

Company Overview:

Jack Huhn Plumbing & Heating is an esteemed regional plumbing contractor based in Louisville, KY. Founded in 1965, Jack Huhn Plumbing & Heating has grown and refined its expertise to become a regional leader in design/build implementations of plumbing and HVAC systems for medium- to large-scale commercial and industrial projects. In the first two decades of the company's operations, smaller scale projects and a service/repair department serving the Louisville area were the main drivers of revenues and growth.

As knowledge and expertise within the industry developed and refined, larger scale projects were targeted as opportunities in which specialization as a premier design/build plumbing and heating contractor would lead the company to new levels of growth and profitability. The service and repair elements of the business were gradually phased out in an effort to dedicate more resources to specializing as the contractor of choice for commercial and industrial developments.

This strategy has guided operations since the late 1990's. The economies of scale gained by targeting these opportunities has proven to be lucrative, as the specialized knowledge and experience within these niches has established the company as a reputable contractor in developing projects such as:

- Restaurants (O'Charley's, Cracker Barrel, Rafferty's, Ruth's Chris)
- "Big-box" retailers (Home Depot, Wal-Mart, Dillards)
- Hotels and other large residence facilities (Holiday Inn, Quality Inn, The Park at Oxmoor, Extended Stay America, Marriott Residence Inn)
- Medical/Office/Retail complexes (Forest Green Office Buildings, Suburban Hospital Medical Plaza, Atria Assisted Living, Mall St. Matthews)

In focusing on these large-scale projects, JHPH is able to dedicate its resources to long-term, lower-risk endeavors and gain economies of scale for its operations. Dedicating the same human resources and specialized expertise to these types of jobs is also a safe way to ensure that

the operation is always running at full capacity and at a competitive edge over other contractors that lack the experience in such projects. The efficiency advantages and specific knowledge gained by performing many repeat implementations have led to lower overall costs and higher profitability when replicating projects (i.e. 31 Wal-Mart superstores, 12 O'Charley's restaurants to date).

While this strategy has fostered growth and blossomed revenues for more than a decade, JHPH is now exploring opportunities to enhance the integration of information technology strategies to augment growth and profitability into the future. As the landscape of business welcomes new technological solutions for effectively managing people, infrastructure and resources, JHPH is now persuaded to incorporate intelligent IT solutions to continue growing revenues and profitability.

What is normally considered a strictly 'manual labor' industry, the infusion of technology has inevitably established a stronghold in this niche. Enhancements in job costing and estimation software have enabled companies to produce greater efficiency and lower average costs for bidding and managing projects. Electronic communications via fax and the internet have replaced the antiquated systems of mail and written communications and information exchange. As in many industries, personal computers and the integration of internal and external business systems are now key factors in facilitating and accelerating growth into the future.

JHPH currently embraces information technology in limited ways, but there is certainly room for enhancing operations and future profitability with the help of technology solutions.

Current IT Strategy:

At the present, JHPH utilizes personal computers, a single dial-up internet connection, and a fax machine in their daily operations, but many elements of the business would benefit

from introducing and improving new information technology products and services available today. The following list includes items in which there is an interest to improve with the help of IT:

- Job costing and estimation
- Information exchange with suppliers and other contractors
- Accounting, financial and inventory systems
- Employee accountability and human resources information

Various administrative personnel at JPH currently manage job costing and estimation by hand. Because many jobs share very similar frameworks, job costing and estimation has proven to be a redundant and time-consuming task when performed manually. In utilizing the strength and flexibility of a database of resources and materials, an automation process for estimating jobs can be implemented to save countless hours of repetitive manual calculation.

Job costing and estimation is always a function of the available prices of material inputs including pipe, fittings, and countless other components from suppliers. Many suppliers have this information available in electronic format, and JPH would benefit from the integration of real-time information with their bidding process when estimating the costs of projects. A database-driven application that integrates information from suppliers would immediately expedite the processes associated with estimating jobs and the ongoing requirements of projects. This database of inputs and resources would also eliminate the time-consuming efforts and redundancy of job costing done by hand.

Integrating the job costing and estimations functions with an accounting and financial reporting package like PeopleSoft would also enhance the operations of this enterprise.

PeopleSoft software enables organizations to reduce costs and increase productivity by directly connecting customers, suppliers, partners and employees to business processes on-line, in real time. A software solution from PeopleSoft integrates a premier suite of applications including:

Customer Relationship Management, Supply Chain Management, Human Capital Management, Financial Management and Application Integration.¹ A typical small business implementation would cost upward of \$50,000, therefore we aim to provide a similar solution using relatively inexpensive development tools.

Typically, over 90% of JHPH projects are performed outside the Louisville, KY area. Accountability of employees' time and resources is an increasing concern, and there are a variety of ways in which JHPH can leverage available technology to mitigate the risks of having 90% of human resources out of town on a regular basis. These options include GPS tracking systems of company vehicles and integrated digital inventory solutions.

