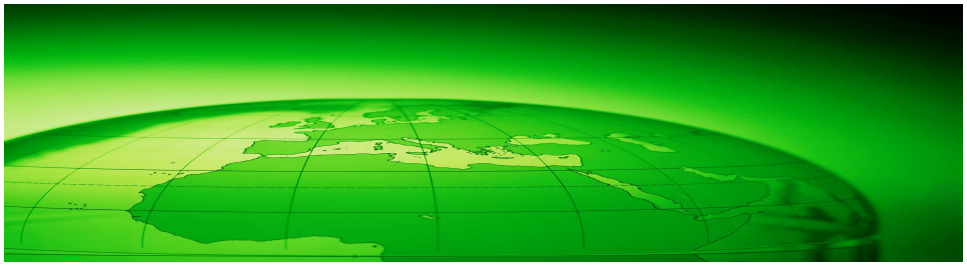

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Contents

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Jeffry Haber, Editor
Hagan School of Business
Iona College
715 North Avenue, New Rochelle, New York 10801
jhaber@iona.edu, editor@JTAR.org

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FIXED OVERHEAD COSTS AND FINANCIAL REPORTING: ACCOUNTING FOR UNUSED CAPACITY

Bruce Wampler, DBA, CPA, CGMA
Louisiana State University Shreveport
One University Place
Shreveport, LA 71115
318-797-5289
bruce.wampler@lsus.edu

Gerald DeBusk, Ph.D, CPA, CMA, CGMA
University of North Carolina Wilmington
601 South College Road
Wilmington, NC 28403
910-962-7151
debuskg@uncw.edu

Keywords: Fixed overhead costs, unused capacity, denominator volume

FIXED OVERHEAD COSTS AND FINANCIAL REPORTING: ACCOUNTING FOR UNUSED CAPACITY

ABSTRACT

This paper discusses the choice of the denominator volume to be used in allocating fixed overhead costs to manufactured inventory. Generally Accepted Accounting Principles require that the level of activity used in this allocation be based on the normal capacity of the production facilities. *Normal capacity* is the production expected to be achieved over a number of periods or seasons under normal circumstances. An alternative measure of capacity, which we believe deserves serious consideration as the denominator volume, is practical capacity. *Practical capacity* is the level of output that would result if the production facility operated at full capacity, with allowances made for normal operating interruptions (e.g., scheduled maintenance, holiday shutdowns, and breakdowns). The amount by which practical capacity (the production level that is *capable of being achieved*) exceeds normal capacity (the production level *expected to be achieved*) is the unused capacity. In this paper, we discuss the advantages and disadvantages of each alternative measure of capacity, how each alternative treats the cost of unused capacity, and how the choice of a denominator volume affects the financial statements.

INTRODUCTION

Determining the cost of manufactured inventory for external reporting purposes is a problem that has long plagued accountants. ASC 330-10-30-1, which addresses initial valuation of inventories, specifies cost as the primary basis of accounting for inventories. It further states that "As applied to inventories, cost means in principle the sum of the applicable expenditures and charges directly or indirectly incurred in bringing an article to its existing condition and location. It is understood to mean acquisition and production cost, and its determination involves many considerations." The cost of inventory that has been sold during a period appears on the income statement as an expense (cost of goods sold), whereas the cost[1] of unsold inventory appears on the balance sheet as a current asset. Non-manufacturing costs, such as selling costs and administrative costs not related to manufacturing, are expensed immediately (i.e., they are period costs).

[1] Actually, most inventories are valued at lower of cost or market (LCM). For purposes of this paper, we ignore the LCM rules (i.e., we assume that market value is greater than or equal to cost). In a very few cases, inventories may be valued at net realizable value, but that topic is beyond the scope of this paper.

A non-accountant reading this guidance might understandably believe that accounting for manufactured inventory is a fairly straightforward and simple process, but that would be an incorrect conclusion. Generally Accepted Accounting Principles (GAAP) allude to the complex nature of the problem in ASC 330-10-30-2, which states that "Although principles for the determination of inventory costs may be easily stated, their application … is difficult because of the variety of considerations in the allocation of costs and charges."

To better understand the problems of costing manufactured inventory, we must briefly consider the three types of manufacturing costs: direct materials, direct labor, and manufacturing overhead (sometimes referred to simply as "overhead"). Because they are direct costs, the first two cost categories are directly traceable to the inventory produced. From a conceptual standpoint, accounting for direct costs is relatively easy, assuming that proper accounting procedures are in place to trace these costs to the end product. Overhead costs, however, are a different story; because they are indirect costs, they cannot be directly traced to the inventory produced. Instead, overhead costs must be allocated to the end product using some reasonable methodology.

Further complicating the accounting for overhead is the distinction between variable overhead costs and fixed overhead costs. While both of these are indirect costs that must be allocated to the product, the allocation of variable overhead is more intuitive because the cost per unit is relatively constant across a wide range of production levels. Fixed overhead costs present a more difficult scenario. As production levels change, total fixed costs remain constant; however, per-unit costs for fixed overhead vary inversely with production. This cost behavior occurs because there is no production-related cost driver for fixed overhead costs, at least not within the relevant range of output.

Determining the proper allocation of fixed overhead costs is a challenging and often contentious issue. A critical decision in making that allocation is the choice of a denominator volume, which is based on some level of activity or capacity. Although GAAP requires that fixed overhead costs

be allocated based on the normal capacity of the production facilities, there are other measures of capacity. One alternative, which we believe deserves serious consideration as the denominator volume, is practical capacity. In this paper, we discuss the advantages and disadvantages of each measure of capacity, how each alternative treats the cost of unused capacity, and how the choice of a denominator volume affects the financial statements.

GAAP AND THE DENOMINATOR VOLUME

GAAP requires organizations to ascribe all manufacturing costs to the products that are produced. This process is known as "full-absorption costing" or simply "absorption costing," and it results in an inventory cost that has absorbed all manufacturing costs, including fixed overhead. The use of variable costing, which includes only variable manufacturing costs as product (or inventoriable) costs, would greatly simplify the accounting for fixed overhead, since all fixed overhead costs would be expensed in the period incurred. While there are some advantages of variable costing, it is an unacceptable approach under GAAP, which states that "The exclusion of all overheads from inventory costs does not constitute an accepted accounting procedure" (ASC 330-10-30-8). Certainly, some fixed overhead costs are necessary for production, and GAAP requires that those costs be included in the cost of the manufactured inventory.

To determine the allocation rate for fixed overhead, which is used to determine the cost of the inventory produced, a manufacturer must make two critical estimates at the start of the accounting period: 1) the estimated dollar amount of fixed overhead costs for the period (the numerator), and 2) an estimated level of activity by which fixed overhead costs will be allocated to the units produced during the period (the denominator, or the allocation base). Our specific focus in this paper is on the denominator.

GAAP does not require that any particular activity be used as the allocation base. However, the *level* of the activity is prescribed for fixed overhead. ASC 330-10-30-3 states that "… the allocation of fixed production overheads to the costs of conversion is based on the normal capacity of the

production facilities." Thus, an organization must calculate its fixed overhead allocation rate by using a denominator volume that is based on normal capacity.[2]

What exactly is normal capacity? It is not a precise number, but an estimate that is more closely related to expected demand for a company's product than to the ability to supply that product. ASC 330-10-30-3 says that "Normal capacity refers to a range of production levels. Normal capacity is the production expected to be achieved over a number of periods or seasons under normal circumstances, taking into account the loss of capacity resulting from planned maintenance. Some variation in production levels from period to period is expected and establishes the range of normal capacity." Thus, normal capacity can vary, sometimes significantly, from period to period. It is important to note that normal capacity is based on the production level *expected to be achieved*, which may be significantly less than the production that *is capable of being achieved*. For this reason, the term *capacity* is probably not the proper word to describe this concept, but we use it in that manner here since the term is widely used in the accounting literature (both authoritative and non-authoritative).

AN ALTERNATIVE MEASURE OF CAPACITY

Normal capacity is not the only measure of output that the Financial Accounting Standards Board (FASB) could have chosen to use as the denominator. Yet, SFAS 151 provides no mention of possible alternatives to normal capacity, and no theoretical justification as to why normal capacity was chosen. The only rationale for this choice is found in the summary (preceding the actual standard), where the FASB indicates that the main reason for issuing SFAS 151 was to converge U.S. GAAP with International Financial Reporting Standards (IFRS). Thus, it would appear that the primary reason for choosing normal capacity was to improve the comparability of cross-border financial reporting, rather than a conceptual preference for normal capacity.

[2] The requirement to use normal capacity is a fairly recent development that resulted from the November 2004 issuance of Statement of Financial Accounting Standards (SFAS) No. 151, *Inventory Costs*. Prior to the issuance of SFAS 151, relevant GAAP was found in Chapter 4 of Accounting Research Bulletin No. 43, which was silent on the choice of the denominator volume that should be used for allocating fixed overhead.

While we certainly support comparability, we believe that the FASB (as well as the International Accounting Standards Board) should adequately consider alternative measures of capacity. One such measure is practical capacity.[3] Practical capacity is the level of output that would result if the production facility operated at full capacity, with allowances made for normal operating interruptions (e.g., scheduled maintenance, holiday shutdowns, and breakdowns). Practical capacity is the production level capable of being achieved; it represents a challenging, but attainable, level of output. Unlike normal capacity (which is based on demand), practical capacity is a supply-based measure.

ACCOUNTING FOR UNUSED CAPACITY

Due to the nature of fixed overhead costs, managers must make a decision regarding practical capacity (i.e., the maximum possible level of production) well in advance of actual production. Expected demand, usually over an extended time period, is the most important factor affecting this decision. Some companies choose a capacity level that is expected to be able to satisfy peak demand. Other firms may choose a lower capacity level (one that is expected to be able to satisfy demand in most, but not all circumstances), consciously deciding to forgo some potential sales in periods of peak demand. The decision about practical capacity largely determines the amount of fixed overhead costs that will be incurred each period.

Practical capacity establishes a cap on the amount of production that is possible. Although some might argue that it is possible to produce at levels above practical capacity, doing so would require extraordinary measures, some of which are likely unwise (e.g., deferring scheduled maintenance). Producing at levels above practical capacity would be impractical, which is defined as “not sensible or realistic.” For this reason, we assume that the actual level of production is less than or equal to practical capacity, which means there probably will be unused capacity. The

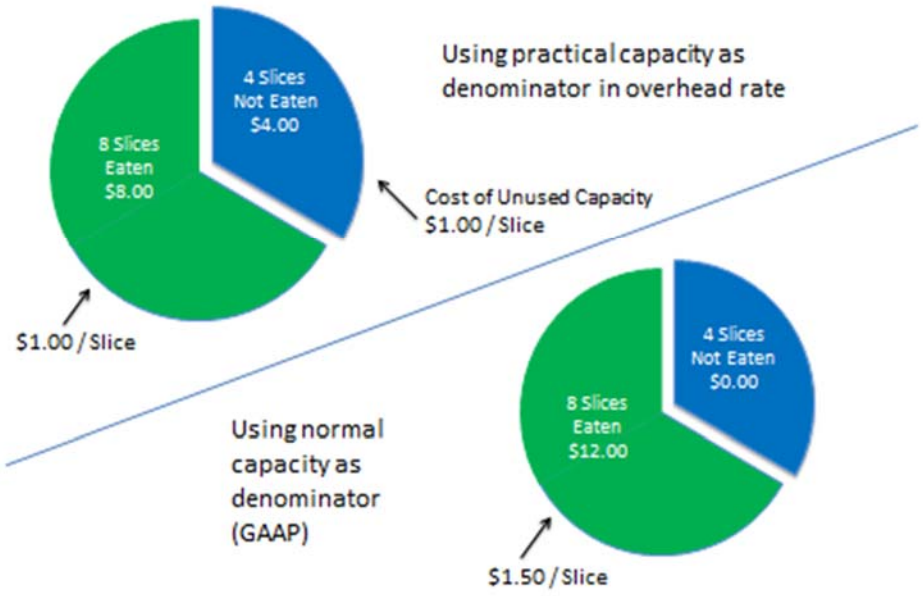
[3] There are other measures of capacity, including theoretical capacity (based on running at full efficiency with no allowance for maintenance, breakdowns, or other downtime), and master-budget capacity (based on the expected level of production for the upcoming budget period). These alternatives are not discussed in this paper because both are, in our opinion, inferior to practical capacity (and normal capacity) as a basis for the denominator volume.

treatment of unused capacity is a key issue (perhaps *the* key issue) in accounting for fixed overhead costs.

To illustrate this concept, imagine that you and a colleague decide to go to lunch at the local pizza joint. You discuss the pros and cons of ordering a medium versus a large pizza. You are both aware that if you order the medium (eight slices), there won't be time to order extra food if you are still hungry when the pizza is finished. Although you usually eat about eight slices total, you are both pretty hungry, so you decide to play it safe and order the large (12 slices), which costs $12.00. (For this example, we assume that the amount of pizza in a medium slice is equal to the amount in a large slice.)

As it turns out, you eat only eight slices and leave the other four slices on the table when you head back to work. If we want to know the cost per slice of pizza that was eaten, how should that cost be determined? If 12 slices are used as the denominator (analogous to practical capacity), the cost per slice is $1.00. Under this approach, the cost of the pizza eaten is $8.00, and the cost of the four slices not eaten (an unused or wasted resource) is $4.00. On the other hand, if GAAP is applied to this situation, the denominator is eight slices (the expected demand, or normal capacity), which results in a cost of $1.50 per slice eaten (and $0.00 per slice for the uneaten pizza, the unused resource). Under GAAP, the cost of the unused capacity is spread over the cost of the used capacity and added to the product cost. See Figure 1.

Figure 1



So what cost should be assigned to the pizza that was eaten? In hindsight, it appears that the decision to purchase the large pizza was suboptimal; you could have eaten just as much pizza for a lower cost had you purchased the medium pizza. This viewpoint ($1.00 per slice) supports the argument for using practical capacity as the denominator, so that the cost of manufactured inventory includes only the costs of those resources that are actually used in producing the inventory. This approach is consistent with the treatment of direct manufacturing costs. For example, if a food manufacturer experiences a significant loss due to spoilage of a key raw material, there are few accountants who would advocate including the cost of the wasted resource in the cost of the inventory that is actually produced; instead, the costs of the spoiled raw material would be expensed as a period cost. We see no good reason why the cost of fixed overhead (a fixed, indirect cost) should be treated differently; yet, this is essentially what is required by GAAP. Unless normal capacity equals practical capacity, the requirement to use normal capacity as the denominator implicitly allows the cost of a resource that is not used (i.e., unused capacity) to increase the cost of the items that are produced, which overstates the inventory cost.

While we tend to support the use of practical capacity as the denominator, there may be other circumstances that cloud the issue and influence that decision. For example, we never mentioned the cost of the medium pizza. However, it is quite common (for both pizzas and fixed manufacturing costs) to see a decreasing per-unit cost as more "capacity" is acquired. So, it is likely that the medium pizza would cost more than $8.00; for purposes of discussion, assume the cost was $10.00 ($1.25 per slice). In this scenario, one could argue that, even if the large pizza was purchased and only eight slices were eaten, the cost per slice eaten should be $1.25 per slice ($10.00 total), since that is the lowest cost that could have been achieved for the quantity of pizza actually eaten. Under this approach, the decision to purchase the large pizza is not as poor as it first appeared, since the cost of the pizza not eaten would be only $2.00 (and not $4.00, as shown in the top portion of Figure 1).

As another example, what if the large pizza was purchased, and ten slices were eaten? Since there was no ten-slice pizza offered, the only way to acquire this amount of "capacity" was to purchase the large pizza. Manufacturing capacity often works the same way; that is, incremental capacity can be acquired only in relatively large blocks. In situations such as this, it is possible to argue that, even though all of the capacity was not used, the entire cost was reasonable, necessary, and appropriate, and that no cost should be attributed to the unused capacity. In the pizza example, the result would be a cost per slice eaten of $1.20 ($12.00÷10), with no cost assigned to the two slices that were uneaten.

FINANCIAL-STATEMENT EFFECTS

To evaluate the comparative financial-statement effects of using normal or practical capacity as the denominator volume, we use a simple two-period analysis (see Figure 2). Several simplifying assumptions are made to facilitate this analysis, including:

1. Estimated fixed overhead costs are $120,000 each period, which equals the actual costs incurred (i.e., there is no spending variance).
2. The company produces only one product, which permits the use of units manufactured as the denominator. In this simplified setting, each unit produced is allocated an equal

amount of fixed overhead. For a company that produces many different products (e.g., televisions ranging from 24 to 80 inches in size), it probably would not make sense to allocate the same amount of fixed overhead to each item manufactured; instead, fixed overhead might be allocated using a base such as machine hours or direct labor hours.

3. The estimated level of production (i.e., the normal capacity) for each period is 8,000 units, which equals the amount actually produced each period. The practical capacity is 12,000 units. Thus, the unused capacity for each period equals 4,000 units.
4. There is no work-in-process inventory at the end of either period. Any raw material inventory is ignored, since its value is unaffected by the denominator volume used.
5. Variable costs (including direct materials, direct labor, and variable overhead) are ignored. We assume that the variable costs per unit would be the same regardless of the approach used to account for fixed overhead costs. Accordingly, the unit costs shown in these examples do not represent the entire cost per unit, but only the cost per unit for fixed overhead.
6. Price levels are assumed to be stable, which eliminates the need to make any inventory cost-flow assumptions.

Figure 2: Financial-Statement Effects

	Period 1		Period 2	
Fixed overhead costs (units)	$120,000		$120,000	
Practical capacity (units)	12,000		12,000	
Beginning inventory (units)	0		2,000	
Normal capacity = production (units)	8,000		8,000	
Sales (units)	6,000		9,000	
Ending inventory (units)	2,000		1,000	
	Normal Capacity	Practical Capacity	Normal Capacity	Practical Capacity
Unit cost	$15	$10	$15	$10
Ending inventory	$30,000	$20,000	$15,000	$10,000
Cost of goods sold (COGS)	$90,000	$60,000	$135,000	$90,000
Unused capacity expense	N/A	$40,000	N/A	$40,000
Total expense	$90,000	$100,000	$135,000	$130,000

As shown in Figure 2, the use of practical capacity (PC) as the denominator results in a lower unit cost ($10) than if normal capacity (NC) is used ($15). Consequently, as compared to NC, PC results in a $10,000 lower valuation for the 2,000 units in ending inventory at the end of Period 1, and a $30,000 lower COGS for Period 1. However, if PC is used, COGS alone doesn't reveal the entire expense picture; since we produced 4,000 units less than capacity, there is also a $40,000 "unused capacity expense." When both expenses are combined, PC results in $10,000 more total expense than if NC is used, and therefore, $10,000 less in operating income. Given that there was no beginning inventory, this result makes perfect sense; if using PC results in a $10,000 lower value for ending inventory than NC, it must also result in $10,000 more in total expense (those costs must go somewhere).

