

**University Honors Program**  
**Honors Thesis Research Proposal and Fellowship Application**

Cover Sheet (unavailable)

## **General Audience Project Summary**

A common challenge most firms face is determining how much a single good or service costs the firm to provide. The reason that this task can be challenging is due to the allocation of a cost known as overhead to each product. Unlike cost of labor and materials, overhead is an indirect cost and includes items such as electricity, property taxes, and rent on buildings. As overhead is an indirect cost, firms need to focus on allocating overhead in a way that is cost effective, and yields the most accurate results as to the true cost of a product. The approach a firm chooses to allocate overhead cost is known as the firm's costing system. There are several different systems that a firm can use for internal reporting purposes, each yielding its own advantages and disadvantages. Determining an appropriate costing systems for a firm is important to accurately determine the cost of an item for decision making purposes, including product pricing. Costing systems can help inform the firm's managers of efficient use of resources, and allow a firm to comply with the rules set forth by U.S. Generally Accepted Accounting Principles (GAAP), the authoritative guidance for external financial reporting. In contrast to the latitude available for internal reporting purposes, GAAP requires all manufacturing costs, including overhead, to be assigned to goods in inventory for costing purposes. The goal of this project is to perform a case analysis on a firm in the Dayton, Ohio area to determine if the costing system currently employed by the firm is the most appropriate system for its circumstances or if an alternative system would be more beneficial. This analysis will be grounded in extensive research on costing systems and will utilize data obtained through interviews with accountants at the firm, a tour of the firm's operations, and research into the firm and its industry, as certain costing systems are more appropriate for specific industries and circumstances.

## **Proposed Thesis Title and Proposed Abstract**

### **Proposed Thesis Title:**

*A Case Study on Inventory Costing Methods*

### **Proposed Abstract:**

Firms use costing systems to determine the price of a product and to analyze the efficiency of resource consumption. These systems often comply with the external financial reporting rules set forth by U.S. Generally Accepted Accounting Principles (GAAP), which requires all manufacturing costs including overhead to be assigned to goods in inventory for costing purposes. However, firms can internally use alternative costing methods that do not comply with GAAP. The purpose of this case study is to understand and evaluate the costing system currently employed by a firm in the Dayton, Ohio area (the Firm) to identify the most beneficial costing method for its circumstances. To analyze the Firm's costing system, I will conduct background research on common costing systems including traditional, process, job, activity-based, and variable. This background research will include each costing system's advantages and disadvantages and under what circumstances the systems should be used. Next, I will research the typical costing systems employed by firms in the Firm's industry to develop expectations regarding the Firm's current costing system and to develop an interview guide before I conduct employee interviews. Then, I will interview Firm employees and tour facilities at the Firm to understand its current costing system, why management selected the particular costing system, and the advantages and disadvantages of the system. Finally, I will synthesize and analyze this information to determine if the current costing system best serves the Firm's interests or if an alternative costing method would better serve its interests.

## **Project Description**

Firms have many different options as to the system they use to allocate overhead, indirect costs related to the production of items and services. Because there are many systems available, and no standardized approach for firms to determine the most appropriate one to use, firms often have a difficult time determining the most appropriate system to implement. Since there are many options and different firm circumstances yield different advantages and disadvantages, various costing methods have been developed to allocate overhead in a way that reflects how much overhead is attributed to each product or service. The purpose of this study is to determine if a firm in the Dayton, Ohio area (the Firm) is implementing a costing system that is cost effective and provides the most appropriate level of information for corporate decisions.<sup>1</sup>

The costing system a firm chooses to implement has a substantial effect on how managers make decisions on items such as selling price and realizable profit. For instance, if one costing method determines that the cost of an item is \$6.00 and the firm wishes to receive a profit of 30%, the price of the item would be \$7.90 with a profit of \$1.80. However, if another costing method determined the cost of the item was \$7.00, the price of the item would be \$9.10, with a profit of \$2.10. A significant impact on the profit realized by the firm is presented when these numbers are multiplied by the number of units sold each month. Pricing can also impact profits by discouraging consumers from purchasing because the cost may be too high for the perceived value of the item. Conversely, if the perceived value of the commodity is high, firms can charge a higher price for the item and receive a higher profit margin.

