

## Northflow Solutions, Inc.: Using ABC to create a new pricing model

*Steven Johnson, Minnesota State University, Mankato*  
*Paul Brennan, Minnesota State University, Mankato*

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### Introduction

As Ben returned to his desk, his mind was racing with thoughts from his meeting just minutes ago with his direct supervisor, Monica. Ben had only been working in public accounting for a year, and most of his assignments during that time had been closely supervised, so when Monica explained that he would be doing most of the work on the next project, he was excited and nervous at the same time. Monica's briefing to him on Northflow Solutions, Inc, had included all of the information necessary for him to complete the project, but he was a little concerned about the timeframe, as Monica wanted a complete report in two days.

He thought back to Monica's closing comments from the meeting:

*Northflow Solutions, Inc. needs some guidance in the way they price their services. They're concerned that their current pricing method isn't providing enough margin for them to be successful and invest in future growth. They also aren't sure which of their customers are making them money, and which are not. We want to help them figure that out.*

As Ben considered his assignment, he opened the Northflow Solutions, Inc. file that Monica had given him, eager to review the details and get started on the project.

### Background Information

Northflow Solutions, Inc. ("Northflow"), was formed as ComputoService in 1964 by four Minnesota-based telephone companies as a service bureau to provide bill calculation services to customers. Due to growth during the 1970's and 1980's, it began developing software applications to meet other operational needs for its clients. During this time, some of the company's projects included developing software solutions for municipal governments, providing software to tabulate local election results, and delivering solutions for handicapping software for the Minnesota Golf Association.

The original owners were bought out by HickoryTech in the late 1980's, and the company ended its municipal government products several years later, and changed its corporate name to National Independent Billing. In 2014, the company was acquired by Consolidated

Communication, Inc., as part of the purchase of HickoryTech. One year later, in 2015, the organization was acquired by Mike Borchert and was rebranded as Northflow Solutions, Inc.

While Northflow continues to provide software solutions, such as billing management and project workflow software, to telephone companies, it is also preparing to launch new products aimed at a broader market. Some of these solutions include database management utilities, and cloud-based management solutions for small and medium sized businesses. The company is well positioned to move beyond its legacy billing services and into more focused development and consultancy services.

Historically, Northflow billed customers based on a predetermined rate, with minor adjustments for administrative items (such as postage or copying). After purchasing the company in 2015, Mike realized that Northflow had not increased customer prices in its legacy Billing Division in nearly 15 years. During this time, changes in services to customer accounts had been made that had not been reflected in the monthly invoicing. Together with Scott Grill, Northflow's COO, Mike made it a priority to understand which customers were profitable and which were not. Once determined, Northflow could decide how to handle unprofitable customers.

To best understand profitability by customer, Mike and Scott believed they could rely on their sophisticated proprietary time and billing system. Northflow required every employee to enter their time into the system and classify it by customer, job, and billable or non-billable time. This system allowed them to see exactly how much time was being spent on each customer or job, as well as the productivity (billable vs non-billable time) of each employee.

To determine pricing for new customers, Northflow estimates the amount of direct labor that will be necessary for the project, along with any direct materials (which are generally immaterial). In addition, Northflow uses a single rate of 150% of direct labor to allocate overhead. The combination of these three items (direct labor, direct materials, and overhead) are used to estimate the cost of the project, which Northflow then marks up and uses as the final price to the customer. Table 1 provides an overview of Northflow's revenue, direct materials, direct labor, and overhead costs of the Billing Division (Borchert & Grill, 2017).

**Table 1: Statement of Income**

Northflow Solutions, Inc.		
Statement of Income - Billing Division Only		
For the Year Ended December 31, 20XX		
Revenues		\$ 1,180,416
Direct Labor		294,960
Direct Materials		36,712
Overhead:		
Setup & Maintenance	117,000	
Billing	124,200	
Development	271,968	
Total Overhead		513,168
Gross Margin		335,576
Selling and Administrative Expenses		252,018
Operating Income		\$ 83,558

(Borchert & Grill, 2017)

Mike was concerned with this approach for several reasons. First, there was a great deal of uncertainty in this approach. Although the organization did the best it could in predicting the future costs of a project, in many cases these costs were inaccurate, which led to underpricing customers. Second, he was concerned about the effectiveness of overhead allocation with this method. Using a single rate to allocate overhead, while ignoring some of the activities involved in Billing Division, seemed like a practice that could be improved.

