

CASE STUDY – STUDENT AUTHORED

IMA Business Game at University of Greenwich

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Abstract

This article, written by a second year maths student from the University of Greenwich, describes a workshop designed to increase maths students' awareness of how businesses operate. The motivation for this activity came from collaboration between the University of Greenwich and the Institute of Mathematics and its Applications.

Keywords: Business Awareness, Employability.

1. Introduction

Employers often say that they want graduates or placement students to have 'business awareness' but, as asked by Ramesh et al. (2013), how can students learn how companies function? To help students at Greenwich understand how businesses operate, staff developed a Business Game activity for second year maths students with the help of the Institute of Mathematics and its Applications (IMA) (Bradshaw, 2013). They have run this activity for the last four years and report that student feedback has always been extremely positive. The IMA are keen to help other universities run similar activities; so do contact Erica Tyson (IMA University Liaison Officer) for more details if you are interested.

2. Business Game

About 60 students gathered one afternoon at Greenwich to take part in this activity, which we were told was going to be in the style of 'The Apprentice'. Thankfully neither Lord Alan Sugar nor Claude Litner were present to give us all a good roasting at the end.

We were split into three equal 'packaging companies', with 20 staff each, and given a brief which outlined the departments that a company might need (i.e. marketing, production, finance etc.). We were also provided with a synopsis of the rules of the game and what staff in each department should be doing. A list of different materials and their costs was also included. Each team then chose their company name and CEO, who asked for 2 volunteers each to act as finance, marketing and purchasing staff. The rest of the team were split in half into design and production staff members. There wasn't an opportunity to change roles as the exercise only lasted for around 2 hours.

One of the lecturers took the role of the customer and another became the supplier. Other lecturers observed us as we went about our business. Only the marketing staff were permitted to communicate with the customer and only the purchasing staff with the supplier.

Our first task was to design, produce and sell a box to contain a small container. The marketing staff immediately went to see the customer to ascertain his requirements and obtain an estimate of what price he would be prepared to pay together with the volume of boxes required. In the meantime, the finance staff started to work on the costs of the materials and staff, although this was only an initial estimate as the design and volume were not as yet decided.

As soon as the marketing staff returned, the design team started working on the prototype while the finance team tried to calculate the unit cost. At the same time the purchasing staff went to the

supplier to buy the initial materials required. There were different types of the same sort of material, for example, masking tape, clear tape, or double-sided invisible tape, at different prices. We therefore had to decide whether to spend money on high-end materials thus improving the quality of our designs, or save money and buy at the cheaper end of the range and make more profit, but risk the client rejecting our design.

However, it soon became clear how difficult it is to coordinate all of the different requirements and how the flow of the supply chain has a serious impact on 'the business'.

The finance team could not calculate the unit cost until the purchasing staff were back from negotiating with the suppliers over material costs, and the design team could not make the prototype until the materials were bought. One delay occurred because there was a queue at the supplier; this showed us that choosing a potential supplier was not just about cost; efficient service and speed of delivery are also vital.

Once the prototype had been made it was taken to the customer for his approval before production commenced. We did not feel that we could purchase the rest of the materials or start production until the customer had approved the model in case he rejected it or required modifications.

This then led to a delay in purchasing materials and hence a delay in production. It also revealed that if one is too prudent over spending on machinery, there is insufficient capacity in production thus slowing delivery. It is very difficult to get the right balance between spending on hardware, profit and staff availability. Up until this point, the production staff hadn't had work to process, resulting in a waste of staff resource and cost. Once production started, we soon found that these staff were under immense pressure to get products out on time, although the delays had occurred higher up the supply chain.

We then went on to design and produce more products to keep the chain going. The second product was a type of 'horse box' which needed to have sides sufficiently high to stop the animal escaping but also allowing easy loading and unloading. At the end of the game we gave a brief presentation of our gross and net profits, what troubles we had encountered and what we had learned from the process. One of the problems we encountered that we had not anticipated was a queue at the suppliers, as other 'companies' were taking time to negotiate over prices.

The 'customer' and 'supplier' commented on each team's performance. The 'customer' noted how well or not we had kept to the promised deadlines and specifications, and why he had paid a much higher price than he originally intended for the 'animal box' as he was under time pressures. The supplier commented on each team's different approach to buying supplies, in terms of volumes and price negotiations. He also let us know that one team had successfully sold their leftover materials back to him at the end of production, thus increasing their profit.

Overall, it was an excellent and clear lesson in how hard it is to run a successful business and how much juggling is required to keep all of one's staff productive. It also highlighted how different personalities would affect the running of a business and how problematic it is to be a manager who encourages and praises their staff but also is tough when necessary. For example, a member of staff with a laidback personality can often need motivating to ensure that work is produced to the necessary timescale, and this can sometimes be frustrating.

3. Final Thoughts

But actually the best bit of the afternoon was that it was tremendous fun to play! The students were all very competitive even though we were told it wasn't about the winning but the experience! I cannot think of any group of people who would not benefit from such an experience and I would suggest that even existing companies should take part in similar activities with staff playing roles which are the opposite to those that they hold. I think this would increase the understanding of all staff for their colleagues in different departments and stop the friction between, say, floor operators and management, as they would appreciate the problems that each other faced. I believe it would also improve the cohesiveness of a company and help staff to realise that they were all in it together, and that each area has a valuable contribution to make to the overall success of a company.

4. References

Bradshaw, N. (2013). IMA Business Game, *Mathematics Today*, 49(1), pp. 28.

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