IMA CANDY COMPANY: AN EXPERIENTIAL EXERCISE IN MANAGERIAL ACCOUNTING

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ABSTRACT

This paper explains the use of an exercise to develop students' understanding of introductory managerial accounting concepts associated with costs in manufacturing. The game requires students to work in competing teams in an attempt to achieve the highest volume of accurately produced units at the lowest cost within the allotted time. Students are required to assess their performance in terms of cost accounting concepts applicable to the manufacturing process, as well as quality control issues, constraints, and other problems experienced during the exercise. The game is generally well received because it is experiential and the students receive the fruits of their productive labor from the game.

INTRODUCTION

Experiential exercises are not new to the teaching methods used in managerial accounting. Simulations and games have been used for many years in managerial accounting (Goosen, 1974; Lord, 1975; Sord, 1977; Bradley & Murtuza, 1988; Goosen, 1990; Lamberton, 2002). Some findings even suggest that accounting majors outperform other majors when engaged in experiential exercises outside of their accounting courses (Hornaday & Wheatley, 1986; Fekula & Ritchie, 2006), thus suggesting that such games and simulations lend themselves well to accounting instruction. In some accounting-specific exercises the evidence indicates that these experiences help to enhance students' procedural knowledge and skill development (Odom & Murphy, 1992).

The active learning processes posed through experiential exercises contribute to the development of student skills and application ability (Bonwell & Eison, 1991; Morgan, Martin, Howard & Mihalek, 2005). The use of these experiences in the classroom is further enhanced by the prospect that students can carry their knowledge and experience from prior exercises into future projects (Leong & Crowley, 2007). In addition, schools of business have been and continue to be under increased demands from AACSB to get students engaged in their learning experience (Biggs & Gulkus, 1988; Boscia & McAfee, 2008). Even though it is sometimes difficult to uncover an empirical relationship between experiential exercise performance versus learning, the evidence shows that exercises still serve to differentiate degrees of performance, which might be valued by prospective employers even more than learning (Bernard, 2004).

Experiential learning is the "process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p. 41). Historically, many accounting instructors defaulted to the traditional approach of having students work through numerous problems in order to get exposure to the required course content (Goosen, 1974). Although games are credited with helping students to internalize knowledge, the exercises do not necessarily generate the desired content, so it is important for teachers to determine how to best integrate experiential exercises into their traditional teaching processes (Lord & Newson, 1977). This "pedagogical pluralism" (Windsor, 1984) is a means to ensure that the various teaching methods complement each other.

Games like *The Puzzle Game* are used to emphasize key points in accounting, which might otherwise get lost in modern "busy" textbooks (Gupta, Ostapski & Elson, 2005). Another game with objectives similar to the game being described in this paper uses an extensive classroom production exercise employing Lego® building blocks to engage students in a managerial accounting lesson (Burns & Mills, 1997). In contrast, the *IMA Candy Game* poses a simpler task and uses fresh, premium pieces of candy as raw material. Other experiential exercises have used or promote the use of candy as an incentive to engage in the games (McAfee, 1981; Newstrom, 1989; Potosky, 2002), but in this case the candy is an actual part of the game (cf. Potosky, 1998).

THE GAME

The IMA Candy Company provides the context in which the game occurs. The students work within the Assorted Candy Department (ACD) of IMA (Introduction to

Managerial Accounting). The goal of each Assorted Candy Department is to produce high quality bags of assorted candy by placing two pieces of each type of candy into a plastic bag. Each bag must then be sealed and labeled. The ACD is also responsible for ensuring that costs are kept to a minimum. A supervisor is assigned to have overall responsibility for both the material and the workers.

MATERIAL

The required and recommended types of materials for this game are as follow:

1. An adequate supply of small clear plastic sandwich bags with a snap-seal opening. The approximate size of these small bags is usually 6.5" x 5.875". They are normally available in boxes of 100 at a fairly reasonable cost. The bags must be able to be written upon with the appropriate marker.
2. A marker suitable for labeling the plastic sandwich bags.
3. An adequate supply of small pieces of candy of at least five different varieties. The authors recommend using fresh, premium types of candy that most students would find desirable to eat. Although these types of candy are more expensive, the amount used in the game can be adjusted accordingly. If the budget does not allow for more expensive candy, less expensive candies or a mixture of both types can be used. Examples of candies used by the first author include various forms of Hershey's® chocolates, cinnamon hard candies, butterscotch hard candies, Jolly Rancher® candies, peppermints and peppermint patties.
4. Tablets or paper suitable for record-keeping.

GROUPS

Students must be formed into groups of approximately 4 to 6 people; although this number can be adjusted accordingly. Each group should be referred to as a production team working in the Assorted Candy Department. Each team must designate one person as Supervisor and one person as Materials Control and Inventory Monitor. The remaining members of the team, those numbering from 3 to 4 people are the production line workers. Regardless of the actual number, each team must have the same number of production line workers. Teams can be balanced by designating other students as non-team members who will serve as Quality Control Monitors or as team process observers.

