What Print CEO’s Need to Know about Automation
Part Two of a Two-part Discussion on ROI and Usage
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In Part One of this two-part article, we learned who in North America is automating their operations and what they’ve automated. We also learned that the biggest reason why 31% of printers have not implemented or plan on implementing JDF-enabled automation is due to a lack of understanding of the benefits or concern that automation is too costly … in other words, they don’t comprehend the ROI for automation. And that’s understandable, because until today (this article), there really wasn’t any data on ROI for automation.

In Part One, I identified 41 case studies out of the 70+ collected through the CIPPI Awards Program that had sufficient financial data to conduct an analysis and determine what the ROI is for JDF-enabled automation is. First a word of caution, these case studies are from printing companies that completed their automation programs, where typically, there was a motivated owner or CEO with a vision and a team or staff manager that acted as a project manager. I’ve heard stories of printers who never got that far because they couldn’t get their vendors to support them, or expected that the integration would be part of the installation of new equipment, and so on. As I’ve said, automation isn’t something you can buy; automation requires planning, coordination with vendors and project management, and a vision. (For printers who have experienced frustration or are not sure where to start, get a copy of Best Practices for Print Automation from Printing Industries of America, which was referenced in Part One of this article.)

So the ROI data that I’m about to report is based only on data from printers who have completed an automation implementation. But before I get to the numbers, let me first make a few important notes about my methodology and assumptions. In conducting an analysis of the ROI statements from these companies, the size of the company was noted, as were the levels of integration. ROI numbers were reported for different periods ranging from 2.4 months to five years, and had to be normalized to annual percentage rates. Furthermore, a discount factor was applied if I found that not all inclusions in the ROI calculation were directly attributable to JDF automation alone. For instance, in one case only 20% of reported ROI was used, as most benefits had to do with the purchase of a new prepress workflow system, and not just the integration of the system with other elements of production.

Labor savings were also tallied in my analysis, but “labor savings” is NOT the same as labor reduction, and may also include savings in labor time for processing in a particular task. What to do with those labor savings is a question for management, and pertains to their vision for the company. Some companies did reduce staff to save on labor expenses, while others shifted workers to other responsibilities, and yet others increased plant capacity. If labor savings were reported in Dollars or Euros (as opposed to hours), a conservative $100,000 per person or €80,000 per person was used to determine the number of hours to account for pay, benefits and overhead. A conservative 2000-hour staff-year was used, as opposed to 2,200 and 2,400 hour staff-years, which are also common. Several calculations of hours were direct and not derived from dollars saved on labor, but rather on hours saved per operation, shift and so on. What I found was that …

• The average annualized ROI for all companies with JDF-enabled integration is 298%.

• If the high (1338%) and low (19%) outlying companies are thrown out, the average annualized ROI is 277%, which is the statistic you should use.

• This results in break-even being achieved on an average of 4.33 months following a JDF-enabled integration going live.

Thirty-six case studies in the ROI analysis had sufficient data to calculate hours of labor reduction. The average labor savings per company is 6979 hours per year. Using the study basis year of 2000 hours, labor savings amounted to an average equivalent to 3½ staff-years. These numbers are gross abstractions, and there is greater meaning to be found in the data if we take a closer look at how this data varies by the level of integration and by the size of the company.
Few printers have the money, bandwidth and opportunity to automate everything at once. Most printers, as seen in the Ratio survey results, start with a limited implementation between a few devices and later expand on the integration over time. For this reason, I broke down the results into four levels of integration:

- **Level 1** — Level one includes simple integration between just a few devices. An example would be using JDF extracted from the imposition process to provide job setup data to a cutter or stitcher.

- **Level 2** — Level two is the intermediary step between initial and full automation, which includes integration between multiple devices and departments. It’s common for printers to integrate MIS, prepress and press or MIS, prepress and postpress, with the intent of adding the missing components later.

- **Level 3** — Level three is full plant automation, where job estimating, planning and scheduling, MIS, prepress, press, and postpress are all automated.

