Helping SMEs choose the best digital technologies to facilitate their growth: case study

National Research Council of Canada. Industrial Research Assistance Program. Digital Technology Adoption Pilot Program; The Centre de productique intégrée du Québec (CPIQ)

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Introduction

Among the Réseau Trans-tech college centres for technology transfer (CCTTs), the Centre de productique intégrée du Québec (CPIQ) is a pioneer. Set up by the Sherbrooke CEGEP in 1986, CPIQ built up, over 25 years, state of the art expertise in helping manufacturing businesses increase their productivity through the integration of digital technologies in design, production, maintenance and management. Although its strength lies in the integration of enterprise resource planning (ERP) software, CPIQ also has extensive knowledge of computer-assisted production management (CAPM) digital technologies.

"SMEs are now very aware of the added value of information-sharing in real time between production, accounting, sales and post-sale service," explained Gilles Charron, Director General of CPIQ. "Silo operations undermine a business's flexibility, increase its response times and reduce its competitiveness. Digital technology improves performance at every stage by making information constantly accessible in real time."

The CPIQ team is composed of approximately 15 professionals with consulting experience in every aspect of manufacturing computerization. In addition, CPIQ organizes technical seminars and *techno happy hours* every year to raise awareness of the benefits for SMEs of using digital technology in manufacturing and business processes.

Gilles Charron and Charles Carrière of CPIQ

DTAPP has given CPIQ great momentum

The Digital Technology Adoption Pilot Program (DTAPP), delivered by the National Research Council Industrial Research Assistance Program (NRC-IRAP) and launched in November 2011, quickly stimulated strong demand at CPIQ, particularly for ERP-related consulting services. "We witnessed truly exponential growth," stated Gilles Charron. "Our number of feasibility studies commissioned per year increased from a dozen or so to about 80 in a wide variety of economic sectors, such as metal manufacturing, plastics and composites, agri-food and wood processing."

Most of the requests came from small and medium-sized enterprises (SMEs) with 50 to 100 employees operating not only in Estrie, Montérégie and Bas Saint-Laurent, but also in Chaudière-Appalaches and Mauricie. CPIQ adjusted by hiring two consultants, increasing its staff by four professionals in four months and using the services of two freelance consultants. The results are impressive: CPIQ was able to conduct approximately 150 pre-diagnostics and 75 feasibility studies in eighteen months. "The pre-diagnostic and feasibility study steps are both essential to the successful adoption of digital technologies," emphasized Charles Carrière, CAPM Project Manager. "But the first step does not

necessarily lead to the second, since each business has its own issues. However, we did have an opportunity to discuss available digital technologies in depth with over 150 entrepreneurs, which was greatly appreciated."

CPIQ facilities in Sherbrooke

The many projects carried out under DTAPP led CPIQ to standardize its analysis and recommendation processes. "We wanted to be able to meet the needs of all the SMEs that turned to us," stated Gilles Charron. "DTAPP prompted us to expand our pool of clients to include smaller businesses, several of which had never met with digital technology experts before. We were able to persuade them to consider adopting digital solutions to resolve certain problems. Nearly one quarter of the work carried out was for SMEs whose business volume was under three million dollars."

CPIQ also improved its service offering by adding coaching to the coordination of its implementation services. One of the recurring difficulties in implementing digital technologies is that SMEs struggle to maintain the momentum of the implementation project on top of their day-to-day activities and to support collaboration with their technology supplier. When deadlines are pushed back and priority is given to unanticipated problems that are considered more urgent, the business runs the risk of losing sight of its long-term objectives. Therefore, during the kick-off meeting, CPIQ insists on adopting a detailed schedule, including several stages where the SME must react quickly.

Integrated management that addresses all of the business's needs

It is estimated that in general, two out of three failures in the implementation of digital technologies are due to the fact that the needs assessment is missing or does not cover all of the processes to be computerized. "Even though SMEs are better informed about integrated production management processes, they are directed first and foremost to developers or distributors who are much more familiar with their products than with the digital business practices that could help them be more efficient," stated Gilles Charron.

Manufacturing SMEs generally want to adopt ERP systems to improve their flexibility and organizational performance (for example, decreasing the turnaround time between orders and production). However, they have trouble choosing the software package they need.

“Astonishingly, many SMEs are often not aware of how much exactly it costs them to manufacture their products,” continued Gilles Charron. “This lack of knowledge about cost makes choosing digital technology complicated, since the business can’t accurately assess its return on investment.”

CPIQ provides services that help its SME clients better manage their expectations of technology and expand their approach so as not to resolve their problems in a piecemeal fashion. An integrated approach is a solution that will sometimes be more costly in the short term, but more cost-effective in the medium and long term, because it can evolve with the business.

“It’s not uncommon for technology suppliers to refer some of their clients to us because they don’t know what exactly they can or want to improve with new digital technologies,” commented Charles Carrière. “We often intervene to correct previous decisions about technology that did not give the expected results.”

The case of Composites VCI

The importance of clearly defining needs

Composites VCI, a company of 120 employees that manufactures composite components used in the assembly of industrial and commercial products had been looking for a few years to computerize some of its activities. Owing to the complexity of the parts to be produced and the wide range of requests from its clients, Composites VCI opted in 2012 for a material requirements planning (MRP) system to reduce errors in its production process and improve its production scheduling.

Composites VCI contacted their Industrial Technology Advisor (ITA) Hamid Ould Brahim at NRC-IRAPNRC-IRAP, to discuss support options for the implementation of an MRP system. After an initial assessment, the ITA suggested instead that they take a step back and conduct a more in-depth analysis of the company’s needs with the help of CPIQ.