The results for Period 1 demonstrate that, *in periods when inventory levels increase, the use of PC as the denominator results in lower operating income than if NC is used as the denominator*. Assuming that NC is less than PC (it could be equal), the GAAP requirement to use NC as the denominator implicitly allows the cost of a resource that is not used (the unused capacity) to increase the unit cost of the items that are produced. Since one-fourth of the inventory produced in Period 1 is still unsold, using NC as the denominator leaves one-fourth of the unused capacity costs ($10,000 = $40,000 x ¼) as an asset on the balance sheet, rather than expensing those costs in Period 1. We consider this outcome undesirable, since it is difficult to understand how producing less than might have been produced in a given period increases the future economic benefit to be received from the asset (inventory) that was produced.

What if inventory levels decrease during the period? This is the situation in Period 2, when 8,000 units are produced but 9,000 units are sold. Although PC still results in the same $40,000 of unused capacity expense as in Period 1, it also results in $45,000 lower COGS than NC. The net effect is that total expense is $5,000 less if PC, rather than NC, is used as the denominator. The results for Period 2 show that, *in periods when inventory levels decrease, the use of PC as the denominator results in higher operating income than if NC is used as the denominator*. From the balance-sheet perspective, we see that PC still results in a lower total value for ending inventory

than does NC; however, the difference is not as large as it was in Period 1, because there is less inventory on hand.

Looking at both periods together reveals that, in terms of the effect on operating income, the choice between NC and PC is essentially a timing issue; under PC, expense recognition occurs sooner than under NC. The flip side of the coin appears on the balance sheet, where PC always results in a lower inventory valuation than if NC is used as the denominator. Thus, using PC as the denominator is a more conservative approach than the alternative of NC.

Assuming that a company has significant fixed overhead costs, the importance of the choice between PC and NC, in terms of the magnitude of the effect on the financial statements, will be influenced by two main factors. The first factor is the amount of unused capacity – the greater the unused capacity, the greater the effect on the financial statements. The second factor is the amount of inventory on hand at the end of the period – the larger the amount of inventory, the greater the financial-statement impact. If NC is close to PC, or if ending inventory levels are consistently low, it will make little difference whether NC or PC is used as the denominator.

CONCLUSION

Selecting a denominator volume for allocating fixed overhead costs is not an easy decision, and valid arguments can be made for using either NC or PC. However, for both conceptual and pragmatic reasons, we believe that PC is the best choice for the denominator. The principal reasons for our conclusion are discussed below.

If NC is used as the denominator, per-unit costs increase as production levels decrease (and vice versa). GAAP does contain a provision intended to limit this outcome if actual production is "abnormally low," relative to NC (see ASC 330-10-30-6). But because the benchmark is NC, GAAP makes no provision limiting the capitalization of "permanent" unused capacity (i.e., when NC is significantly below PC now and for the foreseeable future). On the other hand, if PC is used as the denominator, the amount of fixed overhead costs included in each unit of inventory does not

depend on actual production, but only on production capacity. From a conceptual standpoint, should the unit cost of items manufactured increase simply because of a decline in demand for the product?

In most cases, our answer to that question is no, which is why we support using PC as the denominator. Still, we acknowledge that there may be circumstances where one might view unused capacity costs as "reasonable and necessary" costs of production, which would support treating some or all of these costs as inventoriable costs. However, the rationale for such treatment is often a matter of judgment, and allowing such discretion may offer the potential for abuse by companies that simply want to find a way to delay expense recognition as long as possible. Using PC as the denominator eliminates, or at least significantly restricts, this potential for manipulation of the financial statements.

Using PC as the denominator yields unit costs that more accurately reflect the manner in which the company's resources (i.e., manufacturing capacity) were used during a given period, resulting in a more faithful representation of inventory values and COGS. Furthermore, we believe that separately identifying the cost of unused capacity on the income statement provides more useful information to the readers of the financial statements than does NC, which doesn't identify such costs, but buries them in inventory and COGS.

From a pragmatic perspective, NC is likely a much more subjective estimate than is PC. It is generally much more difficult to estimate demand for a company's products, which is the basis for the NC estimate, than it is to estimate the amount that can be produced, which is based on the actual capacity of the production facilities. Furthermore, NC is potentially a much more variable number than is PC, because demand can vary significantly across periods. PC should be easier to estimate than NC, and should be fairly constant from period to period, unless significant changes are made to the production facilities.

For all of these reasons, we believe that using PC as the basis for the denominator volume is a better choice than using NC for this purpose. At the very least, standard setters should consider modifying GAAP to permit the use of PC as an alternative to NC. The downside of this approach is that comparability with statements prepared under IFRS would be reduced. However, if the FASB agrees that such a change would result in an improvement in financial reporting, they might be able to persuade the International Accounting Standards Board to make a similar change.

A MODEL OF ACADEMIC CAREER SUSTAINABILITY UTILIZING A JUST IN TIME TEACHING APPROACH

Robert Marley, PhD, CPA
University of Tampa
401 West Kennedy Blvd
Box O
Tampa, Florida 33606
rmarley@ut.edu

Eddie Metrejean, PhD, CPA, CFE
Georgia Southern University
School of Accountancy
P.O. Box 8141
Statesboro, GA 30460-8141
(912) 478-7139
emetrejean@georgiasouthern.edu

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A MODEL OF ACADEMIC CAREER SUSTAINABILITY UTILIZING A JUST IN TIME TEACHING APPROACH

ABSTRACT

An academic career entails performing work-related tasks across three broad domains: teaching, service, and research. A sustainable academic career requires faculty to achieve and maintain satisfactory performance across these three domains simultaneously. Since time is a scarce resource, academics must strategically allocate their time across these domains and avoid over- or under- investing in one domain at the expense of another. Thus, effective time management is vital in a sustainable academic career. This paper introduces the Just in Time Teaching Approach (JITTA), a pedagogical technique developed to help faculty manage time more effectively. JITTA extends the sustainability literature to the academic career setting by advancing time management as the foundation of a sustainable academic career.

INTRODUCTION

Academic careers entail teaching, service, and research responsibilities (Vicens and Bourne, 2009). Although each category is capable of consuming a seemingly infinite amount of time, faculty have a limited supply of time to divide among the three categories. Thus an academic career is a context in which a finite amount of temporal resources must be allocated across three categories capable of consuming infinite amounts of time. As a result, it is not surprising that anecdotal evidence suggests faculty generally perceive that they have more obligations than time available.

Temporal resource allocation is an important issue given that a faculty member's performance is evaluated such that minimum standards of performance must be attained in each category, often on an annual basis. If minimum performance standards are not attained, negative consequences result. Accordingly, faculty must learn the delicate art of allocating their time such that no category is neglected nor over-invested. As a result, the effective allocation of a faculty member's time becomes a necessary, although insufficient, factor associated with a sustainable academic career. Within this paper, a "sustainable academic career" is one that is remuneratively rewarding, of long-term duration, and secure in the sense that alternative employment

opportunities are available. Therefore, faculty seeking sustainable academic careers should continuously seek new techniques to improve their productivity as they endeavor to deploy effective time management strategies.

This paper analogizes sustainability concepts to an academic career context, advancing a model of a sustainable academic career that features time management as the enabling factor. Then, tenets of the Just-in-Time (JIT) manufacturing process literature are applied to introduce a new pedagogical technique, the Just in Time Teaching Approach (JITTA), designed to improve faculty members' teaching effectiveness while increasing the time available for research and service.

By modelling an academic career, this paper contributes to the sustainability literature while also contributing to academic pedagogy through extending the core principles of Just-in-Time manufacturing to introduce a new teaching approach. While cognizant that faculty have traditionally resisted learning new pedagogical techniques, perceiving teaching to be a function of natural ability and experience (Weimer 2010), we motivate the use of JITTA by citing the academic ratchet, which is the trend among institutions towards increasing faculty teaching, research, and service performance expectations without providing faculty with greater resources (Flaherty, 2014). John Curtis, director of research and public policy for the American Association of University Professors, succinctly describes the academic ratchet by stating "…there is currently a lot of pressure on faculty members to increase the time they spend on all three aspects [teaching, research, and service] of their work" (as cited by Flaherty 2014). The academic ratchet serves as an impetus behooving faculty to seek and adopt more time-effective pedagogical techniques.

The next section reviews the key principles of the sustainability literature, extending them to model a sustainable academic career. Then, the paper identifies the key tenets of the JIT manufacturing process, adapting them to introduce a Just in Time Teaching Approach. The paper concludes by discussing the limitations and the proposed benefits of this new pedagogical technique.

BACKGROUND, LITERATURE REVIEW, AND PROPOSAL

Modelling a Sustainable Academic Career

Sustainable development, also commonly referred to as "sustainability," encompasses preserving both human achievements and the physical environment for future generations (Dyllick and Hockerts, 2002). The World Council for Economic Development (WCED) defines sustainability as meeting "…the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987, p. 16). At the organizational level, corporate social responsibility literature defines sustainability as meeting the needs of an organization's current stakeholders without compromising its ability to meet the needs of future stakeholders (Dyllick and Hockerts, 2002). Organizational sustainability is generally modelled in terms of managing the "triple bottom line" which entails balancing profits, people, and the planet. Thus, extending the triple bottom line to an academic career context, we analogize organizational sustainability to an academic career context in a manner consistent with Brundtland's (1987) definition, proposing that academic career sustainability pertains to the goal of continuously satisfying teaching (profits), service (people), and research (planet).

More specifically, just as a healthy planet is a necessary precondition for the existence of people and profits, healthy research output is a precondition for the existence of teaching and service given that research output is what ultimately enables an academic to teach. Just as a barren planet can yield no people or profits, a barren research portfolio will yield an academic with no career opportunities, stripping them of the ability to engage in teaching or service. Further, just as efforts to maintain a healthy planet must be continuous, a faculty's research efforts are required to be continuously managed to maintain academic qualification. Accordingly, while a sustainable academic career entails attending to the more immediate needs of delivering effective teaching and valued service, this cannot be sustainably accomplished at the exclusion of continuous, longer term investments in research. Thus, consistent with theoretical tenets of natural science and organizational sustainability, a sustainable academic career entails balancing the teaching and service needs of the present (i.e., profits and people) without compromising the

research needs of the future (i.e., planet). Accordingly, we advance effective time management as the enabling mechanism that permits faculty to attain a sustainable academic career. Next, we advance a pedagogical method designed to help faculty better manage their time.

Background on Course Preparation

Faculty spend the largest portion of their time on teaching-related activities (Flaherty, 2014). Research suggests faculty spend approximately 24.5 hours per week on teaching-related tasks, comprising 40.0% of a faculty member's work week (Ziker, 2014). Conventional wisdom holds that one can never be too prepared, and faculty members are finely attuned to the importance of teaching and teaching preparation because the general public emphasizes it as a priority (Flaherty, 2014) and because a faculty member's annual evaluation is often based on student perceptions, measured in teaching evaluations querying students for their feedback. Both mechanisms serve to motivate faculty members to spend time on course preparation in hopes of warding off negative students perceptions of faculty member preparedness.

The Traditional Course Preparation Approach

The traditional approach to course preparation endorses extensive, multi-period teaching preparation. For example, Wankat and Oreovicz (2011) suggest that preparing for class four times or more is appropriate if one spends two hours preparing for each new lecture and 30 minutes preparing for a lecture previously given, preparing lectures in small 10 to 15 minute chunks of time across several days in advance of each lecture, culminating in taking 15 minutes to prepare psychologically on the day of the lecture. Boice (2000) also advocates preparing for class in brief, regular sessions as opposed to binging, suggesting that this approach affords a sense of being caught up and allowing time for other activities such as research, service, and personal activities. Kuther (2014) buttresses the multi-period pedagogical approach, suggesting that faculty members prepare in multiple 30 minute sessions during the week, arguing that shorter, more frequent sessions allows one to reflect upon the lecture, adding examples as they come to mind, rather than on command (Kuther 2014).

Criticisms of the Traditional Course Preparation Approach

Although a fairly robust literature stream advocates the traditional approach (i.e., a multi-period course preparation approach), applying this pedagogical practice is not without potential pitfalls. For example, Vincens and Bourne (2009) note that the key to balancing teaching, research, and service is to set aside time with clearly demarcated parameters, with discrete segregation among the three categories, suggesting the failure to separate the categories *ex post* will affect the performance of all. Explicating this argument, it follows that category over-investment will result absent a time management strategy.

Further, psychology research that examines settings in which multiple tasks vie for an individual's limited time find individuals to complete tasks closest to completion (Schmidt and Dolis, 2009), followed by tasks that can be completed in the shortest amount of time (Kernan and Lord, 1990). Therefore, a critical examination of the multi-period course preparation approach raises the risk that course preparation can be completed quicker than research, and since classes have a clearly defined ending date, that faculty will naturally gravitate towards attending to teaching at the expense of research. That is, because a given class has a specific start time, academic obligations with deadlines further in the future will tend to be de-prioritized in favor of the closer deadline (Kuther, 2014). Thus, research may get pushed aside in favor of lecture preparation. Further, because teaching a class that has already been prepped before takes less time than conducting (most) research projects, the psychological factors will draw the faculty member to forego research in favor of course preparation. The same argument can be made to explain why faculty might tend to gravitate toward attending to service at the expense of research. Thus, psychology research suggests an inherent weakness of the multi-period course preparation approach is that by encouraging faculty to engage in course preparation across multiple days, it exposes faculty to the risk that they will over-attend to teaching at the expense of research. The same argument can be advanced to explain why faculty might tend to gravitate towards attending to service at the expense of research.

Accordingly, we draw upon the tenets of Just-in-time manufacturing to advance a teaching approach designed to overcome this limitation. Next, we discuss the tenets of Just-in-time manufacturing, apply them to a pedagogical approach called the Just in Time Teaching Approach, and discuss the benefits and limitations of this new approach.

Tenets of Just in Time Manufacturing

Just-in-time manufacturing ("JIT") is a philosophy that stresses continuous improvement through the elimination of waste (Swanson and Lankford, 1998). JIT has traditionally been embraced by organizations seeking to survive in environments characterized by increasingly scarce resources (Swanson and Lankford, 1998). Ordering, moving, and processing raw materials only when they are needed for production is the foundation of JIT (Stevenson, 1996). By handling materials only when needed, waste is minimized and inefficiencies that do not add value to the product are more easily identified for elimination (Ptak, 1997). The five crucial elements which must be in place before an organization can establish an effective JIT are (1) an organization-wide commitment to JIT, (2) the receipt of raw materials only when needed from, (3) reliable suppliers that provide, (4) quality inputs, and (5) handled by right personnel (Ansari and Modarress, 1990).

Extending Just in Time Manufacturing to a Course Preparation Setting

Just as JIT has been deployed in manufacturing contexts characterized by increasingly scarce resources, it seems natural to advocate deploying the Just in Time Teaching Approach ("JITTA") to a context characterized by the academic ratchet, which serves to make time an increasingly scarce resource for faculty members. The foundation of JITTA is to prepare courses only on the day of lecture, analogous to JIT's maxim that resources are expended only when needed, which leaves less margin for waste, leading to greater course preparation efficiency. Anecdotal observation suggests that distractions pose a significant risk when preparing lectures that will not occur for days. These distractions can be defined as "time banditry", which refers to non-value added time sinks, such as television watching, collegial conversations, internet surfing, and social media. Analogous to the five crucial elements of JIT, we suggest the five crucial elements of JITTA are (1) a commitment to the JITTA pedagogical approach, (2) the ability to access course

preparation materials, (3) without the risk of access denial, (4) prepared by a faculty member thoroughly familiar with the subject matter, and (5) able to cope with the increased stress that accompanies preparing only on the day of lecture.

Arguments in Favor of the Just in Time Teaching Approach

Pedagogical literature suggests that preparing a lecture too much may be just as harmful as not preparing enough. For example, Kuther (2014) notes over-preparing causes faculty members to attempt to cover too much material and can lead faculty members to present material too rapidly, while Boice (2000) notes too much preparation can cause faculty members to focus too much attention to detail. The literature also notes too much preparation can reduce a faculty member's class performance, leading to mediocre teaching (Chrisman, et al, 2005; Wankat and Oreovicz, 2011). JITTA transcends these risks by calling for course preparation only on the day of lecture, consistent with calls to clearly demark and limit the amount of time devoted to lecture preparation, balancing teaching, research, and service by allocating time within well-defined parameters to avoid over-investment (Vicens and Bourne, 2009). Further, JITTA is consistent with the admonitions urging faculty to do everything possible to minimize new preps early in their careers (Brent and Felder, 2007) and attends to psychological research that in the absence of an alternative strategy, individuals attend to the task that can be completed the quickest (Kernan and Lord, 1990; Schmidt and Dolis, 2009). As research generally takes longer to finish than lecture preparation, a faculty member who prepares courses over multiple days can fall prey to prioritizing teaching over research.

Another benefit of JITTA is that the lecture will be fresh to the faculty member as compared to lecture preparation methods that advocate preparing a lecture days in advance, which introduce the risk the faculty member will forget some of the material due to the passage of time. JITTA also mitigates the redundancy associated with multiple preparation periods. Consider the faculty member who on Tuesday prepares for Wednesday's class. The innate tendency of the faculty member will be to look over the lecture materials before teaching class on Wednesday, even if that faculty member is fully prepared. However, this "second look" is simply a waste of time.

Finally, given that Chrisman, et al. (2005) observe that too much preparation reduces a faculty member's performance, JITTA offers a pedagogical approach empowering the faculty member to be more flexible, spontaneous, and interactive.

LIMITATIONS

Although we argue that the JITTA method offers several compelling benefits over the traditional lecture preparation approach, we recognize five potential limitations. First, we note that JITTA may be appropriate only for lectures the faculty member has already delivered. Naturally, new lecture preparations should not be attempted at the last minute, especially for complicated material. Thus, we do not recommend using JITTA for new course preps.

Second, we do not advocate using JITTA unless the faculty member has an excellent grasp of the material to be covered, as waiting until the last minute to prepare for the lecture may result in the faculty member's inability to answer questions or address issues likely to occur during that lecture.

Third, we acknowledge that by preparing for lectures only on the day delivered, JITTA may induce elevated stress among faculty members not comfortable with time pressure. Thus, it is likely that some faculty members will considered JITTA to be more nerve racking than the traditional preparation approach.

Fourth, given JITTA's deployment window, we caution faculty members against preparing for lectures using JITTA when it is likely the faculty member may be interrupted. For example, we would not advocate using JITTA in settings where students might stop by to ask questions or settings where colleagues might stop by to chat. We also highlight that using JITTA may leave more of the lecture to be ad-libbed, which is great for faculty members with experience in their field or for those who have "war stories" to share or who enjoy thinking on their feet. Finally, JITTA may not be ideal for faculty members assigned to early classes, as preparation for those

early lectures would need to occur even earlier than the class itself. Naturally, however, if one is an early riser, this limitation may not be a concern.

CONCLUSIONS

This paper modeled a sustainable academic career, advancing time management as a factor associated with academic sustainability. Then, by applying Just-in-time manufacturing research to academic pedagogy, this paper introduced a Just in Time Teaching Approach (JITTA) designed to improve faculty members' teaching effectiveness while increasing the time available for research and service obligations.

