The Relation Between BPR and ERP Systems: A Failed Project

David Paper
Utah State University, USA

Kenneth B. Tingey
Utah State University, USA

Wai Mok
University of Alabama in Huntsville, USA

EXECUTIVE SUMMARY

Vicro Communications (we use a pseudonym to mask the identity of the organization) sought to reengineer its basic business processes with the aid of data-centric enterprise software. Vicro management however made the mistake of relying completely on the software to improve the performance of its business processes. It was hoped that the software would increase information sharing, process efficiency, standardization of IT platforms, and data mining/warehousing capabilities. Management however made no attempt to rethink existing processes before embarking on a very expensive implementation of the software. Moreover, management made no attempt to obtain feedback or opinions from employees familiar with existing business or legacy systems prior to investing the software. Unfortunately for Vicro, the reengineering effort failed miserably even after investing hundreds of millions of dollars in software implementation. As a result, performance was not improved and the software is currently being phased out.

BACKGROUND

Vicro Communications is an international provider of products and services that help companies communicate through print and digital technologies. As a leading supplier of document formatted information, print outsourcing and data based marketing, Vicro designs, manufactures and delivers business communication products, services and solutions to customers.
Vicro operates in complementary marketplaces: Forms, Print Management and Related Products which includes Label Systems and Integrated Business Solutions including personalized direct marketing, statement printing and database management. With more than a century of service, Vicro owns and operates over 100 manufacturing and distribution/warehousing facilities worldwide. With approximately 14,000 employees serving 47 countries, it provides leading edge, high-tech solutions that enable companies to adapt to the dynamics of change. Vicro is a large company with approximately 2.45 billion in 1999 and 2.26 billion dollars in 2000 revenue. The appendix contains additional financial information.

Vicro provides consulting, project management, reengineering and distribution of high volume, customized communications to its clients. It delivers personalized, easy-to-read documents intended to facilitate a positive impression on an organization’s customers. Its reengineering and redesign services intend to ensure that an organization’s business communications have high quality and clarity.

Equipped with the latest print and digital technologies, Vicro has become a market leader in managing critical business communications. It offers products and services that include statement/billing, cards, government noticing, policyholder and plan member communication, and database marketing.

**SETTING THE STAGE**

Vicro is a conservative organization in that (it purports that) it doesn’t embrace “bleeding edge” technology to obtain a competitive advantage. It has been in existence for many years and depends on a good reputation with its clients and positive “word-of-mouth” to attract and maintain its client base. Hence, Vicro wants to deploy proven technology that will help satisfy and exceed customer requests and expectations. The major technologies utilized include mainframe systems to store centralized production data and serve the core applications of the business and client-server technologies for development and daily operations such as e-mail, file transfer, web access, etc.

Vicro Communications was chosen as a case study because the authors knew that it had experimented with business process reengineering (BPR) to streamline its operations and that information technology (IT) was intended as a key facilitator. Since we were interested in why BPR efforts (facilitated by IT) succeed or fail, and had contacts at Vicro, we initiated this research project. We chose the case study approach to gain a rich understanding of what really happened and why events unfolded as they did.

Business process reengineering (BPR) was used as a literature base to frame the study. The BPR literature reveals that many BPR efforts are unsuccessful. Based on this premise, it seemed a good research undertaking to explore why this is the case.

A synopsis of salient BPR literature is included as a resource for the reader. In the early 1990s, business process reengineering (BPR) came blazing onto the business stage as a savior of under performing organizations. Early advocates of BPR (Davenport, 1993; Hammer & Champy, 1993; Harrington, 1991) touted BPR as the next revolution in obtaining breakthrough performance via process improvement and process change. However, BPR has failed to live up to expectations in many organizations (Davenport, 1993; Hammer & Champy, 1993; Kotter, 1995; Bergey et al., 1999). Some of the reasons include adoption of a flawed BPR strategy, inappropriate use of consultants, a workforce tied to old technologies, failure to invest in training, a legacy system out of control, IT architecture misaligned with BPR objectives, an inflexible management team, and a lack of long-term commitment (Bergey et al.,
1999). As one can see from this list, it seems obvious that many organizations failed to realize the scope and resource requirements of BPR.

