Ethical Decision Making on Various Managerial Accounting Issues
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Abstract
This study examines five managerial accounting issues that have ethical implications. These issues are based on situations described in managerial accounting textbooks. To induce truthful responses, an approach called the randomized response technique is used. With this technique, estimates are obtained for responses to sensitive questions relating to the five issues. Results ranged from 9 percent to 51 percent of participants making decisions that are at least questionable from an ethical perspective.

Key Words
Accounting Ethics
Randomized Response Technique
Management Accounting

Introduction
Many issues in the area of managerial accounting have ethical implications. This is recognized by The Institute of Management Accountants, which has provided ethical guidance by developing Standards for Ethical Conduct for Management Accountants (IMA, 1983). These standards deal with issues involving competence, confidentiality, integrity, and objectivity.

Managerial accounting textbooks are replete with discussions of issues that have ethical implications.

These issues range from performance evaluation to cost reimbursement and the decisions encompass managerial ones such as amount of production as well as accounting ones such as cost allocations. While the potential for managerial manipulation or unethical conduct is often mentioned, rarely is evidence provided about the actual occurrence of such behaviour.

The purpose of this study is to provide some evidence about behaviour involving ethical issues in the context of five specific decision areas found in the realm of managerial accounting. The five issues chosen were based on encounters with them while teaching managerial accounting.

Literature on Ethics in Managerial Accounting
Managerial accounting research has addressed various ethical issues. Rogerson (1992) examined overhead allocated to contracts and demonstrated that firms have incentives to engage in pure waste by padding direct labour usage on contracts with cost-based revenues. Sayre, Rankin, and Fargher (1998) investigated the effects of promotion incentives on the selection of investment projects by managers and found that the managers’ investment decisions served their own self-interests at the expense of the owners’ interests. A number of studies on budgeting have shown that when a subordinate’s information is used as
a basis for his performance evaluation, the subordinate has incentives to misrepresent resource requirements or production capabilities (e.g., Young, 1985; Waller, 1988; Chow, et al, 1988; Nouri, 1994; Stevens, 2002). Many studies have provided evidence on how managers manipulate earnings to maximize their compensation or enhance their performance evaluation (e.g., Healy and Whalen, 1999; Nelson, et al, 2003). While these manipulations usually involve accounting choices, some involve managerial decisions such as the research and development spending decisions examined by Dechow and Sloan (1991).

The Issues
The five issues selected for study all come from decision situations appearing in managerial accounting textbooks. Two situations involve investment decisions, one entails a production decision, one deals with cost allocation, and one involves estimation judgment. Each of these five issues is detailed in the Appendix and is explained in the remainder of this section.

Issue #1: Overproduction
The first issue relates to the proposition discussed in the previous section that managers’ decisions may be motivated by the desire to manipulate earnings. Specifically, Issue #1 involves the controversy over absorption costing (i.e., full costing) versus variable costing. Advocates of the latter state that with absorption costing, net income is susceptible to manipulation by managers because fixed overhead is a product cost and, therefore, unit costs can be lowered by merely increasing current production. This lowers cost of goods sold and, in turn, yields a higher current net income. As Zimmerman (2000, p. 496) states, “Managers rewarded on total profits calculated using absorption costing can increase reported profits by increasing production (if sales are held constant). A major criticism of absorption costing is that it creates incentives for managers to overproduce, thereby building inventories.” Horngren et al. (2002, p. 609) also note that “if the company uses the absorption costing approach, a manager might be tempted to produce unneeded units just to increase reported operating income.” An example of how profit was manipulated in this manner is provided by Kaplan and Atkinson (1998, p. 504), who mention a case where “the division manager had greatly increased production in quarters 2 and 3, with excess production accumulating as finished goods inventory. The much higher rates of production enabled period costs to be absorbed into inventory.”

The first research question in this study addresses the issue of whether participants would decide to overproduce in order to increase profits. The actual question asked, which can be found in Situation #1 of the Appendix, was “Would you decide to overproduce in order to meet the targeted NIBT?” The objective is to measure the percentage who would be willing to produce more output than needed to meet demand, an act which has ethical ramifications.

