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Michael J. Dwyer

University of West Florida, dwyer.michaelj@gmail.com

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A Case Study in Supply Chain Ethics: Medical Supplies Are Us

Michael J. P. Dwyer

University of West Florida

ABSTRACT

A hypothetical scenario is presented for consideration as a case study on both delivery logistics cost controls and ethical issues. Set in a regional medical supply company in the fictitious country, Costaguana, the actor needs to first unpack a supply chain issue as related to setting up a system to create cost savings to fund a non-government/non-profit organization. The delivery logistics with an established supplier for the company is explained in detail along with intra- and inter-company logistics' relationships. Then an ethical issue is presented as related to the newfound savings from shipping for the organization. The case is presented on a less complex level, however, complexity can be added to the initial supply chain management issue to be used for upper level supply chain, international business, and/or entrepreneurial courses, as discussed in the final section.

INTRODUCTION

In supply chain education, attention has been paid to corporate social responsibility, the legal environment, and potential outcomes of acting unethically. However, sometimes the supply chain practitioner is caught in a grey area or an uncomfortable position as related to balancing bottom lines, honoring deals struck between parties, and their own self-interest and values. This case aims to personalize the experience and put the reader directly in the shoes of the actor. As the story unfolds, the reader experiences handling a supply chain issue and then the pressure of the decision of what to do next once the issue is resolved. Realistically there are no tenable legal repercussions for going either way in the end. There are only the choices of the actor, which also happens to be operating in a foreign country named Costaguana.

BODY OF PAPER

Medical Supplies are Us

You have just been tapped to start a non-profit functional area of a national medical supplies company in the country Costaguana. Your skills at supply chain management in another non-profit/non-governmental organization (NGO) project proved to this company's upper management that you are the right person for the job! You are excited and overwhelmed as you sit at your desk and ponder where to begin. The management team of Medical Supplies Are Us (MSRU) gave you an open-ended mission that, put simply, is to get medical supplies to people in need and figure out how to do it effectively using currently available resources.

The obvious issue is paying for the supplies to give to the people in medical need. You look around MSRU's store. In it there are medical devices of all types. In Costaguana, people buy their own medical supplies before they get any procedures done. The healthcare system is socialized so going to see the doctor or specialist and the procedure at the hospital is covered, but the socialized hospital system in Costaguana does not pay for the pins, screws, brackets, gauze, etc. that are necessary for specific procedures. MSRU is one of several companies operating in Costaguana providing these medical items.

At the moment there are no freebies or donations at the shop. Everyone who comes in has to pay the designated price. This is true for the company as a whole with its eight other locations offering market coverage for essentially the entire country. Also, the company is among the three largest in Costaguana controlling approximately 30% of total market share. You feel proud that such a large player in the national market is finally making in-roads to providing for indigent families in medical need. Obviously with such a large market share there is a lot of good that can be done in a country with approximately the population of New York City and a poverty rate of 24.2%. To give some context the poverty rate of the United States is 10.5%; however, the nominal amount of money to live on is much lower in Costaguana. Thus, many families in Costaguana subsist on less than four U.S. dollars per day. How would many Costaguanans ever pay for the equipment for a broken bone you wonder? What do they do when something like that comes up?



Exhibit 1. Equipment used in orthopedic surgery procedure. Adapted from <https://www.extreme-bolt.com/medical-device-fasteners.html>

The Plan

You plan on setting up a direct aid initiative under the auspices of the company to launch the NGO. The organization will have a board and director to start. The board would meet once a month to check the NGO's progress and the director would be in charge of day-to-day operations while the NGO grew. Potentially there would be other employees and/or volunteers, but at the

moment you want to get as much aid to those in need as you can without spending on staffing. As a supply chain consultant this challenge seemed like a great way to help Costaguanans be healthier.

You create a financial means test to determine if someone can qualify for the program. Once the patient fills out the means test and is determined qualified, they would be placed in a first come first served queue until whatever funding or equipment was available for the period was exhausted. You decided not to go with a medical urgency criterion as a way of setting up the queue because there were other organizations and the Costaguana government partially fulfilling that need in the community. Plus, for launch and feasibility it was more important to get the NGO up and running because this was a brand-new model for the region.

You would launch at MSRU's main office and its served market first to test the NGO's business model. MSRU's main office was located in the second largest city of Costaguana making it ideal due to the extensive need for medical supplies. Then after the NGO was up and running you would see how scaling operations would work and how much demand would be generated from patients in need. Eventually you would iron out the wrinkles as the model was proven and proof of impact was made to the board, the company, and its donors. In effect, you were working a start-up model.

Resources

Unfortunately, MSRU did not feel comfortable starting to fund the NGO without first having an idea of what the NGO would look like after it started. Their policy of no freebies stood firm. Realizing that this was a folkway of MSRU you knew that funds needed to be secured from somewhere else to get everyone on board. But where? You take a look at MSRU's supply inventory database spreadsheet and think for a minute. If you can lower overall shipping costs per medical component then the company would save a certain percentage on every order. You are a supply chain wizard so you know those savings could be donated to the NGO the business wants to start without directly giving money from existing net profit.

