

Total Cost of Ownership: Why the Purchase Price Means Less Than You Think . . .

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Introduction

When prospective buyers are evaluating wide-format digital production printers, the single most significant factor they consider is the purchase price of the machine.

While the purchase price of a piece of capital equipment is certainly important – it should not be the only consideration.

In fact, the purchase price of a new digital printing system is only one of several costs associated with owning, operating, and producing high quality, sellable output with the machine over its lifetime. There are several other areas – both “hard” and “soft” costs – buyers should be prepared to examine closely in order to develop an accurate assessment of overall value. This more detailed analysis, often referred to as determining Total Cost of Ownership analysis, could even lead to a larger expenditure upfront to achieve lower costs and ensuing higher profits over the long-term.

Total Cost of Ownership (TCO) is a concept by which, in the buyer’s value assessment, he or she accounts for all of the costs associated with a capital equipment purchase over a given time period. After making the decision to acquire a new wide-format printer, for example, a TCO analysis will help buyers develop the right body of information with which they can choose the best value between several models and/or suppliers.

Determining the total cost of ownership for wide-format digital printers varies greatly depending on the monthly output volume produced. Therefore, the analysis that follows begins with an examination of the costs associated with producing output on a wide-format printer, i.e. the real cost per square foot (or square meter) the buyer will experience. It also covers issues like the cost of the machine, ink consumption and overall speed or throughput, all of which closely affect monthly volume. Lastly, it discusses the other cost areas buyers may want to examine to develop a complete picture.

Starting a TCO Analysis: Cost of Output per Square Foot (or Square Meter)

How much does it really cost to produce a square foot (or square meter) of printed output on a wide-format printer?

Many factors contribute to this cost including:

1. Cost of print medium or substrate

2. Cost of equipment per square meter (or square foot) – determined by the price of the machine, its resale value and its productivity
3. Cost of ink, which, when divided by the coverage on the substrate, (i.e., the # of square feet or meters that can be printed using 1 liter of ink) results in the cost of ink per square foot (or square meter).

In this section, we will focus on the cost of ink and the printing system. We will assume that the cost of the print substrate is similar regardless of which wide-format printer you use. Potential buyers should note, however, that the cost of the substrate, in many cases, represents an even larger portion of their total costs than the cost of ink and the equipment together.

The following table shows the cost per square foot for two different machines – one of which (machine 1) carries a higher price tag but also offers a significantly faster cruising speed than the other machine (machine 2). Cruising speed, is a term NUR Macroprinters uses to describe the average real speed that can be achieved running the buyer’s real applications in a live production environment.

Cost per Square Foot Comparison

Table 1. Effect of Selling Price and Speed on Cost per Square Foot

	Machine 1	Machine 2
Selling price (US\$)	350,000	300,000
Monthly payment (US\$)	13,256	11,362
Ink price (US\$/liter)	65	65
Coverage (sq. ft. / liter)	540	540
Speed (sq. ft. / hour)	432	279
Monthly volume (sq. ft.)	76,032	47,520
Cost of equipment (US\$/sq. ft.)	0.17	0.24
Cost of ink (US\$ / sq. ft.)	0.12	0.12
Total cost of equipment + ink (US\$ / sq. ft.)	0.29	0.36

In the example illustrated in table 1, it is clear that machine 1 – the one with the higher price tag – is much more cost effective even though its sales price is significantly higher. Why? Because it is much more

productive thereby resulting in a lower cost per square foot. The more expensive machine is actually less expensive to operate due to its faster throughput speed.

When we add another parameter to the equation by modifying the price of ink, not much changes. Table 2 shows that even when the ink price for machine 2 is lowered by 1/3 (\$20 per liter) machine 1 remains more cost effective. The difference in speed exerts much more influence on the cost of ownership, in this example, than the price of the machine and the ink it uses.

Cost per square foot comparison

Table 2. The Influence of Speed on Cost of Ownership

	<i>Machine 1</i>	<i>Machine 2</i>
Selling price (US\$)	350,000	300,000
Monthly payment (US\$)	13,256	11,362
Ink price (US\$ / liter)	65	45
Coverage (sq. ft./liter)	540	540
Speed (sq. ft./hour)	432	270
Monthly volume (sq. ft.)	76,032	47,520
Cost of equipment (US\$/ sq. ft.)	0.17	0.24
Cost of ink (US\$ / sq. ft.)	0.12	0.08
Total cost of equipment + ink (US\$/sq. ft.)	0.29	0.32

As these examples illustrate, when a potential buyer examines cost of ownership for a wide format digital printing system, it does not make sense to evaluate the price of the machine or the price of ink independently. Rather, the bottom line is what counts.