Issue #2: Cost Allocation
The second issue relates to the proposition by Rogerson (1992) discussed earlier, which noted that firms which have contracts with cost-based revenues have incentives to engage in unethical behaviour when it comes to allocating overhead costs. Specifically, Issue #2 involves arbitrarily changing cost allocations so that a higher amount of revenue can be obtained from a product sold on a cost-plus basis. According to Schneider and Sollenberger (2003, p. 4-19): “When the prices of certain services or products are cost based while others are market driven, managers are often tempted to shift much of the overhead costs to those cost-based services or products.” Similarly, Hilton et al. (2000, p. 375) state that “cost-plus contracts give incentives to the supplier of the good or service to seek as much reimbursement as possible and, therefore, to allocate as much cost as possible to the product for which reimbursement is possible.” Horngren et al. (2003, p. 535) cite an example of an aircraft manufacturer that builds standard planes for commercial customers under fixed-price contracts, and specialized fighter planes for
the U.S. armed forces under cost-plus contracts. They note that if the manufacturer “could shift indirect costs away from (fixed-price) commercial customers and to the cost-plus contracts,” then the manufacturer would increase its revenues.

Consequently, the second research question asks whether participants would arbitrarily change an established logically-based cost allocation procedure to one which is more arbitrary in order to increase profits by way of larger cost-based revenues. The actual question asked, which can be found in Situation #2 of the Appendix, was “Would you arbitrarily change the cost allocation procedure to meet the targeted NIBT?” However, since this change is described as not violating generally accepted accounting principles or any agreements with purchasers, the ethical implications are somewhat nebulous.

**Issue #3: Estimating Equivalent Units**

The third issue involves a misrepresentation about an estimate that has an impact on the reported profit. In slightly different contexts dealing with budgeting situations, the studies mentioned earlier have shown that when a subordinate’s information is used as a basis for his performance evaluation, the subordinate has incentives to misrepresent information. This phenomenon is tested in Issue #3, which involves estimating the percentage of completion of ending work in process inventory in a process costing situation. By overestimating the degree of completion, a lower unit cost could be obtained by spreading the costs over a larger amount of equivalent units. This would lower the cost of goods sold, and as a result, increase profit. As Schneider and Sollenberger (2003, p. 5-16) note, “Estimating the stage of completion of the work in process is an area particularly susceptible to manipulation by production managers . . . managers might be motivated to overestimate the stage of completion . . . A higher estimate for the degree of completion of the work in process inventory results in a greater number of equivalent units of output for the period. This, in turn, generates a lower cost per equivalent unit.” Hilton et al. (2000, p. 271) also indicate that “someone may have a motivation to overestimate degrees of completion to keep costs in inventory, thereby increasing income.”

The third research question, therefore, asks whether participants would misrepresent the degree of completion of the ending work in process in order to report a higher profit. The actual question asked, which can be found in Situation #3 of the Appendix, was “Would you overestimate the ending work in process in order to meet the targeted NIBT?” Such misrepresentation would clearly violate notions of objectivity and integrity.

**Issue #4: Investment and Conflicting Interests**

The fourth issue relates to the proposition by Sayre, Rankin, and Fargher [1998], discussed earlier, which noted that managers’ investment decisions tend to serve their own self-interests rather than the firm owners’ interests. Specifically, Issue #4 involves a conflict of interest in the context of an investment decision where the participant’s performance is evaluated based on return on investment (ROI). The decision setting is one where an investment under consideration has an ROI that would benefit the company, but would reduce the current ROI of the participant. As discussed by Zimmerman (2000, p. 190), “Managers have incentives to reject profitable projects whose ROIs are below the mean ROI for the division because accepting these projects lowers the division’s overall ROI.” Kaplan and Atkinson (1998, p. 505) also state that “actions that decrease divisional ROI may increase the economic wealth of the corporation.” They provide an example of a project whose ROI is between the current divisional ROI of 22% and the division’s cost of capital of 15% and conclude that “the ROI measure causes the division manager to be motivated to refuse this investment, since, even though it returns in excess of the cost of capital, . . . the project lowers the divisional ROI.” Another illustration is given by Horngren et al. (2002, p. 410), who indicate that “if performance is measured by ROI, managers of divisions currently earning 20% may be reluctant to invest in projects that earn only 15% because doing so would reduce their average ROI.”
The fourth research question asks whether participants would reject an investment that would benefit the company, but would lower the participant’s current ROI. The actual question asked, which can be found in Situation #4 of the Appendix, was “Would you reject this proposed investment?” The ethical implications here are not totally clear. On one hand, a manager should make decisions that serve the best interests of the company and therefore undertake the investment. On the other hand, if a manager has been instructed to maximize ROI, and is rewarded accordingly, then it could be argued that in rejecting the investment, the manager is, in a sense, adhering to company policy.

