

THE EFFECTS OF PRIMING IN TRAINING ON AN ACCOUNTANTS' DECISION-MAKING

by

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ABSTRACT

This paper focuses on priming, the use of a specific word, phrase, or image, can impact decision-making, specifically in the accounting profession. This is analyzed through research and studies reported by professionals in the field. The author conducted an experiment with undergraduate accounting students at Appalachian State University who were asked to complete a case study. The author hypothesizes that the use of priming will influence accounting students to choose maintaining quality over cutting costs, because they are primed with the slogan, "We value quality." The paper is intended to emphasize the importance of ethics training, suggest ways to enhance current methods, and find ways to apply the methods to the accounting profession.

Keywords: priming, accounting, training, psychology, values

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INTRODUCTION

In this paper I analyze research from accounting and psychology disciplines to learn about priming and how it is applied in the workplace, particularly in the accounting profession. Priming is “the temporary nonconscious activation of a behavior (Shantz & Latham 289).” In application this means that a person can be subconsciously motivated to act a particular way in response to an image, word, or other external means.

Within this study, priming is related to the accounting profession in several ways, including: revisions to management accounting systems and the use of specific and summarized memos in fraud detection and reporting. Specifically, I hope to apply the use of priming in the accounting industry to ethics training.

Investing in training and development for employees has proven effective in research and application. According to Tartell, the training program a company implements will determine how an employee works, understand the corporate culture, and normalize behavior. Research shows that ethics training can help promote value-based decision-making that is aligned with company values. The intent of this research is to show how priming can be used to help accountant's make decisions that are congruent with the company, firm, or organization that employs them.

LITERATURE REVIEW

PRIMING

According to Gary Latham, goal commitment encourages employees to exert effort and persist in pursuing a goal until the specified goal is attained (Shantz and Latham, 290). The problem with explicit goals is that they occupy the limited attention of the employees (290). To inspire employees to pursue goals without occupying their cognitive resources, managers can use

the social psychological technique, priming. Bargh and Chartrand define priming as “the temporary nonconscious activation of a behavior (Shantz and Latham, 290).”

The two types of priming are supraliminal priming and subliminal priming. In supraliminal priming experiments, the participant is aware of the prime, but does not see a connection between the prime and the task (Shantz and Latham, 291). Fishbach, Friedman, & Kruglanski tested this method when they performed an experiment that required participants to order food after looking at magazines. The experimental group was shown exercise and diet magazines and the control group was shown nothing. After the priming, the experimental group participants were more likely to order an apple over chocolate than the control group (290). Subliminal priming is usually done through a computer-based experiment that uses a visual or icon out of the direct focus of the participant (291).

Shantz and Latham performed three experiments to test whether primed goals can positively impact job performance. The first study asked employees at a call center to assess an information packet for soliciting money from donors (293). The experimental condition was that there was a woman winning a race printed on the background of the packet, while the control had nothing in the background. The researchers used the amount of money raised to measure the effectiveness of the prime. While the experiment showed a link between the positive prime and positive work response, the sample size was too small to be consequential. The second study in a different office, using the same procedure (294). The researchers found that the primed goal had a significant correlation with the employees' job performance (294). The third study followed the same methodology as the previous two studies, but there was no consistency in the sample populations, location, or date of the three independent experiments. This made Shantz and Latham's study more compelling because it showed that priming can be effective across

populations and that the priming can act like a goal to create habits that increase efficiencies (295).

Shantz and Latham's research effectively shows how priming can be applied to a company's goals to help employees make decisions in-line with company values or goals, without making the goal a primary focus.

APPLYING PRIMING TO ACCOUNTING ENVIRONMENT

At the onset of this process, I wanted to apply the use of priming to the accounting profession. In Hammersley, Bamber, and Carpenter's article, *The Influence of Documentation Specificity and Priming on Audit Fraud Risk Assessments and Evidence Evaluations Assessments*, the researchers discuss how documentation specificity and fraud risk priming impact how the auditor practices professional skepticism and how thoroughly they report the fraud risks.