You talk to the board of MSRU who are surprised at the idea that savings per unit from shipping is possible. The board members skeptically shrug and say that if you can generate those savings that money will be distributed to the NGO for its operations. After meeting with the board and describing your supply chain management savings plan investigation, you speak to the President of MSRU in the hall and ask him what are the plans for sales prices of components sold to the NGO. You convince him that it would best to sell the components at a discount and write off the difference from the over-the-counter price as a tax deduction through a charitable donation. He agrees that the idea sounds reasonable. You shake hands and go back to your office at your house.

Table 1. Select MSRU Inventory Data, Supplies for a Broken Arm (The Set Up)

Code	Description	Supplier	On Order	Existing Stock	In Transit	Unit Cost	Sales 2020	Average Sales Per Quarter 2019
425-762	Bolt Plate 1	ASM		20	1	\$ 22.50	140	35
425-764	Bolt Plate 3	ASM		14	0	\$ 24.50	108	27
302-038	Bolt Plate 5	ASM		20	0	\$ 26.50	168	42
302-039	Medical Screw 1	ASM		45	0	\$ 12.00	220	55
302-040	Medical Screw 2	ASM		56	8	\$ 13.00	416	104
302-041	Medical Screw 3	ASM		32	12	\$ 14.00	368	92
302-042	Large Gauze Pack	ASM		60	5	\$ 4.99	480	120
302-044	Arm Brace	ASM		16	4	\$ 35.00	80	20

At your desk you begin to analyze the shipping system for MSRU. Shipments are made to MSRU via air freight in boxes that are not paid for by weight, instead are paid for individually by box, which is of a uniform size. Each box from the chief supplier costs \$100 in shipping and typically requires three days to arrive. Some boxes arrive full and others arrive almost empty depending on the order for the month. However, the supplier attempts to pack as much as it can in each box and in as few boxes as possible to fulfill the order.

Having opened up several shipments you notice that the received plastic boxes generally have extra space. You begin to measure the extra space over the course of a few weeks. Typically, a box will be packed with approximately 25% of its volume in packing nuts and air bags. Since weight is not an issue you determine that, on average, you can safely place 5% more items in a box without risking damage to the other equipment in transit. There are no taxes on medical supplies shipments to Costaguana.

Current order flow is on a pull basis. The master inventory database is an Excel Spreadsheet that includes all medical supplies on hand at all MSRU stores in Costaguana. The full inventory consists of approximately 1800 items systemwide. Inventory is manually reviewed to see if any line item hits a critical level of less than or equal to a three count for the system's totals. When that critical level is reached an order is made to the supplier to refill stock to the desired level in the MSRU system otherwise inventory replenishment orders are made monthly. You notice that inventory forecasting is largely done ad hoc by manually reviewing the spreadsheet database. If one MSRU location should run low on a particular item then another location with extra stock can quickly dispatch a delivery to the location in need arriving no more than 12 hours later, usually much less. This MSRU-wide demand driven delivery system ensures that inventory is evenly distributed throughout retail locations.

So, while you look for cost savings perhaps you can talk to one of your chief suppliers to help with some resource donations for the NGO too. The chief supplier is located in Europe and is named A+ Med Supplies (ASM). You call your contact at ASM and talk about MSRU's plans to start an NGO. In the first place, you talk to ASM about their packing procedures. ASM mentions that because orders come in as complete and for immediate delivery they pack the boxes the way they do because they assumed that once in Costaguana the equipment would undergo a harrowing journey to the retail centers. You chuckle a bit and let the rep know that the equipment does not need as much packing material and can be packed more tightly because the trip is safe. The ASM rep agrees.

Still you have noticed some boxes are not completely filled and you mention this to the rep. She lets you know that in reality the orders come in ad hoc - if not monthly - so sometimes an extra box is necessary in order to ensure the integrity of the equipment for delivery. You muse for a moment and ask if it would be all right to include filling up the extra box with other orders before the delivery goes out. She responds saying that would be great and would be willing to call to check before the delivery leaves if there was extra space. She stipulated that she would call if and only if the extra space would be used by the NGO. The phone call and subsequent order change generally would not affect the delivery time because orders for MSRU are comparatively small to existing stock at ASM. She also mentions that ASM has a history of helping people in medical need too and would be willing to sell supplies at cost to the NGO and make in-kind donations on a case-by-case basis.

The Presentation

You need to present your findings to the board. You calculate that 30 broken arm set ups can arrive in a box from ASM for a typical delivery using the old packing system. What would be the savings per unit with the new packing system you worked out with ASM in a single box? What percentage difference in price does it make overall? If MSRU does 1.5 million in revenue every year how much does that extrapolate to savings for MSRU as a whole? What other recommendations can help control costs in MSRU's supply chain? How do you present these findings to the board so they can follow through on using the savings to fund the NGO?

