Effective industry support for higher education of employees

Craig Harris, Red Ball Oxygen, Co., Inc.

Operations Manager Director, Quality Assurance Former Operations Manager of Specialty Gas Lab

Dr. Malini Natarajarathinam, Texas A&M University

Dr. Malini Natarajarathinam is an Associate professor with Department of Engineering Technology and Industrial Distribution. She teaches classes on strategic relationships for industrial distribution, distribution information systems and new directions in Industrial Distribution. She is also the founding faculty and advisor for the Society of Women in Industrial Distribution (SWID). She works on many service learning projects with her students where they work with many local community agencies.
A case study providing evidence of a compounding positive impact on organizations that support education of their members

Abstract
Strategic educational investments that foster industry best practices directly and positively affect the EBITDA of the small businesses. In this paper, we show how investment from a small business to support an employees’ higher education helps the overall organization in tangible and intangible ways. The specific case study project focuses on developing a web based mechanism to order and produce packaged gases in a closed loop supply chain to optimize cylinder placement through a distribution network comprised of a packaging facility for twenty distribution centers and retail store fronts that handle both outbound and inbound product. The case study provides evidence of the perceptions of organizational perception that educational investments not only create a bond between the organization and the employee but they provide a basis for which the investments sparks educational curiosity throughout the organization. This paper combines methods developed through an educational investment in key operators concerned with asset utilization as well as surveys and interviews regarding the perception of educational investments from the viewpoint of an industry buying group. The sponsoring organization sees bottom-line improvement with efforts from its own employees, including those who do not receive direct educational investments. The benefits of supporting higher education by a small business may expose some financial risk but this paper provides evidence that the investment compounds quickly throughout the organization.

Introduction
Small businesses must compete with publicly traded global giants. The need for an experienced, educated, creative and motivated work force is quickly becoming a necessity. Companies spend money on employees’ continuing education in numerous ways, ranging from daylong seminars to full blown PhD programs. The investment in education and training has benefits and risks associated with it from the investing business’ point of view. We are interested in the benefits of the training and how it expands from the individual to the organization as a whole. We provide, in this paper, a case study in which a small business financially and emotionally support an employee in the pursuit of an advanced degree and how that educational experience serves as a compounding force for improvement throughout the structure of that company. Research
specific to the independent welding industry and the benefits received by educational investments is limited and therefore the samples for this research are taken from industrial alliances, the case study of one company and current graduate students.

This paper provides insight from members of the Buying and Information Group (BIG), a strategic alliance of twelve independent welding gas and supply companies located throughout the United States. The BIG group meets on a regular basis to discuss best practices within the industry. While all of the companies within the BIG group provided information regarding their views on educational support, only half of the companies financially support education of their employees. Only Red Ball Oxygen provided us with permission to name its company in this paper. The six companies’ executives that do support education provided insight on the business’ perception of the value of training and education. The responses of the companies were obtained through written survey answers as well as face to face and phone interviews. Several current graduate students were also interviewed for this paper. All of the students in question receive financial aid from their employers, however, the level of support from their companies in terms of encouragement and informational resources ranged from complete support to nearly antagonistic. The most severe case of the lack of support of a current graduate student is included in this paper to provide a juxtaposition of the positive effects found in the results of the case study. The case study provided within this paper was performed at Red Ball Oxygen and provides the most tangible evidence of the positive impact of an investment in employee education.

**Cost/benefit of continuing education**

Tuition reimbursement is a popular benefit in which employers pay all or part of an employee’s tuition for a range of training and college education. The executives in the BIG group were asked to provide their perception of the benefits of small businesses’ investments in employee education. The question is open ended and so are the responses. The BIG group is diverse in its tuition reimbursement policies. Six of the twelve companies in the alliance responded that they provide some level of reimbursement for industry and vendor specific training. Two companies that responded provide full tuition reimbursement. The reasoning reported among those that only provide financial support to industry specific conferences and vendor specific training is that there is a concern that the investment would be lost if the employee decided to leverage the
education for a job at a different company. The companies that do support tuition reimbursement state that while losing an employee after their education is complete is a concern, the benefits of the education outweigh the potential risks.

The survey results show that the overwhelming benefit of higher education is that an intelligent and dedicated workforce that is creative and flexible is the best way to compete in a market in which customers are becoming more demanding as technological advances increase. The surveys show too that an investment in education from the company’s standpoint shows a long term commitment to that employee while the student simultaneously shows dedication to the company. The risk associated with tuition reimbursement lies in the possibility of an employee switching jobs once they have completed a degree through tuition reimbursement, possibly taking new found skills to the competition. In their 2006 article, Pattie, Benson and Baruch suggest that there is a clear difference between graduate degrees and skill specific training in regard to turnover. They suggest that graduate degrees are strongly related to earnings and career opportunities and therefore employees are more likely to switch jobs if they have not received a promotion after graduation (Pattie, Benson, & Baruch, 2006).