Before a firm implements a costing system, it is critical that managers conduct appropriate background research in costing systems. Research should include items such as how the systems allocate overhead and under what situations it is appropriate to use each system. It is important that a firm select a system that is in line with the manner in which it generates its product and the amount of data accuracy needed. For instance, some costing systems can only be used when heterogeneous products are created,

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<sup>1</sup> At this time a firm has been identified through the University of Dayton Accounting Advisory Board for the purpose of this case study, but without further approval from the Firm the Firm's name cannot be disclosed.

while others can only be used when homogenous products are created. In other cases, systems provide highly accurate data, but more accurate data can be costly and may not be critical to the firm's survival. While costing methods can affect the price and profit of a good or service, they can also help a firm determine the efficiency of various processes. A more reliable costing system is able to provide more representative information about the cost of each product and sources. When managers have access to this information, their ability to easily assess which processes need to be more efficient.

As noted earlier, firms have numerous options as to the type of costing system that managers choose to implement. Common costing systems have many similarities. They use some rational and systematic approach to allocate overhead to products. They also use cost drivers to allocate costs. Examples of common cost drivers are direct labor hours worked and number of machine hours used, but a firm can create a cost driver in any instance where there is a change in the cost due to an activity. However, important differentiation features of costing systems include the number of cost drivers used, the nature of the costs allocated by these drivers, and under what circumstances they are implemented.

The nature of the costs can include fixed, variable, period and production costs. Fixed costs are defined as costs that do not depend on the amount of the cost driver- it is a flat rate and does not alter (e.g., rent). Variable costs, on the other hand, depend on the usage of the cost driver and fluctuate (e.g., equipment maintenance). Period costs are defined as costs that can be attributed to a period of time versus the product (e.g., selling and administrative expenses). Lastly, product costs are defined as costs that can be traced to the production of a product (e.g., electricity in the production facility).

The most common systems include traditional based, process, job-order, activity based, and variable costing. Traditional based costing implements only one cost driver that allocates period, product, fixed, and variable costs to the finished product (Johnson). Process costing, a system derived from traditional based, is another option firms have for a costing system. This system traces costs through each department, and each department is responsible for selecting its own cost driver. The only requirement is that product, fixed and variable costs are all allocated. However, some firms include period costs. This decision is made at each firm's discretion. Process costing is generally used by firms that generate

homogenous products (Ingram). Job-order costing, another system derived from traditional based, is generally found in firms that generate heterogeneous products. This method is similar to process costing, but instead of having costs flow through departments, costs flow through the job cost sheet. This means that to determine overhead applied to each product, firms analyze the cost driver usage through the job cost sheet and multiply the cost driver by a firm's predetermined overhead rate to determine overhead applied. Predetermined overhead rate is defined by the formula:

*[Formula unavailable]*

(Vitez) Another system derived from traditional based costing is activity based costing (ABC). This method allocates overhead to the activities that cause the various costs. Unlike traditional based that attributes all overhead to a single cost driver, ABC attributes costs to multiple cost drivers that are used to produce the commodity. ABC, like traditional, includes period, product, fixed, and variable costs (Kapić). The final system often used by firms is variable costing. This system is different from the preceding systems because it does not include any fixed costs in its calculation of overhead. Few firms use this system because it omits critical pieces in assessing the actual cost of overhead that is attributable to a product (don Edwards).

For this study, the goal is determine if the Firm currently uses a costing system that is best suited for the firm. As discussed above, firms have many available costing systems options and can choose any of these systems. However, prior research suggests that one costing system will best align with a firm's desired accuracy level and type of product produced (e.g., heterogeneous or homogenous) (e.g., De Vos, don Edwards, Taylor). After understanding the Firm's business, I will predict the Firm's current costing system based on background research and a tour of the operations facility. I also predict the Firm's current costing system will be one that is used in other firms in the industry

To test my hypothesis, interviews with accountants within the Firm, observations of the production process, and research of the firm's background will be conducted and combined to understand

1) why the Firm selected its current method and 2) if it is in the best interest of the Firm to change costing

methods and if so why. This information along with a thorough analysis of available costing method alternatives, the advantages and disadvantages of these alternatives, and the most common method used in the Firm's industry will be compiled and analyzed to determine if the Firm should continue to use its current costing approach or switch costing systems.

