

Sales Forecasting and Monitoring in an Engineering Services Company

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Abstract — Forecasting is a powerful business tool when used appropriately. It helps to provide a vision of the expected outcome of any business metric such as sales. The current forecasting process of an engineering sales company was studied to identify areas of opportunities and a new process was developed to address the existing gaps. As a result of implementing a robust forecasting process, there was significant increase in forecast accuracy and reduction in management planning time.

Key Terms — forecast accuracy, lack of standardization, planning time, process robustness.

INTRODUCTION

The ability to make projections of future performance is a common need in businesses and it is known as forecasting [1]. In engineering services companies, the hours charged to projects are considered sales since they are the source of revenue. For the latter reason, it is important to develop an accurate sales forecast which projects the financial performance at the end of a given period [2].

Several factors can be considered at the time of developing a sales forecast. Historic data can provide valuable information and be an indicator of future trends [3]. Historic data can help to determine if there are patterns that behave in a cyclical, seasonal or irregular way [4].

Also, when the sales and revenue of the company is directly dependent on the hours worked by its employees, it is important to take into consideration all the factors that could affect the availability of human resources. These factors could include attrition, hiring, promotions [5] and paid off time.

Herein it will be shown how the current forecasting and monitoring process used in an engineering service company, fails to provide

acceptable results due to lack of standardization and inconsistent gathering of necessary inputs.

METHODOLOGY

In order to prove this thesis, the forecasting and monitoring process currently in use by an engineering service company was studied. The results of this study revealed the gaps and areas of opportunities. After identifying the areas of opportunities and data gathering of the current process, a new process was developed to address the gaps of the current process and provide standardization.

The method of comparison consisted in collecting data of the former and new process of a 4 weeks period and comparing results of forecast accuracy and management time spent. Success criteria of the new process consisted in increasing the forecast accuracy and reducing management time spent in monitoring sales.

FORMER PROCESS

The former process utilized could be described as ad hoc since it lacked standardization and consistency on inputs utilized. Figure 1 shows a workflow diagram of the former process.

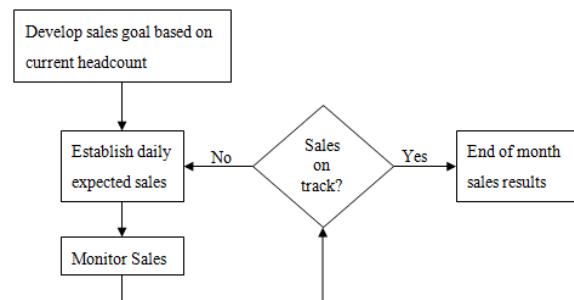


Figure 1
Former Forecasting and Monitoring Process

The process consisted on developing a sales goal at the beginning of the month, which was also considered the forecast. Then based on the latter, an expected daily sales goal or rate was established that was used to determine if sales were on track to meet the goal. Finally, if feedback from the monitoring process showed sales were off track, a new daily sales rate was established aiming at pushing harder to meet the goal. Although simple, this process required a significant amount of re-planning and monitoring due to the following deficiencies:

- Established sales goal wasn't realistic since it didn't take into account the manpower availability during the period.
- Inconsistency of inputs as there wasn't a defined process to assure consistency on required inputs for a good forecast.
- No accountability was assigned further down into the chain of command since goal wasn't break down into individual objectives hence no commitment from individual employees.

NEW PROCESS

Establishing the areas of the former process in need of improvement, led to the development of a new process that would add steps to correct the deficiencies identified. The first item to be addressed was manpower availability. It was determined that the variables affecting manpower availability and therefore sales outcome were:

- Headcount during period
- Available working days
- Paid time off (sick leaves, licenses, vacations)
- Non-billable activities (i.e. worked hours that aren't charged to projects)

The new process set the above variables as standardized inputs to develop a realistic forecast. Then to create sense of ownership and drive accountability within the department, the departmental goal was broken down into individual sales objectives. It was found that this practice helps to set clear expectations of what each individual needs to achieve within the period. Figure 2 shows a diagram of the new process.

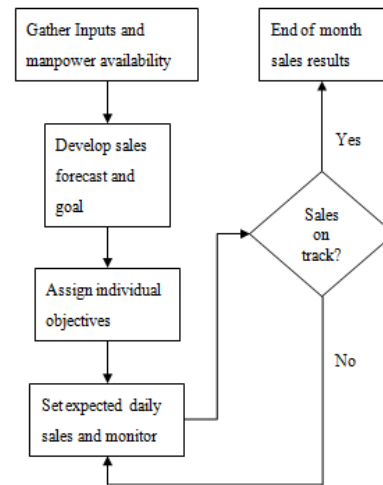


Figure 2
New Forecasting and Monitoring Process

Although the new process adds complexity to the forecast development process, it's expected that the latter results in a significant reduction on monitoring and re-planning time. This reduction in process time and increase forecast accuracy will in turn increase the value of this business tool.

Also, as part of the new process a simple tracking tool was developed using MS Excel. The purpose of the tool is to easily calculate the forecast based on the inputs gathered and to provide an easy way to track sales and determine if they are on or off track.

COMPARISON BETWEEN PROCESSES

For comparison purposes, data on the former and new process was collected over the established period of time. Results showed significant difference between the outcomes of the processes. Table 1 shows the overall results of both processes over a four week period. It can be seen that the implementation of a standardized process that clearly identified the inputs affecting it, resulted in a decrease on monitoring time of 95.8%. All of this time was spent in management meetings that provided no overall value to the company. Hence reduction of time spent in this activity allows

management to focus on other tasks that could be more value added. Forecast accuracy represents how far off were the resulting sales with respect to the forecast established at the beginning of the period. Results showed that implementation of the new process drove forecast accuracy from 94.1% to 99.3%, which represents an improvement of 5.6%.

Table 1
Process overall results over 4 week period

Process	Monitoring Time (hrs)	Forecast Accuracy (%)
Former	48	94.1
New	2	99.3

CONCLUSION

The results obtained by means of a comparison of an ad hoc process to a robust process supports the argument that the former process utilized failed to provide acceptable results due to lack of standardization and inconsistent gathering of necessary inputs.

Therefore, it can be established that standardization of procedures with focus on defining clear inputs based on their effect on process outcome, leads to improve business processes and is a practice that should be adopted whenever possible.

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