
Carlo's Inven-Storyⁱ

One day in August 2015, Carlo Quinto,ⁱⁱ Mar Cruz,ⁱⁱⁱ and Philip Dela Cruz met for coffee in Manila. They had a lot of catching up to do. The three had been good friends since beginning their graduate studies at University of the Philippines Diliman. Each of them had a different story about why he had decided to take on the master of science in industrial engineering program.

Carlo, for one, was going to play a major role in his family-owned pipe-manufacturing business, Jhaymarts Industries, Inc. as plant manager, a position he was awarded in June 2015. Both Mar and Philip looked forward to seeing him achieve success in this position.

"Hello brother!" Mar greeted Carlo.

"How's the new plant manager?" Philip followed.

Carlo sighed and responded, "There are just too many things to work out."

While waiting for his coffee, Carlo was thinking about his father's wish to fix the company's inventory system, and how little had been done so far to improve the system.

ⁱ The author used a dialogue format for this case to better narrate the case facts. It is based on the author's personal interview with the case protagonist on July 23, 2016.

ⁱⁱ Juan Carlos "Carlo" P. Quinto. He has a Bachelor of Science degree in materials engineering from the University of the Philippines Diliman, Quezon City, Philippines.

ⁱⁱⁱ The author of this case.

Overview of the Company

Founded in 1992, Jhaymarts Industries, Inc. was a Davao^{iv}-based, family-owned corporation. It was known as a pioneer in the manufacture of polyethylene (PE)^v pipes in Mindanao. It had become a trusted name in the fields of water distribution, irrigation, and drainage due to the superior quality of its products and customer service.¹ As a result, Jhaymarts had received many accolades such as the National Consumers Quality Award,^{vi} National Shoppers' Choice Award, Philippine Marketing Excellence Award,^{vii} and the International Quality Crown Award (London 2009).^{viii,2}

Its products included premium and recycled high-density polyethylene (HDPE) pipes with an outside diameter ranging from 16 mm to 225 mm, HDPE storm drain pipes with an outside diameter ranging from 225 mm to 965 mm, and low-density polyethylene (LDPE) pipes with outside diameter ranging from 16 mm to 25 mm. These pipes were used in several water systems applications such as transmission and distribution lines, service connection lines, and irrigation. Other products included PE pipe fittings and fuses, standard water fitting materials, and pre-paid water meters. Jhaymarts also offered water systems services such as design, planning, installation, and repair.³

The company's customers were real estate developers, contractors, and agricultural companies. Some of the companies Jhaymarts worked with included Aboitiz Power, Mountain Haven Subdivision, Mountain Pines Subdivision, Tagluno Development Corporation, Xavier Estates, and Aberdi Palm Oil Mill.⁴

Jhaymarts' plant and sales offices were physically separated from one another. The plant was located along CP Garcia Highway, Maa, Davao City, while the sales office was located along McArthur Highway, Matina, within the business district of Davao City. Orders and payments could be placed at either the plant or sales office.⁵

In the sales office, there were eight employees including the president and general manager, three sales persons, three accountants, and one consultant.⁶

At the plant, Jhaymarts employed five operators per shift. There were two twelve-hour shifts per day for six working days for the operators. Unless there were backlogs or important orders to fill, the plant did not operate on Sunday. Alongside these operators, there were three other staffers who worked eight hours a day. Two of these staffers were dedicated to repair and maintenance and one was assigned to quality control and inventory. The plant office also housed Carlo, who was the plant manager; Joseph "Tata" Celerinos, who was in charge of processing, communicating with the sales office, and served as the production planner; and Lemuel Acuña who was in charge of purchasing raw materials and preparing documents for certifications and applications. Further, there were four drivers and one delivery worker. (Depending on the demand, contractual workers were employed to help with deliveries.) The five operators, four drivers, and delivery worker reported to Tata, while the maintenance and repair and quality control personnel reported to Lemuel.⁷

iv Davao City is located in Mindanao, one of the three major islands of the Philippines. The city covers 943 square miles, making it one of the largest cities in the world. It is approximately 587 miles from Manila.

v Polyethylene (PE) is the most popular plastic in the world. Products commonly made from this type of plastic are grocery bags, shampoo bottles, children's toys, and bullet-proof vests.

vi Awarded by the National Consumer Affairs Foundation.

vii Awarded by the Philippine Marketing Excellence Awards Institute, Sales and Marketing Magazine, and the Asian Institute of Marketing and Entrepreneurship.

viii Awarded by Business Initiative Directions.