**Issue #5: Replacing Existing Assets**

The fifth issue, like the fourth, is also tied to the proposition by Sayre, Rankin, and Fargher (1998) that managers’ investment decisions are self-serving rather serving the owners’ interests. Issue #5, like Issue #4, again deals with an investment decision where ROI is used as the performance measure. In this setting, the company uses book value in defining the amount of assets in the denominator of ROI. A proposed investment in new machinery would benefit the company in the long-term, but would lower the participant’s current ROI because the cost of the new machinery is much higher than the book value of the existing machinery. This situation is described in Hilton et al. (2000, p. 844) as follows: “The tendency for net book value to produce a misleading increase in ROI over time can have a serious effect on the incentives of investment-centre managers. Investment centres with old assets will show much higher ROIs than investment centres with relatively new assets. This can discourage investment-centre managers from investing in new equipment.” Similarly, Horngren et al. (2002, p. 415-6) note: “To maximize ROI or residual income, managers want a low-investment base. Managers in firms using net book value will tend to keep old assets with their low book value.” In a more equivocating tone, Kaplan and Atkinson (1998, p. 518) argue that “we would not expect that many managers would manipulate their ROI measures so transparently; nevertheless, . . . managers can improve their ROI measure by postponing new investment and continuing to operate with fully or nearly fully depreciated assets.

The fifth research question asks whether participants would reject an investment that would benefit the company in the long-term, but would lower the participant’s current ROI. The actual question asked, which can be found in Situation #5 of the Appendix, was “Would you reject the investment in the new machinery?” Like the fourth research question, the ethical implications here are not clear. In addition to the arguments made there, the benefit to the company here is less evident because it is characterized only as a long-term benefit.

**Research Design**

Participants received a research questionnaire which contained background information about a hypothetical company and they were instructed to presume that they were division managers for this company. They were then given five case scenarios involving managerial accounting decisions, as described above. For the first three, the questionnaire indicated that they would receive a significant cash bonus if the current year’s targeted net income before taxes (NIBT) for the division was obtained. For the last two cases, the instructions indicated that they would receive a significant cash bonus if the annual rate of return (ROI) for their division exceeded the cost of capital. The higher their division’s rate of return was above the cost of capital, the more cash bonus they would receive. After responding to the five cases, the participants completed a page of demographic and other information.

Since the cases involve sensitive issues, obtaining truthful responses is a major concern. Without some form of "protection," participants might be reluctant to admit that they would overproduce, arbitrarily change cost allocations, misrepresent equivalent units, or reject goal congruent investments. Accordingly, this research used an approach called the randomized response technique (RRT) to elicit decisions.
Warner (1965) developed the RRT so that anonymity would be assured to participants when obtaining responses to sensitive questions. With this method, each participant is told to answer either a sensitive question or an unrelated innocuous question, depending on the outcome of a randomization process which the participant determines. Nobody other than the participant knows which of the two questions -- innocuous or sensitive -- has been answered. Nevertheless, an estimate of the average response to the sensitive question can be statistically determined. Most studies that have compared the RRT to traditional direct response approaches have found that the RRT reduces response bias and produces a greater tendency for participants to report behaviours that could be perceived in a negative light (e.g., see Fidler and Kleinknecht, 1977; Tracy and Fox, 1981). Several prior accounting studies have employed the RRT over the past two decades (e.g., Buchman, 1983; Schneider and Wilner, 1990; Schneider, 1995).

Analysis

In each of the five cases, a response of "yes" to the sensitive question would indicate a behaviour that is clearly or possibly unethical. The formula to obtain an estimate of the proportion of participants that respond “yes” to the sensitive question is (see Tracy and Fox, 1981, p. 189):

\[ \pi = \frac{L - (1-p)(Y)}{p} \]

where:

\[ \pi = \text{proportion of participants who respond “yes” to the sensitive question} \]
\[ L = \text{Proportion of “yes” responses given} \]
\[ p = \text{probability of answering the sensitive question} \]
\[ Y = \text{probability of responding “yes” to the innocuous question} \]

Sociken and Macready (1982) suggest that the researcher set the probability of answering the sensitive question between .70 and .85. Greenberg et al., (1969) state that the probability of responding "yes" to the innocuous question should be on the same side of .50 as \( \pi \) is expected to be (in this study, the expectation is below .50), but it should not be too close to zero. In accordance with these suggestions and with previous studies in accounting (e.g., Schneider, 1995; Schneider and Wilner, 1990), this study used \( p = .70 \) and \( Y = 1/3 \).