Mike and Scott believed that the Billing Division had had three primary activities in relation to the services that it provided to customers: Setup and maintenance of customers, the actual billing processes, and development costs. Setup and maintenance costs included setting up each of the customer's customers. For example, one of Northflow's customers has over 15,000 of their own customers, while another has over 40,000. When providing billing services for these customers, Northflow has to set up and maintain each of these customers. In addition, each customer also has a different number of "batches" that get processed each month. These batches are typically accounts receivable runs, and can vary from a few per month to five or more per week. Development costs are simply the labor costs associated with the ongoing development of the software (bug fixes, updates, programming, etc.).

Although Northflow employees do a good job entering their time into the time and billing software, misclassifications sometimes occur. One of the most common errors is misclassifying customer development costs as generic development costs. For example, Northflow spends significant time on the development of new software, which would be considered generic development costs; however, there are also many times where a customer will ask for specific changes to software. In these cases, employees sometimes inadvertently code customer

development costs to generic development costs. Since generic development costs do not get billed to individual customers, Northflow was missing potential revenue for these services.

Northflow’s Billing Division was small, consisting of only three customers, which is one of the reasons that Mike wanted to focus on it first. Although pricing modifications were necessary in other divisions, the Billing Division’s small customer base made it an ideal pilot project. Table 2 provides additional information for each of the three customers of the Billing Division (Northflow, 2017).

**Table 2: Additional Information from Northflow Solutions**

	<b>Spectre Industries</b>	<b>Portal Telecom</b>	<b>Maplewood Companies</b>	<b>Total</b>
Average Monthly Direct Labor Hours (before adjustments)	256	144	310	710
Additional Annual Labor Hours (from review of time-keeping system)	276	180	480	936
Number of Customers per Month	17,100	15,300	42,600	75,000
Number of Batches per Month	8	2	40	50
Development Hours per Month	123	115	396	634
Hourly DL Costs	\$ 32.00	\$ 32.00	\$ 38.00	
Annual Direct Materials Costs	\$ 8,714	\$ 11,017	\$ 16,981	\$ 36,712
Customer Pricing - Currently Monthly Fee	\$ 28,000	\$ 16,000	\$ 35,000	\$ 79,000
Annual Hours of Excess Employee Capacity	600	48	120	768

(Borchert & Grill, 2017)

In addition to providing details on revenue, direct labor, and direct materials, Table 2 provides information necessary to allocate overhead using an activity-based costing method. “Additional Annual Labor Hours” refers to the development hours that had been inadvertently coded to generic development hours instead of allocated directly to specific customers. These additional labor hours should be included in total direct labor hours for each customer, and subtracted from development hours per month for each customer.

### Conclusion

After reviewing Northflow’s information, Ben was much more confident that he could help provide answers to Mike and Scott. He knew he had to gain a better understanding of the cost of providing services to each of the Billing Division’s customers, and he was confident he could do so using activity-based costing. He was anxious to get started and to answer Mike and Scott’s questions. Which clients are making money, and which are not? And based on this information, how should Northflow change its pricing model?

### Appendix: A Brief Primer on Activity Based Costing

Activity Based Costing (ABC) was developed as a costing method to more closely match indirect costs to the activities that were believed to drive the size of those costs and to then allocate the costs of those activities to products based on the product usage of those activities. The product usage of activities was measured by the usage of cost drivers determined to be causal factors of those activity overhead costs.

Overhead costs, many of them fixed, tended to be high proportion of overall costs in modern businesses and when indirect costs were a significant portion of total costs, simple traditional costs systems may distort estimates of product, service, or customer costs. ABC was developed as a method to more accurately allocate indirect and service costs to products, services, and customers (Baykasoglu and Kaplanoglu, 2007).