Their research is in response to the PCAOB's concern that "auditors' mindsets are too compliance-oriented and insufficiently fraud-oriented, especially during evidence evaluation (Carmichael 2003; PCAOB 2004a, 2007, 2008) (Hammersley, Bamber, and Carpenter 548)." Thus, the team's objective is to help management maintain integrity of the profession and help accountant's comply with audit regulators' expectations. For example, the PCAOB explains that audit documentation "facilitates the planning, performance, and supervision of the engagement and provides the basis for the review of the quality of the work (Hammersley, Bamber, & Carpenter, 548)" through Auditing Standard No. 3. Additionally, the Auditing Standards Board has issued SAS No. 99, which "requires auditors to consider during planning how an issuer's financial statement might be susceptible to material misstatement due to fraud and how

management could perpetrate and conceal fraudulent financial reporting (551).

Hammersley, Bamber, and Carpenter used Support Theory to establish their formal hypotheses. Support Theory “predicts that people assess the likelihood of an event by evaluating the support for the underlying component hypotheses rather than by assessing the probability of the event itself (548).” The researchers hope that by reducing the number of “typical” fraud risks through a prime intended to increase an auditor’s skepticism, there will be a greater recognition of fraud when there is support for the fraud. One of the unfortunate results of Support Theory is that the reduced typicality of the fraud risk combined with little support have an inverse relationship with the rate of recognition of fraud (549).

To mitigate these concerns, Hammersley, Bamber, and Carpenter suggest including documentation specificity in the audit process. In the conduct of an audit, this takes the form of memos, which have two forms: summarized and specific. A summarized memo “places a larger burden on the auditor either to recall the risks discussed or to generate the risks by re-evaluating the client’s situation than would a more specific memo” because the information in the memo is a generalized look at potential risks. Conversely, a specific memo is “more likely to contain detail allowing auditors to determine how fraud could occur or which accounts would be affected (551).” While this reduces ambiguity, the summary memo “may avoid the checklist mentality often associated with audit program lists (Asare and Wright 2004) and is likely preferred by audit firms in the event there is later litigation related to the audit (Levy 2005) (551-52).” The researchers are critical of the Big Four accounting firms because they rely on sampling and prior experience to make judgments on potential fraud. They suggest that auditors should list their concerns more explicitly so that the auditing team can more thoroughly “unpack” the fraud risks (553). Hammersley, Bamber, and Carpenter hypothesize that “unprimed auditors will

assess final fraud risk higher in the specific memo condition than in the summary memo condition (553).” The priming should work by increasing the “salience of fraud” and “making auditors unpack the event of fraud into its component fraud risks (553).” The hope would be that these behaviors would result in a more client-specific response based on what is in the financial statements, rather than general expectations based on the auditor’s previous experiences.

The second variable that the researchers analyze is the effect of fraud risk priming on the final audit risk assessment. The researchers theorize that the fraud risk priming “should reinforce skepticism during evidence evaluation (553).” Further, they expected that primed individuals using specific memos are more likely to assess fraud risk higher than those who are unprimed and using the summary memos. They also expect that primed individuals using summary memos will assess fraud risk lower than unprimed auditors using a specific memo (554).

To test their hypotheses Hammersley, Bamber, and Carpenter conduct an experiment with 81 audit seniors who were asked to attend firm training meetings. There was a morning session where participants were asked to complete five tasks consisting of brainstorming, videos, and reading. In the afternoon session, the participants were given “a file that contained summaries of the findings of the interim and year-end work for the revenue and receivables cycle and copies of the Initial Team Briefing Memo and the Fraud Risk Memo (557).” They were instructed to evaluate and find evidence that assessed final client business risk, the inherent risk for the revenue cycle, and the fraud risk for the revenue cycle. The documentation specificity variable was tested in the morning session by giving some participants specific fraud risk memos and other participants summary fraud risk memos. The fraud risk priming variable was implemented by having the primed half of participants list the important fraud risks at the beginning of the afternoon session (559).

Hammersley, Bamber, and Carpenter were able to conclude that “priming increases skepticism in fraud risk assessments in the summary memo, used most often in practice, and can reduce skepticism in fraud risk assessments in the specific memo, suggested by the PCAOB (565-566). Additionally, it was uncovered that documentation specificity and fraud risk priming have a significant relationship for issue identification and evidence evaluation (564).

This study is relevant to my research because it led to the consideration that training could influence the decisions of accountants, even those at the senior level. If priming is used in this training, a company can inspire higher-level goals, which were utilized in Tyler Thomas' study on management accounting system revisions.