Participants

The participants came from two U. S. universities’ graduate and executive education classes where managerial accounting had been taught. Questionnaires containing the case materials were distributed at the end of the courses, and after completion (which was not during class, but rather on their own time), individuals handed them in or mailed them to the researcher. A total of 44 individuals returned the questionnaires. All but one had a bachelor’s degree, and the one who did not had 25 years of work experience. The average and median age was 28.8 and 27, respectively. The participants had average and median full-time work experience of 5.8 and 3 years, respectively. Only two participants (4.5 percent) indicated that the instructions or other information in the questionnaire were not clear. When the data analyses were done after removing these two, the results obtained were virtually identical to those of the entire sample, so the analyses presented in the next section include these two individuals.

Results

Table One reports the estimated percentage of individuals who responded “yes” to the sensitive questions. For the full sample, these figures range from 9 percent for Issue #3 to 51 percent for Issues #1 and #4. Hence, for two of the five cases, slightly over half of the participants made decisions that are at least questionable in an ethical sense.

Issue #3, which involves a misrepresentation, is the most clearly unethical act of all five cases, so it is not surprising that this situation had the lowest rate of estimated “yes” responses. It was somewhat surprising to find that Issue #1, which involves overproducing and would appear to be more unethical than Issues #2, #4, and #5, did not have a lower rate of
“yes” responses than these other three situations. An explanation may be that the stated amount of overproduction was rather low – only 10 percent – and so the participants may have felt that it would not be a big problem if that little amount of unneeded output was produced.

In comparing the two investment decisions, the responses are mildly surprising in that the benefit to the company in Issue #5 is less evident than it is in Issue #4. Therefore, one might have expected participants to be more likely to reject the investment in Issue #5 than in Issue #4. Yet, the estimated percentage of rejections were 13 percent lower in Issue #5.

The data analyses were also conducted by removing eight individuals who had no full-time work experience. In Table One, this resulting sample is labelled as Reduced Sample A.

Table One shows that the results for Reduced Sample A are similar to those of the full sample.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Full Sample (n=44)</th>
<th>Reduced Sample A¹ (n=36)</th>
<th>Reduced Sample B² (n=32)</th>
<th>Reduced Sample C³ (n=38)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue #1: Overproduction</td>
<td>51%</td>
<td>45%</td>
<td>44%</td>
<td>53%</td>
</tr>
<tr>
<td>Issue #2: Cost Allocation</td>
<td>41%</td>
<td>41%</td>
<td>39%</td>
<td>42%</td>
</tr>
<tr>
<td>Issue #3: Estimating Equivalent Units</td>
<td>9%</td>
<td>10%</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>Issue #4: Investment and Conflicting Interests</td>
<td>51%</td>
<td>53%</td>
<td>57%</td>
<td>53%</td>
</tr>
<tr>
<td>Issue #5: Replacing Existing Assets</td>
<td>38%</td>
<td>33%</td>
<td>44%</td>
<td>42%</td>
</tr>
</tbody>
</table>

Note: Percentages in the table represent π, where:

π = Estimate of the proportion of individuals who responded “yes” to the sensitive question

¹This reduced sample A excludes those individuals who had no full-time work experience.
²This reduced sample B excludes those individuals who were under age 25.
³This reduced sample C excludes those individuals who were obtained from an executive education course.

For Issues #1 and #5 the estimated proportions of “yes” responses decline, for Issues #3 and #4 the proportions increase slightly, and for Issue #2 the proportion remains the same. The biggest changes are for Issue #1 and #5, which reveal decreases of six and five percent, respectively. Hence, it does not appear that work experience has much of an effect on these decisions.

For Issues #1, #2, and #3, the full sample had higher estimated proportions of “yes” responses than Reduced Sample B, but lower estimated proportions of “yes” responses for Issues #4 and #5. In any event, the removal of relatively young individuals did not seem to have an appreciable effect on the average responses.

Six of the participants in this study were obtained from an executive education course in which the coverage of managerial accounting was far less than in the graduate-level accounting courses taken by the other 38 individuals. Reduced Sample C was constructed by eliminating the six individuals from the executive education course to see if the amount of managerial accounting coverage made a difference. As Table One reveals, the results of Reduced Sample C are striking similar to those of the full sample, with none of the percentages differing by more than four percent. Only for Issue #3 did the full sample have a higher estimated proportion of “yes”
responses than Reduced Sample C. Clearly, the amount of managerial accounting coverage to which the participants were exposed did not make much of a difference in their decisions.