Carlo's Inventory Dilemma

Jhaymarts' growth had stagnated in recent years. Engr. Robert Quinto, Carlo's father and the company's president and general manager, had identified several areas of concern that were critical to its growth over the next decade. These were productivity, waste generation, energy consumption, production planning, and inventory control. As the new plant manager, Carlo was expected to make improvements in these areas. However, he recognized that it would take time to address these concerns. First on his agenda was the company's inventory system.⁸

After receiving their coffee, the three friends sat down and Carlo began to share the observations he had made of the company's plant operations.

"There are so many inconsistencies," Carlo stated.

"How is that?" Philip asked.

"Every shift, the operators grab a production form. This form shows the type and quantity of raw materials used, and information about output pipes like dimensions, weights, and wastes."

Carlo explained further, "Upon completing the form (see **Appendix A**), they walk to the computer on the shop floor and transfer that information into the computer through the LANE software,^{ix} which we use to monitor production. Though the forms are submitted every shift, they are consolidated weekly. Each week, I also print that information, process it, and then check on the availability of raw materials. Most of the time, the records simply do not match the actual quantity of raw materials left! There are fewer sacks than what the records show, or there are half empty sacks."

"How could this happen?" Mar curiously asked.

"I don't know. Maybe the operators too hastily fill out the forms and mistakes just happen. I am simply not able to account for everything. When you visit the plant, you'll find some sacks out of place. The operators sometimes use them to prevent storm drain pipes from rolling over and also use them during their nap times!" Carlo said.

"Additionally they wait for a sack to be emptied before they declare it on the form when they should weigh the raw materials before and after usage," Carlo continued.

"Do you get angry with them?" Philip asked.

"Not really. It's a bit challenging, though, because some have been working there for a long time while I just came on board two months ago," Carlos said.

"Aside from what you mentioned, do you have any other concerns?" Philip asked.

"Finished pipes are not counted regularly. I instructed the workers to count the pipes weekly at a minimum," Carlo explained.

"Why don't you count every day?" Mar inquired.

"We don't have enough workers to do it. Everyone is busy. Although now we have hired one worker who is dedicated to testing the quality of the pipes and counting them weekly," Carlo said.

^{ix} LANE is the company that manufactured the software. Jhaymarts purchased the software for its own use.

As Philip opened his mouth to inquire further, Carlo added, "Another problem is that the records often do not match the actual count! Remember the form I showed you? I use that to determine the total number of pipes available."

Carlo explained further, "From the printed LANE information, I input the data into QuickBooks,^x the software we use in the plant office to keep track of our inventory. After that, I compare the QuickBooks output with the actual count on the shop floor. You can just imagine the errors! Errors from inputting data in LANE and QuickBooks, and errors in counting!"

"I think that is also difficult for you since you have to double check the forms with the LANE output and then match the LANE output with the QuickBooks output," Philip said to which Carlo agreed.

"Whenever I want to know the number of pipes available for sale, I should have it with just one click," Carlo shared with frustration.

"In the first place, why do you still have QuickBooks?" Mar inquired.

"Before, we only used LANE. However, our accountants were having difficulty working with it, so they used QuickBooks. My dad bought the QuickBooks software and configured it. In essence, QuickBooks is better for accounting while LANE is better for manufacturing," Carlo said.

"But why don't you use just one software package?" Philip followed.

Carlo laughed and answered, "There were attempts before to integrate the two. One of the attempts was very expensive and the other did not generate the type of reports the accountants wanted."

Carlo added, "To make matters worse our QuickBooks data in the plant is different from the QuickBooks data in the sales office!"

"Are you serious!?" the two responded in awe. "Oh man, there are a lot of things going on!" Philip replied.

"Remember I said I input the LANE data into the plant's QuickBooks? I then create an Excel file from the same LANE data and forward it to the sales office where they input it into their QuickBooks. However, the sales office QuickBooks data is different. It is actually configured to monetize items to aid them in deciding on the prices of the pipes and to produce financial documents. Additionally, sales out of the sales office are only recorded in the sales office QuickBooks, while sales out of the plant are recorded in both sets of QuickBooks."

"It sounds like this can be a source of confusion for both the plant and sales office," Philip said.

"Can you just copy the QuickBooks' configuration at the sales office?" Philip asked.

"I don't know. This process was in place before I arrived," Carlo said.

"You really need a reliable and integrated inventory system, brother!" Mar suggested.

"I wish we could have one!" Carlo quickly responded. "Unfortunately, we do not have reliable Internet here. I don't foresee having it in the near future. I remember when we consulted PLDT,^{xi} we were told that the maximum speed we could have was only 0.7 to 0.9 mbps,^{xii} so we decided against it."

x Specifically, QuickBooks: The Premier Manufacturing and Wholesale Edition, 2011.

xi One of the top telecommunication companies and Internet providers in the Philippines.

xii Megabytes per second.