In 2016, Tyler Thomas explores how priming can be used to motivate individuals involved in the management accounting system (MAS) improvement process, in his article, *Motivating Revisions of Management Accounting Systems: An Examination of Organizational Goals and Accounting Feedback,*” as part of his dissertation at the University of Wisconsin-Madison.

To illustrate his theoretical predictions, Thomas conducted an experiment that analyzed the relationship between prior success/failure, priming/no priming a high-level goal, and the effort exerted on future MAS revisions. Thomas used motivational theory and previous studies to determine his hypotheses. In this experiment, 118 undergraduate and MBA students were asked to complete a cost accounting case study. The participants had taken an average of 3.6 accounting courses and a mean of 2 years of professional experience (Thomas, 6). All individuals were given \$15 for their participation (6).

In the computer lab, participants were given two envelopes that contained important information about production activities and were asked to act as the production managers for

Michigan Inc., an industrial firm that produces two products, Green and White, in three manufacturing activities, Painting, Fabricating, and Finishing. Additionally, the participants were provided information about Michigan's cost accounting policy. In the top right corner of the cost accounting policy there was the slogan, "Better Accounting for Better Decisions (7)." After submitting their responses to the questions about cost drivers and decisions, the participants received feedback on their responses. Half of the participants were told that their choice of cost driver was successful, and the other were told that their choice was unsuccessful (8). Additionally, half of the participant population received an accounting feedback report with the slogan, "Better Accounting for Better Decisions" in the top right corner, and the other half received an accounting feedback report without a slogan (8). All of the participants receive information about the Fabricating and Finishing production activities to determine how much time should be used to continue revising the costing system (8).

Thomas's hypotheses are visually represented in Fig. 2 Theoretical predictions of his article. His main assertions concerned the dual-impact of high-level goal priming and prior MAS revision success/failure on the amount of effort exerted on subsequent MAS revisions. To summarize, Thomas hypothesized that previous failure with priming or prior success with no priming would result in higher levels of effort on future MAS revision. Additionally, he hypothesizes that prior failure and priming or prior success without priming will result in less effort on future MAS revisions (10).

After viewing the results of the experiment, Thomas proved his hypotheses correct. He concluded that "if a high-level goal is activated during MAS revision, then participants are more likely to interpret feedback on MAS revision a success in a goal-commitment frame. However, if the high-level goal is not activated, then participants are more likely to be in a goal-progress

frame when interpreting the feedback (14).” In the post-experiment questionnaire participants were asked about their level of agreement with four statements about goal commitment and goal progress. Those who were primed with the high-level goal were more likely to agree with the GoalFrame statements than those who were not primed. “This provides theory-consistent evidence that the high-level goal was more activated for those viewing the prime, and thus they were more likely to interpret feedback in a goal-commitment frame (14).”

The experiment conducted as part of my research focuses on the use of priming to activate a high-level goal, like Thomas uses in his study. To this end, Thomas’ research “provides theory and evidence that identify cases in which reporting small-scale and/or short-run success in revision efforts increases individuals' motivation to exert additional effort on MAS revision projects and cases in which such reporting decreases motivation. This reporting strategy can be effective when employees are primed with the project's high-level goal, but not effective without such a prime (14).”

POTENTIAL FUTURE OF TRAINING

Dr. Ross Tartell, adjunct professor at Columbia University and learning and development consultant, states that organizations should take a “holistic approach” on training their employees (12). Tartell references a study done by LRN, an ethics and compliance consulting firm, which reported self-governing organizations outperform organizations running on blind acceptance or informed acquiescence (12). What sets self-governance apart is that employees are self-motivated, feel like they have a purpose and a strong understanding of the moral code and expectations of the organizations (12). LRN’s research shows that self-governed organizations show greater customer satisfaction and business-wide success, while simultaneously reducing the

amount of misconduct (12). Tartell argues that these self-governing organizations have chosen to do more than just train their employees to do a job.

Professor Geoffrey Parsons Miller's study states that there are "three fundamental areas that can affect ethical and compliance behavior." These areas are knowledge and skills, culture, and structure (Tartell 13). Tartell uses this study to argue that the best way to train employees is to use a combination with a heavy focus on real-life application, some coaching or mentoring, and a very small portion spent in formal learning courses (13).