Conclusions, Limitations, and Further Research

The findings of this study can enhance the teaching of managerial accounting when various types of ethical situations are discussed. When covering the issues examined in this paper, instructors can now report some evidence about decision-making behaviour in these contexts. The contexts involved a blend of managerial decisions (Issues #1, #4, and #5) as well as accounting decisions (#2 and #3).

Findings from three sub-samples of respondents were consistent with those of the full set of respondents. For four of the five issues addressed in the study, estimates of possible unethical behaviour ranged from 38 percent to 51 percent of the respondents. Only in the situation that had a blatant act of unethical behaviour – misrepresentation – was the percentage much lower than this range (9 percent). Interestingly, this situation (Issue #3) was the only one that did not involve an overt conflict of interest. Issues #1, #4, and #5 essentially had the interests of the individual conflict with those of the company. In Issue #2, the interests of the company conflicted with those of other stakeholders (e.g., cost-plus contractor). For Issue #3, however, the overestimation would increase the current earnings of the company as well as the cash bonus for the individual without undermining the company’s production or investment, as would be the case for Issues #1, #4, and #5.

Several limitations to this study should be noted. First, as with virtually all behavioural experiments, the hypothetical nature of the decisions and rewards (i.e., cash bonus), though realistic, may not induce the decisions that would be made in an actual setting. Second, while an effort was made to assure anonymity by using the RRT, some individuals may still have been reluctant to respond truthfully. Finally, the results of this research may not be generalisable beyond the conditions embodied in the study (e.g., the specific decisions, company setting, managerial incentives).

Future research can attempt to generalize the results of this study by using different types of managerial decisions, alternative forms of incentives (e.g., stock-based compensation), non-manufacturing settings, or different groups of participants. Regarding the latter, it might be interesting to see if, for instance, production managers make different decisions than plant managers or financial managers. It would also be beneficial to conduct this research in countries outside the U.S. in order to do cross-country comparisons of ethical decision-making.

References


IMA, (1983) *Standards of Ethical Conduct for Management Accountants*, Institute of Management Accountants, Montvale, NJ.


APPENDIX
RESEARCH QUESTIONNAIRE

INSTRUCTIONS
Thank you for participating in this research project, which involves the study of various cost/managerial accounting issues. The questionnaire should take about 15-20 minutes to complete. The information you provide in this research will be kept confidential. Furthermore, the names of the organizations with which the participants are affiliated will not be identified. The completed questionnaires will be securely stored in a researcher's office.

Since the question posed in this study may be sensitive, a response method called the randomized response technique is employed. This method is designed to assure you of anonymity so that, hopefully, you will not be reluctant to respond truthfully.

The randomized response technique requires that you obtain a dollar bill (or any other denomination of paper currency). The serial number on your dollar bill will serve as a "random number generator" to determine whether you will answer a sensitive question or an innocuous (i.e. non-sensitive) question.

The method works as follows. After receiving information about a hypothetical scenario, one sensitive and one innocuous question will be presented. You will respond to only one of these, depending on the serial number of your dollar bill. Since this is your dollar bill, nobody but you will know whether you have answered the sensitive question or the innocuous question. Do not reveal the serial number! (While the researcher does not know which question was answered by particular individuals, statistical methods are available to estimate the aggregate average response to the sensitive question.)

If any aspects of this questionnaire are not clear, please assume whatever you feel would be most reasonable. You are welcome to state these assumptions unless they would reveal which question you are answering. After you finish, you may provide any comments you wish to make on the last page. If you have an objection to any question, you need not answer it.

If you would like to receive the results of this study, please provide your name and address:

Background Information
Assume that for the first three independent situations you are a division manager at Tibby Corporation, a closely held, medium sized manufacturer of consumer and industrial products. You have been with this company (and division) for three years. The first two years were characterized by rapid growth and excellent financial performance in your division. During the current year, however, your division has experienced some problems. A recent memo to you from the CEO stated that the division’s failure to achieve the current year’s targeted NIBT (net income before taxes) of $900,000 would have serious repercussions for the division.

Your contract with Tibby calls for a significant cash bonus if the current year's targeted NIBT for your division is obtained.

