the information needed is completed, the iterative process begins.

#	Task	Expertise Needed	Assigned to:
1	Operational Procedure	Expert	Maria
2	Programming	Beginner	Rosa
3	Debugging	Beginner	Luis
4	Graphics	Expert	Manuel
5	Training	Beginner	Ana
6	Project Management	Expert	Luis

Figure 3
Data Entry Form

The iterative process was accomplished by pressing the “Find Candidates” button in the data entry form, (refer to Figure 3). This automatically ran a macro that called out the Solver function in Excel. As shown in Figure 4, the Solver window allowed the user to set the objective and constraints in order to find the optimal solution of the model. As depicted in Figure 1, a sum product between the labor cost and the delegated tasks ranges was done.

$$TotalCost = SUMPRODUCT(DelegatedTasks, LaborCost) \quad (1)$$

For IT Borinquen’s hypothetical case, the following constraints were entered into the Solver’s Window:

1. The number of delegated tasks had to be integer and greater than zero.
2. Employees were allowed to work a maximum of three tasks per week.

3. The total delegated tasks had to be equal to the total tasks needed.
4. Selected employees needed to have the required expertise to get the job done.

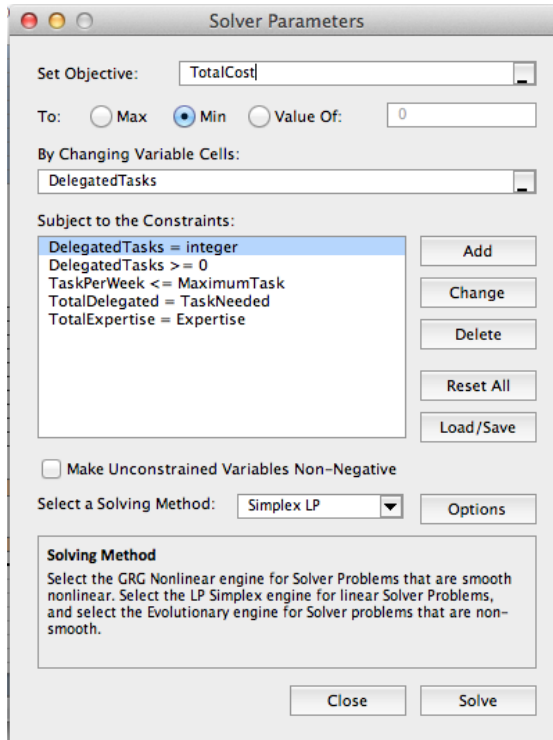


Figure 4
Excel Solver Function Window

The “Solve” button started the iterative process until it found the optimal solution; in this case, the employee(s) with the desired skills, with the available time at the minimum possible cost. The results of this iterative process are shown in the Data Entry form previously depicted in Figure 3 (Column D).

Model Strengths

The decision-making model for long-term staffing decisions helped German Printing Company to lower the existing cost of labor by 26%-39% [5]. Although, the approach and tool presented in this paper used different methods and tools than [5], similar results are expected when this model is applied to a real work environment. Consequently, the results from [5] strongly support the hypothesis

that effective workforce delegation will reduce the existing labor cost of a given firm.

Additionally, the model provided an excellent platform that will help managers to effectively assess the workforce capacity and reduce labor cost of the firm. The spreadsheet platform will also provide with a dashboard where managers will be able to see strengths and areas of improvement of the employees. This will be great to assign relevant tasks to keep employees motivated and in a continuous-improvement environment.

Model Weaknesses

One of the limitations that this model presented was that hypotheses could not be fully verified because the method and tool presented herein were not tested with real work data. Moreover, the variables used to develop the standard methodology may not be sufficient to effectively assess workforce capacity for a particular industry.

Additionally, during the verification and validation phase, the spreadsheet model was not able to present results with an exact solution at all times due to the boundary conditions and constraints stated in the Solver’s window. However, this issue will be mitigated with the addition of the dashboard intended to help managers to find the best candidate for the job to delegate.

CONCLUSION

Upon completion of this study the following objectives were achieved:

- A standardized approach was designed to assess employees’ ability to take and complete a particular task.
- Skills, labor costs and workload were identified as effective variables that can be used to assess the workforce capacity of a firm.
- Pros and cons of implementing a standardized methodology for work delegation were explained.

Although this study was not performed using real work data, the results presented herein strongly support the hypotheses previously established and

provided enough evidence to conclude that effective workforce capacity is essential to successfully improve productivity, and reduced labor costs of a firm. In addition, the study presented mitigation actions such as the implementation of a dashboard to assess workforce capacity when the decision making tool is not capable to find an exact solution. This would also help managers to determine areas of improvement of their employees to assigned them challenging tasks that help them to be successful and motivated to work.

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