In the article, *Is Formal Ethics Training Merely Cosmetic?*, authors Warren, Gaspar, and Laufer use an experiment with bank employees to decide if formal training is actually an effective way to inspire employees to act ethically. Formal ethics programs were proposed and incentivized by the U.S. Sentencing Guidelines. This is tied to responsive regulation, which is that the theory of self-regulation is the most optimal way to inspire more ethical responses from employees (87). Comprehensive ethics training is designed to "provide models of appropriate behavior and information about industry rules, regulations, and laws" to potentially "decrease unethical behavior through the raising of awareness of moral issues (91)." Warren, Gaspar, and Laufer hypotheses reflect that the time soon after a comprehensive ethics training will result in greater importance placed on perceived firm values, more reports of unethical behavior, favorable perception of organizational efficacy in managing ethical violations, "the normative structure will demonstrate more convergence in perceptions of unethical behavior," and values will be seen as important to coworkers, supervisors, and senior managers(92-96). Additionally, the researchers hypothesize that indicators of an ethical organizational culture will shift towards or away from ethics training content over time (97).

Warren, Gaspar, and Laufer's experiment focused on a multinational bank that was incorporating comprehensive ethics training by sending out a survey asking participants to reflect on the four constructs: perceptions of coworker values, perceptions of supervisor values, perceptions of senior manager values, and perceptions of organizational efficacy (100). At the conclusion of the study had surveyed the employees three times, once before the training, then 9 months after the training, and 2-and-a-half years after the training (98). Some factors like the normative structure and willingness to report unethical behavior increased survey to survey. However, the perception of values only increased in between Time 1 and Time 2, but not in Time 3. The researchers feel that the inability to isolate specific factors, makes it difficult to offer generalizations about all training programs. However, they do conclude that their research shows that formal ethics training is integral to an organization's ethical conduct on all levels of the organization.

Most relevant to this research are Warren, Gaspar, and Laufer's insights about the changes in perception of values. The researchers found that values increased in importance in the first year, but decreased after the second year. They theorize that "self reinforcement" explains the reduced occurrences of unethical behavior (107). This was surprising, considering the perception of company values had decreased in the same time period. This makes the use of priming for company values more attractive, because of the demonstrated long-term effect of value-based training on employees.

EXPERIMENT

In order to test the theories and conclusions drawn in the literature, I conducted my own experiment. This experiment mirrors many of the practices of Tyler Thomas in his dissertation, *Motivating Revisions of Management Accounting Systems: An Examination of Organizational*

Goals and Accounting Feedback. The goal of the study was to see if a prime could successfully activate a high-level goal for the participants and then alter their behavior to be more in line with the company's values. The case study will ask the participants to read through a case, complete a comparative income statement, and then decide whether or not to make a recommendation.

HYPOTHESES

The independent variable in this study is the presence or absence of a prime (i.e. slogan), that is intended to influence the participant to conform to a company's values. The dependent variable in this study is whether or not the participant recommends or does not recommend the change. The hypothesized relationships between the presence of a prime and the recommendation of the participant are outlined below:

Hypothesis I:

Participants who complete the experimental case study, that included the prime, are more likely to respond that they would not recommend the changes. The prime, "We value quality," would instigate a higher-level goal of producing a high quality product.

Hypothesis II:

Participants with the control case study, without the prime, are more likely to respond that they would recommend the change because they would not be conditioned to value extra attention on quality over price.

METHODOLOGY

Participants

Participants were contacted by word-of-mouth at Beta Alpha Psi meetings and emails from accounting professors about the case study. They signed up for one of two dates to

participate in the case study using a Google Form. Some participants came to the computer lab and were screened through brief questioning to see if they met the criteria.

The criteria for participants was that they were Appalachian State University students, and enrolled in or completed a college-level cost accounting course. While not a specific criteria, all of the participants were currently enrolled Accounting undergraduate students. The participants had an average age of 23.24 years old and had taken an average of 5.41 upper-level accounting courses each. In this case, upper-level accounting courses were all courses completed or enrolled in after Principles of Accounting II.