THE PROCESS

The materials and labor used in the game must have a cost associated with them and this particular cost must be assigned to the materials at the beginning of the game according to the instructor's discretion. A cost should be assigned to the plastic bags, the candies, the paper used for record-keeping, labor, and any other overhead. Note that each of the types of candies should have a different cost since they represent different material. Also, prior to class the instructor should randomly mark an appropriate number of plastic bags and pieces of candy with a marking that designates that piece of material as inferior and subject to rejection by the Quality Control Monitor. These markings should be perceptible through deliberate inspection, but should not otherwise be obvious to the team members.

Before the game begins the Materials and Inventory Control Monitor should be given the opportunity to inventory the materials to be used in the game. Throughout the game this Monitor keeps track of the materials supplied from his or her inventory. The Supervisor's role is to monitor all the personnel to make sure they are accomplishing their designated task. No personnel are allowed to perform the tasks assigned to another person. The Quality Control Inspector inspects all of the finished product to include the quality of each specific piece of candy in the bag, the type of candy placed in the bags, the quantity of the candies used in the bag, the extent to which the bag is properly sealed, and whether the bag is attractively, legibly and appropriately labeled.

The job of the production line workers is to follow the directions of the supervisor in order to produce the assorted candy bags. The Supervisor is responsible for ensuring that the following guidelines are adhered to in the production process:

1. One or more production line workers must get the candy and bags by going to the Materials and Inventory Control Monitor.

2. The production line workers must assemble the candy bags according to the directions of the supervisor. The supervisor should direct the production line workers to place two pieces of each type of candy into each bag, and to ensure that the pieces they use are of high quality showing no damage or unusual markings of any kind.

3. The production line workers must seal the bag.

4. The production line workers must label each bag with the name of the company, the title *Fine Assorted Candies*, and an accurate description of the contents.

5. One of the production line workers must deliver the completed candy bags to the Quality Control Inspector.

Note that the guidelines allow enough room for students to decide how they will retrieve their production materials, how they will assemble the bags, how they will label the bags, and when and how they will deliver the bags for quality control. Thus, the potential exists for problems to occur especially in the area of quality control as students rush to complete the competitive task in a limited period of time. In particular, if the students do not deliver bags for quality control on a periodic basis, they cannot be sure that their bags are being produced in accordance with quality

control standards. It is possible that they will not know whether any of their bags have passed inspection until their production run is over and it is too late to change. If they get feedback about the quality of their bags then they will know if adjustments to their process are necessary.

QUALITY CONTROL

The Quality control Inspectors have an important job and should adhere to the following guidelines:

1. The Quality Control Inspectors do not work for the team and are not rewarded through the team's performance, so they should be unbiased in their efforts. The Quality Control Inspectors should be instructed to examine each finished bag to ensure that it has two pieces of each type of candy and that each of these pieces is free of natural defects that came with the candy when purchased. The pieces of candy must also be free of any markings placed on the pieces by the instructor. The determination of natural defects can be left up to each inspector; however, they must not ignore defects such as improperly wrapped pieces of candy, defects in the wrapping or markings on the wrapping, chipped, cracked, or obviously broken pieces of candy or any other feature that would make the piece of candy look abnormal or unattractive to a consumer.

2. The inspectors must also check each bag to ensure that it is completely sealed, as well as labeled with the name of the company, the title *Fine Assorted Candies*, and an accurate description of the contents. The labeling should be accurate, legible, and reasonably attractive given the constraints of the materials at their disposal. Labels that are excessively sloppy, inaccurate or otherwise poor in appearance should be rejected.

3. The quality control inspectors should be rewarded for both accepting, as well as rejecting finished products in accordance with the standards. This reward system should be designed according to the discretion of the instructor to ensure that inspectors are not biased in their judgments favoring rejection over acceptance or vice versa. Like the rewards given to the teams, the rewards for these inspectors can also be pieces of candy.

PRODUCTION RUNS

The instructor should allow at least 5 to 10 minutes for the teams to prepare the organization of their department and process. Since the teams are competing, they should begin their production runs at the same time, as directed by the instructor. The recommended production run time is between three and five minutes; however, this time can be adjusted according to team members' learning curves and an assessment of the attained production efficiency.

At the end of the first round, the team with the most bags that passed the quality control inspection is the winner. Each team member is allowed to keep one bag of the candy units that passed quality control inspection. If there are fewer bags than team members, the team members should share the bags. The Quality Control Inspectors should be rewarded by the instructor for having done an accurate job in enforcing the standards.

At this point the students should assess the status of their process according to managerial cost accounting concepts. At minimum this would include accounting for finished goods inventory, remaining inventory, work in process, direct and indirect costs, overhead, constraints and bottlenecks, and quality control issues.

In the second and subsequent rounds, as needed, students should be given time to address prior production problems, improve production quality, and reduce manufacturing costs. At the end of the second round, teams must present their direct material costs, direct labor costs, manufacturing overhead, and product cost per bag of candy produced. The winner of this round is the team with the lowest product cost per unit. The reward can be the same.

Subsequent rounds can also be used to teach job order costing concepts by having the instructor submit special orders for private label branding of candy bags, including special mixes of candy as specified in the order. Students would then need to address the reorganization of their processes to accomplish the fulfillment of special orders and account for their actions using job order costing concepts.

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