Many contractors and suppliers have continually embraced the use of technology in their operations and now require that JHPH follow suit in order to better integrate their operations with the overall project implementations. For example, blueprints and other job requirements are often available exclusively online, so it is advantageous for JHPH to supplement its capabilities for sharing and distributing information online with contractors and suppliers. Coupled with the in-house database that helps manage job costing, estimation and project management, a requisite piece of a new IT strategy includes a corporate website that enables other contractors and suppliers to collaborate with JHPH online and in real-time.

Internet connectivity is an increasingly important aspect of operating a business today. JHPH currently has a dial-up internet connection on only one of 10 personal computers in the corporate offices, and the scheduling conflicts among administrative staff become increasingly more distracting for the user of the computer that possesses the internet connection. Establishing and sharing a high-speed DSL connection for the office can be a very cost-effective way to allow all users to access the online information and resources.

¹ PeopleSoft corporate website: <http://www.peoplesoft.com>

Implementing cutting-edge technology solutions is clearly not a prerequisite for continued success for this particular industry or enterprise, but vast improvements can be achieved with relatively simple extensions of the ways in which technology enables and accelerates operations for JHPH. We can commend JHPH for introducing solutions like personal computers, a file server, a computer-based accounting package, and computerized barcode inventory system, but there are many areas in which operations can be updated in order to achieve improved business processes.

Proposed Changes in Strategy and/or Organization:

We propose to implement a new file server and dedicated high-speed internet connectivity (DSL) to JHPH. At the low cost of around \$50 a month², it's barely double the cost of the current dialup internet connection used at the company, but provides a significant leap in performance. The DSL connection, when combined with a low cost router, will allow for all of the workstations to have internet access shared among the (already installed) Ethernet network. Sharing an always-on internet connection, employees will be better equipped to leverage the information from contractors and suppliers, and will also be able communicate individually with personalized email accounts that are part of a new corporate website.

A corporate website is an easy and cost effective way to share information about the company with the public. When being considered to bid new jobs, contractors frequently ask JHPH for a biography of the company and its principles, and/or a list of past accomplishments. A website would be a great tool for managing this information, and would again reduce the time associated with compiling all of this information repeatedly for various projects. Establishing a branded corporate website is also a powerful way to exude professionalism and quality for an enterprise. Transitioning from an email address like Jackhuhn@aol.com to

² DSL Pricing Information: <http://www.fastaccess.com/content/index.jsp>

username@jackhuhnplumbing.com lends much more credibility to the enterprise and also invites the opportunity for each administrative employee to have a personalized address with which they can communicate via email internally and externally.

To address the problem of storing and sharing job costing information, we propose the development of a database using the MYSQL platform. Since there is no immediate cost associated with a MYSQL database, we will be able to budget more resources for application development. We are planning on using the new file server to house this database as well. This new system will not only represent a change in technology but a change in how costing and estimation are done at JHPH. This will obviously require some training for the employees who have figured jobs by hand for years.

Risks associated with change:

There are several risks associated with introducing these types of new information systems into JHPH. One of these risks is employee abuse of the company information systems.³ There are studies that show that companies will lose several thousand hours of man-hour productivity to non-business-related internet surfing per year. However, it is impossible to measure that risk against the benefits gained by using the internet. Implementing some kind of workplace surveillance can alleviate this risk.⁴ It would be in the best interest of the company to implement some type of firewall and/or objectionable content filter to ensure that employees aren't abusing their internet access.

Cyber slacking is a growing problem in the workplace, especially for a company like Jack Huhn Plumbing and Heating. With their limited staff it's imperative that they get full productivity from each of their employees. Time spent on the computer needs to be spent

³ When Should Companies Restrict Employee Net Access? <http://www.iorg.com/papers/iw/19980601-advisor.html>

⁴ Workplace Surveillance: <http://www.pbs.org/wnet/moneyshow/cover/062901.html>

collaborating with coworkers or contributing to the workflow of projects. Imagine the loss of productivity that would be experienced if employees spent their time online gaming, or chatting: it could cost JHPH a lot of money. To alleviate this risk we plan on implementing SQUID⁵, a freeware proxy and cache server that will allow management to not only monitor inappropriate content but also keep track of employees time spent surfing the web. This free software will prove to be invaluable for keeping track of employee productivity.

Costs associated with change:

There are several costs associated with upgrading JHPH's current IT infrastructure. The most obvious cost is the purchasing the hardware. The only hardware that needs to be purchased is a new file server; JHPH already owns 10 computers that are capable of performing everyday business operations. A Dell tower server costs approximately \$1200-1700. No other capital costs for computer equipment will be incurred.