Experiment

Participants entered a computer lab to complete a case study. There are two versions of the case study in this process:

Version A was the control, and included the company logo, the case study narrative, a blank comparative income statement, and two questions about the case. The logo (Appendix A) only includes the name of the company, Kitchen Supplies R Us. The narrative is a description of the company that product highlights the financial struggles and product positioning of the Fruit Blender 2000. The participant was made aware that the lower costs would result in fewer quality checks, but the blender still met industry standards. The full case study can be found in Appendix B.

Version B was the experimental, also included the company logo, the case study narrative, a blank comparative income statement, and two questions about the case. The experimental version sets out to utilize priming techniques to influence the participant. This is done through the slogan "We value quality!" on the company's logo (Appendix B) and the more detailed description of company values in the beginning of the narrative. The intent of this additional

information is to make the participant think about the higher-level goals of the organization. Like the control, the participants are told about potential cost saving measures that would simultaneously reduce the number of quality checks. The full case study can be found in Appendices C and D.

Participants were asked to review the information and fill-in the comparative income statements to find the net income and unit costs of the Fruit Blender 2000 with and without the proposed changes. After analyzing the outcome, the participant decided to recommend the changes or not. Participants were asked to save the file to the Desktop where the administrator could save the case study to the Google Drive folders.

RESULTS

There were 17 case studies completed and saved properly. At least 8 cases were lost due to technical difficulties and miscommunication about saving the file. Additionally, one of the submitted case studies does not have any information included and has been highlighted gray in the data compilation in Appendix D. However, the participant's demographic information has been calculated into the average for the study.

Of the usable 16 case studies, 7 were Version A, the control, and 9 were Version B, the experimental. To summarize the decision making process, I have highlighted the most influential criteria, according to participant's explanations, in making the final recommendation: operating income and cost/unit. Because there were some discrepancies in the actual numbers, I determined whether the figure increased or decreased with the changes and the percent of change before and after the changes were made. For 14/16 participants, the operating income increased with the implementations of suggested changes. Additionally, 13/16 participants determined that the cost per unit had decreased with the implementation of the suggested changes. Increases in

operating income and decrease in cost per unit generally indicate that the manufacturing process is efficient and cost-effective. Furthermore, 14/16 participants recommended the change, of which 8 of them were primed with the slogan, "We value quality." Two participants did suggest the change, but only one of them, the primed one, considered the quality checks in their decision-making process.

The goal of the study was to have participants answer the question, would lower costs influence you to forgo additional quality checks? The consolidated information below shows the overall decision of the population and the population of the primed individuals. The primed population reacted in the same way as the overall sample population. This is an indicator of how the prime did not impact participant behavior significantly.

DISCUSSION OF RESULTS

A prime is a word, phrase, or action that will influence an individual's actions towards a specific, higher-level goal. If used in company training, employees would be predisposed to making decisions in-line with the company's values. The example that Thomas F. Tyler (cite page number) used in his study was, "Better Accounting for Better Decisions," which was intended to prime participants to keep the purpose of the accounting policies in mind while revising management accounting systems. Tyler's experiment became the outline for my own experiment. The slogan, "We value quality," was intended to encourage participants with the experimental case to consider Kitchen Supplies R Us' values before making decisions about the cost versus quality decisions.

The benefit of priming is that it can influence the individual without requiring them to exert extra energy on the implementation of the goal. The training committee could utilize

priming in the form of a short seminar and then through the use of slogans to influence the employees during their training about the possible decisions that could be made.

The research led me to hypothesize that the participants who were given the experimental case would be more likely than those with the control case to choose to increase quality over increasing the profit margin. Similarly, I hypothesized that those with the control would be less likely than those with the experimental case to choose to increase quality over increasing the profit margin.

The results of the experiment showed that the prime did not significantly influence the participants' decision-making process. Regardless of the prime, 87.5% of the population chose to implement the cost-cutting, productivity-increasing results. According to participants, the changes in operating income and the cost per unit were the main factors in their decision making. Only one of the primed participants said that they would not recommend the change and referenced a lower quality in their reason why. The participant said, "the changes necessary to make those different profits would not be worth the price. There is a drop in sales per unit produced and there is a greater chance that the products could be defective (Table B)." The other participant that did not recommend the change, based their decision on the changes they saw in operating income and unit/ cost.