Companies have used the just-in-time approach to manufacturing for years, but faculty members can also apply the just-in-time approach to teaching by preparing for lectures immediately before the lecture is to be delivered. Preparing only when the lecture is to be delivered frees time for the faculty member to devote time to research and other activities. The benefits of JITTA include the elimination of preparation redundancy, improved freshness of the lecture material to be delivered, and increased spontaneity in the classroom. By preparing for lectures only on the day they will be delivered, JITTA reduces the risk that academics will spend too much time preparing courses at the expense of their research obligations, helping them to avoid the Siren call of teaching during their tenure voyage. Just as every sailor who fell prey to the Sirens' call was condemned to remain marooned on an island forever, faculty members who fall prey to the alluring Siren's call of over-preparation for teaching may forego their research obligations, condemned to forgo tenure and advances in professorial rank.

While successfully deploying JITTA may initially increase a faculty member's time pressure and stress, it offers faculty members increased time for research and service obligations. Long-term career growth requires faculty to view their teaching as an ongoing process, continually seeking methods to refine and improve their teaching strategies (Weimer, 2010) as they strive to balance both teaching and research (Vicens and Bourne, 2009). In closing, we attempt to illustrate the main strength of JITTA with a quote from Leonard Bernstein, one of American's most successful

music lecturers. When asked what was required to accomplish greatness he replied, “A plan and not quite enough time.”

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ACCOUNTING RESEARCH PRODUCTIVITY: MORE HEAT THAN LIGHT?

Wm. Dennis Huber, JD, DBA, CPA
Capella University
School of Business and Technology
Minneapolis, MN 55402
Dennis.Huber@Capella.edu

Keywords: Accounting research, productivity, impact factor

ACCOUNTING RESEARCH PRODUCTIVITY: MORE HEAT THAN LIGHT?

ABSTRACT

Accounting research productivity has acquired mythic characteristics. What constitutes productivity in accounting research, in particular financial accounting research, has for decades not been measured by the amount of work that is required to generate publishable research, but by the quantity of publications, more by the particular journals where the research is published and like a giant multi-level marketing scheme, by the peculiar property that the more frequently a particular researcher is cited by subsequent researchers, the more productive the first researcher becomes.

This paper reviews the various ways productivity in financial accounting research is benchmarked and how the meaning of accounting research productivity is distorted by those benchmarks. It then examines the criticisms leveled against financial accounting research and synthesizes productivity in accounting research with the criticisms of accounting research. In so doing, this paper suggests that financial accounting research produces more heat than light and accounting research productivity benchmarks do not measure contributions to new accounting knowledge useful to society or the profession.

Here, you see, it takes all the running you can do, to keep in the same place.
If you want to get somewhere else, you must run at least twice as fast as that!
The Red Queen

INTRODUCTION

A measure of energy efficiency is how much energy is lost in the conversion process such that, e.g., an incandescent light bulb is only 10% efficient. That is, the amount of electrical energy (the input) used to produce light (the output) is only 10% efficient since 90% of the energy (the input) is converted into heat (an undesired output) and only 10% of the energy is converted into light (the desired output). The 90% of energy converted into heat is simply wasted.

In accounting research the input is the research effort ("accounting research energy") and the desired output is the production of new knowledge ("accounting research light"). But the amount of new knowledge produced by accounting research can be compared to an incandescent light bulb – inefficient and disproportionate to the research effort. Less new knowledge is produced

(light) than the effort required to produce the new knowledge (energy). Instead, more heat is produced in the form of subsequent mutual citations rather than actual new knowledge that is useful to society or the accounting profession.

Virtually every study on accounting research productivity begins by acknowledging that there have been many studies on the productivity of accounting faculty with respect to their research. Over the last forty some years, accounting research productivity studies have been published in both elite journals and non-elite journals.

While this is not an empirical study that measures precisely (or even imprecisely) the amount of input or the inefficiency of published accounting research output compared to input, an analysis of accounting research productivity studies compared to what is seen as the amount of new knowledge produced sufficiently supports the validity of the conclusion that little new useful knowledge is produced compared to any productivity measure.

The next section discusses the importance and contribution of this study. The following section is a chronological review of the literature of accounting research productivity studies and the criticisms of accounting research. This is followed by the discussion and conclusion which synthesizes accounting research productivity studies and the criticisms of accounting research.

IMPORTANCE AND CONTRIBUTION

There have been many studies on the research productivity of accounting faculty. The studies on research productivity have focused on such things as the journals in which the research is published or the university affiliations of the researchers. At the same time, many criticisms have been leveled against the quality of accounting research and its contribution to accounting knowledge.

However, no study has yet placed the criticisms of accounting research and its contribution to accounting knowledge within the context of accounting research productivity. This study is unique in that it places the criticisms of accounting research and its contribution to accounting

knowledge within the context of accounting research productivity thereby revealing what productivity in accounting is actually measuring. It contributes to our understanding of what benchmarks for accounting research productivity mean.

The following section is a review of the literature of accounting faculty research productivity and the criticisms of accounting research and its contribution to new accounting knowledge.

THE PROBLEM OF MEASURING RESEARCH PRODUCTIVITY

First, several things must be understood. One, this is not a study of accounting research journal quality or rankings, or university or accounting program quality or rankings, or the influence of journals, articles, or individually named faculty members and will thus attempt to avoid, to the extent possible, getting sidetracked from its purpose of examining metrics and benchmarks for measuring accounting research productivity. However, accounting research productivity metrics and benchmarks for measuring accounting research productivity cannot be separated from considerations of journal quality or rankings, or university or program quality or rankings, or the influence of journals or articles, or individually named faculty members simply because most metrics and benchmarks use journal or university rankings. Nor does it address faculty promotions *per se*, but only as faculty promotions are seen as linked to research productivity.

Two, accounting research productivity is often referred to as "contributions," "output," "number of publication," "quantity," or "activity." So, while a study may not use the term "productivity" explicitly, it is included here if it uses a synonymous term. Three, the focus of the paper is on financial accounting research productivity as opposed to topics such as managerial or tax and, where relevant to research productivity, only schools in the U.S.

With this in mind, consider the following example. Prof. Smith conducts a study on X and submits it to Accounting Journal Y, a non-elite[1] but peer-reviewed accounting journal with an Impact

[1] "Elite" accounting journals are generally considered to be *Accounting, Organizations and Society*; *The Accounting Review*; *Contemporary Accounting Research*; *Journal of Accounting and Economics*; and *Journal of Accounting Research*.

Factor of 1.0.[2] It is accepted with no revisions required. But Prof. Smith withdraws the paper. Prof. Smith then submits it to Accounting Journal Z, an elite journal with an Impact Factor of 4.0. It is accepted with no revisions required and is subsequently published in Accounting Journal Z.

Now, if you are wondering why Prof. Smith would have first submitted her research to Accounting Journal Y, a non-elite journal, instead of Accounting Journal Z, an elite journal, you are missing the point[3] which is, Prof. Smith is now considered to be four times more productive than had the paper been published in Accounting Journal Y, even though it is the same paper, merely because it was published in an elite journal, not because additional work was performed or because it produces more new knowledge than would have been produced had it been published in Accounting Journal Y.

As explained in the following section, Prof. Smith's paper will be considered more influential and more important simply because it is published in Accounting Journal Y, an elite journal. As a result, Prof. Smith will considered more productive and as a result may likely to receive a promotion, or a raise, or tenure.

Lest the reader doubt the reality of this scenario, consider the recent adoption of a written research productivity policy by the University of Wyoming based on recommendations by the AAUP that awards points toward tenure and promotion for publishing in various journals. The points vary according to journal ranking. For example, for non-doctoral granting institutions, publishing in an elite journals earns 6 points while publishing in non-elite journals earns only 1 point. (Walker, Fleishman, & Stephenson, 2013). Thus, a faculty member would have to publish six papers in a non-elite journal to earn 6 points, requiring 6 times as much effort.

[2] See Huber (2016) for a discussion of the relationship of impact factors and accounting research.
[3] The "pecking order" would typically be the reverse. That is, researchers normally first submit their research to elite journals with higher Impact Factors and then when rejected, they submit to non-elite journals with lower in Impact Factors.

Consider another example grounded in citation analysis. Citation analysis is frequently used in accounting research productivity studies. Citation analysis works like a giant, multi-level or network marketing scheme[4] where Jones sites Smith, Smith cites Jones and Johnson, Johnson cites Jones and Smith, and Jones then cites Johnson, Smith, and of course, Jones. All are now considered more influential as a result of the multiple citations and, according to some research productivity studies, more productive[5] (Brown, 1996, Brown & Gardner, 1985).

The next section reviews the literature on financial accounting research productivity and the criticisms of accounting research. Only accounting research done in the U.S. and its criticisms are reviewed. Possible gender issues are not considered.

ACCOUNTING FACULTY RESEARCH PRODUCTIVITY: A REVIEW OF THE LITERATURE AND CRITICISMS OF ACCOUNTING RESEARCH

Accounting Research Productivity

Accounting research productivity has been studied for some forty years, mostly in attempts to develop research productivity metrics and benchmarks for measuring productivity. Each successive study in accounting research productivity adds a new dimension such as adding quality measures to quantity measures or adding a time factor, or expanding a benchmark from a limited number of schools or journals to include more schools or journals. Most acknowledge that developing productivity metrics and benchmarks is difficult. Almost all warn against the potential abuse of productivity metrics and benchmarks, but then suggest that administrators, faculty, and other researchers that their metrics or benchmarks can be used for performance evaluation, tenure and promotion decisions, and merit pay decisions.

Forty years ago, Carpenter, Crumbley, and Strawser. (1974) studied accounting faculty perceptions of the quality of accounting doctoral programs and accounting faculties at

[4] "Multilevel marketing is a way of distributing products or services in which the distributors earn income from their own retail sales and from retail sales made by their direct and indirect recruits" (p. 140). Thus, citations is a method of increasing social and professional capital.

[5] See Huber (2015) for a discussion of the misuse of citation analysis and impact factors.

institutions that offer doctoral programs. They adopted and modified a questionnaire used by the American Council on Education. With 279 usable responses they concluded that the reputations of accounting faculties appear to be measured principally on the basis of national reputations for scholarship.

Subsequently, Bazley and Nikolai (1975), extended the Carpenter, Crumbley, and Strawser (1974) study to develop a ranking based on the quantity of published articles of accounting departments according to the institution where the author was located at the time the article was written, and the institution where the author earned his or her doctorate. Their reasoning was that the ranking by Carpenter, Crumbley, and Strawser was subjective and they believed that an objective ranking was preferable—the quantity of articles published in the accounting journals.

They reviewed the number of articles in four leading accounting journals from January, 1968 through July, 1974 along with the names of each author or joint author noted.[6] Based on the absence of commonality between the compared rankings they suggested first that published research is only one factor that contributes to perceptions of quality. Other interpretations of the differences in rankings included the misperception of the quantity of publications, that the rankings were significantly influenced by perceived quality, or that the difference in the sizes of the various faculties and doctoral programs could affect the perceptions of quality.[7]

Three years later Andrews and McKenzie (1978) adjusted the rankings of Bazley and Nikolai (1975) by weighting articles in the four journals included in the Bazley and Nikolai study by factors representative of the perceived quality of each of the journals, as well as by computing an index for publications per faculty member that accounts for the size of the faculty for the top 15 schools. However, the differences in the quality of the articles within each particular journal were considered.[8]

[6] The four leading journals were *The Accounting Review*, *Journal of Accounting Research*, and, probably the last time they were considered to be "leading journals," *The Journal of Accountancy*, and *Management Accounting*.
[7] Individual universities and authors are not relevant to this study and are therefore omitted.
[8] How to measure and compare the quality of the articles within each particular journal was not suggested. Also, for the first, the length of articles was mentioned as a potential metric for comparison.

As might be expected, there were shifts, although minor, in the rankings as a result of the effect of the differences in the perceived quality of the journals. More significantly, the number of publication per faculty member index for the fifteen leading accounting departments reported by Bazley and Nikolai resulted in a significant shift in rankings.

Liao and Boockholdt's (1983) study concluded that perceptions of accounting faculty quality were not strongly correlated with journal rankings based on quantity of faculty publications in journals weighted by quality.

Bublitz and Kee (1984) then reviewed multiple rankings of university accounting research programs using a new survey of accounting publications of faculty in those universities as well as an increased number of accounting journals over prior studies. They suggest that "Because many schools are competing for research money, students, and faculty, CPA firms and other contributors may use measures of published research in allocating their contributions to schools [while] students and prospective new faculty may employ the results of such studies in choosing an institution compatible with their individual objectives" (p. 41).

They grouped the journals into five categories: Academic-Practitioner journals; Practitioner-Public journals; Practitioner-Private journals; Tax journals.[9] Among their conclusions were that additional information other than quantity such as using some measures of the various research markets and schools that publish in academic journals are more likely to produce graduates that publish in the same academic journals.[10] In addition, graduates of schools that publish frequently do not necessarily join faculties that publish frequently and graduates of schools that publish infrequently do not necessarily join faculties that publish (infrequently.

Because previous studies of research contributions of accounting faculties and graduate programs focused on the number of articles authored by the certain groups of researchers or the

[9] Out of top 13, only two had accounting in the title of the journal.
[10] They noted that at that time weighting a published paper by the number of times it is subsequently cited in later research was not been done.

perceptions of accounting researchers, Brown and Gardner (1985) used citation analysis to evaluate the research contributions of accounting faculties, doctoral programs, and individuals by looking at the impact of accounting faculties and graduate programs on contemporary accounting research.[11] They included in their study only four accounting journals, now considered "elite:" *Accounting, Organizations and Society*), *Journal of Accounting and Economics*, *Journal of Accounting Research*, and *The Accounting Review* from 1976 through 1982.

They believed that in addition to quantity the research quality of an institution can be measured by the research productivity of its graduates. They developed an alphabetical list of the 25 individuals cited most often not just by school, but by named authors (which naturally included the lead author of the study)[12] and counted the percent of faculty with one paper cited ten or more times, the percent of faculty with three papers cited five or more times, and the percent of faculty with five papers cited three or more times and concluded that the more times an author was cited, the more influential the author was considered and thus the more productive the author was considered.[13]

Cargile and Bublitz (1986) recognized that studies of research productivity have been limited to identifying such things as the universities most active in research and have attempted to rank the universities and accounting programs on that basis. While they acknowledge that such studies "provide insight into which accounting programs are most productive in published research," those studies do not attempt to identify the environmental factors that rise to, or are correlated with, research productivity. Their results indicated that faculty in all accounting programs "perceived published research to be a more important factor in promotion, tenure, and salary increase decisions than teaching, service, or politics."

[11] "Contemporary accounting research" should not be confused with the journal "Contemporary Accounting Research."
[12] Not surprisingly, studies of prolific authors frequently include as a prolific the author of the study of prolific authors.
[13] Hence the earlier comparison of accounting research to a multi-level marketing scheme.

Jacobs, Hartgraves, and Beard (1986) believed that since previous studies of accounting research productivity relied on the quantity of faculty publications in particular academic and professional journals as a surrogate metric for the quality of the institution, a size- and time-adjusted publication productivity index of doctoral graduates using publication quantity and/or quality of the faculty as an in-direct measure of the quality of the doctoral program.

They collected publication data for the 13-year period January 1972 through December 1984, including names of authors, and selected eight journals[14] published during that period which they considered as a representative sample of journals that could be useful in estimating parameters of a population of journals. Publication "success" was used to rank the top 25 schools. They maintained that an objective measurement of the quality of a doctoral program is important since numerous benefits accrue to both faculty and academic institutions whose faculty and graduates are actively engaged in research and publication and claimed that their study "evaluated the specific success of doctoral programs by establishing a ***relatively*** objective output measurement that provides a size- and time-adjusted publication productivity index of accounting doctoral graduates" (p 186, emphasis added).

Campbell and Morgan (1987) found, among other things, that those who were promoted to full and associate professor ranks at doctoral-granting institutions between 1979 and 1981 had a significantly higher number of publications than those promoted to full and associate professor ranks at non-doctoral-granting institutions.

According to Campbell and Morgan accounting faculty at AACSB-accredited universities are evaluated for promotion and merit pay increases based on teaching, research, and service with research considered the most controversial since it involves evaluating both the quantity and quality of research effort resulting in publications. Therefore, the purpose of their study was to

[14] They believed that "Some readers may feel that articles published in the various journals should not be as-signed equal value" (p. 180).

examine the number of publication records of recently promoted faculty to obtain an understanding of publication requirements for promotion.

An analysis of the quality of publications, which they equated to publishing an article in either the *Journal of Accounting Research* or *The Accounting Review*, showed that accounting faculty were promoted with publications in both non-academic practitioner journals and academic journals, with most appearing in practitioner journals. However, 42 percent of those promoted at doctoral-granting institutions had published in the *Journal of Accounting Research* or *The Accounting Review* while only 11 percent of those promoted at non-doctoral-granting institutions had published in the *Journal of Accounting Research* or *The Accounting Review*.

The data also showed that faculty at doctoral institutions not only published more articles in higher-quality journals than their counterparts at non-doctoral institutions. Those promoted to associate professor at doctoral institutions published an average of 1.06 publications (18 percent of the total publications) in the top ten journals while those at non-doctoral institutions who were promoted to associate professor published an average of only 0.21 publications, (seven percent of the total publications) in the top ten journals. Those promoted to full professor rank at doctoral institutions published on average of 1.60 publications in the top ten journals while those who were promoted to full professor at non-doctoral institutions averaged only 0.15 publications in the top ten journals.

Milne and Vent (1988) assert that "publication productivity is viewed as the dominant component in the evaluation of accounting faculty members" and therefore "Faculty members naturally have an interest in the standards being used to evaluate their research and how these standards are changing" (p. 137). Those making "important" decisions need "valid information upon which to base their standards" such as "what is reasonable and how much is enough?"

Their study consisted of five-year publication productivity of 154 accounting faculty members who were promoted from assistant professor to associate professor or from associate professor

to professor in 1981, 1984, and 1985. They chose the five-year time period "because it reflects the average time for promotion to Associate Professor and because it approximates the time required for promotion to Professor" (p. 137).

As with several previous studies, they grouped schools based on faculty perceptions. However, here the perceptions were of perceived institutional support for research and standards for research productivity. The groups were doctoral granting schools; schools accredited by the AACSB without doctoral programs; and schools not accredited by the AACSB.

The data showed a continued increase in productivity at AACSB accredited schools without doctoral programs, decreased productivity at non-AASCB accredited schools, and relatively consistent productivity at doctoral degree granting institutions.

Data were divided into quartiles which were determined by dividing the number of faculty members in each group by the total number of publications. Quartiles indicated differences in productivity with the first quartile showing the highest level of productivity.
Faculty members ranked in the first quartile published at more than twice the frequency as those in the second quartile, faculty ranked in the second quartile published at approximately twice the frequency of those in the third quartile, and faculty ranked in the third quartile published at more than twice the frequency as those in the fourth quartile.

An exception to the trend was that total faculty at doctoral granting schools exhibited a more evenly balanced publication pattern and focused more on academic articles in *The Accounting Review* and *The Journal of Accounting Research*. However, comparing publication productivity at AACSB accredited schools without doctoral programs with non-AACSB accredited schools, faculty promoted to both ranks at AACSB accredited schools showed a substantial upward trend in productivity, while faculty promoted at non-AACSB accredited schools showed a substantial downward trend in productivity.

