

Rydell & Associates

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→ **Memo**

Date: May 13, 2002
To: Joanna Rydell, President, Rydell & Associates
From: Marne Ewing, Technical-Communication Intern
Teresa Lipus, Technical-Communication Intern
Subject: Completion Report for the Feasibility Study on Printing Capability

→ Attached is a completion report on our feasibility study about improving our printing capability. We completed the tasks outlined in our proposal dated April 15, 2002: evaluating our current printing capabilities and researching various options for increasing our printing capability.

→ First, we calculated the lost productivity caused by associates' having to wait for their print jobs. Then we established printer-selection criteria and researched available laser printers according to the criteria.

→ Based on the information we gathered and reviewed, we recommend buying 10 small-business laser printers for our office. Because the HP LaserJet 1200se has proven reliability and Hewlett Packard has an excellent customer-service reputation, we recommend purchasing 10 HP LaserJet 1200se printers, for a total cost of \$3,990. These printers will pay for themselves in less than one year.

→ Thank you for the opportunity to research options for enhancing printing capability at Rydell & Associates. We look forward to the possibility of working on future projects for the firm. Please contact Marne Ewing at extension 2645 or Teresa Lipus at extension 3406 if you have any questions or comments.

→ *Transmittal "letters" can be presented as memos.*

→ *The purpose of the study*

→ *The methods*

→ *The major recommendation*

→ *A polite offer to provide more information*

**FEASIBILITY STUDY ON PRINTER CAPABILITY:
A COMPLETION REPORT**

Prepared for: **Joanna Rydell, President**
Rydell & Associates

Prepared by: Marne Ewing, Technical-Communication Intern
Teresa Lipus, Technical-Communication Intern

May 13, 2002

← The title indicates the subject
and purpose of the report.

Abstract

"Feasibility Study on Printer Capability: A Completion Report"

Prepared by: Marne Ewing, Technical-Communication Intern
Teresa Lipus, Technical-Communication Intern

The abstract briefly summarizes the purpose of the study and its methods, then focuses on the technical aspects of the subject: the specifications of the recommended printer.

In April 2002, the president of Rydell & Associates authorized a feasibility study on improving the company's printing capability by replacing or augmenting current printing equipment. The president authorized a \$5,000 budget for capital expenditures. The firm's three networked printers have not been able to meet the increased demands of the recently expanded staff and workload. As a result, the firm is losing valuable employee time (28 hours per month) as employees wait for the two reliable printers to complete 95 percent of the print jobs. We evaluated the cost of lost productivity as employees wait for print jobs, established essential printer-selection criteria, and evaluated available laser printers according to the criteria. Based on the information we gathered and reviewed, we recommend buying 10 HP LaserJet 1200se laser printers for our office printing needs. At a cost of \$399 each, the 1200se prints at 1200 × 1200 dpi, comes with a standard 8 MB RAM (expandable), and has a 90MHz processor. It prints at 11.5 pages per minute, at a cost of 2 cents per page. By increasing printing capacity, Rydell & Associates can maintain its reputation for efficiency and high-quality work.

A keywords list ensures that if the report is searched electronically, it will register "hits" for each of the terms listed.

Keywords: printing, laser printers, HP LaserJet 1200se

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Note that the typeface and design of the headings in the contents page match the typeface and design of the headings in the report itself.

In This Book

For more about using styles to create a table of contents automatically, see Ch. 3, p. 40.

Executive Summary

Because of the reputation that Rydell & Associates has earned for efficiency and high-quality service, business volume has increased dramatically in the last five years, resulting in the addition of four associate accountants in the past year alone. Our expanded staff and workload have increased demands beyond our current printing capacity, and we are losing valuable employee time due to print-job delays.

Our team interviewed the office manager, Bill Fredericks, who reported that we use 15,000 sheets of paper per month, approximately 95 percent (14,250 sheets) of which are printed on our two HP LaserJet printers. Employees usually avoid our third printer, a Canon Inkjet, because of its poor output quality.

The heavy use of our two popular printers has resulted in lost time as employees wait at the printers to retrieve and sort out their print jobs. We surveyed employees and calculated the cost of this lost productivity. Our 10 employees average over 6 minutes per day waiting for print jobs, which translates to 28 hours (\$570) per month of wasted employee time.