- **Level 4** — Level four is where the automation extends directly to the customer. This may be through online reporting derived from JDF, web-to-print and ecommerce and online job submission tools, or where printers provide customers JDF templates after an estimate is approved for use in their layout and PDF distillation tools. Full automation (Level three above) is not a prerequisite for Level four integration. The case study results that fell into this category included both printers with partial and full integration of production. As you’ll see in the results, this distinction is meaningful.

What I learned is that the ROI averages for levels 1, 2, and 4 were similar, at 224%, 232%, and 219% respectfully. Level III had a much higher ROI average at 480%.

How could this be so? Level III (full automation) generates synergy throughout the plant. Many of the printers’ objectives, such as having reporting and billing directly tied to machine input, and the ability to manage all schedules and operations centrally, are only achievable once full automation is reached. Full automation allows the MIS to capture data on all operations and allows for better reporting, billing and workflow diagnostics and management. Partial automation isn’t without its value … 200% plus is a pretty good annualized ROI … but partial automation means that some processes still require manual communication of job specifications and equipment setup.
When we take a look at labor savings, Level three automation is only slightly more beneficial than Levels one and two. However, the labor savings for Level four integration (e.g., integration with the customer) is much higher.

Quite simply, dealing with customers is time consuming. While some tools, like web-to-print tools don’t automatically mean that there is JDF under the hood and offer productivity gains, the integration of JDF between front-end systems and production offers a higher level of optimization. Several case studies mention the creation of a “super CSR”; one person that can handle scheduling, planning, estimating and customer communications. This is made possible by bringing the information necessary together in one tool set, and JDF is critical to making those connections in the business workflow.

I also looked at ROI by the size of the company, and categorized companies into four size groups

1. Small Printers — Printers with no more than 20 employees or less than $7,000,000 USD in sales.
2. Medium Printers — Printers with up to 100 employees or less than $50,000,000 USD in sales
3. Large Printers — Printers with over 100 employees or up to $300,000,000 USD in sales
4. Super-sized Printers — Printers with over 300 employees or sales over $300,000,000 USD

Small and large printers were more likely to have moved to full integration, with medium printers in various phases of implementation. This explains the variation in ROI by size of the company and dispels the myth that JDF-enabled automation isn’t for small printers.
Super-sized printers tended to focus on specific, (Level one) integrations, may have older pre-JDF custom automation in place, or may have been hampered by levels of bureaucracy and a complex approval process. Knowing that executive level buy-in and support is critical to an automation implementation program, it is reasonable to conclude that smaller companies are more likely to get C-level buy-in for full automation, where the largest companies have much more complex approval processes to go through. However, the labor savings data adds more illumination to this finding. For the super-sized printer, labor savings seems to be a bigger factor, and possibly the motivation or objective that such companies find support for among top management.

![Bar chart showing labor savings for small, medium, large, and super-sized printers.](image)

So for those 31% of printers who have not implemented or are not planning on implementing JDF-enabled print automation, this is the data you were missing. Yes, implementing automation is not without its costs, but with a breakeven averaging just over four months from the completion of installation, you’ll recover your costs quickly, and even more importantly, quickly add dollars to your bottom line. And for the majority of printers who have implemented automation, but who have not achieved full end-to-end automation, you now know that there is an additional payoff to expanding your automation program.

My friend Bill Lamparter of Printcom Consulting also advises that ROI data is only truly usefully within a company. Using the above averages for anything other than an industry indicator isn’t advised, as every company’s financial structure, from wages, to how equipment is amortized and depreciated, or how overhead is tallied, is different from one company to another. These numbers only indicate that there is great value to be had in automating your operations, but the plan that you devise and the results that you achieve will be uniquely yours. Bill advises that if you construct an ROI as part of your plan, you should go back after the implementation, measure, and compare your results to your objective. If you fall short of your objectives, there is both a lesson to be learned and an opportunity to correct errors that may have been made along the way. For many printers, the recent lean economy has been one of the motivating factors in pursuing better productivity through automation. For those printers who achieve full automation, these numbers lead me to conclude that, as the economy recovers, they may find that their best years are still to come.