A year later Milne and Vent published a similar study and again argued that "Published research is a major factor in the determination of faculty rewards" (Milne & Vent, 1989) but previous studies provided "little assistance to administrators in establishing or applying performance standards or to faculty members attempting to judge their own performances (p. 95). Similar to their 1988 study, the purpose of their 1989 study was to present an analysis of research productivity for promoted accounting faculty members but changing the time period to 1981 and 1984. The analysis again included all published journal articles, books, and monographs and schools were again separated into the same three categories (schools granting doctoral degrees in accounting, schools accredited by the AACSB, and schools not accredited by the AACSB) and again based on faculty perceptions of support for research and standards for research productivity.

The publication records from 1977 through 1981 for154 accounting faculty promoted in 1981, and 1980 through 1984 for 188 faculty promoted in 1984 were analyzed. The data revealed that research productivity of faculty promoted to full professor at doctoral-granting schools more than doubled from 1981 to 1984 while the productivity of those promoted to full professor at schools without doctoral programs but which are accredited by the AACSB had increased by approximately 24 percent. However, research productivity of faculty promoted to full professor at non-AACSB schools has decreased by more than 27 percent. Those who were promoted to associate professor at doctoral-granting schools in 1984 were approximately 19 percent more productive than those promoted in 1981. However, those who were promoted to associate professor in 1984 at non-AACSB accredited schools showed a 36 percent decrease in productivity from the 1981 group.

Poe and Viator (1990) used surveys to investigate the relative importance research, teaching, and service in the evaluation of accounting faculty by deans and heads of accounting departments. Their results indicated that administrators of separately AACSB accredited accounting programs place more emphasis on research and less on teaching than do administrators non-AACSB accredited accounting programs.

Deans of colleges with both AACSB accredited business and accounting programs believed that the AACSB attached more importance to the quality of research than did the deans of colleges without AACSB accredited accounting programs. Furthermore, deans of programs without AACSB accredited accounting programs believed that the AACSB attached more importance to the quantity of publications than did deans of programs with AACSB accredited accounting programs.

Chung, Pak, and Cox (1992) attempted to determine whether any regularity exists in the publication pattern among 3,422 accounting researchers between 1968 and 1988. Identifying the authors by name, they found that 57.7 per cent published only one paper while only 9.8 per cent of authors published more than five papers. Other data showed a range from 62.6 percent for authors who published one time in *The Accounting Review* to 96.4 percent for authors who published one time *Journal of Accounting Literature*. Seven out of 38 schools produced the most prolific contributors.

Englebrecht, Iyer, and Patterson's (1994) contend that it is useful to know the relative emphasis placed on publication activity in doctoral vs, nondoctoral and AACSB accredited vs. non-AACSB accredited institutions in promotion decisions. Their study reviewed the relative importance of publication related to promotions to associate or full professor in an attempt to determine whether the relationship between publication and promotion had changed since the 1980s and if so why changes may have occurred. They suggest that the increased rate of publication results from greater emphasis being placed on the number of publications in promotion decisions.

While prior studies assumed a uniform rate of research productivity, their study contributed to an understanding of accounting research productivity by investigating the publication patterns of promoted faculty by considering two time periods—the period immediately prior to their promotion, and the period immediately surrounding promotion—between 1987 and1989. Their study analyzed the publication and promotion activity according to type of institution using a sample of 584 faculty promotions. The publication activity was qualitatively evaluated using a recent ranking of accounting journals.

On average, faculty at AACSB-accredited institutions published at a greater rate than faculty at non- AACSB accredited institutions, and faculty at doctoral institutions publishes at a greater rate than faculty at nondoctoral institutions. For example, approximately 74 percent of faculty promoted at doctoral institution during that time period had published at least one article in one of the top ten journals while only 25 percent of faculty members promoted in nondoctoral institutions had published at least one article in the top ten journals. There was also a statistically significant difference between the publication productivity for promotions to both associate and full professors at AACSB accredited and non-AACSB accredited institutions.

Hasselback and Reinstein (1995a) acknowledge that a single study cannot establish the quality of accounting programs, but claim their study can provide preliminary evidence of the caliber of accounting doctoral programs. They believed the results of their study could be used by administrators at doctoral granting institutions to compare their graduates' productivity to that of their peer institutions, to make more informed selections for hiring new faculty, and help establish standards for other decisions such as promotion and tenure.

Their study ranked doctoral programs by considering both the quality and quantity of the accounting research of their graduates. A total of 2,708 doctoral degrees were earned from 73 U.S. institutions between 1978 and 1992. The quality of published research was accomplished by using a weighting scheme to assign quality points to 24 of the 41 journals in their database.

A similar study by the same authors that same year compared academic institutions that use research productivity as an indicator of their reputations and a means to strengthen their national stature to corporations that measure success by bottom line profits or market share (Hasselback & Reinstein, 1995b). Their assessment of the literature was that there was a need for an objective method of measuring the quality of faculty productivity but most studies of faculty productivity only measured the quantity of publications. Their study considered both the quantity and quality of the publication records by examining faculty members' then current

academic year (1991-92) at 716 schools rather than where they may have been at the time their research was published.

They found that faculty members in over 37 percent of the schools had no publications in any of the 40 journals included in the study but larger institutions granting accounting doctoral degrees dominated the highest rankings total number of articles. On a per-faculty member basis, however, "high quality" private institutions with smaller numbers of faculty members garnered the highest rankings when only the five elite accounting journals were considered rather than the entire 40.

The purpose of Brown's (1996) study was to identify influential accounting articles, researchers, Ph.D. granting institutions, and faculties using citation analysis where productivity was implicitly equated to the number of citations.

Brown first grouped the articles into three citation categories: 26 "classic" papers cited four or more times per year since year of publication, 24 "near classic" papers (articles cited four or more times per year since year of publication), and 53 other "top 100" papers (those that received the most citations). He classified the papers by research paradigm and journal in order to provide a contextual framework in which important papers are cited.

Brown then identified 123 out of 5,053 individuals influential accounting researchers which he deemed to be influential because they were "classics," as well as Ph.D. granting institutions, and faculties to provide a ranking system of accounting researchers, Ph.D. granting institutions and facilities.

Rodgers and Williams (1996) analyzed author productivity in *The Accounting Review*, one of the three highest ranking U.S. journals, for the 26 year period from 1967 to 1993. They found that the most productive authors in *The Accounting Review* were dominated by graduates a set of

elite schools and concluded that, “almost no academics reach the level of greatest productivity in accounting unless they attend a certain set of universities” (p. 86).

Fogarty and Ruhl (1997) explored what effects the doctoral granting school and subsequent initial faculty appointment school status had on the career publication productivity of accounting faculty since levels of research productivity is transmitted through doctoral education. Their results showed that research productivity is related to both the status of the doctoral granting school and the status of the school of the initial faculty appointment. Their analysis indicated that accounting faculty members who receive their doctoral degrees from top universities are more likely to be more productive accounting researchers, that, those obtaining initial appointments at top schools are likely to do more research, and that institutional affiliations are important determinants of research productivity.

However, in addition to the obligatory “contribution to the literature” they suggest, like the proverbial “Freudian slip,” their article also has considerable “***practical*** value” (p. 28, emphasis added). Their results showed that accounting faculty who earn doctoral degrees from “top universities” are more likely to be productive accounting researchers and that those who obtain initial appointments top universities are likely to publish more accounting research. Therefore, doctoral students can use the results for searching for their first academic positions are provided information on their prospects and on the consequences of their decisions, and those applying to doctoral programs can use the results to select a doctoral program.

Citing other studies, they argue that (1) “social status describes the relative social esteem of an institution,” (2) “perceived status is often correlated with ‘hard’ measures of productivity…and scholarly influence,” therefore (3) “status is related to the publication productivity of resident faculty” (p. 28). Status, according to Fogarty and Ruhl, is equivalent to academic reputation.

Their sample averaged slightly less than 0.30 publications per year since graduation with slightly more than 0.12 publications per year since graduation in the three top accounting journal.

Moving on to the 21st century, Hasselback, Reinstein, and Schwan (2000) reported on the research productivity of 3,878 accounting faculty who received their doctorates between 1971 and 1993 using 40 journals to measure the quantity of faculty publications. They compiled journal rankings from five prior studies to measure publication quality. They used several benchmarks of quantity and quality including the level of journal quality (the Best 4, Best 12, Best 22 and Best 40 journals), comparative levels of performance (publication records in the top 10%, top 20%, top 25%, top 33%, or top 50% of all faculty), and number of years since the doctoral degree was earned.

Benchmarks allow faculty to judge the quantity and quality of research necessary to attain tenure and promotion. Administrators and committees need "objective" benchmarks to evaluate performance for hiring, tenure, and promotion. The AACSB accredited schools need appropriate benchmarks for research productivity. The benchmarks they developed, they believed, would allow administrators to state, "with ***some*** justification, a required number of articles for tenure or promotion" (p. 79, emphasis added).

They believed that their benchmarks used comprehensive data not available in previous studies and were an improvement over previous benchmarks that used only "a) qualitative rank-ordering of accounting and related journals, (b) quantitative measures of total and average research productivity of faculty, and (c) quantitative measures of total and average research productivity according to where faculty earned their doctoral degrees" (p. 944).[15] After adjusting individual faculty publication records based on journal quality, benchmarks for the "Best 4" journals (*Journal of Accounting Research*, *The Accounting Review*, *Journal of Accounting and Economics*, and *Journal of Finance*) show that very few faculty have published in the premier journals. They observed that, "One published article in these top four journals is likely to put its author in the top 20%, or even top 10%, of all faculty" (p. 94).

[15] They stated that previous benchmarks were either quantitative or qualitative in nature, but not both. This was not quite accurate, since several studies used both.

In a subsequent study the same authors analyzed 40 journals for the 35-year between 1967 and 2001 in order to identify the most prolific authors and their productivity records, including the top 10 researchers, based on number of publications according to the year they received their doctoral degree for the 30-year between 1968 and 1997, and the top 75 researchers in the 40 journals, including category of publication. (Hasselback, Reinstein, & Schwan, 2003). They also analyzed all U.S. accounting faculty holding the rank of Assistant Professor and above by the number of publications for the year 2001–2002.

According to Hasselback, Reinstein, & Schwan, academic administrators want objective data to serve as benchmarks to use to measure research productivity in faculty performance evaluations and in making hiring, tenure, and promotion decisions. Their measures of research productivity consist of the number of articles published by each faculty member, the number of articles adjusted for co-authorship, and a composite measure adjusted for both quantity of articles published and the quality of journal in which the articles are published which they refer to as the Q&Q composite score.

They presumed that quantity of publications is an objective, cost-efficient method benchmark,[16] but not as objective or simple as it may appear since the selection of journals to include requires several subjective decisions (e.g., only the elite journals or all journals?). Citation analysis is another method of counting and also presumed to be objective in that it measures the frequency with which articles are cited in other articles, but then leads to the presumption that articles are higher quality articles because they are cited more often than articles of lower quality which is subjective.

The purposes of their study of the productivity of accounting faculty were to generate comprehensive data on the quantity and quality of research to be used as benchmarks, and to explore ways to use the benchmarks. Their database consisted of all 4,890 faculty who received

[16] "Merely counting the number of articles often provides a good surrogate for the other, more complex measures" (p. 123), and "On a total institution basis, total articles seem to be a suitable surrogate for more sophisticated measures incorporating co-authorship and journal quality" (p. 123).

their doctoral degrees for the 30-year period between 1968 and 1997 for the academic year 2001–2002. They then counted the number of articles of each faculty member according to the year of they received their doctoral degrees. They identify the frequency with which tenured or tenure-track faculty have published in three premier journals (*Journal of Accounting Research*, *The Accounting Review*, and the *Journal of Accounting and Economics*) and then expand the list to identify those who have published at least 12 articles between 1982 and 2001 in the top 10 accounting journals.[17] What they refer to as "Best of Breed" provides data for "those wishing to set world-class levels of accounting.

Fogarty (2004) explored the publication productivity of accounting faculty of older accounting academics using the population of US academics with doctoral degrees received prior to 1977. His study showed that sustained research productivity is associated with both the status of the degree granting school and the status of the current employing school. Those who received their doctoral degrees from "high status universities" and those who possessed current appointments at "top schools" were more likely to be sustained accounting researchers. Thus, he concluded, research productivity cannot be understood without considering the schools with which the researchers have been affiliated.

Bonner, Hesford, Van der Stede, and Young (2006) summarized previous studies in accounting research productivity that ranked both academic accounting journals and articles that provided other bases for measuring journal quality. Their results were consistent with other studies that consistently ranked five journals—*Accounting, Organizations and Society*, *Contemporary Accounting Research*, *Journal of Accounting and Economics*, *Journal of Accounting Research*, and *The Accounting Review*—as the top journals in the field. They arrived at this ranking by conducting an exhaustive search of accounting literature over the previous 20 years. They excluded from their summary of previous studies of journal selection because they either

[17] *Accounting, Organizations and Society*, and *Contemporary Accounting Research* were among the top six, but not the top three (which they refer to as "premier journals"). The *Journal of Finance* was also included.

represented a subjective, arbitrary choice by the authors or the choice was justified by data availability and/or ease of data collection.

They believed that it is important to publish in the top journals because, in North America at least, it impacts on faculty members' careers and reputation, their pay, and their tenure and promotion. At the same time, they found that financial accounting research appeared in disproportionately higher numbers for all journals except *Accounting, Organizations and Society*, while management accounting research appeared in disproportionately lower numbers for all journals except *Accounting, Organizations and Society*.

According to Bonner, et al, their study was an improvement over previous studies because previous used arbitrary lists of journals not directly based on specific journal ranking studies.

Glover, Prawitt, and Wood's (2006) study focused on schools that published the most in "top-tier" journals and document the "top performance" in publication productivity. They propose that the data they provide are useful for developing benchmarks for published scholarship for promotion and tenure criterion for accounting faculty since there was, prior to their study, "a limited amount of current, relevant publication data that can be used by faculty and administrators to plan and evaluate research productivity and to set research criteria" (p. 196).

Since previous research of faculty research productivity did not present clear publication records of promoted faculty at the time of promotion, the objective of their study was to provide recent publication productivity data of accounting faculty promoted from 1995 to 2003 at the top 75 research-oriented accounting programs. But instead of examining all faculty promotions, their sample included only 20 percent of all faculty promotions. Furthermore, it excluded doctoral programs, beings limited to four-year institutions with accounting programs in the U.S. during that period of time period, and did not distinguish between AACSB accredited and non-AACSB accredited schools or programs. Their study was intended to extend previous studies to improve the ability to benchmark research productivity at promotion.

They found that 76.3 percent of the professors in their sample who were promoted to associate professor had published at least one article in the Top 3 accounting journals, and 46.8 percent had published at least two articles in the top journals. Almost 30 percent of their sample had published 10 or more articles in the Top 6 category at the time of promotion to full professor.

With the support of the American Accounting Association, Reinstein and Calderon (2006) used a survey of accounting programs to examine how accounting programs assess the quality of accounting journals. Their reasoning was that academic administrators are interested in objective data and benchmarks of faculty research productivity for purposes of faculty performance evaluation and to make hiring, tenure and promotion decisions.

Their assessment of previous studies of accounting research productivity was that it was "vast" and assumes that accounting departments use the quality of the journals in which faculty members publish in making tenure, promotion and merit pay decisions. Using their survey, Reinstein and Calderon document journal rankings used by both doctoral-granting and non-doctoral-granting accounting programs. Their results "confirm the existence of an elite set of journals whose rankings are invariant to school type, faculty size, resource base or mission" (p. 457) and interpret the results as "evidence of the influence of a select group of elite accounting programs in defining the parameters of value in accounting scholarship" (p. 457).

Since AACSB requires accredited schools and accounting programs to develop research standards and measure outcomes against those standards, journal rankings or a list developed in-house could serve as a benchmark for assessing journal quality. At the very least, such a list could provide an efficient and transparent medium for evaluating research quality.

They found that "elite programs demand that their faculty publish in five or six elite journals" (p. 487) and concluded that "elite programs—intentionally or unintentionally—have induced many aspiring accounting academics to focus on fewer and fewer journals, which can impede the broad research needs of accounting academe and the profession" (p. 487).

Consistent with several previous studies, Kerr, Simkin, and Mason (2009) maintain that the most popular measure of research productivity has been counts of papers published in "premier" journals. One benchmark that emerged from their sample of 302 is the total number of faculty publications by rank. Assistant professors published almost four articles, associate professors 11.6 articles, and full professors 20 articles.

Another benchmark resulting from their survey was the overall publication rate of "almost exactly" one blind-refereed journal publication per year. A third benchmark was "the lack of evidence to support the claim that the presence of Ph.D. programs positively affect research productivity" (p. 109). Rather, their analysis showed that "the presence of such programs has no detectable impact on publication rates, with the possible exception of those faculty working at the associate professor rank" (p. 109). They made no adjustments for research quality except to limit publication counts to blind-refereed articles.

Stephens, Summers, Williams, and Wood (2010) ranked accounting Ph.D. programs using the quantity of research published by each program's graduates. Their rankings were developed using an index of 11 major academic accounting journals. They ranked approximately 50 Ph.D. programs according to research methodology (analytical, archival, and experimental) for a three- or six-year window following their graduation between 2001 and 2009.

The rankings of the top six programs by methodology were 24 for analytical, 4 for archival, and 13 for experimental. However, while the most productive analytical programs achieved high overall rankings, the highest ranked archival Ph.D. programs were also the programs that ranked highest overall which showed that "a top overall Ph.D. program ranking does not represent the breadth of methodologies employed in research" (p. 171).

Hasselback, Reinstein, and Abdolmohammadi (2012) added to the literature of accounting faculty research productivity by providing benchmarks based on publication records of 5,607 accounting doctoral graduates between 1971 and 2005 who published 22,579 articles in the Best 40 journals

through 2009. They found that average publication productivity of accounting faculty per year had steadily increased over the previous 35 years under study. They proposed benchmarks that can be used for "tenure, promotion, merit pay, appointment and renewal of chaired professorships, and other resource allocation decisions" based on faculty productivity

They classified journals in four sets—Top 3, Next 10, Next 11 and Next 16—from 1971–2005 and for each year of 2001–2005. On average each faculty member published unadjusted 0.20 articles per year, and 0.28 after adjusting for journal quality,

Finally, Walker, Fleishman, and Stephenson (2013) attempted to capture "realistic, relative quality differences using a weighting procedure **(**based on perceived publication difficulty**)** representing the amount of effort and reward that department chairs and administrators might attribute to publications in each category of journals." This means, as they explain it,

After reviewing the literature on research productivity by accounting faculty and journal quality and quantity standards for tenure and promotion they determined that "a reasonable number of total publications for promotion to associate and full professor is about 4 and 7, respectively" (p. 139).

To summarize, attempts to develop metrics or benchmarks to evaluate accounting faculty research productivity have been the subject of studies for four decades. Useful. reliable benchmarks for accounting research productivity remain elusive.

Proposed benchmarks of accounting research productivity vary by number of journals, number of schools, number of years. Benchmarks have been developed using quantity of publications only, quantity in types of journals, quantity coupled with quality of journals. Many benchmarks are subjectively based, such as those involving quality and rankings, and based on faculty or administrator perceptions. Each successive study of accounting research productivity adds a new

dimension such as adding quality measures to quantity measures, adding a time factor, or expanding a benchmark from X number of schools or journals to Y number of schools or journals.