Patience is another key aspect. BPR initiatives can lose momentum as managers face limited resources, slow pay-off, diminished employee enthusiasm, and increased resistance to change (Harkness et al., 1996). When short-term BPR results are not obtained, management tends to lose interest and top management is less willing to allocate new resources to the project (Paper, 1998a). One solution to this problem is targeting a BPR initiative that is ‘manageable’ and that will garner quick results (Paper, 1998a). Another solution is for top management to be actively involved in the effort (Kettinger et al., 1997).

Assuming that the organization understands the scope of BPR and is patient, the project still may not succeed without careful consideration of the type of process initiative. Paper (1998a) argues that the BPR initiative should be driven by a focus on the customer, strategic business issues or senior management directives. Failure to do so greatly reduces the chances for success.

IT has been touted as one of the key enablers of BPR (Davenport, 1993). However, IT can be one of the biggest obstacles if not properly aligned with business objectives (Broadbent et al., 1999). The heritage of a legacy system can contribute greatly to BPR failure (Bergey et al., 1999). Many legacy systems are not under control because they lack proper documentation, historical measurements, and change control processes (Bergey et al., 1999; Paper, 1998b). Due to the scope and complexities inherent to a typical legacy system infrastructure, it should be treated with the same priority as the cultural and organizational structures when undergoing process change (Broadbent et al., 1999; Clark et al., 1997; Cross et al., 1997).

Although the proliferation of research articles has been abundant, research findings have provided limited explanatory power concerning the underlying reasons behind BPR failure. To address this problem, several recent in-depth case studies have appeared in the IS literature to add explanatory power to this issue (Broadbent et al., 1999; Clark et al., 1997; Cooper, 2000; Cross et al., 1997; Harkness et al., 1996; Paper, 1999). However, much more work of this type needs to be undertaken. Hence, we embarked on a case study to gain insights into the IT-enabled BPR phenomenon.

**CASE DESCRIPTION**

Vicro Communications was under-performing according to its board of directors and major stockholders. That is, its market share was declining, its revenues were not growing as expected, and its share price was plummeting. The stakeholders agreed that drastic improvements were needed. It thereby decided that reengineering of its basic business processes was the correct path to undertake. In addition, it was agreed that the BPR efforts would be facilitated by data-centric enterprise software. The stakeholders believed that the power of IT would complement BPR efforts. We mask the name of the vendor by calling the software high profile technology (HPT). Since Vicro is conservative in terms of IT investments, it chose enterprise software that had been in existence for over 30 years with worldwide name recognition. It was hoped that this software would facilitate automation of redesigned processes while improving overall system performance in terms of increased information sharing, process efficiency, standardization of IT platforms, and data mining/warehousing capabilities.
Although the software investment was very significant, top management felt that it was a good decision. Top management based the software investment decision solely on vendor promises, market share of the software in its market niche, name recognition, and CEO endorsement. No effort was made to obtain opinions and/or feedback from employees at the process level or those engaged in existing systems development and maintenance. Moreover, the state of legacy systems and processes were never considered as a factor in the decision.

In short, Vicro management attempted to solve its performance problems with expensive enterprise software. There appeared to be a communication breakdown between what the stakeholders wanted and the decided course of action because the original intention of the stakeholders was to complement BPR with IT, not to depend solely on an IT solution to solve the problem. The communication breakdown extended even further. Top management mandated the plan to use the enterprise software without interactions with other managers and process workers. Furthermore, Vicro made no attempt to align business process changes with business objectives or IT objectives. The BPR literature agrees that this is one of the biggest reasons for failure.