The President's Office

You successfully presented your findings to the board the other day. You thought it went well and the board was excited to find so much money could be saved just through tighter management of their supply chains and logistics. The meeting broke with plans to execute on your recommendations and work more closely with their primary supplier in regards to packing for the business and orders for the NGO. The board asks you to go out and find a few families who need help and fit the established need criteria. That money you found was as good as fixing broken legs in Costaguana - or so you thought.

A week later while you were in MSRU's main office working with one of the delivery personnel the President asks you to come into his office. He tells you of the great things coming to MSRU! The company is building a clinic and foot traffic has increased due to buzz in the community

about the NGO. He is pleased that the supplier is offering some equipment at cost to help get the NGO started and helping to pack the boxes more tightly. And congratulations, he adds, the board has approved. You are the new director of the NGO! Things are going great.

However, the President lets you know that given the growth and vertical integration going on in the business that the vast majority of savings you uncovered in MSRU's supply chain will be going back to the business. You ask where in the business those savings would be going. The President tells you that the board has decided to allot 10% of the savings from your work to the NGO and 90% back to the business. However, the accounts would need to stabilize first in order for the NGO to receive payments. You will need to find more money for the NGO and he suggests applying for grants through the national government. However, to apply for grants through the national government you need to go out and hire a lawyer to process the necessary legal documents, which is another up-front cost. He goes on to say that you need to determine your salary from that figure too, get board approval, and then launch the NGO. He mentioned that the salary was entirely up to you. He apologized, but also let you know that the NGO would have to buy medical supplies at retail prices as well. The President never responded to your question about where the rest of the savings were going even after your repeating the question.

It is likely that the NGO will not launch without your involvement. It is also likely that the board will not budge on its decision. Truthfully you are upset, but you know that if this organization does not launch several families that were already slated to receive aid will not. One family you spoke with was hoping to help their child walk again and had no other way of helping him. How will the supplier respond to how the set up for the NGO has changed since a part of the savings was wrapped up in at-cost and no-cost donations? If you are not there will the supplier even know what is happening in Costaguana? There would not be any legal repercussions for taking the deal off the table, after all, originally you just shook hands with all the parties involved. You can decide your own salary and would be director of an organization that Costaguana desperately needs. Is MSRU in financial trouble for which you did not account? Perhaps you could fix the NGO further down the road? Could you find other funding? What other ethical issues does this situation raise? What do you do?

Case Study Levels of Complexity/Case Solutions

Currency exchange: It is not uncommon for international suppliers to request payment be made in dollars or the supplier's native currency when the supplier occupies a niche industry. As a result, large nominal dollar exchanges could be addressed in the supply chain management set up in the case. In this case, ASM could ask to be paid in euros. In effect, the actor would have to exchange birdies (B), the local currency, into dollars into euros in order to make the orders. Costaguana banks would offer euro denominated wire transfers, but only after exchanging into dollars. Thus, the student would have to take payments/fees on exchanges into account.

Air Cargo Logistics: The logistics costs problem as presented is direct. The boxes are uniform and ship at a fixed price regardless of weight. Medical components are inferred to be of a similar size at least as the "broken arm set up" is concerned. The real-world business with 1800 items in managed inventory increases complexity immensely, especially since each item is a different

size. This complexity is why 5% was chosen as the across-the-board potential savings so as to make the savings real; however, that percentage can be broken out among product categories related to size or for other considerations with a larger sample spreadsheet included with the case.

Supplier Considerations: Calling after the boxes are packed to see if there is extra space is evident of an amazingly helpful sales rep at ASM. In reality, MSRU would need to be aware of what is going into the boxes and plan accordingly. The complexity of the case can be enhanced by placing that responsibility on the supply chain and logistics managers at MSRU to control freight costs.

Order Timing, Inventory Management, and Forecasting: MSRU does both ad hoc and monthly orders in the case. This area can be given further exposition to elucidate the timing of the orders as related to putting together a rudimentary forecasting system with given data. This potential case complexity could tie into adding forecasting to air cargo logistics with attendant pricing.

Marketing: In the case, little attention is paid to what impact starting an NGO has on a company's marketing reach. Part of the sales pitch to the board can include the marketing lift from starting an NGO and straight up foot traffic through the door.

ABOUT THE AUTHOR

Michael J. P. Dwyer is looking forward to entering Iowa State University's Ph.D. program in Supply Chain Management the fall of 2021. In the past, Michael worked as an independent researcher studying humanitarian/disaster relief supply chains (HDRSCs) in Guatemala for an extended period. Michael received his Masters of Business Administration from the University of West Florida in Pensacola, Florida and his Bachelors from James Madison University in Harrisonburg, Virginia. Presently, Michael works in finance for a proprietary trading firm specializing in financial derivatives. His past research and publications include issues related to supply chain management, the study of HDRSCs, and organizational behavior in the logistics context.