Although literally every study of accounting research productivity suggests how the benchmark can be useful, several benchmarks are inconsistent with other benchmarks. Several accounting research productivity studies emphasized the need for "objective" measures and benchmarks, and state either explicitly or implicitly that their benchmarks are objective. Yet, they then incorporate subjective measures into their benchmarks such as surveys of journal quality or university rankings which are anything but objective.

Criticism of Accounting Research

Criticisms of accounting research have been made in both formal studies and in speeches or editorials and are almost as numerous as studies of accounting research productivity.

A quarter of a century ago, Briloff (1990) lamented that "presumptive first-rate accounting scholars are constrained to demonstrate their competence as second-rate financial analysts, applying a third-rate mathematical methodology, predicated on fourth rate data, compiled by fifth-rate drones" (p. 28).

Lee (1995) noted that

> "Publications in what are perceived to be elite journals enhances the ability of the researcher to progress in a career as an educator. The editors and editorial board members of these journals not only determine what is or is not published as accounting research...The editorial function basically sets the agenda for what is or is not publishable accounting research, and researchers respond to this if they wish to get published..." (p. 252).

While Rodgers and Williams (1996) presented an analysis of research productivity in "*The Accounting Review*, they also criticize accounting research. Since, they say, "*The Accounting Review* is a significant medium through which accounting knowledge is disseminated [it] affects what comes to be accepted as genuine accounting knowledge (p. 54). They observed that "*The*

Accounting Review has acted through time to restrict, rather than enlarge, accounting's intellectual potentialities. TAR's purpose seems now to produce academe reputations" (p. 80).

In his AAA presidential address, Demski (2001) noted that progress in accounting research had turned flat, and tribal tendencies in both research and doctoral training had taken hold. While the number of accounting journals has increased, the accounting academy struggled with intertemporal sameness and incremental attempts to move forward.

Reiter and Williams (2002) commented that mainstream U.S. accounting academics were troubled about the lack of progress of accounting research. One of the barriers to progress in accounting research is "the hierarchical reputation structure that forces most US accounting researchers to narrowly define their work within the economic paradigm" (p. 602).

In her 2005 AAA presidential address, Rayburn remarked that "Accounting journals are the most important resource our discipline has to encourage the development of new ideas" (Rayburn, 2005, p. 4), but while journals "provide the imprimatur of quality, and are capable of promoting the growth of new ideas through the process of expert peer review and by publishing innovative, high quality research" (p. 4), the top journals have reduced the scope of published research and a retrenchment of the breadth of accounting research in North America is in process. This has resulted in the reduced diversity of accounting research and a narrowing of the training in accounting doctoral programs.

Hopwood (2007) joined in the growing criticism of accounting research by adding that accounting research had become insufficiently innovative, too cautious, and too conservative. The emphasis in research encourages conformity by staying within recognized intellectual parameters.

> "More recently institutional careerism has reinforced these tendencies as deans and their colleagues seek to develop research and publication portfolios that perform well in media rankings, accreditation evaluations, and state-sponsored research assessments. In practice these institutional developments tend to result in the same concerns with both the volume and legitimacy of publications" (p. 1372).

Tuttle and Dillard (2007) recognized a dramatic reduction in the diversity of accounting research that contributed to the homogenization of accounting research that "obstructs the dialogue necessary for the accounting academy to fulfill its societal responsibility" (p. 388). Ph.D. programs have narrowed their focus, and editors and editorial board members of accounting research journals share the common view of what constitutes legitimate accounting research. "The dominant paradigm is becoming the only paradigm" such that academic accounting research is fully entrenched on its present course.

> "The definition of legitimate academic accounting scholarship has morphed into a set of organizational field criteria that primarily manifests as financial accounting research. These criteria are now embedded within the professionalized structures of the dominant academic institutions: AAA governance, award criteria, Ph.D. program curriculum, job market criteria, and academic publication outlets" (p. 403).

Kaplan (2011) reasoned that since accounting academics limit their research to "issues that can be adequately addressed by a narrow set of generally accepted research methods" (p. 369) much of accounting research for the past 40 years has been reactive since a sufficient amount of time must pass in order to generate archival.[18]

Basu (2012) asserts that ''Accounting research as of 2011 is stagnant and lacking in significant innovation that introduces fresh ideas and insights into our scholarly discipline" (p. 851). Similarly, Waymire (2012) posits that "Several features of modern accounting scholarship suggest our discipline is not well positioned to produce scholarly innovation. These include substantial 'careerism' among accounting scholars that promotes conformist thinking" (p. 1078).

Moser (2012) saw "considerable evidence of stagnation in accounting research" (p. 846). Too much published research relates to a limited group of topics using the same research methods, with archival being most prevalent, and using the same underlying theories with conventional economic theory being the most commonly employed. Their review of the literature found much

[18] Kaplan gives the example where researchers failed to foresee "the reporting, valuation, and disclosure implications from the new types of mortgage lending and the massive securitizations of these loans."

published research merely represented minor extensions of previous research "with no discussion of who, other than a limited number of other researchers working in the same area, might be interested in the study's findings" (p. 846). Moser goes on to observe that "In order to earn tenure or promotion, or even simply to receive an annual pay increase, researchers must publish in the top accounting journals and be cited by other researchers who publish in those same journals (Merchant 2010)" (p. 847). Consistent with a multi-level marketing scheme, publishing depends on the views of editors and reviewers which results in researchers limiting the topics and research methods in order for their work to be accepted. This in turn leads to an increase in the likelihood of citations by others who publish in those journals.

McCarthy (2012) sees accounting research as stuck in a rut, repetitive and irrelevant. Mainstream accounting research topics have narrowed their scope with more and more researchers studying the same topics in the same ways, over and over and over.

Williams (2014) argues that "the rigor that allegedly characterizes contemporary mainstream accounting research is a myth" (p. 869) and "the rigorous nature of certain preferred forms of accounting research is, thus, largely a matter of appearance and not a substantive quality." (p. 869).

Chapman (2012) argued that there is a false dichotomy between diversity of accounting research and quality accounting research. Diversity in accounting research is perceived as a threat to quality. But, he argues, increased diversity in accounting research promises to increase the quality of accounting research.

> "Accounting is a complex social phenomenon, and so our understanding of it should be enhanced through the adoption of a diverse set of research perspectives and approaches. Grasping accounting in all its complexity is important from an intellectual perspective, but also from the perspective of the ability of our research discipline to contribute back to society" (p. 822).

Hasselback and Reinstein (1995a) state that accounting departments with highly productive graduates are providing their graduates with solid research skills, enabling them to succeed in the critical research portions of their academic careers. But that is not accurate. They provide their graduates with statistical and econometric related research skills. Training in historical or sociological research methods are almost non-existent.

To summarize, accounting research has for decades been seen as stagnant, closed to intellectual challenges, and more supporting of career advancement than knowledge advancement.

The next section synthesizes accounting research productivity with the criticisms of accounting research.

CONCLUSION

The purpose of this paper was to synthesize accounting research productivity with criticisms of accounting research. Thus, we can ask, if Demski, Kaplan, Lee, Rayburn, Williams and others have been criticizing accounting research as stagnate at the same time that accounting research productivity has been increasing, what exactly are they criticizing? What conclusions can be drawn when accounting research productivity is synthesized with the criticisms of accounting research? Occam's razor comes to mind:

> "Among competing hypotheses that predict equally well, the one with the fewest assumptions should be selected. Other, more complicated solutions may ultimately prove to provide better predictions, but—in the absence of differences in predictive ability—the fewer assumptions that are made, the better" (Stanford Encyclopedia of Philosophy, 2015).

The single assumption, the simplest explanation, the most logical conclusion is that the benchmarks of accounting research productivity are benchmarking the stagnation of accounting research. Accounting research energy is converted less into the light of advancing accounting knowledge and more into wasted heat of stagnation. Hasselback, Reinstein, and Abdolmohammadi (2012) concluded that "analysis indicates very high correlations between productivity measures. This evidence indicates that productive researchers rank high regardless

of the productivity measure" (p. 943). Thus, regardless of the productivity measure used for accounting research productivity, productive researchers contribute to the stagnation of accounting research rather than the creation or advancement of new knowledge.

Accounting research productivity has evolved into a myth of epic proportions created by self-perpetuating mutual citations and the elevation of the status of a limited set of accounting journals to "elite," "top," or "premier" that overwhelming restrict the publication of accounting research that does not conform to the dominant research construct. Many accounting faculty, especially new faculty, have been indoctrinated into following unquestioningly in cult-like fashion a research construct that provides no incentive for the intellectual pursuit of accounting and its importance to society and the profession. They have come to believe that the quantity of research published in elite journals contributes to the creation of new accounting knowledge. Studies of prolific authors serve more as permanent reminders that the stagnation and decline of accounting research "is a tendency for senior accounting academics to judge and reward the performance of juniors on the basis of a narrow definition of what constitutes academic accounting" (Demski. et al.. 1991, p. 4–5).

Furthermore, the usefulness of studies of named prolific authors is itself questionable. Such studies change accounting research into a game of one-upmanship where accounting research is no longer a pursuit of new accounting knowledge useful to society or the profession, but has degenerated into a competitive enterprise based on little more than the quantity of publications in subjectively ranked journals. As Hasselback, Reinstein, and Schwan (2003) state,

> "Others, however, may wish to set benchmarks at best of breed or world class levels. Lucertini, Nicolo and Telmon (1995), for example, suggest that accounting programs should seek relevant benchmarks to 'continuously search, measure, and compare' their processes to the best practices that their competitors have developed" (p. 106).

Milne and Vent's (1988) data "show 'successful' productivity levels in formats that are useful for self-evaluation or for establishing institutional standards," and Milne and Vent's (1989) endeavor

to develop benchmarks for “faculty members attempting to judge their own performances” (p. 95).

Ironically, the AACSB has been complicit, inadvertently and unintentionally perhaps, but undeniably, in the degeneration of accounting research. As a result of its emphasis on research productivity, its standards, however noble, have actually worked to encourage the stagnation of accounting research since data showed a continued increase in productivity at AACSB accredited schools without doctoral programs, and faculty promoted to both ranks at AACSB accredited schools also showed a substantial upward trend in productivity. (Milne & Vent, 1988). Yet the useful new knowledge produced by the increased productivity is stagnant.

Accounting research that actually produces more knowledge useful to society or the accounting profession but does not conform to the “generally accepted research construct” (or rather, “generally imposed research construct”) and is not published in elite journals is at best ignored and at worst denigrated, while research published in elite journals that produces little knowledge that is useful to society or the accounting profession but conforms to the generally imposed research construct and cites other research that produces little knowledge that is useful to society or the accounting profession, is elevated to positions to be admired and emulated. The hierarchy of research, and consequently journals, is inversely correlated to the practical relevance of the research.

Although the stagnation of accounting research is an embarrassment to the academic accounting profession, no apologetic is forthcoming to defend the state of affairs. Indeed, “Those who argue for the worthiness of alternative research paradigms must defend and rationalize them…Because mainstream research is so deeply embedded as methodologically sound, the burden of proof continues to lie upon the alternative methodologies” (Willaims, 2014, p. 871). Rather than acknowledging the embarrassment chairs, deans, journal editors, and those in control of academic accounting organizations bask in mutual accolades, awarding and rewarding each other for their accomplishments in an enterprise that produces more heat than light.

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ACCOUNTING ETHICS: POST-CONVENTIONAL MORAL DEVELOPMENT AND NON-MANDATORY VIRTUES; MAKING THE CASE FOR ETHICS TRAINING IN THE UNDERGRADUATE PROGRAM

Warren Kleinsmith, PhD, CPA
Stockton University
101 Vera King Farris Drive, Galloway, NJ 08205-9441
(609) 626-3532
Warren.Kleinsmith@stockton.edu

Michele Hewitt, MBA
Stockton University
101 Vera King Farris Drive, Galloway, NJ 08205-9441
(609) 652-4342
Michele.Hewitt@stockton.edu

Leo Previti, JD, MBA, CPA
Stockton University
101 Vera King Farris Drive, Galloway, NJ 08205-9441
(609) 335 5352
Leo.Previti@stockton.edu

Robert Kachur. MBA, CPA
Stockton University
101 Vera King Farris Drive, Galloway, NJ 08205-9441
(609) 652-4471
Robert.Kachur@stockton.edu

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ABSTRACT

In the wake of corporate scandals such as Enron, WorldCom, Tyco, HealthSouth, and American International Group (AIG), confidence in the integrity of the US capital market has been negatively impacted. At the heart of this problem lies the role of the certified public accountant, seen as the gatekeeper for the integrity and accuracy of financial statements that are critical in making a variety of business decisions. This paper examines several of the underlying ethical accounting issues considered pivotal in the recent deluge of business and corporate scandals and concludes that the profession must embrace post-conventional moral development and non-mandatory virtues. The intergrity of the accounting profession is not best advanced through external regulators and legislators that take a reactive view to a continually changing, global business environment. Rather, the profession must proactively address the fundamental failure of integrity and moral foundation through ethics training and moral development during the undergraduate college experience. Ethics training would provide an environment to enhance students' current moral development and provide the accounting industry a pool of entry-level professionals with a common level of moral competency.

INTEGRITY IN THE CAPITAL MARKET

In the wake of corporate scandals such as Enron, WorldCom, Tyco, HealthSouth, and American International Group (AIG), confidence in the integrity of the US capital market has been negatively impacted. The primary source of confidence resides with the Certified Public Accountant (CPA) who, since the passage of the Security Act of 1933 and 1934, has been charged with conducting audits of company financial statements as a condition of participation in financial and securities markets. In effect, this legislation provides the accounting profession with a service monopoly as it pertains to the accounting and auditing of publicly traded companies (Rodgers, Dillard & Yuthas, 2005). Fundamental to the role of the audit is the assurance that the financial statements fairly represent the financial position of the company (Gaa, 2001, cited in Libby & Thorne, 2004).

The dominant view among accountants is that the primary purpose of financial statements issued by management is to provide financial information that will be used by investors and creditors to make

sound economic decisions. This paper will examine some of the underlying ethical accounting issues that were pivotal in business and corporate scandals where financial reporting and auditing inconsistencies were central elements and further discuss the ability to enhance moral development through ethics training during the undergraduate college experience.

THE ACCOUNTING PROFESSION, A HISTORY OF TRUST

To better understand the recent ethical challenges to the accounting environment, a brief summary of the profession's history is required. The double entry system that is used in modern accounting was developed in 1494 by Italian mathematician Lucas Pacioli. Pacioli's format of accounting has remained the pinnacle of bookkeeping and the basis of the process has not changed significantly since inception. The practice of basic bookkeeping however existed well before Pacioli with evidence of bookkeeping practices being utilized by the Mesopotamians. The Mesopotamian land owners developed a system of bookkeeping to track the purchase and sale of property and goods with the assistance of scribes who processed and certified the transaction. Similar to current standards, transactions required the seller to provide buyers with a price-quote and the subsequent agreement of sale/purchase was notarized, in a fashion, by the scribe (Alexander, 2002). The Egyptians used a similar process with the addition of the audit of business records. Penalties for inaccurate record-keeping were "punishable by fine, mutilation or death" (Alexander, 2002, p. 4). Note that notarization/certification by the scribes of Mesopotamia and the legal sanctions imposed by the Egyptian government indicate the expected high level of professionalism, accuracy and integrity that has consistently been required of those in the accounting profession. Additionally, it provides further reason why the transgressions by the few directly involved in the recent economic crisis have provoked such widespread debate regarding ethics.

The inherent integrity of the system is vitally necessary if accounting firms and individual professionals expect consumers to place their trust in the product offered. As stated by Smith (2003), "the purpose of ethics in accounting and business is to direct business men and women to abide by a code of conduct that facilitates, indeed encourages, public confidence in their products or services" (p. 47). To help ensure the highest level of professional conduct and ethical standards are adhered to, the US accounting industry formed the American Institute of Certified Public Accountants (AICPA), in 1887. The AICPA established a code of professional conduct tailored by its membership to provide guidance and codes in

the performance of professional responsibilities in the public, private, governmental and educational environments (American Institute of Certified Public Accountants [AICPA], n.d.). More specifically stated:

> Compliance with the Code of Professional Conduct, as with all standards in an open society, depends primarily on members' understanding and voluntary actions, secondarily on reinforcement by peers and public opinion, and ultimately on disciplinary proceedings, when necessary, against members who fail to comply with the Rules (AICPA, n.d., para. 3)

The creation of the AICPA was a significant step in solidifying the ethical behavior of accountants. However, focus returned to this topic again in 1959 with the publications of T*he Education of American Businessmen* by Pierson and *Higher Education for Business* by Gordon and Howell. These publications placed emphasis on the need for higher education in business to go beyond vocational training and to include an organization's external environment (Sims, 2002). This summarily prompted the growth in business ethics courses offered during the undergraduate degree experience during the 1960s and 1970s. These courses primarily emphasized an ethical framework that addressed the ethical and moral decline in society that had occurred in the 1960s. Yet, as suggested by Powers and Vogel, activities such as philosophy were "remote from the traditional intellectual center of gravity of business education" (Sims, 2002, p.3). Additionally, universities failed to take seriously their responsibility to instill a sense of ethics in college students and help students develop moral and ethical standards that they were unlikely to obtain elsewhere. While the raw numbers supported an increase in the number of academic institutions offering separate business ethics courses, questions still remained regarding the efficacy of these programs helping students learn to reason more carefully about moral issues and respond to ethical questions.

Inclusion of ethics education in the academic environment continued as an important topic of discussion in both the academic and corporate communities well into the 1980s and 1990s. Unfortunately, the academic arena was changing in ways that impaired the provision of ethics education in the classroom. Faculty became more specialized in their respective fields leading to greater amounts of subject specific learning outcomes within the course guidelines. Increased academic workload, a lack of solid knowledge base with respect to ethics/moral development and efforts among the academic administrators to divide responsibility among larger numbers of faculty contributed to ethics learning objectives receiving

minimal focus. Consequently, ethics became a codicil to topics of discussion but not the focus of an entire lesson (Boyd, 2004).

A CHANGING PROFESSION

In conjunction with the changes that were occurring in the academic community, changes to the overall marketplace began to emerge and with it, changes in the composition of the accounting industry. As the US economy gained the ability to function as a global operation, businesses grew from local/regional operators to national and multinational operators forcing accounting and audit firms to follow suit. Small partnerships and individually owned firms were acquired by larger firms and over time, major control of the accounting industry fell into the control of eight major accounting firms, commonly referred to the "Big Eight". This process that began in the late 1950s gained momentum and by the late 1990s the "Big Eight" were reduced to the "Big Four" in 2002 as a result of Arthur Andersen's involvement in the Enron scandal (Boyd, 2004).

As with any service based industry that must adapt to the changing needs of clients, the accounting function within these big firms also experienced a shift in focus and priority. Auditing services became increasingly recognized by consumers as an undifferentiated commodity product thus instigating price and/or opinion shopping behaviors. Clients engaging in price shopping were searching for the best, lowest price for the services they required. Those engaging in opinion shopping were searching for firms where auditors could be persuaded to apply standards in a way that would be beneficial and advantageous for the client (Boyd, 2004). Auditing services became progressively unattractive due to declining margins, cost of compliance, insurance costs, risk of litigation and continued ethical challenges. This forced accounting firms to find a new area of revenue generation - horizontal integration with audit functions residing inside the client's organization.