To shield themselves from an employee’s flight after graduation, the tuition reimbursement candidate is highly vetted in most instances, although the process is extremely vague for the BIG group companies. The CFO at Red Ball Oxygen, for instance, stated that the candidates for tuition reimbursement are those that are disciplined, show a willingness to improve, and are creative and respected by peers. He continues that the traits stated above provide a platform that will bring others into the educational experience. The theme that employees that have peer respect is shown in the survey responses; the executives believe that one of the major benefits to providing an education is seen in the general enthusiasm of employees across the respective organizations. New ideas provided by an education that provides insight into a variety of industries and processes fosters continuous improvement within each organization.

There was no mention in any survey of any hard line expectation for a monetary return on investment. Instead, the responses revolved around the perception that the employee was dedicated to the company and that they company shows support for the improvement of the employee through tuition reimbursement. Several companies stressed that the lack of trained and experienced leadership is a definite impediment to the growth of their small businesses. They
believe that they are strengthening the ties to the company and education provides not only intellectual stimulation but stokes the individual ambition to contribute more. The benefits listed above are perceptions and are not easily measured in numbers. This paper proves, however, that there are financial benefits to providing an education to an employee and provides insight into the more subjective benefits through the following case study.

The compounding effect of education is described as a force multiplier by several front line employees at Red Ball Oxygen. These employees who voiced their opinions were brought in to work on the project this paper’s case study reviews. They stated that the education policy at the company is very clear and that they have felt the benefit of several of their co-workers’ educations. The project workers state that the company’s students are very open with new ideas and invest quite a bit of time training them on new techniques. The general feeling was that front line employees were receiving benefits of the students through these ideas and that it directly and positively affected their jobs and in some cases, their voices in the company.

Juxtaposed to the compounding positive nature of support from a company is the compounding negative effect of the lack of support. The graduate student interviewed with the most extreme case explains that his company does not provide financial support for his education. He is quick to point out that it is the lack of encouragement that is most disappointing to the student. Where the students who are supported claim that the relationship between employer and student is strengthened through the experience, where there is no support, the graduate student explained that it completely sours the employee’s relationship with the organization. Further, because of the lack of support, any knowledge gained through the educational experience was kept from the organization, compounding the issue as the organization now loses new opportunities. This particular graduate student is currently seeking new employment as a direct effect of the soured relationship that arose during his education. This paper does not claim that an investment in education must be financial, but rather the organizational support of continuing education effects much more than the one employee that is supported.

The case study below provides the output of the application of the education of one employee and how the experience of that education influenced the organizational behavior regarding a particular project. The project provides substantial proof that the BIG executives are correct in their assumption that education provides a spark in individual ambition in which
interdepartmental cooperation creates a tangible output that results in increased profit for a company.

Case study

This paper highlights the case of Red Ball Oxygen, an independent welding gas and supply distributor, headquartered in Louisiana. The company supports education reimbursement and recently completed a continuous improvement project. The improvement project is the synthesis of several departments coming together for a common goal and using the formalized techniques learned in the advanced degree program to create a tangible, web-based program with which the company improves processes and saves money. The return on education investment is seen not only in terms of dollars but through the observation of the overall intellectual curiosity of the organization in terms of improving current processes.

Origin

The origin of the project stems from individual departmental projects throughout Red Ball Oxygen reporting back to the President during weekly staff meetings. The theme of these projects highlighted that the company was spending at a pace out of line with revenue. The President of the company formed a team to investigate possible solutions. A current graduate student, whose education is paid by the company, was placed as the lead of the team. The team consists of members from production, branch operation, fill plant operations, and distribution. A formalized approach to business research found in (Cooper, Schindler, & Sun, 2006) was quickly applied and the team went to work to best answer how to best reduce system wide costs associated with cylinder distribution while maintaining service levels.

Synthesis/Application

Purchasing, routing, cylinder production, branch inventory management, and operations are all represented on the cylinder distribution project team. The current state of compressed gas distribution within Red Ball Oxygen is considered by the team and is determined to be negatively affected by the bullwhip effect. The inventory managers at each branch currently apply inventory strategies in isolation, creating a bullwhip effect that negatively effects total system wide expenses and customer service levels (Simchi-Levi, 2005). The bullwhip effect is the phenomena in which the orders to the supplier (fill plant) have a larger variance than sales to
the buyer (distribution branch) (Lee, Padmanabhan, & Whang, 2004). The two major causes of the bullwhip effect seen at Red Ball Oxygen are demand signal processing, in which a surge of demand in one period is interpreted as a signal of high future demand, as well as the rationing game, in which the buyer issues an order that exceeds the quantity reflecting demand in response to a situation in which demand potentially exceeds supply (Lee et al., 2004).