We were given a \$5,000 budget for capital expenditures. With the objective of reducing this loss of employee productivity, we researched options for improving our printing capabilities. We established printer-selection criteria, reviewed performance tests on laser printers, and narrowed the field to two highly suitable models: the HP LaserJet 1200se and the Samsung ML 1450.

Based on the information we gathered and analyzed, we concluded that a purchase of 10 small-business laser printers would cut printer wait times by an estimated two-thirds, resulting in a savings of approximately \$380 per month. That savings would pay for all 10 printers in less than one year. The HP LaserJet 1200se earns excellent reliability ratings, and Hewlett Packard has an outstanding reputation for customer service. For these reasons, we recommend purchasing 10 HP LaserJet 1200se printers, for a total cost of \$3,990.

The executive summary describes the project with a focus on the managerial aspects, particularly the recommendation. Note the writers' emphasis on the problem at Rydell and their use of dollar figures.

Managers want the bottom line: how much would it cost to implement your recommendation, and how long is the payback period?

Introduction

On April 22, 2002, we received approval for our proposal to research and evaluate options for improving the printing capability of Rydell & Associates accountancy firm. This proposal was based on growing concerns over the efficiency and productivity problems we have been experiencing with our current printers.

This report presents the findings of our study. We calculated the cost of lost productivity, evaluated various options for improving our printing capabilities, and established printer-selection criteria. We researched specifications and performance data for available laser printers.

Because of the firm's reputation for high-quality work, Rydell & Associates has recently experienced a growth in business volume, resulting in the addition of four new associates in the past year. The expanded staff and workload have increased demands on our current printing equipment: two HP LaserJet 1200s and one Canon BJC-85 Inkjet. Consequently, employees are losing valuable time due to print-job delays. Our team interviewed the office manager, Bill Fredericks, who reported that we use 15,000 sheets of paper per month, approximately 95 percent (14,250 sheets) of which are printed on our two HP LaserJet printers. Employees avoid using our third printer, an inkjet, because of its low-quality output.

The inability of our current printers to keep pace with increased printing demand adversely affects our productivity: our employees average over 6 minutes per day (28 hours per month) of lost work time waiting at the printers to retrieve their print jobs and sort out their documents from those of other associates. This lost time translates to a loss of \$570 per month in employee productivity. Continued loss of employee productivity could hurt the reputation that Rydell & Associates has earned for efficiency and high-quality service.

In view of these concerns, we recommend buying 10 small-business laser printers, at a total cost of \$3,990. This reconfiguration would cut printer wait times by an estimated two-thirds, a savings of approximately \$380 per month, and would pay for the 10 printers in less than one year. Although the Samsung ML 1450 is an excellent printer, we recommend purchasing 10 HP LaserJet 1200se printers because of their reliability and the company's excellent customer-service reputation.

In some organizations, all first-level headings begin a new page.

The background and purpose of the report

An overview of the methods

A more detailed statement of the background and problem

An introduction can present the basic findings of a report.

Research Methods

We performed the following research to determine the best option for our printing needs:

1. To calculate the cost of the lost productivity incurred by using our current printers, we interviewed all 10 appropriate employees of the firm to find the average time per day spent waiting for print jobs (Appendix, page 10).
2. To establish printer-selection criteria, we started with the assumption that any solution we recommend will need to cost less than \$5,000. We needed to determine whether our associates' needs would be best served by continuing our networked printing configuration, or whether we should move to a distributed configuration, in which each employee has his or her own printer. The question we needed to answer is whether we can purchase 10 printers that have the technical characteristics we need: speed, resolution, and expandability.
3. To narrow the selection of printers, we chose 14 laser printers from reviews and benchmark tests of small-office laser printers in *PC World* (Top ten, 2002), *ZDNET.com* (Most popular, 2002), and *CNET.com* (Top 5, 2002). We eliminated printers with a resolution less than 1200 × 1200 dots per inch (dpi), the current standard for small-office printers, because of our associates' need to print documents containing small type sizes. To derive our conclusions and recommendations, we analyzed the five remaining printers again according to features, performance, and our particular needs. We created a comparison chart, drew a conclusion, and formulated the recommendation presented in this report.

The writers use the same task organization that they used in the proposal and in the progress report.

Note the cross-reference in point 1 to the appendix, complete with a page number.