Be Sure to Look at the Whole Picture

There are other factors that can wipe out any theoretical cost savings potential buyers could achieve from a lower priced machine or one with lower ink cost. Take reliability, for example. A \$0.10 difference per square foot becomes insignificant if the machine breaks down frequently.

As for image quality, again a \$0.10 difference per square foot will not help if the lower image quality means prints can only sell for a lower cost or worse, the job must be re-run, or even worse, you lose a customer.

Lastly, looking at speed, a \$0.10 difference per square foot will not help if the machine does not have the speed to help meet customers' fast turnaround and last minute deadlines. A faster machine will also help meet peaks in demand.

In short, when doing a value assessment of the different models and suppliers of wide-format printers in the marketplace, buyers should be sure to look at the bigger picture and the weight of varying costs to their businesses.

TCO: What Else To Look At

A Total Cost of Ownership analysis covers the combined "hard" and "soft" costs of owning a piece of capital equipment. In the case of wide-format digital printers, "hard" costs include items such as the purchase price of the machine, implementation and installation fees, hardware and software upgrades, maintenance and support contracts – and above all, the consumables used to produce the output sold from the machines. These costs are considered 'hard costs' because they are tangible and easily accounted for. A short list of hard costs includes:

1. Price of equipment and its resale value
2. Installation fees (if applicable)
3. Hardware upgrades over the life of the machine – NUR Macroprinters makes every attempt to develop ma-chines that can be upgraded as advances and refinements become available, rather than making current, productive models obsolete.
4. Software upgrades over the life of the machine – same as above. Software upgrades can help update a productive machine and make it even more efficient and improve image quality.
5. Maintenance and support contracts – NUR Macroprinters offers different levels of service contracts, paid on a monthly basis.
6. Inks
7. Media
8. Printheads – these semi-consumables are another important, yet variable cost to consider.

Other "hard" costs buyers may wish to factor into their TCO evaluation include power consumption, air conditioning and even environmental requirements.

Soft Costs to Consider

In some cases, "soft" costs are also significant. These are the costs related to management, support, training, hidden costs, and downtime. Because they don't occur at acquisition time, they are often overlooked in acquisition budgets. This can lead to unexpected increases in operating costs and worse, lower than expected year-end profit.

There are a variety of ways to manage these "soft" costs. Service and support contracts that include telephone support can help handle complex or new applications. Buyers should look for a supplier that offers telephone support, preferably from a nearby local or regional office.

To eliminate downtime, investigate the reliability track record of the machine under consideration. Make sure the supplier has a sufficient staff of field service engineers located worldwide to assist with problems if they do arise. Some suppliers like NUR include

guaranteed response time to service contract customers, so downtime affecting productivity becomes a minor issue.

Take advantage of training – an important value-added offer. There should be a specific amount of training included with the machine and additional training should be readily available at the supplier's offices. For example, NUR offers maintenance courses and courses on advanced or specialized topics. NUR service contract customers benefit even more, with additional training for additional or replacement operators included as part of the contract fee.

A Word on Productivity

At NUR Macroprinters we believe that what we call the "cruising speed" of wide format printers is the most meaningful productivity specification prospective buyers should look at when evaluating wide-format printing systems. Cruising speed is defined as the average real speed that can be achieved for real jobs in a production environment and at which the image quality and printer throughput are sufficient to handle the vast majority of applications the buyer will require. The print speeds many suppliers quote in their sales literature are raw numbers that are typically useless for any practical or operational purposes.

Useable speed, or "cruising speed", is a more practical attribute to evaluate, because at speeds above the machine's cruising speed, the quality produced will only be sufficient for a limited range of applications. Speeds lower than the cruising speed should be used only

for a limited range of applications where the image quality requirement is significantly higher than that produced by cruising speed.

Conclusion

In summary, accurately identifying and evaluating all of the costs associated with owning and operating a wide format printer – not just the cost of the machine and its consumables – is a challenge worth pursuing. Whatever level of TCO analysis a prospective buyer eventually performs, the exercise will help develop the appropriate information need to assess all of the options and make an educated choice between printing systems. The best way to avoid mistakes when implementing new technology is to consider the total cost of ownership and plan accordingly.

Biography

Ron Michael has been Vice-President of Marketing at NUR Macroprinters Ltd since June 1999. Before that he was Managing Director of Hygiene Products Ltd., and held several positions at Strategic Business Development ("SBD"), an Israeli consulting firm. He also founded and served as Managing Director of Esprit Promotion Systems Ltd., a company that develops and sells direct marketing databases. Michael holds a B.A. in Business Administration from Tel-Aviv College of Administration, an LL.B from Tel-Aviv University and an MBA from INSEAD France.