This experiment disproves Hypothesis I, which states that those with the prime would be less likely to recommend changes in the process because they would be more focused on quality than the cost savings. Additionally, because the participants with experimental and control cases answered so homogeneously, one cannot say that not being exposed to a prime, resulted in a higher rate of recommendation, as Hypothesis II states.

This indicates that while priming may be an effective method in some environments, it is not going to be effective in every scenario. Further, it indicates that other factors, that are not covered in this experiment, could be impacting the participant's decision. It may imply that the prime would need to be reinforced over time to take full effect.

LIMITATIONS OF THE STUDY

One of the greatest limitations of this study is the small sample population. This meant that there was not enough data to determine the statistical significance of the results. There is no way to know whether the sample population is or is not indicative of the entire population. Thus, there are concerns about the results being generalizable to a wider population, which limits their usefulness to the academic community.

Another limitation of this study is that it only includes undergraduate accounting students from a single university. These students have similar accounting education backgrounds and professors. It would stand to reason that these students, who have had limited experience in the field, would make similar decisions because they have similar backgrounds. It would be interesting to see how students from other universities would respond to the study.

There was not an exit-survey following the completion of the case study. While this did not seem necessary initially, it would have been helpful to have a manipulation check. The manipulation check would give reasonable assurance about the effectiveness of the prime; thus, the conclusions could be more closely correlated to the prime.

EXPANDING THE RESEARCH

To further this research, one may want to look at how different populations within the profession or education field would respond to a similar survey. For example, it would be

interesting to see how first year associates with some field experience would respond to priming. Hammersley, Bamber, and Carpenter had a population of audit seniors, who already had experience with fraud and auditing, which added further emphasis to the power of priming. The level of the experience of a participant can definitely influence how they handle subjective material, because it takes time to groom skills like professional judgement.

Another way to expand this research would be to use an audit or tax-based case study to determine how an accountant can use professional judgement in a public accounting firm or industry environment to navigate gray areas in the field. This would broaden the scope of the experiment and further the implications for other types of decision-making.

Research has shown that much of what an employee learns about a company comes from hands-on experience and comprehensive training programs. It would be interesting to see how Warre, Gaspar, and Laufer's study could incorporate a prime and then be applied to the accounting profession. This would help researchers evaluate the long-term effects of priming in training and in the accounting profession.

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Case ID	What happened to Operating Income?	Change in Operating Income	What happened to Cost/ Unit?	Change in Cost/ Unit Produced	Recommend Changes?
1A	Increased	38.29%	Decreased	-12.44%	Yes
2A	Increased	18.72%	-	-	No
3A	Increased	29.79%	Decreased	-11.64%	Yes
4A	Increased	27.69%	-	-%	Yes
5A	-	-%	-	-%	-
6A	-	-%	Decreased	-16.00%	Yes
7A	Increased	15.63%	Decreased	-11.36%	Yes
8A	Increased	34.96%	Decreased	-12.14%	Yes
1B	Increased	72.92%	Decreased	-13.60%	Yes
2B	Increased	27.28%	Decreased	-6.25%	Yes
3B	Increased	0.39%	Decreased	-31.75%	Yes
4B	Increased	50.59%	Decreased	-17.31%	Yes
5B	Increased	22.78%	Decreased	-7.78%	Yes
6B	Increased	34.96%	Decreased	-12.14%	Yes
7B	Increased	69.44%	Decreased	-35.51%	Yes
8B	Increased	6.00%	Stayed the Same	0.00%	No
9B	-	-%	Decreased	-12.44%	Yes

Table 1: Consolidated Experiment Results

Recommend Changes?	Why or Why Not?
Yes	Generating a much higher operating income and your cost per unit has also significantly decreased. (Also your time to produce is greatly reduced leaving you more time to pursue other revenue generating activities)
No	The changes necessary to make those different profits would not be worth the price. There is a drop in sales per unit produced and there is a greater chance that the products could be defective.
Yes	I would because it is reducing my cost of production per unit by \$5.12. It is increasing my operating income drastically. I would test it before I implement the new process since it is getting rid of some of the features in the previous process. I want to reduce my cost, but I want to make sure that new process will make enough sale to be profitable.
Yes	If we met the required industry standards, and our operating income is higher, I believe that we should go ahead and shorten the process.
-	-
Yes	Yes, I would recommend the change. Revenue is increasing while expenses are decreasing. Also, the company is selling more products than before. All expenses are decreasing significantly and production time is shortened by 20%. I would definitely recommend the change because it is improving several areas of the company.
Yes	Because cutting the fixed labor costs in turn lowers the cost per unit and raised operating income.