Results

In this section, we present the findings of our research. We cover the costs of the lost productivity, the printer-selection criteria, and the technical comparisons of the printers.

← An advance organizer for the results section

1. Costs of Lost Productivity

Currently, our three printers are networked. According to Bill Fredericks, our office manager, we use 15,000 sheets of paper per month. He estimated that approximately 95 percent of our printing (14,250 pages) is done on the two HP LaserJet printers and only 5 percent (750 pages) on the Canon Inkjet, because employees are dissatisfied with its print quality. This means that our employees often need to wait as their print jobs are queued on the two HP LaserJet printers.

(There is an additional problem with the networked-printing configuration. Experts recommend that a printer be used to print no more than one-quarter the number of pages listed in its duty cycle [Ozer, 2002]. This means that each LaserJet, with a duty cycle of 3,500, should be printing no more than 875 pages per month for optimum equipment wear. In fact, each LaserJet is printing approximately 7,000 pages per month, eight times the Ozer recommendation. We are not using our printers efficiently; in fact, we are in danger of significantly reducing their effective useful lifetimes through overuse.)

For the week of April 15, we asked all 10 appropriate employees to estimate the amount of time they spent waiting for print jobs. The average wait per day was over 6 minutes, which we converted to hours per month. The total wait time for 10 employees was 28 hours, which translates to approximately \$570 per month (Appendix, page 10).

2. Printer-Selection Criteria

The results of our quantitative analysis of current costs suggest that the main weakness of our current networked printing configuration is that employees have to leave their desks, wait for print jobs, and sort out their documents from the others at the printer. Based on this information, we decided that rather than having centralized, networked large-business laser printers, it would be more efficient for each employee to have his or her own small-office laser printer. Therefore, we eliminated large-business printers from our study.

Following were the five main criteria we considered during our research:

Initial purchase price

Our main goal was to find the most cost-effective approach to increasing our printing capacity and efficiency. Therefore, purchase cost was the initial criterion for evaluating laser printers; because we were working with an equipment budget of \$5,000, and we knew we wanted to buy 10 printers, we narrowed the field by evaluating only printers under \$500.

Print resolution

Because our documents often have fine, small print, and require clear, crisp text, we selected high resolution (1200 × 1200 dpi) as an essential criterion.

RAM-expandability

Accounting documents can be very complex, often including data from Microsoft® Excel and Access. Available RAM affects a printer's efficiency and resolution, and the ability to expand and upgrade the printer makes it more adaptable to future printing demands.

Cost per page

Cost per page is based on the average number of pages that can be printed from one toner cartridge.

Printing speed

Printing speed is another factor that contributes to efficient printing capabilities. We evaluated the laser printers by the pages per minute (ppm) they can produce.

3. Evaluation of Qualified Printers

The reviews and benchmark tests we studied provided a set of 14 printers from which to choose:

Brother HL 1270N	Lexmark E320
Brother HL 1440	Lexmark Optra M412n
Brother HL 1650	Samsung ML 1210
Brother HL 1670N	Samsung ML 1250
HP LaserJet 1000	Samsung ML 1651N
HP LaserJet 1200se	Samsung ML 6060
Lexmark E 210	Samsung ML 1450

A strength of this report is that the writers explain their thinking clearly throughout.

After eliminating printers with resolutions less than 1200 × 1200 dpi, we narrowed the scope of our research to the following five printers, listed here from least expensive to most expensive:

Printer	Price
Samsung ML 1450	\$299.99
HP LaserJet 1200se	\$399.00
Brother HL 1650	\$600.00
Samsung ML 1651N	\$650.00
Brother HL 1670N	\$750.00

Only the first two on this list meet our purchase-price criterion. To be sure that we were not eliminating appropriate printers on the basis of price alone, however, we studied the other three as well. The Brother HL 1670N and the Samsung ML1651N are high priced because they are designed to be network printers. The Brother HL 1650 is expensive because it offers a duplexer feature. Because neither networking nor duplexing is a feature that our office requires, we eliminated these printers from consideration.

Table 1 presents the technical comparison of the two printers that best met our needs.