[SITUATION #1]

Because your division has a high amount of fixed costs, you are aware that a way to increase the current year’s NIBT is to overproduce. That is, a lower unit cost could be obtained by spreading the fixed costs over a larger amount of output than is needed to meet demand. This would lower the cost of goods sold, thereby increasing NIBT. By producing 10% more output than is needed, your division’s NIBT would reach the current year’s targeted level.

Requirement: If the last digit on the serial number of your dollar bill is between 0 and
6 (inclusive), answer question (A). Otherwise, answer question (B).

(A) Would you decide to overproduce in order to meet the targeted NIBT?

(B) Is the last digit on the serial number of your dollar bill an even number?

Please circle either "YES" or "NO", but do not reveal whether you answered (A) or (B):

YES  NO

**SITUATION #2**

Your division sells one of its industrial products on a cost-plus basis. By allocating more of the division’s overhead costs to this product rather than to the other products, the division can generate more revenues since the revenues for this cost-plus product would be based on the higher cost assigned to it. The division’s total costs would not change since less cost would be allocated to the other products. By changing the cost allocation from the current logically-based procedure to one which is more arbitrary (but does not violate generally accepted accounting principles or any agreements with purchasers), revenues can be increased by 5% for the current year. As a result, your division’s NIBT would reach the current year’s targeted level.

**Requirement:** If the next to last digit on the serial number of your dollar bill is between 0 and 6 (inclusive), answer question (A). Otherwise, answer question (B).

(A) Would you arbitrarily change the cost allocation procedure to meet the targeted NIBT?

(B) Is the next to last digit on the serial number of your dollar bill an even number?

Please circle either "YES" or "NO", but do not reveal whether you answered (A) or (B):

YES  NO

**SITUATION #3**

Your division uses a process costing system where the determination of unit costs depends on estimates of the degree of completion of the ending work in process inventory. The ending work in process of one of your products is 50% complete. By overestimating the degree of completion, a lower unit cost could be obtained by spreading the costs over a larger amount of “equivalent” units. This would lower the cost of goods sold, thereby increasing NIBT. By estimating the ending work in process as 70% complete instead of 50%, your division’s NIBT would reach the current year’s targeted level.

**Requirement:** If the third from the last digit on the serial number of your dollar bill is between 0 and 6 (inclusive), answer question (A). Otherwise, answer question (B).

(A) Would you overestimate the ending work in process in order to meet the targeted NIBT?

(B) Is the third from the last digit on the serial number of your dollar bill an even number?

Please circle either "YES" or "NO", but do not reveal whether you answered (A) or (B):

YES  NO

Assume again that for the next two independent situations you are a division manager at Tibby Corporation. Now, however, your performance is evaluated based on rate of return (i.e., NIBT divided by assets). A recent memo to you from the CEO stated that the Tibby’s cost of capital is 10% and that any investment that would earn a rate of return in excess of 10% would benefit the company. Currently, your division is earning a 16% rate of return. Your contract with Tibby calls for a significant cash bonus if the annual rate of return for your division exceeds the cost of capital. The higher your division’s rate of
return is above the cost of capital, the more cash bonus you receive.

**SITUATION #4**

You have been looking into an investment proposal which is estimated to yield an annual 13% rate of return. Since this rate is above Tibby’s cost of capital, the investment would benefit the company. However, it would lower your division’s overall annual rate from 16% to 15%, resulting in a significantly lower cash bonus.

**Requirement**: If the fourth from the last digit on the serial number of your dollar bill is between 0 and 6 (inclusive), answer question (A). Otherwise, answer question (B).

(A) Would you reject this proposed investment?

(B) Is the fourth from the last digit on the serial number of your dollar bill an even number?

Please circle either "YES" or "NO", but do not reveal whether you answered (A) or (B):

YES  NO

**SITUATION #5**

In computing divisional rates of return, Tibby uses the book value of assets in the denominator. You have been looking into replacing machinery that would provide benefits in the long-term, but would have little effect on current NIBT because the operating cost savings would be offset by the increased depreciation expense attributable to the new machinery. Because the cost of the new machinery is much higher than the book value of the existing machinery, purchasing the new machinery would cause the division’s current annual rate of return to be reduced. This would result in a significant reduction in the cash bonus.

**Requirement**: If the fifth from the last digit on the serial number of your dollar bill is between 0 and 6 (inclusive), answer question (A). Otherwise, answer question (B).

(A) Would you reject the investment in the new machinery?

(B) Is the fifth from the last digit on the serial number of your dollar bill an even number?

Please circle either "YES" or "NO", but do not reveal whether you answered (A) or (B):

YES  NO