The oldest and simplest method of allocating overhead used just one cost pool and a single overhead application base. All overhead costs were gathered into the single pool and allocated to products using a single measure of usage (for example, direct labor hours, direct labor costs, machine hours, etc.). Overhead was then allocated to products or services based on the product or service's usage of that single measure. The simple method using one cost pool and one application base easily could lead to cost distortions because that method spread the cost of resources uniformly to products or services when, in reality, those products or services were not uniform in their consumption of resources (Horngren, Datar, Kaplan, 2015). Products and services could be over or under costed because their actual consumption of different overhead resources could be quite different from the overhead costs allocated to them based on the broadly averaged measure.

Departmental overhead application was an advancement from the single overhead cost pool using a single application rate. Overhead costs pools were identified by service departments and each department developed an application base to allocate its overhead costs to products and services. Conceptually, ABC had some commonalities with this costing method in that the method used multiple overhead cost pools with multiple cost drivers to allocate indirect overhead costs to products. The difference was that ABC required the identification of "activities" that may cut across departments. Departmental rates allocating costs from single departmental pools and rates still tended to average differential overhead consumption within the department across products and services. One of the touted advantages of ABC was that the system forced firms to identify activities that drove indirect costs, to track those activities, and to contemplate ways to reduce activity costs.

Horngren, *et al* (2014) described implementation of Activity Based Costing as a two-stage process with four identifiable steps. The first stage involved identifying the firm's activities that drove indirect costs and creating costs pools for those various activities. Appropriate costs of those activities, which likely cut across existing departments, would then be assigned to those cost pools. The last part of stage one involved identifying appropriate cost drivers that were the primary causal factors influencing the size of those cost pools. In the second stage, cost of the identified activities would then be allocated to products based on the product use of those activity cost drivers. There likely would still be some unallocated costs that strictly speaking didn't support the identified activities.

Wiersema (2015) made a more detailed description of ABC implementation by describing five

steps of ABC as 1) defining activities and their direct costs; 2) coding and tracing of those direct cost items to the activities while determining the costs of support activities (indirect costs that benefit multiple activities); 3) assigning the support costs to the various activities using the most appropriate cost drivers; 4) determining the most appropriate application rates for assigning the costs of activities to the final cost objects (products, services, or customers) and applying those activity costs; and 5) periodically evaluating the validity of established activity rates and making adjustments where necessary. Horoun (2015) described a slightly different methodology where support costs are first assigned to departments and departmental costs are then assigned to activities.

The selection of cost drivers to allocate activity costs was a function of the best estimate of cause and effect moderated by cost vs. benefit concerns. Application rates normally involved a budgeted amount of activity cost dollars divided by some measure of capacity of an activity. MacArthur (2003) recommended practical capacity (the amount of available capacity under reasonably efficient operations) to be used in the denominator because that avoided fluctuations in activity application rates with fluctuations in volume of production.

Determining cost application rates was often a difficult task especially when many costs were indirect and fixed. The process often involved managerial estimates of time spent on various activities. To simplify this process, Latshaw and Cortese-Danile (2002) recommended regression analysis where the value of the cost pool is the dependent variable and the actual activity levels of the defined activities are the independent variables. The suggested process provided an estimate of variable application rate coefficients and a fixed component of cost pools that would have to be applied to activities based on a more indirect application base.

Garg and Rafiq (2002) asserted that using ABC was particularly effective for appropriate pricing of services, setting effective transfer prices, and determining profitability of services. Service firms did not face external pressures to cost services because they were not subject to GAAP and IRS compliance rules for inventory capitalization faced by producers of inventory. As a result, they seldom had established cost accounting systems enabling them to accurately estimate the costs of services to customers. In addition, service firms had more costs generally categorized as fixed with fewer directly traceable costs making them particularly good candidates for the implementation of ABC. Although ABC was first applied to producers, the broad steps of ABC (identification of activities, specification of cost drivers for each activity, calculation of application rates for activities, and allocation of activity costs to products) were equally applicable to costing of services to customers (Baxendale, 2001). Customer characteristics drive a service organization's costs and ABC is flexible enough to accommodate costing of customers as well as products and services (Sharman, 1996).

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