The team created a centralized purchasing function for the distribution branches called a branch stock planner. This branch stock planner will use sales history to create an inventory stratification that informs stocking levels for the distribution branches. The branch stock planner is intended to minimize the bullwhip effect and thus improve the variable expenses associated with compressed gas cylinders:

1. Raw materials cost due to unplanned purchases of supplies, including cylinders (capital expenditures)
2. Additional manufacturing expenses created by excess capacity
3. Inefficient cylinder utilization
4. Overtime
5. Transportation costs associated with transferring cylinders from the industrial fill plant to the distribution branches

The closed nature of the supply chain, in which all branch inventory requirements are filled from a common, recycled stockpile, demands a depot stock planning function. The depot stock planner receives demand information from the branch stock planner. The branch stock planner produces the information required for informed decisions by both the production planner and raw material purchasing agent in the fill plant. The information reflects demand in line with recorded customer demand rather than the experience and emotion of the branch managers. Because end user demand is used to inform the fill plant (depot) decisions, the bullwhip and its effects shall be minimized. The purpose of this paper is to study the impact of cylinder placement on the cost drivers at Red Ball Oxygen. The team discovered that optimal cylinder placement within the distribution network reduces the bullwhip effect and decreases the costs associated with cylinder gas distribution while customer service levels are maintained. The team further pinpoints the distribution costs associated with cylinder transfers as the primary target for reduction. Reducing these operating costs increase EBITDA throughout the company.
Benefits

There are several benefits derived from the project, and while the quantitative benefits are substantial, the qualitative benefits are possibly more powerful in effecting daily operations.

The branch stock planner provides a strategy to reduce cylinder transfer activity throughout the distribution network. Because the inventory policy reduces the bullwhip effect associated with overstocking slower moving inventory, the distribution schedule flexible and allows the opportunity to combine truck loads for multiple branch locations. The reduction of transfers presents an opportunity to reduce distribution costs by 26%, seen in Figure 1 below. The reduction in costs does not consider a reduction in dollars per mile that are associated with the use of fewer overtime hours of drivers or the overall reduction in fuel costs associated with the deliveries.

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<tr>
<th>Branch</th>
<th>round trip</th>
<th>cost per mile</th>
<th>indirect labor @ 3 hr * 20</th>
<th>Cost per Cylinder Transfer</th>
<th>Current State</th>
<th>Future State</th>
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*Savings -26%

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Figure 1

The qualitative benefits of the project are much harder to measure but provide evidence that the BIG group executives expressed desire of bonding employee and company is a reality. Red Ball
Oxygen’s executives explain that the small size of the company provides an organizational structure in which the executives constantly interact with the managers and front line employees. This interaction leads to operational decisions, and the executives are seeking candidates that will translate an education to positive leadership and creative solutions. Because the education suggests that employees will be part of a management team that will work closely with the executive leaders, the selection process for higher education candidates is intentionally partial and determined by the executives. The educational support, both financial and managerial, sends a signal to the candidates that they are important to the company, which strengthens the bond between company and employee. The surveys suggest that the enthusiasm provided by education and the experiences of the cross industrial collaboration associated with advanced degrees is a positive influence throughout the organization. This collaboration further injects itself into the host organization, in which peers are affected by new ideas and cross functional teams are formed to overcome internal problems and improve processes.

The team members interviewed for this paper confirm that there is a heightened enthusiasm for improvement ideas at the company. A key component to the academic enthusiasm witnessed during the case study is the support that Red Ball Oxygen has shown to its employees that seek higher education. The company’s openness to the ideas shared from their students fosters an environment that allows for creative solutions to old problems. Without the support of the company, the particular ideas that synthesize to generate the case study’s deliverable would not have been explored as many of the ideas were originally shelved due to difficulties associated with change management. Several team members present the notion that the formalized methods presented by the graduate program served as the catalyst for completion of the cylinder distribution project. The team members suggest that their ideas, some of which had been in motion for years, were able to come to fruition as a direct result of the company’s dedication to continuous education. Furthermore, several members of the team have requested tuition reimbursement for continuing education classes since their involvement in the project.

**Recommendations and conclusions**

The outputs of this project provide immediate financial return in form of a reduction in cylinder distribution costs. The outputs further provide a long term return of creative, productive, and intellectually curious employees. We believe that the results produced with this project can be
replicated at any similarly sized company in which the culture embraces education and the intellectual well-being of its employees. The President of Red Ball Oxygen states in his survey remarks that trained and experienced leaders are a catalyst for growth and that higher education provides those that are a good cultural fit with more experience and education to maximize their potential. Interest in similar studies have been noted throughout the BIG group as they are curious to measure the benefits of the educations they have provided to their employees. The promotion of education at Red Ball Oxygen is observed to have produced employees that provide consistently large contributions of work, have the respect of their peers and are creative, trusted and continuously improving the company.

**Bibliography**