In my research to date, I have summarized background research on the various costing methods firms can employ. My analysis includes the costing methods of traditional, process, job-order, activity-based, and variable. It also includes how each method is used, under what situations it is implemented, its advantages and disadvantages, the types of costs allocated, and whether the system complies with GAAP.

I have compiled a draft of background on costing systems that will be included in my final thesis. Interview questions for accountants and factory tour guides at the Firm have been compiled. Once the Firm has officially agreed to participate in the case study, the interview questions will be edited and tailored to the Firm. I plan to conduct my interviews during the summer of 2016. For my draft of my IRB proposal to date, please see Appendix 1.

## **Timeline**

April 18, 2016- Background research that can be found online/ Edit interview questions

April 30, 2016 – Submit work for IRB approval/ Methods Draft 1

May 2016 – Tour operations facility of company/ Methods Draft 2

Between tour of facility and interview accountant update questions for accountant to reflect any additional questions that have arisen from touring operations facility

June 2016 - Interview Accountant Start date

June 1, 2016 – Hypothesis Draft 1

June 15, 2016- Hypothesis Draft 2

July 1, 2016 Interview Accountant end date

July 15, 2016 - Analyze results of Interviews

August 13, 2016 – Analysis draft 1

September 24, 2016 - Analysis draft 2

October 8, 2016 – Conclusion draft 1

October 22, 2016- Conclusion draft 2

November 5, 2016- Full thesis edits #1

November 19, 2016 – Full thesis edits #2

December 3, 2016 – Board Layout Proposal

December 17, 2016 - Edits to Board Layout Proposal

December 31, 2016 - Type up material for board

January 15, 2017 - Second edit of material for board

January 28, 2017 - Board finalized and printed

All of my work will be submitted via e-mail to my mentor on the above due dates. During the week between each deadline, I will discuss with my mentor my submitted work. Our meetings will be in person when I am on campus, and through video calls and e-mails when we are unable to meet in person.

## **Working Bibliography**

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- don Edwards, James. "The New Costing Concept--Direct Costing?." *Accounting Review* 33.4 (1958): 561. *Business Source Complete*. Web. 12 Jan. 2016.
- Ingram, David. "Advantages & Disadvantages of Job Order Costing & Process Costing." *Chron. Hearst Newspapers*, n.d. Web. 11 Jan. 2016.
- Johnson, Rose. "Traditional Costing Vs. Activity-Based Costing." *Chron. Hearst Newspapers*, n.d. Web. 11 Jan. 2016.
- Kapić, Jadranka. "Activity Based Costing - Abc." *Business Consultant / Poslovni Konsultant* 6.32 (2014): 9-16. *Business Source Complete*. Web. 12 Jan. 2016.
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- Taylor, Elliot. "Disadvantages of Absorption Costing for a Firm." *Chron. Hearst Newspapers*, n.d. Web. 12 Jan. 2016.
- Vercio, Alan. "Full Absorption: The Good, The Bad, And The Ugly." *Journal Of Corporate Accounting & Finance (Wiley)* 19.3 (2008): 51-55. *Business Source Complete*. Web. 19 Mar. 2016.

**Budget**

**Itemized Budget:**

<b>Materials/Supplies:</b>	
<b>Item</b>	<b>Estimated Cost</b>
<b>Travel: (If required for Thesis Project)</b>	
<b>Automobile Mileage</b>	<b>X miles X (\$0.55/mile) = 3(60)(.55)= \$99</b>
<b>90 miles</b>	<b>*The current UD rate for mileage reimbursement will be used.</b>
<b>Other:</b>	
<b>Item</b>	<b>Estimated Cost</b>
<b>Other Source(s) of Funding</b>	
<b>Source</b>	<b>Pending/Secured</b>

**Total Amount Requested: \$99.00**

**Narrative Budget Justification:**

For my project it is estimated I will have to take three trips to the Firm. The first trip will be to tour the operations facilities, the second to conduct interviews with accountants, and the last visit for any follow up questions. It is approximately 30 miles from The University of Dayton to the Firm, which would be 60 miles for a round trip.