Yes	Cost per unit produced would decrease by \$5.38 post-changes.
Yes	I would recommend the change because it increases your operating income by over \$20,000. I would take into consideration though if there are more quality issues that are reported after the fact and if that would then increase repair costs.
Yes	The change is economically and operationally feasible. It will increase productivity and profit, at little to no cost to the company or harm to other factors.
Yes	The change would mean the same number of sales but the cost of goods would decrease making the items cheaper to produce. The income would increase as well.
Yes	Cost per unit goes down as well as the time it takes to make each unit. Therefore, the change is more efficient
Yes	You receive more money from improving the process. This process allows a higher operating income and allows your to sell your product at the same price while also having less expenses.
Yes	Revenue stayed the same and the cost of producing the Fruit Blender 2000 decreased. Profit increased.
Yes	I would recommend the changes because even though the cost per unit produced and sales per unit produced are both decreased the overall change is an increase in net profit.
No	They have more sales revenue. Even though the change have less operating expense, the sales revenue is smaller than original one.

Yes	This drops your total cost to produce by \$5.60 this will save you money in the long run to invest in other business revenues. Helps generate additional income and using less time to produce to use employees in other areas of the business.
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Table 2: Participant's Recommendations and Rationale

	Ratio	Percentage
Showed Decrease in Operating Income	0/14 responses	0%
Showed an Increase in Operating Income	14/16 responses	87.5%
Operating Income Could Not Be Calculated	2/16 responses	12.5%

	Ratio	Percentage
Showed Decrease in Cost/ Unit	13/16 responses	81.25%
Showed an Increase in Cost/ Unit	0/16 responses	87.5%
Cost/ Unit Could Not Be Calculated	2/16 responses	12.5%
Cost/Unit Did Not Change	1/16 responses	6.25%

	Ratio	Percentage
Recommend Change	14/16 responses	87.5%
Do Not Recommend Change	2/16 responses	12.5%
Primed & Recommend	8/9 responses	88.99%
Primed & Do Not Recommend	1/9 responses	11.11%

Table 3: Ratios of Results

APPENDIX A: EXPERIMENT CONTROL LOGO



APPENDIX B: EXPERIMENT EXPERIMENTAL LOGO



APPENDIX C: EXPERIMENT CONTROL CASE STUDY

Welcome!

There will be an entrance survey and a short case study. Please use the buttons to navigate through the spreadsheet.

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Push the Start button to continue to the Entrance Survey.