Horizontal integration into the client's business led to new, more effective and profitable revenue streams. It was discovered that by placing an auditor into the client's business, not only could the auditor assess the accuracy and legitimacy of the accounting process, but they had access to the overall operation of the company. With this knowledge and view of the business process, areas of improvement could be identified and remediated thus initiating a new service the accounting firm would provide,

consulting. Consulting became a leading revenue producer and auditing became a loss-leader. This situation was mutually beneficial until conflicts of interest emerged "relating to the simultaneous sale of consulting services to audit clients" (Boyd, 2004, p.386).

The identification of new revenue streams for accounting firms continues, however there has been a conceptual re-evaluation of how to achieve higher profits while maintaining high levels of moral and social responsibility (Larue, 2004). This increase in moral rationality is based on risk reduction, organizational integrity, market reputation and community reputation. More importantly, the focus on these elements is shifting from an instrumental motivation based on revenue generation, profits and costs to a value emphasis. This value emphasis cannot be fully explained by economic benefit or rationality and points to the growing importance of social expectations and the need for greater integration of moral rationality in business ethics.

Considering the history of the accounting/auditing profession and the high level of professionalism and integrity that is expected combined with the recent lapse in moral judgment of influential accounting firms, it is evident that there is a need for intervention with respect to moral development. To address these issues, three questions must be evaluated: What is ethical behavior? Can ethics be taught? Is it the responsibility of the academic community?

ETHICAL BEHAVIOR

The concept of ethics does not stand alone. Morals and values intertwine with ethics and should be evaluated to provide a deeper understanding of the overall concept. Morals are specific to a group or society and guide behavior from a group social standpoint. "Morals represent a set of mores, customs, and traditions that may have been derived from social practice or from religious guidance" (Koehler, 2003, p. 99). Values are strongly held beliefs that dictate beneficial conduct with the goal of social acceptability. The evaluation of value based behavior as acceptable or not within the social context is the application of ethics (Koehler, 2003). As Taylor (2012) states, values "form the foundation of your life" (no page). They are deep-seated in an individual's personality having been developed through childhood and becoming solidified as an adult. Considering this, it is unlikely that values can be modified by external pressure from social groups or professional organizations. This view then would further the

belief that the undergraduate years may be the last opportunity to enhance moral development through ethics training.

Virtues, synonymous with morals, are normative qualities that reflect an individual's tendency to act in an ethical manner thereby manifesting the ideals of the community to which they belong (Libby & Thorne, 2004). There are two subcategories of moral virtues, mandatory and non-mandatory. In the case of auditors, mandatory moral virtues are those minimally required to ensure formulation of professional judgment in accordance to Generally Accepted Accounting Principles (GAAP). However, as Libby & Thorne note, "mandatory auditor virtues may not be enough to ensure formulation of 'ideal' professional judgment" (2004, p. 487). The Enron case provides a good example of this important difference. When auditors decided to move debt from the balance sheet into special purpose entities, they acted within accepted professional standards, thus exhibiting required mandatory virtues (Libby & Thorne, 2004). Non-disclosure of these entities to investors displayed a lack of ideal professional judgment, which leads to the notion of non-mandatory moral virtues.

Non-mandatory moral virtues, those personal characteristics that result in making professional judgments in which the public interest is paramount, were horribly absent in the case of Enron. An auditor exhibiting non-mandatory moral virtues would have required the disclosure of special purpose entities in the spirit of fair disclosure to the public. In addition, the auditor would have qualified his opinion and/or resigned from the audit if the client refused to conform (Libby & Thorne, 2004). Additional concerns arise with the realization that the decision to withhold the creation of special purpose entities was made in conjunction with Enron's board and 14 senior Anderson partners ("Role of the Board of Directors", 2002).

The Enron case points to the problem with defining some moral situations/decisions as mandatory and others as non-mandatory. Herron and Gilbertson (2004) highlight an important inconsistency; rules are enforceable, principles are not. They further state that, "By placing the public interest and other principled guidance in the unenforceable section of the code, the AICPA strongly signaled to its membership that these principles are unimportant, or at least less important that the specific rules" (p.

516). Simply stated, the AICPA Code of Professional Conduct principles and rules support mandatory auditors' virtues such as honesty, integrity, independence, objectivity and concern for the public interest. Non-mandatory virtue concepts such as placing public interest and professional interest ahead of self-interest or the ability to be farsighted and enlightened are not explicitly delineated in the code (Libby & Thorne, 2004).

Some would advocate that the lack of defined limits and boundaries surrounding non-mandatory virtues may become increasingly problematic as US accounting standards shift from the GAAP rules-based system to the IFRS principle based system. As the convergence project continues, the profession will increase its focus on principles-based accounting standards (PBA), as opposed to rules-based standards, and will prepare for the conceptual transition. However, PBA should not be seen as a foreign idea. In 1989, the AICPA bifurcated the Code of Professional Conduct, separating the code into rules and principles. The AICPA believed the previous rules-based code contained numerous technicalities that provided opportunities for loopholes. Echoing this belief Mano, Mouritsen, & Pace (2006), noted that rules-based systems encourage negative creativity in financial reporting allowing some to stretch the limits of legal compliance without regard for ethical or moral acceptability. Alternatively, broadly stated principles would encourage more generalized ethical conduct, thus eliminating the loopholes. The intent was to employ principles to encourage more ethical behavior and serve to express the basic tenets of ethical and professional conduct.

It is clear that ethical behavior does not exist in a vacuum and cannot be entirely controlled through rules, laws, norms or principles because it can be manipulated by various motivating factors that reside within the individual. Several motivational theories exist, however two lend themselves best to the current topic: Egoism and Utilitarianism. Egoism's general principles support acting in your own best interest (Beauchamp & Bowie, 2004; Koehn, 2005). Corporate executives and corporations themselves are frequently seen as functioning from an egoistic standpoint in the continuous need to acquire wealth and market share respectively (Beauchamp & Bowie, 2004). Alternatively, an accounting professional cannot behave as an egoist because doing so would often cause an inability to adhere to the profession's charge of serving the public interest (Koehn, 2005). Beauchamp & Bowie (2004) also note that, "Egoists

do not care about the welfare of others unless it affects their welfare, and this desire for personal well-being alone motivates acceptance of the conventional rules of morality" (p. 15).

There are two off-shoots of utilitarian theory, act and rule. Act utilitarian theory supports actions that produce the greatest good for the greatest number of people (Beauchamp & Bowie, 2004; Koehn, 2005). This motivating theory would promote the expansion beyond self-interest and would provide a more beneficial foundation for an accountant in the performance of fiduciary duties thereby supporting a cost-benefit approach to problem solving (Koehn, 2005). One drawback to this behavioral choice would arise when engaging in judgments to determine not only the value of the choice but where greatest good lies.

Rule utilitarian theory holds that actions are justified by abstract rules that appeal to the principle of utility (Beauchamp & Bowie, 2004). This theory would argue that adherence to the rule of utility is paramount to consideration of individual circumstances therefore holding to the rule is perceived as doing the right thing.

CAN ETHICS BE TAUGHT?

Most models of ethical decision making agree that ethical decisions are affected by an individual's level of moral development, their awareness of relevant professional standards and an ability to apply the appropriate moral paradigm to the context that exists (Herron & Gilbertson, 2004). One of the most influential theorists in the field of moral development, Lawrence Kohlberg, believed that moral development followed six basic stages: "obedience, instrumental egoism, interpersonal concordance, [adherence to] law and duty, social consensus and non-arbitrary social cooperation" (Herron & Gilbertson, 2004 p.502). These very specific stages were then combined to form three, more comprehensive levels: pre-conventional (stage 1 and 2) where focus is on the individual, conventional (stage 3 and 4) where focus is on relationships and post-conventional (stage 4 and 6) where focus is on personal principles. Kohlberg postulated that morals develop in a lock-step, progressive manner thereby allowing the individual to develop only those moral skills at the current level before advancing to higher levels of moral development. However, current research supports a more diffuse nature to moral

development seeing the individual "gradually shifting distributions of the use and preferences for more developed thinking" (Herron & Gilbertson, 2004, p. 501-502).

James Rest developed a similar progression of moral development, utilizing a schematic approach. Rest's theory categorizes moral behavior into three schemas; "personal interest (focus is on consequence of actions), maintaining norms (focus is on normative rules) and post-conventional (focus is on sharable ideals)" (Herron & Gilbertson, 2004, p. 502). Utilizing Rest's theory, individuals will access higher level schema as their overall morality develops.

In practical application, auditors primarily act from the conventional moral developmental stage (Kohlberg's stage 4 and/or Rest's Maintaining Norms Schema) because adherence to laws, rules, and duty to society are of the highest importance. More specifically, auditors reasoning at this level would follow the rules or laws as prescribed in the situation rather than follow their own principles. Post-conventional moral schema focuses on the values and principles that underlie the duty to social order and adherence to law that characterize conventional schema. Therefore, post-conventional moral reasoning would lead to choosing the best action because it is perceived as right or fair based on general principles, while conventional moral reasoning leads to choosing an action as best because it is accepted by rule or law (Herron & Gilbertson, 2004).

Herron and Gilbertson (2004) explain further that the level of individual moral development interacts with compliance of codes or principles. For example, accountants who have lower moral development may comply with codes/rules that specify what is acceptable as an audit engagement more readily than adhering to a non-specific principle. Accountants with lower levels of conventional moral development tend to focus on rules and norms whereas accountants with higher post conventional levels of moral development tend to focus on principles and values. Simply stated, the level of moral development normally matches the form of code the individual complies with. To optimize ethical judgment, an accounting code comprised of both principles and rules would seem to be the most beneficial. However, this is the exact structure of accounting code that led to the current ethical situation. If it is the case that the code is structured in a fashion that captures accountants functioning from both rules and/or

principles based decision making processes, where can remediation occur with maximum benefit? An advantageous place to conduct this remediation may be during the undergraduate degree program.

ETHICS IN THE ACCOUNTING CURRICULUM

Both Kohlgerg's and Rest's moral development stages indicate that an individual comes to the profession of accounting with a rather developed ethical/moral sense, thereby inhibiting the ability to teach or reformulate ethical nature. There is support for this conclusion in the literature, arguing that it is too late to begin ethics education at the undergraduate academic level because students arrive with firmly held belief systems in place (Bernardi & Bean, 2006; Bean & Bernardi, 2007; Malone, 2006; Sims, 2002). However, there is research in the area of personality development that advances the concept that personality continues to develop throughout adulthood" Hill and Roberts (2010) (p. 380). Adulthood provides additional role situations (becoming a spouse, parent, employee) that require different moral schemas and therefore as these roles are added, moral behavior continues to develop and change. The ability to develop and change individual behavior supports the position that subject specific ethics courses should be added to the accounting and business curriculum. While general ethics courses have been taught at the undergraduate level, there is movement to integrate this topic into business education. As Ryan and Bisson (2011) note, "business school deans" regard ethics education among one of "the top five" learning objectives (p. 44). Recognizing this movement, Bean & Bernardi (2005) propose that an initial course of ethics, along with a discipline-specific ethics course in accounting is essential to educate students preparing for the profession. In addition, such understanding would help to reinforce students' ethical values and inspire them to prevent others from making unethical decisions (Vogel, 1987). Sims (2002) notes that research by Carlson & Burke (1998) and Weber and Glyptis (2000) found that ethics courses have a significant impact on students'ethical sensitivity and reasoning skills. The researchers also found that moral behavior can be developed from a thorough understanding of ethical concepts and dilemmas and reinforced by awareness of ethical issues. Furthermore, the AACSB (The Association to Advance Collegiate Schools of Business) Ethics Education Task Force of 2004 recommended to:

> …strengthen ethics components of our curricula in all disciplines to emphasize the importance of individual integrity and corporate responsibility to business success.

> We must offer courses that introduce frameworks that may help in resolving ethical business and managerial problems; courses that lay out the larger societal context in which business operates; and seminars and workshops that bring executives to campus to focus on the link between leadership and values (p. 14-15).

CONCLUSION

The key to the future of this profession is not through external regulators and legislators that take a reactive view to a continually changing, global business industry. The profession must address the fundamental failure of its integrity and moral foundation. As Herron & Gilbertson (2004) state, "If we need public accountants to make the public interests their highest priority, we need to better develop their capacity to reason at post-conventional levels" (p. 517). If auditors continue to operate without the higher developed, post-conventional moral reasoning and non-mandatory moral virtues, situations will continue to arise where poor moral choices place self-interest ahead of the overall public good. In an industry where the "profession, like most professions, engages in creating, managing, and if necessary, defending its image and reputation" (Rogers, Dillard & Yuthas, 2005, p. 159), the major breakdown of ethical behavior must be remediated in the most expeditious manner possible.

Ethical training and moral development during the undergraduate college experience would provide this much needed remediation as well as provide an environment to enhance students' current moral development without the risk of real-world repercussions. The ability of accounting students to learn to identify and successfully navigate ethical challenges must be a goal of undergraduate education. Developing curricula to enhance students' sensitivity to and appropriate resolution of ethical issues would provide the accounting industry a pool of entry-level professionals with a common level of moral competency that employers in all business fields could rely on.

In summary, despite the fact that morals and values are deeply ingrained in personality there is sufficient support in the literature that education may enhance an individual's level of moral development even into adulthood. Inclusion of both an initial general ethics course and a subsequent business/accounting specific ethics course in the undergraduate curriculum is an effective and expeditious way to begin remediation of the current lapse in moral judgment exhibited during the past several years. The academic community has recognized the value these courses have and is moving towards including ethics in academic goals. Significantly, the AACSB has recommended inclusion of ethics courses in the

undergraduate curriculum as a result of their task force review. With this gaining support, it is apparent that ethics courses will eventually find their way onto the business student's transcript. Our concluding recommendation is for further assessment and analysis regarding how to effectively integrate ethics into the undergraduate (and possibly the graduate) curriculum.

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THE IMPACT OF AUDIT ROOM NOISE ON AUDIT QUALITY: A THEORETICAL INQUIRY

David Breger
Southern Illinois University-Carbondale

Mark Edmonds
Southern Illinois University-Carbondale

THE IMPACT OF AUDIT ROOM NOISE ON AUDIT QUALITY: A THEORETICAL INQUIRY

ABSTRACT

While performing field work, auditors are often constrained to the small confines of a conference room, which is conducive to many distractions. These distractions often include people talking, laughing, or typing. Relevant theories and empirical evidence suggest that noise negatively affects performance when an individual is engaging in a cognitively difficult task. The noise creates attentional conflict, which elevates levels of stress and anxiety. Attentional conflict facilitates performance for simple tasks, but hampers performance for difficult tasks. This paper is designed to understand the effects of noise on performance and provide auditors with solutions to potential noise problems.

INTRODUCTION

The impact of noise on the performance of office worker's job performance has been a subject of concern for many years. This is especially true in the modern work environment where workers are surrounded by noisy computers, ringing phones, and fellow employees talking in small quarters. Many employers may be surprised by the results of recent studies showing that noise in the work environment is linked to decreased cognitive performance (Smith-Jackson and Klein, 2009; Rashid and Zimring, 2008; Hongisto, 2007), decreased motivation (Bindley, 2012) and increased stress (Evans & Johnson, 2000). Further, noise in the work environment was cited as the number one contributing factor to a person's ability to concentrate in a national survey of office workers (Louis, Harris & Associates, 1978, 1980). These studies among others provide a point of concern regarding how noise can influence an individual's job performance.

Literature outside the discipline clearly demonstrate that there is a negative relationship between "noise" and task performance in office settings. For purposes of this study, noise is defined as a distracting or interrupting sound. To date, research has yet to examine the relationship between audit room noise and audit quality. As audit rooms often contain a large proportion of people relative to office space, the propensity for noise to influence an auditor's behavior is quite high. Given the extent of prior research showing a negative relationship

between noise and work quality, it is reasonable to assume that audit quality would suffer as a result of noise encountered in the audit environment.

While performing field work, audit teams spend the majority of their time in the client's conference room. The purpose of the room is to provide a confidential place, where staff auditors can ask questions, and others can engage in thought provoking dialogue. Unfortunately, the room is also full of noise distractions. Do these distractions have a serious impact on audit quality, and if they do what are some solutions to the problem? Obviously, auditors need to be able to ask each other questions, but do the costs of working in an audit room outweigh the benefits?

Many claim they work better in the presence of others, music, or noise. While others claim they can't focus, are miserable, and even become hostile if there is any distraction. Are the first class of individuals merely overconfident, or do they possess an innate ability? Does the second class of individuals have a "disability" or are they just more aware of their overall surroundings?

In order to fully understand how noise affects auditors and audit quality, we reviewed the literature involving individual task performance in social settings. From this research, several theories became germane to the questions and are as follows: Social Facilitation Theory, Yerkes-Dodson Law, Drive Arousal Theory, and Distraction Conflict Theory. These theories provide the empirical basis as to whether task performance during auditing can be significantly affected by noise encountered in the audit room. Based on our analysis, we provide suggestions for auditing firms to implement, in order to reduce the negative influence of noise on audit quality.

THEORIES AND LAWS

The first to research individual task performance in social settings was Triplett (1898). He observed that professional cyclists increased their speed in the presence of others compared to completing individual time trials. He states that, "The bodily presence of another contestant participating simultaneously in the race serves to liberate latent energy not ordinarily available." (p. 516). Social Facilitation refers to the fact that the "presence of others tends to energize

certain performances." (Baron, 1986, p. 2). Many have supported this finding. For example, Allport (1924) found that performance for multiplication tasks increases in the presence of spectators. In addition, Tolman and Wilson (1965) observed that animals tend to eat more when they are not alone. Finally, Bergum and Lehr (1963) found that subjects performing light monitoring duties performed better when supervised than when working alone. Overall, social facilitation increases performance when an individual is performing a simple or mastered task. When people are competing, performing in the presence of others, or being observed, performance generally increases.

In contrast to Triplett's conclusions, Yerkes and Dodson (1908) studied the patterns of mice and found that performance increases with arousal (stress) to a point, but then decreases as the arousal (stress) is further increased. According to Eysenck (1989), "High levels of arousal, motivation, or anxiety lead to performance up to a certain level, after which further increases impair performance." (p. 323). The Yerkes-Dodson Law has taken many forms, but is most easily described by Figure 1 below.

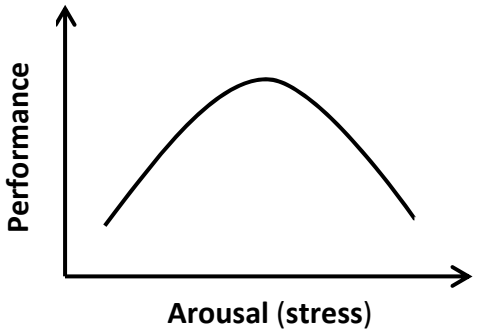

Figure 1. Yerkes-Dodson Law

The conclusions from the Yerkes-Dodson Law are interesting. Since arousal (stress) is often associated with performance in social settings, then (according to the law) some social arousal is necessary for optimal performance. The Yerkes-Dodson Law has also been applied to other situations involving stimulation. For example, Watters, Martin, & Schreter (1997) tested the

effects of caffeine on task performance. They found that low amounts of caffeine increased performance, while high amounts of caffeine decreased performance.