"Another challenge is accurate recording of pipe sales in non-standard lengths," Carlos added. "The sales office and the plant have different methods of recording this. For example, one standard length is 150 meters which equals one roll. Assume that in a particular week, the beginning inventory is three rolls of pipes with a length of 150 meters and no pipes are manufactured that week. If a customer wants 100 meters, for example, you would cut 50 meters from one of the three rolls. In the plant, the way this is reflected in the inventory is that one roll is subtracted from the three rolls and 50 meters is added. If another customer wants 100 meters that week, then one roll is subtracted from the two remaining rolls and 50 meters is added to the previous 50 meters so that two 50-meter pipes are recorded. Finally, if another customer wants 100 meters, then we have three 50-meter pipes. When I forward this information to sales office, this is recorded differently. In their weekly report, 450 meters from three rolls times 150 meters is recorded and 300 meters (from three times 100 meters), is subtracted from the 450 meters. Do you see the problem here?"

"If, for example, Philip walks into our sales office and wants to buy one roll with 150 meters length, the sales office wouldn't know if the plant has one roll or just three 50-meter pipes," Carlo said.

"Now I see!" Mar responded. "But why do you have different recording processes?" he asked.

"Again, the sales office has different recording processes for accounting purposes," Carlo said.

"Maybe they are more concerned with knowing how many kilos of raw materials are used and the lengths sold to compute for costs and profits," Philip added.

"But Carlo, instead of granting the 100-meter request, you could just sell standard lengths only," Mar said.

"You have a point. But sometimes we have to satisfy our customers — those who want to buy only what they need. Anyway, we can grind and recycle those excess pipes, or we can use them for those needing shorter pipes," Carlo said.

"What about customers who want pipes longer than the standard lengths available?" Philip asked.

"They can place their orders before the pipes are made if they request a reasonable quantity. Instead of melting and joining the ends of the pipes, the workers can tailor the pipes to the customer's specifications," Carlo said.

"Aside from working out your inventory system, what are your other plans, Carlo?" Mar asked.

"I want to improve our production planning with better forecasting. Currently the production schedule is based on previous orders plus some quantity, depending whether pipes are sold quickly or not. Our production planner has some heuristics,^{xiii} but only he knows how to do it. When he's absent, we feel doomed!"

"Sometimes the production planner gets confused, too," Carlo added. "He writes the production schedule on the whiteboard on the shop floor. However, the operators sometimes forget to erase those items they have completed. When the production planner checks what's listed on the whiteboard and then asks the operators about those items, he ends up scratching his head in confusion." All laughed heartily.

Mar said, "Carlo, you have a good 'inven-story' to write!"

xiii Meaning rule of thumb.

Looking Forward

Carlo would have to find a solution to the software problem. Could he integrate all three sets of software into one integrated management information system that all employees could access via the Internet? Could he find a reliable Internet connection? He would also need to deal with the issues of non-standard pipe links and sales. How should these be recorded so that the data is the same across both the sales and plant offices? Then there remained the problem with getting workers to record the weights of raw materials and the number of finished pipes. Did he need to add manpower to complete these tasks? He also needed to find a way to get workers to erase the items they had completed from the whiteboard. Was this a simple fix or would it require more effort? There were many issues before him. It was time to get back to work.

Appendix A

JAYMARTS INDUSTRIES, INC.
CHECKLIST FOR IN-PROCESS

Machine no.: _____ Shift: _____ Date: _____
Note: Please put (/) check for conformance and put (x) for non-conformance for Appearance under Pipe column, Properly Marked and Attached Sticker column.

[illegible]

Operated by: _____

Source: Jhaywants Industries, Inc.

Revision No. 0
Revision Date: _____

III-CIP

Source: Jhaymarts Industries, Inc.

Endnotes

- 1 Jhaymarts Industries, Inc. "About Us: The Company." Accessed 14 July 2016. <<http://jhaymarts.com>>.
- 2 Retrieved from Jhaymarts Industries, Inc. brochures.
- 3 Jhaymarts Industries, Inc. "Products." Accessed 14 July 2016. <<http://jhaymarts.com/products>>.
- 4 Jhaymarts Industries, Inc. "Projects." Accessed 14 July 2016. <<http://jhaymarts.com/projects>>.
- 5 Quinto, Juan Carlos. Plant Manager, Jhaymarts Industries, Inc. Personal interview. 13 June 2016.
- 6 Quinto.
- 7 Quinto.
- 8 Quinto.