Implementing a GPS tracking systems for fleet vehicles will cost \$2000 per vehicle and the subscription for the monitoring service will cost another \$50 per month.⁶ This option could be cost prohibitive given a fleet size of 30 trucks. A more simple GPS recording system would cost \$149 for installation and only \$5 per month in subscription fees. To clarify, GPS tracking systems offer real time tracking of vehicles whereas a GPS recording is a less expensive (no real-time tracking) system. GPS recording systems differ in that the unit records the vehicle's location until the information is downloaded by the end-user. Both systems offer savings from undue overtime charges and enhanced accountability for employees. JHPH must decide whether it is more important to obtain immediate vehicle location information or simply a method of

⁵ Squid Website: <http://www.squid-cache.org/>

⁶ Holly Smith, GPS Fleet Solutions, LLC July 12, 2003

keeping records. The addition of these tools will surely prove to make the return on investment rapid and rewarding.

Developing a corporate website will cost JHPH around \$3000 for the initial set up and an estimated \$250 per year in hosting and support fees. Updates to the website can be managed in-house by a capable administrative employee equipped with a software package called Macromedia Contribute, a \$99 solution that allows end-users to modify and update a website without the knowledge of HTML or website architecture.

Another major cost associated with our proposed changes will be the adoption of the new database-driven IT strategy. We would propose top priority status for creating the dynamic database that will mesh job costing, estimation, supplier information, human resources and financial systems. Database development for this project can be estimated at 45 hours of time at \$80 per hour for design, development and testing of the integrated solution. Approximately \$500 per employee of training expenses can be budgeted for getting everyone up to speed on the new systems. Fortunately, up to 50% of the training costs could be recovered through an income tax credit (Table 1) made available through the Kentucky's Bluegrass State Skills Corp. This credit does is not limited to the training activity, but JHPH is eligible for credits towards employee wages during the training period. In learning to maximize the power of the new technology, we can expect the cost savings associated with the enhancements to far surpass the initial outlay of capital to incorporate our proposed solutions.

Table 1. Tax credits for employee training

Bluegrass State Skills Corp. Cost Schedule

SKILL CATEGORY	MAXIMUM BSSC AMOUNT
INTERPERSONAL WORK SKILLS	\$100 Per Hour
SOFT SKILLS	\$70.00 Per Hour
QUALITY	\$65.00 Per Hour

TECHNICAL SKILLS	\$50.00 Per Hour
WORKPLACE ESSENTIAL SKILLS	\$45.00 Per Hour
LEAN MANUFACTURING	See Guidelines for Specific Rates

Table 2. Summary of IT Expenditures

Hardware and Software Related	
Dell / Linux Server	\$1300
GPS tracking units	\$2000 / unit + \$50 monthly service fee
GPS recording unit	\$149 / unit + \$5 monthly service fee
Training and Development	
Website Development	\$3000 +\$250/year hosting fee
Database Development and Testing	\$3600 (based on 45 hrs at \$80 / hr)
Employee Training	\$500 / Employee

Benefits associated with change:

The primary benefits associated with these new information systems and strategies are 1) to lower the costs associated with managing the enterprise and 2) maximize the productivity of JHPH employees. Following a successful adoption of the new systems, JHPH will be more productive for several reasons. The database-driven application will provide opportunities to eliminate the repeated manual processes and duplications of effort. Vast amounts of information pertaining to the bidding, administration and management of information about projects will be more readily accessible with this database solution. Thus a three person job proposal which takes approximately two working days could be simplified to 4-6 hours and be completed by one person.

Incorporating the new technology may result in increased revenues because of the enhancements in productivity both internally and externally. Corporate communications will benefit from the new website and email capabilities of the firm, offering other contractors

additional efficiencies in working with JHPH. This competitive technological advantage may cause more lucrative projects to be awarded to JHPH while other less tech-savvy competitors are relegated to lesser jobs. For example, if a contractor can send a design change immediately to JHPH via email, administration at JHPH would be able to handle the modifications much more expeditiously than a firm that does not employ a powerful IT strategy such as the one we have proposed here.

Office administration can also be streamlined when integrated with the new technology enhancements. The eight administrative personnel will be trained on the new database-driven system; where payroll and timesheet activities would be combined and automated. Additionally, employee performance and accountability can be better gauged when integrated with this system. Another benefit of the proposed changes includes the ability to quantify rapidly and specifically project costs and profitability levels based on the input of many factors like human resources, material costs and project scheduling.

By leveraging technology to enhance its operations, JHPH minimizes the propensity for employees to shirk and engage in other non-business-related activities, becomes better able to accurately estimate and efficiently develop projects, is able to assess the productivity of each employee, and can collaborate more effectively with other contractors and suppliers. With the proposed strategy in place, JHPH is now able to provide their employees the essential tools from which they can increase their productivity and therefore increase efficiency for the business, with the ultimate goal of growing revenues and profitability.

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