Composites VCI facilities in Saint-Lin–Laurentides, Lanaudière region

"We had dismissed the option of ERP software because we were not sure it could be justified in the short term," admitted Sylvain Rivard. "We were also unaware of the possibilities of some of the ERP systems on the market." However, CPIQ mapped the company's needs and convinced Composites VCI of the benefits of purchasing ERP instead of MRP software. In the fall of 2012, Composites VCI therefore opted for the Orchestra ERP system given its capacity scheduling function, its customization options and the support that Composites VCI could obtain from Concepts Industriels 2000, the company in Trois-Rivières that had developed the software package.

Engineer Sylvain Rivard, Vice-President of Engineering at Composites VCI

The first stage of ERP implementation took place in the spring of 2013 and consisted of six weeks of theoretical and technical training for the employees who will use the software package in their work. Subsequent training involving real data concluded the first stage. "The main issue that we encountered along the way was underestimating the complexity of our operations and the products we manufacture," mentioned Sylvain Rivard. "We had to review our budgets and turnaround times with Concepts Industriels 2000 to make sure Orchestra could be customized to our needs."

The implementation, which took approximately 12 months, was completed in December 2013, much to the satisfaction of Composites VCI management. "We now use Orchestra to conduct the planning and manufacture of all our new products," stated Sylvain Rivard. "Since our production schedules change every week, Orchestra saves us nearly six hours of planning each time. We are now faster and have reduced the chances of making mistakes."

Software implementation team at Composites VCI: from left to right, Yves Berthiaume, Anthony Hadjedj, Sylvain Paquin and Olivier Deaudelin.

"At first, we were hesitant about implementing an ERP out of fear that it would increase costs and slow down the implementation of computerized management," explained Sylvain Rivard. "Working with CPIQ allowed us to select a comprehensive solution that better meets all of our needs."

Six tips for successfully implementing digital technologies

Through its popularity with SME manufacturers, DTAPP enabled CPIQ to expand its pool of clients, especially with respect to companies with a business volume under $5M and with less than 50 employees. Already well aware of the issues surrounding the implementation of digital technologies, CPIQ improved its perception. What advice does CPIQ have for SMEs wishing to adopt digital technologies for their manufacturing and management processes?

1. *Know your needs and take a step back.*

An ERP system should not be implemented to resolve, for example, ad-hoc problems. Owing to the potential of this type of software package, taking a step back is necessary in order to choose a solution that adds value to all activities. “An ERP affects the operations of every department in a business,” explained Charles Carrière. “Precise mapping of needs identifies the functions that can and need to be improved to increase flexibility and productivity.” This knowledge also makes it possible to have more realistic expectations in relation to expected profits and the return on investment.

2. *The implementation project must come from the top and be a true business plan.*

Management must fully support the project and make sure that all the employees take ownership of it. Plus, the head of the organization must be totally and unconditionally committed to it.

3. *Implementation is a means, not an end.*

Training is one of the keys to getting the most out of an ERP system. It is extremely important that employees’ learning curves be taken into account. Training must continue over the years to ensure that all users take ownership of and increasingly use the software package, thus maximizing the return on investment. A poorly used ERP system will have a decreasing value added and will be used less and less or not at all by staff.

4. *Do not underestimate the work required.*

Long-term projects, which are always more difficult than temporary projects, must remain a priority if they are to succeed. Watch out for temporary problems and production risks that could derail the process. Make sure that you have a project manager who closely monitors the project’s progress.

5. *Do not ignore resistance to change.*

Employees are human. Fear of the unknown and resistance to change should not surprise you. Identify those who are the most resistant and develop a strategy—involving transparency, good internal communications, etc.—to get them on board with the changes.

6. *Be proactive. Communicate.*

A good communication plan that generates interest in the new processes being implemented will have a very positive impact. Sell the project so that everyone can see the concrete benefits it will have for their work and their situation in the organization.

How can the transfer of digital technologies to SMEs be facilitated?

For CPIQ, their collaborative work through DTAPP helped to stimulate its strong growth and improve its consulting services to SMEs. “The increase in the number of commissions we received led us to improve our processes in order to be able to do more with less,” stated Gilles Charron. One of the main pitfalls was the coordination of a large number of consultation projects despite the contingencies of CPIQ’s client businesses. CPIQ took advantage of this by analysing its own operating procedures with a view to reducing response times without compromising the quality of its consultants’ deliverables.

The availability of clients’ resources remains a matter of concern to every CCTT working with an SME. CPIQ’s consultants circumvented the issue by providing a coaching service and engaging NRC-IRAP ITAs to support SMEs in their implementation work.

“Quebec SMEs are ready to adopt not only ERPs, but also a wide range of other digital technologies,” concluded Gilles Charron. “That being said, an ERP is not THE cure-all that fixes every problem. However, regardless of needs or choices, the key to success is in integrating all of a business’s systems with each other, with the support of multi-disciplinary teams such as the ones we offer at CPIQ.”

About the Digital Technology Adoption Pilot Program (DTAPP)

As part of the Government of Canada's Digital Economy Strategy, NRC-IRAP is delivering the Digital Technology Adoption Pilot Program (DTAPP). DTAPP was created as a pilot program to deliver support from November 2011 to March 31, 2014.

DTAPP represents a significant investment in the Canadian economy to increase the productivity growth of small and medium-sized enterprises (SMEs) in Canada across all sectors through the adoption of digital technologies.

An important component of DTAPP is to assess and measure the outcomes of digital technology adoption on the productivity of SMEs. DTAPP will utilize this aggregate knowledge and transfer successful practices and lessons learned to the broader SME community in order to:

- improve the rate of digital technology adoption by SMEs
- improve understanding of the link between digital technologies and productivity
- raise awareness of the benefits and importance of adopting these technologies

This information will be a critical tool to encourage prospective adopters of digital technologies and will continue to impact the potential productivity growth of the Canadian economy well into the future.