

TU Packaging Group – Case Study

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Introduction

TU Packaging Group¹ (“TUG”) is in the business of design, manufacture and sales of corrugated paper packaging products. The company started as a small family business selling cardboard boxes to shoes and clothing businesses in Singapore in the 1970s. Today, TUG has manufacturing operations in both Singapore and China. Their clientele has expanded to various industries, including electronics and electricals, food and even pharmaceutical. The number of customers has grown from 443 five years ago to 1,000 currently.

The CEO of TUG is concerned that while the group is expanding their customer base, the growth in profits has been slowing. He has formed a cross functional task force (including representatives from the accounting department) to examine more carefully the current business operations, profits, and costs in a bid to understand the slowing profitability growth. The task force has put together the information below as a starting point of their project.

TUG Business Operations

TUG prides itself for being a one-stop integrated shop from the design to manufacture of corrugated packaging products. The group supplies a range of corrugated paper packaging products of different configurations and sizes according to customers’ specifications. Their strategy is to expand market share by providing high quality products and services to retain current customers, as well as sourcing for new business with existing and new customers.

Key Products

Corrugated boards – boards purchased mainly by box manufacturers who do not have their own corrugating production capabilities.

Corrugated cartons – full cartons that come with top and bottom flaps. These are cost effective, multi-purpose boxes for packaging. The boxes are joined with glue, tape or wire stitches, the final closure of boxes is done by users.

Die-cut boxes – boxes that are cut from corrugated boards using cutting die. These boxes are highly customizable. Customers can create curves, ventilation holes, self-closing styles, or even extension flaps that can hold the position of products within in the box.

Assembly cartons – cartons that combine corrugated boards, cartons, die-cut boxes, partitions, and other packaging materials (for examples pallets and foams). These cartons require additional finishing and are assembled before delivery to customers.

Heavy duty corrugated paper products – used by customers who require heavy-duty packaging. These products are made with stronger corrugated boards.

TUG also offers offset printing on their products. This capability allows for high-resolution, multi-colored images to be printed on packaging or display products exactly according to customer specifications.

Manufacturing Process

¹ TUG is a fictional company based loosely on a company in a similar industry listed on the Singapore Stock Exchange. The company data provided are created for the purposes of the case study.

The manufacturing process at TUG can be divided into four main categories – design, corrugating, printing, and converting.

Design

The design process begins with discussions about structural, functional and graphic design requirements of corrugated products with customers. Using computerised design systems, TUG allows for customers to visualize products before actual production. Finalized product designs are then put through a production process design software for optimal customisation (in terms of cost and time) of the actual production process.

Corrugating

This refers to converting paper rolls into corrugated boards.

Printing

Graphic designs agreed upon with customers are printed on the corrugated packaging products. This would include offset printing, where it is relevant.

Converting

In this final stage of the production process, corrugated boards are transformed into corrugated cartons, die-cut boxes, assembly cartons or heavy duty corrugated paper products. The exact converting process required will depend on the product category. Die-cut boxes and assembly cartons require more processes than corrugated cartons.

Customers

TUG started as a small family business making cardboard boxes for shoe shops and tailoring shops in the 1970s. Currently, their customers include MNCs and local companies (in Singapore and China) in the electronics and electricals, food and beverage, medical healthcare, pharmaceutical and chemical, and printing, publishers and converters industries. Majority of their sales are made to customers in the printing, publishers, and converters industry. This is followed by medical healthcare, pharmaceutical and chemical customers. Closely behind is electronics and electricals. Less than 15% of sales are to customers in food and beverage and other industries.

TUG has a good track record of retaining customers. For the last 3 financial years, about 70% of their sales are recurring business from customers. The total number of customers have grown from 443 to 1,000 in the last 5 years.

TUG Financial Information

While TUG's sales revenue has been growing steadily, net profit growth has been slowing. This is despite TUG's growing customer base.

A part of reported TUG's sales revenue is attributable to charging customers for design services. Currently, a flat rate is charged based on the type of design service required. For example, separate flat rates are charged for design consultation for offset printing and for structural design of packaging product.

	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
Revenue (\$)	192,575,613	223,387,711	290,404,025	351,388,870	421,666,644
Cost of Goods Sold (\$)	127,099,905	147,659,277	192,828,272	233,673,599	281,475,023
Gross Profit (\$)	65,475,709	75,728,434	97,575,752	117,715,271	140,191,621
Other Operating (\$) Expenses (\$)	51,815,831	60,429,372	79,828,840	98,193,668	119,108,289
Net Profit (\$)	13,659,877	15,299,063	17,746,913	19,521,604	21,083,332
<i>Number of Customers</i>	443	508	661	826	1000

On closer inspection, while cost of goods sold is currently 67% of revenue dollars; other operating expenses is a non-negligible part of total costs. In particular, the task force representative from accounting noticed that a substantial part of other operating expenses can be reasonably traced to servicing customers. In 2020, customer servicing costs made up 88% of other operating expenses. The table below is a summary of the activity cost pools that the task force identified as driven by servicing individual customers.

Activity	Activity Driver	Cost Per Driver
Shipping	Number of shipments	\$7.00
Order Administration	Number of orders	\$0.17
Expedition Costs	Number of expedited orders	\$267.00
Customer Support	Number of queries	\$33.00
Design	Number of design hours	\$70.00

Shipping – costs incurred to deliver products to customers

Order administration – administrative costs incurred to process customer orders and invoice customers

Expedition of orders – costs incurred to expedite a customer order (including extra expedited shipping costs, over and above regular shipping costs)

Customer support – costs incurred to address queries from customers pre and post sales

Design – costs incurred in the first phase of manufacturing process described earlier

An example of other operating expenses that is not part of the activity cost pools mentioned above is sales incentives paid to the sales team. Currently, the sales incentives are computed based on a percentage of sales revenue. The sales team is compensated more for selling product lines with higher gross margins.

Initial Task Force Assessment

Based on data files attached detailing individual customer information at TUG, the task force suspects that individual customer profitability analysis could explain the CEO's concern of slowing profit growth. The next steps are to (i) identify customers that are unprofitable, after factoring in customer service related costs; (ii) examine why identified customers are unprofitable; and (iii) formulate future sales and/or operational policies at TUG.