Number of Upper-Level Accounting Courses	
Age	
Program of Study	



<p>The Fruit Blender 2000 is currently produced in 50 minutes at a cost of \$45 per unit. Engineers have conducted research and found that the process can be shortened by 20%, thus reducing other operating expenses by 30%. The head engineer, Rachel Martin, did warn you that shortening the process would remove some of the earlier quality checks. However, there were just enough checks to meet the industry's minimum standards. In reducing the time, the labor costs would decrease by \$3.50 per unit.</p> <p>Below are the current accounts for the Fruit Blender 2000 for 2500 units</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">Sales Revenue</td> <td style="text-align: right;">\$157,500</td> </tr> <tr> <td>Other Operating Expenses (Fixed Cost)</td> <td style="text-align: right;">\$17,500</td> </tr> <tr> <td>Direct Materials</td> <td style="text-align: right;">\$70,000</td> </tr> <tr> <td>Direct Labor</td> <td style="text-align: right;">\$25,000</td> </tr> </table> <p>Figure the changes in costs after the proposed changes, then create a comparative income statement if Kitchen Supplies R Us produces 2800 Fruit Blender 2000s and sells 2650 of them. What is the change in production time between the two processes? After considering these changes, would you recommend changing the process or not? Why?</p>	Sales Revenue	\$157,500	Other Operating Expenses (Fixed Cost)	\$17,500	Direct Materials	\$70,000	Direct Labor	\$25,000	<div style="text-align: center; font-size: 2em; color: red; opacity: 0.5; transform: rotate(-45deg); position: absolute; top: 10px; left: 10px;"> Kitchen Supplies R US </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th> <th style="width: 10%; text-align: center;">Original</th> <th style="width: 10%; text-align: center;">Post-Changes</th> </tr> </thead> <tbody> <tr><td>Sales Revenue</td><td></td><td></td></tr> <tr><td>Operating Expenses</td><td></td><td></td></tr> <tr><td> Materials</td><td></td><td></td></tr> <tr><td> Labor</td><td></td><td></td></tr> <tr><td> Other Operating Expenses</td><td></td><td></td></tr> <tr><td>Operating Income</td><td></td><td></td></tr> <tr><td> </td><td></td><td></td></tr> <tr><td> Sales/ Units Produced</td><td></td><td></td></tr> <tr><td> </td><td></td><td></td></tr> <tr><td> Materials/ Units Produced</td><td></td><td></td></tr> <tr><td> Labor/ Units Produced</td><td></td><td></td></tr> <tr><td> Fixed Cost/ Unit Produced</td><td></td><td></td></tr> <tr><td> </td><td></td><td></td></tr> <tr><td> Units Sold</td><td></td><td></td></tr> <tr><td> Units Produced</td><td></td><td></td></tr> <tr><td> Cost/Unit Produced</td><td></td><td></td></tr> </tbody> </table> <div style="text-align: center; font-size: 2em; color: red; opacity: 0.5; transform: rotate(-45deg); position: absolute; bottom: 10px; right: 10px;"> Kitchen Supplies R US </div>		Original	Post-Changes	Sales Revenue			Operating Expenses			Materials			Labor			Other Operating Expenses			Operating Income						Sales/ Units Produced						Materials/ Units Produced			Labor/ Units Produced			Fixed Cost/ Unit Produced						Units Sold			Units Produced			Cost/Unit Produced		
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APPENDIX D: EXPERIMENT EXPERIMENTAL CASE STUDY

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Number of Upper-Level Accounting Courses	
Age	
Program of Study	

<p>At Kitchen Supplies R Us there is an emphasis on quality and customer service. This is carried through all areas of the business, including the management, manufacturing, and delivery of goods. The Fruit Blender 2000 is currently produced in 50 minutes at a cost of \$45 per unit. Engineers have conducted research and found that the process can be shortened by 20%, thus reducing other operating expenses by 30%. The head engineer, Rachel Martin, did warn you that shortening the process would remove some of the earlier quality checks. However, there were just enough checks to meet the industry's minimum standards. In reducing the time, the labor costs would decrease by \$3.50 per unit.</p>	<div style="text-align: center; border: 1px solid black; padding: 5px; background-color: #e0f0ff;"> <p>Kitchen Supplies R US We value QUALITY!</p> </div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 80%;"></th> <th style="width: 10%; text-align: center;">Original</th> <th style="width: 10%; text-align: center;">Post-Changes</th> </tr> </thead> <tbody> <tr><td>Sales Revenue</td><td></td><td></td></tr> <tr><td>Operating Expenses</td><td></td><td></td></tr> <tr><td> Materials</td><td></td><td></td></tr> <tr><td> Labor</td><td></td><td></td></tr> <tr><td> Other Operating Expenses</td><td></td><td></td></tr> <tr><td>Operating Income</td><td></td><td></td></tr> <tr><td> </td><td></td><td></td></tr> <tr><td> Sales/ Units Produced</td><td></td><td></td></tr> <tr><td> </td><td></td><td></td></tr> <tr><td> Materials/ Units Produced</td><td></td><td></td></tr> <tr><td> Labor/ Units Produced</td><td></td><td></td></tr> <tr><td> Fixed Cost/ Unit Produced</td><td></td><td></td></tr> <tr><td> </td><td></td><td></td></tr> <tr><td> Units Sold</td><td></td><td></td></tr> <tr><td> Units Produced</td><td></td><td></td></tr> <tr><td> Cost/Unit Produced</td><td></td><td></td></tr> </tbody> </table>		Original	Post-Changes	Sales Revenue			Operating Expenses			Materials			Labor			Other Operating Expenses			Operating Income						Sales/ Units Produced						Materials/ Units Produced			Labor/ Units Produced			Fixed Cost/ Unit Produced						Units Sold			Units Produced			Cost/Unit Produced		
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