To understand the conflicts in Social Facilitation Theory, Zajonc (1969) concluded that, "socially facilitated increments in performance are usually found for behaviors that are either very well learned or instinctive." (p. 83). Individuals in group settings will rely on dominant responses and ignore non-dominant responses. The arousal from others increases these dominant responses. Therefore, when the individual is performing a simple task in a social environment, performance will increase. But, when the individual is performing a cognitively difficult task in a social environment, performance will decrease. In this situation (where the task is cognitively difficult), performance will be greater when the individual is working alone (Zajonc 1965; Zajonc 1969). Zajonc's deduction is theoretically similar to the Yerkes-Dodson law. In reviewing Zajonc's conclusion, Nicholson, et al. (2005) states that, "It is the increased arousal state, or cognitive load, that is created by both the presence of others and the complexity of the task that is really affecting the individuals performance." (p. 3)

Baron, et. al extended on Zajonc's work, and developed the Distraction-Conflict Theory which states that, "Both audiences and coactors (even their presence) can elevate drive by provoking attentional conflict." (1986, p.3). Distraction-Conflict Theory can be summarized by the following statements: 1. Others are distracting, 2. Distraction can lead to attentional conflict, 3. Attentional conflict elevates drive (ie. arousal, stress, motivation).

According to Baron, et al. (1986), "Distraction is, "something that directs attention away from an ongoing activity… Attentional Conflict is conceptualized as a tendency, desire, or requirement to attend to two (or more) mutually exclusive inputs." (p.4) Accordingly, attentional conflict facilitates simpler tasks and impairs complex processes. For example, when an auditor is merely ticking and tying a work-paper, a side conversation between two coworkers can actually increase performance. However, when the auditor is performing a cognitively demanding task, such as evaluating management's assumptions for key estimates, performance is likely to decrease.

Overall, these theories and laws demonstrate the effects of social settings on individual task performance with a general consensus that performance in a social setting will be greater than in a private environment when the task is simple. However, performance in a social environment will be worse than performance in a private environment when the task is difficult. Although these authors do not deal directly with noise and performance of auditors, they do form the foundation for the empirical research showing that noise affects performance.

EMPIRICAL FINDINGS

Banbury and Berry (1998) found that office noise with speech disrupts performance for memory for prose and mental arithmetic, while office noise without speech inhibits performance only on the mental arithmetic test. Performance in the presence of noise was actually, "reduced to about one-third the level of that in quiet." (p. 509). Loewen and Suedfeld (1992) performed three experiments demonstrating that noise decreases performance while subjects perform cognitively difficult tasks. The group that performed the best was not exposed to noise. The group exposed to white noise (a constant masking sound) was second in performance with those exposed to general noise showing a significant drop in performance. Banbury and Berry (1997) also found that performance can increase as an individual becomes habituated to noise. However, distractions such as a five minute period of quiet caused individuals to be dishabituated and perform worse. This phenomenon is referred to as the Changing State Hypothesis (Jones et. al 1992) which is the, "idea that disruption of short term memory only occurs when speech stream changes state." (p.645) Simply put, people can become accustomed to a specific noise and perform well. However, if the noise fluctuates or changes, performance is likely to decrease.

One issue related to noise concerns whether the distraction caused by noise can be decreased. For example, Jones and Macken (1995) found that one or two voices caused high levels of distraction, but the babble of six voices caused lower levels of distraction. Therefore, distraction decreases in a large office environment compared to a small office environment. In addition, Hongisto (2007) found that speech sound levels do not determine the degree of distraction

caused by speech. Instead speech intelligibility better explains the level of distraction as it refers to the degree an individual can understand the words being spoken. For example, face to face discussion would have high speech intelligibility, while muffled voices due to highly insulated walls would have low speech intelligibility. As the speech intelligibility increases, performance in the task decreases. Unfortunately, small audit rooms do not provide an opportunity for speech intelligibility to decrease. Every word is clearly heard and understood, which is likely to be extremely distracting.

Evans and Johnson (2000) studied the chemical effects on subjects who were exposed to simulated low-intensity open-office noise. The results showed that the epinephrine levels (which is a strong indicator of stress) were higher for the group exposed to the noise. These results were consistent with prior studies of noise and stress. (Baum & Grunberg, 1995; Grunberg & Singer, 1990). Evans and Johnson (2000) also witnessed a reduced amount of physical adjustment with the group exposed to the noise. The subjects likely tensed up due to stress and, "did not use the ergonomic work-furniture features designed to provide opportunities for postural movements." (p. 783). In addition Smith et al. (1997) saw an increase in diabolic blood pressure with the group exposed to noise. Lundberg and Frankenhaueser witnessed (1978) an increase in heart rate with subjects exposed to white noise, and Waye et. al (2002) found that cortisol increases with noise sensitive subjects when exposed to ventilation noise.

Many studies have demonstrated that individuals under uncontrollable stress and noise lose motivation and adopt a form of learned helplessness. (Glass and Singer, 1972; Cohen et al., 1976; Miller and Seligman, 1975). For example, Cohen (1980) found that school children exposed to constant aircraft noise, were, "more likely to fail on a cognitive task and more likely to give up before the time to complete the task has elapsed." (p. 231) However, the noise does not need to be unrealistically loud for motivation to decrease. However, "The uncontrollability of sound rather than its intensity is what makes it stressful. Even low intensity sound levels, simulating typical open-office noise can induce performance aftereffects indicative of diminished task motivation." (Evans and Johnson, 2000, p. 781). In addition, Glass and Singer (1972) found that

people exposed to uncontrollable noise were less likely to persist in solving puzzles. Since office noise is uncontrollable (ie. we can't control whether someone speaks or types), it is clear that office noise decreases motivation.

Prior research has shown that, in noisy environments, the task performance of extraverts is significantly better than that of introverts. Accordingly, introverts have a lower level of optimal arousal. (Eysenck, 1967; Stelmach, 1981). Therefore, they need less stress, drive, or noise to perform well compared to extroverts. Furnham and Strabac (2002) tested the performance of introverts and extraverts in the presence of background music and office noise. They found that reading comprehension was significantly worse for introverts than extraverts. However, overall performance (for both introverts and extraverts) was lower in the noisy environment compared to a silent environment. Cassidy and MacDonald (2007) found similar results. They used high stimulating music and noise to determine if there were differences in performance between extraverts and introverts. They found that introverts were more detrimentally affected by the music and noise, but performance was lower for all tasks that involved background sound, regardless of personality type.

Overall, the empirical findings demonstrate that noise negatively affects individual task performance. As the cognitive difficulty of the task increases, the detrimental effects of noise increases. Although task performance increases as an individual becomes habituated to a constant noise, non-constant noises are prevalent in office settings. In addition, performance has been shown to increase as the chaotic noises are muffled out by a white noise. Office noise has also been shown to increase stress and anxiety, which can inherently decrease task performance. As individuals become overwhelmed with the noise, they become helpless and often stop trying. Even though extraverts are less affected by noise compared to introverts, their performance is still impaired by any noise (whether its music or office noise).

IMPLICATIONS FOR PRACTICE

The theoretical framework and the empirical findings clearly demonstrate a negative relationship between noise and individual task performance. Unfortunately, auditors are over-exposed to noise. The problem starts with the design of the audit room which is set up to facilitate discussion and learning. However, the audit room normally consist of a small client's conference room with all the audit personnel being housed in a single location. On an average audit, the audit team in this location would consist of three audit staff, two seniors, one manager, one senior manager and one audit partner who visits the team periodically. These numbers would obviously fluctuate based on the size of the audit client with smaller/larger clients requiring fewer/more audit personnel. Due to the large volume of audit associates being housed in a confined location, the opportunity for distracting noises to influence auditors is extremely high.

While audit practice has found it efficient to have all members of the audit in single location to supplement the discussion and learning process, this format is also likely to cause distractions for auditors not participating in audit discussions. Each auditor is normally assigned an individual task, unrelated to the tasks being performed by other members of the audit team. This results in a situation where many of the discussions held within the audit room are unrelated to the work being performed by other audit team members. As such, these discussions can be distracting to members of the audit team who are not involved in the discussion, but instead are trying to focus on the performance of their audit procedures. Further, much of the discussion in the audit room is related to senior auditors providing training and advice to individual staff auditors.. These discussions would be tailored to the specific auditors asking the questions which is likely to be distracting to other auditors not involved in these discussions. Another common distraction in the audit room is the frequency of visitors, namely the audit client, stopping by the audit room to discuss various aspects of the audit. These visitors often only need to speak to a single member of the audit team, but as a result of having the entire team in a single room, their visit becomes a distraction to all members of the team. Based on the previously discussed research, the constant discussions and noise distractions occurring in the audit room are likely to have a

negative impact on audit quality, especially during the performance of cognitively demanding tasks.

While less cognitively demanding tasks such as observations of inventory and client control procedures occur outside the audit room, more cognitively demanding tasks are likely to occur within the audit room. Such tasks include the assessment of control deficiencies, evaluation of complex estimates, and determination of proper revenue recognition. While auditors normally acquire the evidence for these procedures from the client, the actual evaluation of the evidence and performance of these procedures primarily occurs in the audit room. As discussed previously, audit room noise is likely to distract individuals and causes attentional conflicts. This causes the auditor to lose focus, become stressed out, frustrated, and lose motivation. As a result, the auditor becomes less efficient and effective resulting in decreased due diligence and professional skepticism. As task performance decreases the auditor is more likely to make errors or overlook material misstatements.

Prior literature has demonstrated that performance can increase as an individual becomes habituated to constant noises. Unfortunately, these findings are unlikely to assist auditors as it is nearly impossible to become habituated to the noises in the audit room. This is due to the fact that the type of noise and noise levels are constantly changing. It is very common for coworkers to first engage in conversation, then work silently, and then engage in conversation again. According to the changing state hypothesis, distraction increases as noise levels change. Therefore, auditors are constantly affected by these distractions thereby diminishing the quality of their work.

Empirical evidence has also shown that a “babble” of voices or white noise can actually drown out individual voices and help facilitate performance. Unfortunately, audit rooms are usually so small that each auditor can clearly hear and understand a conversation between other auditors. Since only two or three individuals are usually talking at once, the “babble” effect is not likely to

occur in the audit room environment. Individual voices are not drowned out and distraction levels remain very high.

In addition, empirical evidence has demonstrated that the uncontrollability of noise severely hampers performance. Since auditors are not able to control the volume of their coworkers, they likely become stressed out and frustrated. Prior literature has shown that this lack of control can lead to a decrease in motivation and learned helplessness. Therefore, noise may lead to auditors to signing off on incomplete work papers and even avoiding necessary audit testing.

As noise increases in the audit room, individual task performance decreases. When individual task performance decreases, audit quality decreases which in turn increases audit risk. As audit risk increases, audit firms become exposed to potential financial loss, embarrassment, or even governmental punishment. Since audit room noise can have such a substantial impact on a CPA firm, it is imperative that audit firms seek methods to minimize the amount of noise in the audit room.

There are many solutions to the problem of audit room noise. Firms who are willing to implement these solutions into practice are likely to benefit from decreasing the negative impact of audit room noise on audit quality. The first suggestion involves an audit partner providing the opportunity for staff and senior auditors to work independently at an open cubicle. The environment of the cubicle tends to be significantly less noisy than the audit room, and the auditor can then avoid distractions. Second, given the right working conditions, auditors should be given the opportunity to work from home or the hotel. While auditors usually need to be at the client site during the hours of operation, there is usually little need for an auditor to work in the noisy room after the client is no longer available. Auditors should be given the freedom to work in their own private environment, in order to improve their focus and reduce the number of encountered distractions. Next, auditors need to recognize the potential harm caused by audit room noise and take actions to reduce noise related distractions. Instead of loudly discussing a question with another auditor across the conference table, the auditors engaging in conversation

should sit closer and control their respective noise levels. Next, auditors should consider the potential negative consequences of playing music in the audit room. Although many believe this facilitates performance, empirical evidence has shown that it tends to decrease performance (especially when performing a cognitively demanding task).

Another recommendation for practice involves senior auditors and managers reserving specific portions of the day for question and answer sessions. This will allow everyone to work quietly for a few hours, but still allows questions to be answered for a short period of time. Audit managers should also assemble teams that work well together. By simply asking subordinates how well they work in noisy environments and with specific coworkers, teams can be assembled appropriately.

The theories and empirical evidence cited above clearly demonstrate a negative relationship between noise and individual task performance. Since audit rooms are extremely noisy, we can deduce that auditor task performance is compromised. Auditors engage in highly cognitive tasks, and audit room noise (such as people talking, typing, or laughing) causes auditors to lose focus, become frustrated, become stressed out, and lose motivation. Consequently, these conditions result in a decrease in audit quality and increase in audit risk.

Fortunately, many recommendations and solutions which have been suggested herein to address this problem. However, audit firms must first acknowledge the potential impairments to audit quality as a result of audit room noise and implement the suggested improvements to mitigate the negative consequences of audit room noise. The cost-benefit ratio of implementing the solutions is extremely favorable thereby providing firms an easy solution to the problem of audit noise.

The research conducted herein provides a foundation for understanding how prior research and theory relate to the influence of noise on audit quality. However, there are countless opportunities for future research to study in more detail how audit room noise influences auditor

behavior. This could include conducting experiments to determine which specific audit room noises cause the most harm, determining individual character traits of auditors that make them more or less susceptible to noise, etc.... Lastly, research could be conducted to test the suggestions proposed herein to determine which are the most effective at reducing the negative influences of noise on audit quality. This study hopes to draw attention to the problem of noise in the audit room and provide a springboard for future research in this area.

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AGGREGATION OF PERFORMANCE MEASURES IN FRANCHISING: DOUBLE MORAL HAZARD

Igor Semenenko, PhD
Acadia University
15 University Avenue
Wolfville, NS, Canada B4P2R6
902-585-1294
igor.semenenko@acadiau.ca

Junwook Yoo, PhD, CPA,CGA
Marshall University
One John Marshall Drive
Huntington, WV, USA 25755
304-696-2654
yooj@marshall.edu

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AGGREGATION OF PERFORMANCE MEASURES IN FRANCHISING: DOUBLE MORAL HAZARD

ABSTRACT

This study examines aggregation of performance measures in franchising contract in the double moral hazard context, when both the franchisor and franchisee provide a productive effort. It explores a model, in which risk aversion of the participants has big impact on the optimal aggregation of performance measures. When both the franchisor and franchisee are risk averse, a one-dimensional aggregate performance measure is not optimal for the franchise contract, and optimal franchise contract needs at least two aggregate performance measures: one measure to calibrate the franchisee's effort and the other measure to calibrate the franchisor's effort. When the franchisor is risk neutral while the franchisee is risk averse, a one-dimensional aggregate performance measure can be optimal.

INTRODUCTION

This study examines aggregation of performance measures in an agency with double moral hazard. Double (two-sided) moral hazard refers to a situation in which not just the agent (e.g., franchisee) but also the principal (e.g., franchisor) provides productive efforts. It analyzes whether or not the optimal franchise contract can be written on a one-dimensional aggregate performance measure.

As productive efforts are not observable (at least not contractible), the franchise compensation depends on the performance measures which provide imperfect information on the productive efforts from the franchisee and franchisor. In designing a performance measurement system, the basic performance measures may be aggregated into a smaller number of aggregate performance measures to reduce complexity. Performance measurement and compensation will be most efficient when optimal franchise contract is written on a one-dimensional "summary" performance measure. The results show that as far as the franchisor is risk averse, a one-dimensional "summary" performance measure is not optimal for the franchise contract. Optimal franchise contract needs at least two "summary" performance measures: one for the franchisee's effort and the other for the franchisor's effort.

Economically Sufficient Aggregation

Holmstrom (1979) proposes the informativeness condition such that additional performance measures provide information about the agent's unobservable effort unless the existing measure is a sufficient statistic. His findings suggest that optimal aggregation of performance measures is characterized by a one-dimensional sufficient statistic. On the other hand, Amershi, Banker, and Datar (1990) show that optimal aggregation of performance measures is not generally characterized by sufficient statistics, but is generally achieved by a one-dimensional measure that is economically sufficient and agency-specific. These studies analyze a single moral hazard setting, in which only the agent provides a productive effort.

A separate strand of literature examines double moral hazard problem in different contexts. Demski and Sappington (1991) analyze double moral hazard problems in buyout agreements, and Chau, Firth and Srinidhi (2006) focus on leases with purchase options. More recently, Berkovitch, Israel and Spiegel (2010) apply double moral hazard model to theory of organizational design. This study extends double moral hazard framework to franchise contracts. It contributes to the literature by analyzing aggregation of performance measures in an agency with double moral hazard.

Economic sufficiency of aggregation requires no economic loss to the principal although there can be some loss of information in the aggregation process. When aggregation of the basic performance measures $y_1, y_2, \cdots, y_q$ incurs no economic loss to the franchisor in inducing the second-best effort level $(a^{E\dagger}, a^{R\dagger})$, aggregation is economically sufficient. Economically sufficient aggregate measure can depend on utility functions of the franchisor and the franchisee through the second-best effort level $(a^{E\dagger}, a^{R\dagger})$.

Definition 1: Economic sufficiency of aggregation

Aggregation of performance measures is economically sufficient if there exist an aggregate measure $\varsigma(y_1, y_2, \cdots, y_q; a^{E\dagger}, a^{R\dagger})$ *and a function* $q(\cdot)$ *such that the aggregate measure* $\varsigma(y_1, y_2, \cdots, y_q;$

$a^{E\dagger}$, $a^{R\dagger}$) can be substituted for the basic measures $y_1, y_{2,\cdots}, y_q$ in the optimal franchise contract $C^{\dagger}$ to induce the second-best effort level ($a^{E\dagger}$, $a^{R\dagger}$):

$$C^{\dagger}(y_1, y_{2,\cdots}, y_q) = q(\varsigma(y_1, y_{2,\cdots}, y_q; a^{E\dagger}, a^{R\dagger})), \quad (1)$$

where the function $q(\cdot)$ depends on the basic measures $y_1, y_{2,\cdots}, y_q$ only through the aggregate measure $\varsigma(y_1, y_{2,\cdots}, y_q; a^{E\dagger}, a^{R\dagger})$.

When franchisee exhibits the second-best effort level $(a^{E\dagger}, a^{R\dagger})$, the franchisor is as well off with an economically sufficient aggregate measure $\varsigma(y_1, y_{2,\cdots}, y_q; a^{E\dagger}, a^{R\dagger})$ as with the basic measures $y_1, y_{2,\cdots}, y_q$. When aggregation is economically sufficient, aggregate measure can vary depending on utility functions of the franchisor and the franchisee through the second-best effort level $(a^{E\dagger}, a^{R\dagger})$, where $a^{E\dagger}$ and $a^{R\dagger}$ are agency specific factors.