Table 1. Final Feature Comparison of Two Selected Printers*

Criterion	HP LaserJet 1200se	Samsung ML 1450
Cost	\$399	\$299
Resolution	1200 × 1200 dpi	1200 × 1200 dpi
RAM/Processor	8MB 90MHz	4MB 66 MHz
ppm	11.5	10.3
Cost per page	2 cents	1.7 cents
Support	1-year warranty extended phone support	1-year warranty extended phone support
Expert overall ranking of top five	<i>PCWorld.com</i> and <i>CNET.com</i> : 3rd of 5	<i>CNET.com</i> : 5th of 5
Reviews and user comments	<ul style="list-style-type: none"> • holds 250 sheets • no on-off switch • some problems with paper curl • can buy copier/scanner attachment for \$149 	<ul style="list-style-type: none"> • holds 550 sheets • needs more memory to print at 1200 dpi
Price of additional memory	32MB: \$29	8MB: \$21 16MB: \$29 32MB: \$59
Size (inches)	approx. 16 × 19 × 10	approx. 16 × 14 × 12

*Sources: <<http://www.satech.com/printermemory1.html>> (memory prices)
<<http://CNET.com/hardware/0-1063.html?>>
<<http://www.pcworld.com/reviews/article/0,aid,73855,pg,2,00.asp>>
<<http://www.zdnet.com/products/filter/guide/0,7267,1500123,00.html>>

Conclusions

The HP LaserJet 1200se and the Samsung ML1450 both meet our needs. They produce excellent text quality at an average speed and received mostly good reviews by experts and users. The Samsung, a new model, is less expensive to purchase (even with a memory upgrade), the cost per page is very reasonable, and it holds an entire ream of paper. The HP LaserJet costs slightly more to purchase, the cost per page is a little higher, and it holds only 250 sheets of paper. However, the HP LaserJet comes with more RAM, and RAM upgrades are cheaper than for the Samsung. In addition, the HP LaserJet is slightly faster than the Samsung. Our existing HP LaserJet 1200s have proven to be very reliable performers in our office, even under very hard use, and the manufacturer's reputation for customer service is excellent.

The writers explain their conclusions carefully.

Recommendation

We recommend buying 10 small-business laser printers for our office printing needs. We estimate that this reconfiguration of our workplace would cut printer wait times by an estimated two-thirds, a savings of approximately \$380 per month. That savings of employee time would pay for the 10 printers in one year or less. Although the Samsung ML 1450 would be slightly cheaper, the technical merits of the HP LaserJet 1200se and HP's customer-service reputation make it an excellent choice. We recommend purchasing 10 HP LaserJet 1200se printers, for a total cost of \$3,990.

This recommendation largely repeats the last paragraph in the introduction to the report. In technical communication, repetition can reinforce important information and increase your chances of reaching readers who read only selected portions of long documents.

References

CNET editors' top 5 personal laser printers. (2002, March). Retrieved April 10, 2002, from the CNET Web site: <http://computers.cnet.com/hardware/0-2645882-8-5700867-1.html>

Most popular printers. (2002, March). Retrieved April 10, 2002, from the ZDNet Web site: <http://zdnetshopper.cnet.com/shopping/0-8399-1410-0-0.html?tag=pop&cobrand=29>

Ozer, J. (2002, January). Print more for less. *Computer Shopper*, 22, 126–130.

Top ten monochrome laser printers. (2002, March). Retrieved April 10, 2002, from the PC World Web site: www.pcworld.com/reviews/article/0,aid,92901,00.asp

Appendix: Lost Productivity as Employees Wait for Print Jobs

For the week of April 15, we asked employees to estimate the amount of time they spent waiting for print jobs. The average wait per day was over 6 minutes, which we converted to hours per month.

Employee Name	Title	Hourly Salary	Hours per Month Waiting for Printer	Cost to Firm
Drew Collins	CPA	28	1.50	42.00
Roland Green	CPA	23	1.85	42.55
Penny Parkyn	CPA	23	2.30	52.90
Rajiv Gupta	Associate	22	2.60	57.20
Barry Gathers	Associate	22	3.25	71.50
Kay Merrill	Associate	21	3.25	68.25
Brian Woolley	Associate	21	2.75	57.75
Bill Menendez	Associate	19	3.00	57.00
Carly Matthews	Associate	18	3.75	67.50
Bill Fredericks	Manager	15	3.60	54.00
Monthly Total			27.85	\$570.65

The writers present their primary-research results because they are critically important to the argument made in the report.