Modeling Features

$X(y_1, y_{2,\cdots}, y_q)$ is the net present value of the franchisor. $X(y_1, y_{2,\cdots}, y_q)$ is assumed to be non-contractible and thus, $X(y_1, y_{2,\cdots}, y_q)$ can be imperfectly measured in terms of contractible performance measures $y_1, y_{2,\cdots}, y_q$ such as cash flow, net income, and residual income.

A franchisor and franchisee write a franchise contract $C(y_1, y_{2,\cdots}, y_q)$ on contractible performance measures $y_1, y_{2,\cdots}, y_q$, and the franchisor pays the franchisee a compensation based on the realized values of performance measures $y_1, y_{2,\cdots}, y_q$. Performance measures are affected by the franchisee's effort a^E, franchisor's effort a^R, and a random factor ϑ. Multiple performance measures $y_1(a^E, a^R, \vartheta), y_2(a^E, a^R, \vartheta), \cdots, y_q(a^E, a^R, \vartheta)$ follow a joint density function $f(y_1, y_{2,\cdots}, y_q; a^E, a^R)$. With the joint density function, the expected compensation to the franchisee on the franchise contract $C(y_1, y_{2,\cdots}, y_q)$ is:

$$E[C(y_1, y_{2,\cdots}, y_q)] = \int\cdots\int C(y_1, y_{2,\cdots}, y_q) f(y_1, y_{2,\cdots}, y_q; a^E, a^R)\, dy_1 \cdots dy_q. \quad (2)$$

The risk averse franchisor has an additively separable utility $U^R(X-C)-V(a^R)$, where $V(a^R)$ is the personal cost of effort to the franchisor. It is assumed that $U^{R'}>0$, $U^{R''}<0$ and $V'>0$, $V''>0$. The franchisor's expected utility is:

$E[U^R\{X(y_1, y_{2,\cdots}, y_q)-C(y_1, y_{2,\cdots}, y_q)\}- V(a^R)]$

$= \int\cdots\int [U^R\{X(y_1, y_{2,\cdots}, y_q)-C(y_1, y_{2,\cdots}, y_q)\}- V(a^R)]\, f(y_1, y_{2,\cdots}, y_q; a^E, a^R)\, dy_1\cdots dy_q$

$= \int\cdots\int U^R\{X(y_1, y_{2,\cdots}, y_q)-C(y_1, y_{2,\cdots}, y_q)\}\, f(y_1, y_{2,\cdots}, y_q; a^E, a^R)\, dy_1\cdots dy_q - V(a^R).$ (3)

The risk averse franchisee has an additively separable utility $U^E(C)-K(a^E)$, where $K(a^E)$ is the personal cost of effort to the franchisee. It is assumed that $U^{E'}>0$, $U^{E''}<0$ and $K'>0$, $K''>0$. The franchisee's expected utility is:

$E[U^E(C(y_1, y_{2,\cdots}, y_q))-K(a^E)]$

$= \int\cdots\int \{U^E(C(y_1, y_{2,\cdots}, y_q))-K(a^E)\}\, f(y_1, y_{2,\cdots}, y_q; a^E, a^R)\, dy_1\cdots dy_q$

$= \int\cdots\int U^E(C(y_1, y_{2,\cdots}, y_q))\, f(y_1, y_{2,\cdots}, y_q; a^E, a^R)\, dy_1\cdots dy_q - K(a^E).$ (4)

As the franchisor provides productive effort a^R, the franchisor's incentive compatibility constraint (IC) is as follows:

∂[Franchisor's expected utility] / $\partial a^R = 0$;

$\int\cdots\int U^R\{X(y_1, y_{2,\cdots}, y_q)-C(y_1, y_{2,\cdots}, y_q)\}\, f_R(y_1, y_{2,\cdots}, y_q; a^E, a^R)\, dy_1\cdots dy_q - V'(a^R) = 0,$ (5)

where $f_R = \partial f / \partial a^R$.

The risk averse franchisee is subject to the following incentive compatibility constraint (IC):

∂[Franchisee's expected utility] / $\partial a^E = 0$;

$\int\cdots\int U^E(C(y_1, y_{2,\cdots}, y_q))\, f_E(y_1, y_{2,\cdots}, y_q; a^E, a^R)\, dy_1\cdots dy_q - K'(a^E) = 0,$ (6)

where $f_E = \partial f / \partial a^E$.

Because the franchisee can earn reservation utility $\overline{U}$ alternatively in the franchise market, the franchisee is subject to the following participation constraint (PC):

[Franchisee's expected utility] $\geq \overline{U}$;

$\int\cdots\int U^E(C(y_1, y_{2,\cdots}, y_q))\, f(y_1, y_{2,\cdots}, y_q; a^E, a^R)\, dy_1\cdots dy_q - K(a^E) \geq \overline{U}$. (7)

Optimal Franchise Contracts

The optimal franchise contract $C^{\dagger}(y_1, y_{2,\cdots}, y_q)$ is solved in implementing the second-best effort level $(a^{E\dagger}, a^{R\dagger})$. The franchisor solves the following maximization problem:

Max Franchisor's objective function

$=$ Franchisor's expected utility $+\mu_1$ Franchisor's IC $+\mu_2$ Franchisee's IC $+\lambda$ Franchisee's PC

$= \int\cdots\int U^R\{X(y_1, y_{2,\cdots}, y_q) - C(y_1, y_{2,\cdots}, y_q)\} f(y_1, y_{2,\cdots}, y_q; a^E, a^R)\, dy_1\cdots dy_q - V(a^R)$

$+ \mu_1 [\int\cdots\int U^R\{X(y_1, y_{2,\cdots}, y_q) - C(y_1, y_{2,\cdots}, y_q)\} f_R(y_1, y_{2,\cdots}, y_q; a^E, a^R)\, dy_1\cdots dy_q - V'(a^R)]$

$+ \mu_2 [\int\cdots\int U^E(C(y_1, y_{2,\cdots}, y_q))\, f_E(y_1, y_{2,\cdots}, y_q; a^E, a^R)\, dy_1\cdots dy_q - K'(a^E)]$

$+ \lambda [\int\cdots\int U^E(C(y_1, y_{2,\cdots}, y_q))\, f(y_1, y_{2,\cdots}, y_q; a^E, a^R)\, dy_1\cdots dy_q - K(a^E) - \overline{U}\,],$ (8)

where μ_1 and μ_2 are Lagrange multipliers and λ is a Kuhn-Tucker multiplier.

Proposition 1

When both the franchisor and franchisee are risk averse, the optimal franchise contract is characterized by the following:

$$U^{R'}\{X-C\} / U^{E'}(C) = [\lambda + \mu_2 \{f_E / f\}] / [1 + \mu_1 \{f_R / f\}]. \quad (9)$$

Proof: See Appendix.

Equation (9) shows that the optimal franchise contract is characterized by the likelihood ratios f_E / f and f_R / f. A family of joint density as in Banker and Datar (1989) and Amershi, Banker, and Datar (1990) is used to define likelihood ratios:

$$\rho(y_1, y_{2,\cdots}, y_q; a^E, a^R) = \exp[\sum_{1}^{q} g_i(a^E, a^R) y_i + \alpha(a^E, a^R) + \beta(y_1, y_{2,\cdots}, y_q)], \quad (10)$$

where g_i, α, and β are arbitrary functions. The family of joint density $\rho(y_1, y_{2,\cdots}, y_q; a^E, a^R)$ (10) includes many common distributions such as (truncated) normal, exponential, gamma, chi-square, and inverse Gaussian. If the joint density of performance measures $f(y_1, y_{2,\cdots}, y_q; a^E, a^R)$ belongs to the family $\rho(y_1, y_{2,\cdots}, y_q; a^E, a^R)$ (10), the likelihood ratios are defined as follows:

$$f_R / f = \partial[g_1(a^E, a^R)y_1 + \cdots + g_q(a^E, a^R)y_q + \alpha(a^E, a^R)] / \partial a^R$$

$$= [\partial g_1(a^E, a^R)/\partial a^R]y_1 + \cdots + [\partial g_q(a^E, a^R)/\partial a^R]y_q + \partial\alpha(a^E, a^R)/\partial a^R, \quad (11)$$

$$f_E / f = \partial [g_1(a^E, a^R)y_1 + \cdots + g_q(a^E, a^R)y_q + \alpha(a^E, a^R)] / \partial a^E$$

$= [\partial g_1(a^E, a^R)/\partial a^E]y_1+\cdots+[\partial g_q(a^E, a^R)/\partial a^E]y_q + \partial\alpha(a^E, a^R)/\partial a^E.$ (12)

The characterization of optimal franchise contract for double moral hazard (9) is now:

$U^{R'}\{X-C\} / U^{E'}(C)$

$= [\ \lambda + \mu_2 \{ [\partial g_1(a^E, a^R)/\partial a^E]y_1+\cdots+[\partial g_q(a^E, a^R)/\partial a^E]y_q + \partial\alpha(a^E, a^R)/\partial a^E \}\ ]$

$/ [\ 1 + \mu_1 \{ [\partial g_1(a^E, a^R)/\partial a^R]y_1+\cdots+[\partial g_q(a^E, a^R)/\partial a^R]y_q + \partial\alpha(a^E, a^R)/\partial a^R \}\ ].$ (13)

Economic sufficiency of aggregation (Definition 1) is now satisfied with the following two aggregate measures, which linearly aggregate the basic performance measures $y_1, y_2, \cdots, y_q$:

$[\partial g_1(a^E, a^R)/\partial a^E]\ y_1+\cdots+[\partial g_q(a^E, a^R)/\partial a^E]\ y_q$ (14)

and $[\partial g_1(a^E, a^R)/\partial a^R]\ y_1+\cdots+[\partial g_q(a^E, a^R)/\partial a^R]\ y_q.$ (15)

The following corollary has been proved.

Corollary 1

With the assumptions in Proposition 1, assume that the joint density of performance measures $f(y_1, y_2, \cdots, y_q; a^E, a^R)$ *belongs to the family* $\rho(y_1, y_2, \cdots, y_q; a^E, a^R)$ (10)*. Economically sufficient aggregation of performance measures requires two-dimensional aggregate performance measures as follows:*

$[\partial g_1(a^E, a^R)/\partial a^E]\ y_1+\cdots+[\partial g_q(a^E, a^R)/\partial a^E]\ y_q$ (14)*, which summarizes the franchisee's effort* a^E

and $[\partial g_1(a^E, a^R)/\partial a^R]\ y_1+\cdots+[\partial g_q(a^E, a^R)/\partial a^R]\ y_q$ (15)*, which summarizes the franchisor's effort* a^R*.*

Corollary 1 shows that when the joint density $f(y_1, y_2, \cdots, y_q; a^E, a^R)$ belongs to the family $\rho(y_1, y_2, \cdots, y_q; a^E, a^R)$ (10), economic sufficiency of aggregation (Definition 1) requires more than one "summarizing" performance measures. When the franchisor is risk averse, the optimal performance measurement system of a franchise needs at least two aggregate performance measures: one summarizing the franchisor's effort and the other summarizing the franchisee's effort. On the other hand, the following results (Proposition 2 and Corollary 2) show that when the franchisor is risk neutral, the optimal performance measurement system of a franchise needs only one "summarizing" performance measure.

Proposition 2

When the franchisor is risk neutral while the franchisee is risk averse, the optimal franchise contract is characterized by the following:

$1 / U^{E'}(C) = \lambda + \mu_2 \{f_E / f\}$ (16)

Proof: See Appendix.

For the proof of the following corollary, it suffices to note that the aggregation of performance measures in the optimal franchise contract (16) depends only on the likelihood ratio f_E / f.

Corollary 2

With the assumptions in Proposition 2, assume that the joint density of performance measures $f(y_1, y_2, \cdots, y_q; a^E, a^R)$ *belongs to the family* $\rho(y_1, y_2, \cdots, y_q; a^E, a^R)$ (10). *Economically sufficient aggregation of performance measures requires only one aggregate measure:*

$[\partial g_1(a^E, a^R)/\partial a^E]\, y_1 + \cdots + [\partial g_q(a^E, a^R)/\partial a^E]\, y_q$ (14)*, which summarizes the franchisee's effort* a^E.

Even under dual moral hazard, the optimal franchise contract with the risk neutral franchisor (16) is equivalent to the "standard" single moral hazard contract as in equation (7) in Holmstrom (1979) and equation (2) in Amershi, Banker, and Datar (1990), in which only the franchisee provides an effort and the franchisor does not provide an effort. When the franchisor is risk neutral, the optimal franchise contract is written as if the franchisor were not providing an effort. The reason is that when the franchisor is risk neutral, the optimal contract is no longer designed to share risk. As long as the franchisor is risk neutral, risk sharing is not an issue because it is efficient that the risk neutral franchisor takes all the risk. The "variable" part of contract $\mu_2 \{f_E / f\}$ in equation (16) serves as the incentive for "inducement of effort" from the risk averse franchisee, even though the efficiency of risk sharing is a little sacrificed by the imposition of compensation risk on the franchisee.

In dual moral hazard, the franchisor provides an effort. In a franchise with double moral hazard, the likelihood ratio $\{f_R / f\}$ is used in the optimal franchise contract (9) when risk averse franchisor is concerned with both risk sharing *and* inducement of franchisee's effort. However,

if the franchisor is risk neutral, the "variable" contract component aims only to align incentives and effort, and the franchisor does not need the incentive for himself. Thus, the risk neutral franchisor uses only the likelihood ratio $\{f_E / f\}$ that varies with respect to the franchisee's effort, and the likelihood ratio $\{f_R / f\}$ is not used in the optimal franchise contract in equation (16). Consequently, the optimal franchise contract with the risk neutral franchisor (16) in Proposition 2 is a special case of the contract with risk averse franchisor (9) in Proposition 1 with $\mu_1 \{f_R / f\} = 0$ and with $U^{R'}\{X-C\} = 1$.

CONCLUSION

This study analyzes aggregation of performance measures in double moral hazard problem in the frame of principal-agency relationship in a franchise contract. It shows that participants' risk aversion effects optimal aggregation of performance measures. When franchisor is risk neutral and franchisee is risk averse, a one-dimensional aggregate performance measure is sufficient for contract optimization. On the other hand, when both franchisor and franchisee are risk averse, at least two aggregate performance measures are required to design an optimal franchise contract: one measure summarizing the franchisor's effort, and the other measure summarizing the franchisee's effort.

APPENDIX

Proof of Proposition 1

Take the derivative of the franchisor's objective function (8) with respective to the franchise contract $C(y_1, y_{2, \cdots}, y_q)$ and set equal to zero to satisfy the first order condition. Differentiating with respect to each of $y_q, y_{q-1}, \cdots, y_1$ results in the following:

$$U^{R'}\{X(y_1, y_{2, \cdots}, y_q) - C(y_1, y_{2, \cdots}, y_q)\}(-1) f(y_1, y_{2, \cdots}, y_q; a^E, a^R)$$
$$+ \mu_1 U^{R'}\{X(y_1, y_{2, \cdots}, y_q) - C(y_1, y_{2, \cdots}, y_q)\}(-1) f_R(y_1, y_{2, \cdots}, y_q; a^E, a^R)$$
$$+ \mu_2 U^{E'}(C(y_1, y_{2, \cdots}, y_q)) f_E(y_1, y_{2, \cdots}, y_q; a^E, a^R)$$
$$+ \lambda U^{E'}(C(y_1, y_{2, \cdots}, y_q)) f(y_1, y_{2, \cdots}, y_q; a^E, a^R)$$
$$= 0. \quad (17)$$

Divide both sides with $f(y_1, y_{2, \cdots}, y_q; a^E, a^R)$ and by $U^{E'}(C)$. Rearrange terms to obtain equation (9).

Proof of Proposition 2

The risk neutral franchisor's utility is

$$\{X(y_1, y_{2, \cdots}, y_q) - C(y_1, y_{2, \cdots}, y_q)\} - V(a^R), \quad (18)$$

and the risk neutral franchisor's incentive compatibility constraint (IC^N) is as follows:

$$\partial[\text{Risk neutral franchisor's expected utility}] / \partial a^R = 0;$$
$$\int \cdots \int \{X(y_1, y_{2, \cdots}, y_q) - C(y_1, y_{2, \cdots}, y_q)\} f_R(y_1, y_{2, \cdots}, y_q; a^E, a^R)\, dy_1 \cdots dy_q - V'(a^R) = 0. \quad (19)$$

The risk neutral franchisor solves the following maximization problem:

$$\text{Max Risk neutral franchisor's objective function}$$
$$= \underline{\text{Risk neutral franchisor's expected utility}}$$
$$+\mu_1 \underline{\text{Risk neutral franchisor's } IC^N} + \mu_2 \underline{\text{Franchisee's IC}} + \lambda \underline{\text{Franchisee's PC}}$$
$$= \int \cdots \int \{X(y_1, y_{2, \cdots}, y_q) - C(y_1, y_{2, \cdots}, y_q)\} f(y_1, y_{2, \cdots}, y_q; a^E, a^R)\, dy_1 \cdots dy_q - V(a^R)$$
$$+ \mu_1 [\int \cdots \int \{X(y_1, y_{2, \cdots}, y_q) - C(y_1, y_{2, \cdots}, y_q)\} f_R(y_1, y_{2, \cdots}, y_q; a^E, a^R)\, dy_1 \cdots dy_q - V'(a^R)]$$
$$+ \mu_2 [\int \cdots \int U^E(C(y_1, y_{2, \cdots}, y_q)) f_E(y_1, y_{2, \cdots}, y_q; a^E, a^R)\, dy_1 \cdots dy_q - K'(a^E)]$$
$$+ \lambda [\int \cdots \int U^E(C(y_1, y_{2, \cdots}, y_q)) f(y_1, y_{2, \cdots}, y_q; a^E, a^R)\, dy_1 \cdots dy_q - K(a^E) - \overline{U}\,], \quad (20)$$

where μ_1 and μ_2 are Lagrange multipliers and λ is a Kuhn-Tucker multiplier.

Given the equality

$$\int \cdots \int f_R(y_1, y_{2, \cdots}, y_q; a^E, a^R)\, dy_1 \cdots dy_q$$

$= \partial[\int \cdot\cdot \int f(y_1, y_{2, \cdots,} y_q; a^E, a^R)\, dy_1 \cdot\cdot dy_q] / \partial a^R$

$= \partial\ 1 / \partial a^R$

$= 0,$ (21)

the same steps for the first order condition as in Proposition 1 result in

$(-1)\, f(y_1, y_{2, \cdots,} y_q; a^E, a^R)$

$+ \mu_2\, U^{E'}(C(y_1, y_{2, \cdots,} y_q))\, f_E(y_1, y_{2, \cdots,} y_q; a^E, a^R)$

$+ \lambda\, U^{E'}(C(y_1, y_{2, \cdots,} y_q))\, f(y_1, y_{2, \cdots,} y_q; a^E, a^R)$

$= 0.$ (22)

Arranging terms, after dividing both sides with $f(y_1, y_{2, \cdots,} y_q; a^E, a^R)$ and $U^{E'}(C)$, results in equation (16).

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Jeffry Haber, Editor-In-Chief
Iona College
Hagan School of Business
715 North Avenue
New Rochelle, NY 10801

editor@JTAR.org or jhaber@iona.edu
website: JTAR.org