The remainder of the case description attempts to illuminate for the reader what happened to the reengineering effort. We describe in detail how we gained and analyzed the data for the case. We adhered to a phenomenological approach. The strength of this approach is that it allows themes to emerge from the case over time. These emergent themes then become the basis for classification of the data so that it can be analyzed in an organized fashion.

**Data Analysis**

The phenomenological approach called for us to identify a set of patterns or themes that emerge from the data. To accomplish this we set up a series of interviews that were subsequently transcribed and analyzed. The formal interviews were conducted with our main contact. Informal interviews were conducted with several site employees over time. Each researcher iteratively combed through the transcripts for several hours to allow a set of common patterns or themes to emerge from the data. Each theme was color coded to facilitate easy identification in the transcript. The colors were negotiated and agreed upon after the first iteration. After each iteration, we did three complete iterations, the researchers met to compare themes. After the final iteration, the researchers negotiated a set of themes or categories that are laid out later in this section: technology usage, process improvement, HPT adoption, CEO mandate, enterprise integration, and resistance to change. Using these themes (which actually became categories to facilitate organization of transcribed data), the researchers were able to more easily analyze the case as pieces of the transcript naturally fell into one of the categories. Placement of the data from the transcripts into one of the themes was based on the experience and judgment of the researchers and verified by member checks with the main respondent.

The general theme of the formal interviews was to obtain information about the use of breakthrough technology in the BPR process. The interviews began with general questions concerning the use of computers to manage processes. The interviewee was then encouraged to divulge his opinions and ideas related to process redesign and the use of high profile technology (HPT) to facilitate or inhibit such initiatives (we use HPT to mask the name...
of the software vendor). The interviews were audio taped to maintain the integrity of the data and to allow proper analysis of the transcripts produced. The interviews were framed within the context of technology usage and process improvement to provide an easily understandable context for the interviewee and guide the discussion. Informal interviews were conducted with several employees onsite. These interviews were done on an ad-hoc basis, that is, we conducted them when we saw an opportunity to do so. Since we have close ties with Vicro, we were able to informally speak with several employees about the BPR effort and its relationship with HPT.

The initial contact that enabled entry into Vicro Communications was Ron Dickerson (the name has been masked to protect the respondent from reprisal). Ron is the National Manufacturing Systems Project Manager. He is also one of the key facilitators of reengineering and new technology initiatives at Vicro. Ron was the major direct player and contact in the case, but we did meet and speak with several users, project managers, and business managers on an informal basis (informal interviews). Ron is located at the headquarters of the technological communications division of Vicro. As such, this site is responsible for streamlining business systems and facilitating process reengineering across the organization.

The first contact with Ron was a phone interview on December 4, 2000, to garner preliminary information and discuss the merits of the research. Another phone interview was conducted on February 2, 2001 to discuss the fundamentals of BPR at Vicro and some of the major obstacles to success. Preliminary phone interviews were conducted to set up a time for a formal ‘sit down’ interview and acclimate the interviewee to the ‘essence’ of the topics to be discussed. The first formal interview with Ron was conducted on April 16, 2001. We administered two additional formal interviews on May 29, 2001, and July 1, 2001.

In the remainder of this section, we summarize (and synthesize) the analyzed data by classification theme. The information garnered from the data is based on in-depth analysis of the recorded transcripts and other data collected from telephone and e-mail interactions. Each section is a negotiated theme wherein the data summarized from the transcripts is presented and discussed. Included are pertinent segments of the respondent’s comments (comments are indented) followed by an explanation of how these comments relate to the theme.

**Technology Usage**

This theme relates to the importance of computers at work. That is, are computers important for accomplishing tasks, activities, and objectives within delineated processes?

> In my job, [computers] are essential. I live and die with my computer. If used correctly ... [computers] can help. Used incorrectly, they can be a burden. We have ... personal computers ... I have a laptop because I travel a lot and take it with me everywhere I go ... The plants have mainframes where all of their data is fed to clients ... a lot of servers that store and work our data, but the facilities in particular use mainframes ... so we have kind of both worlds [personal computers connected to servers and mainframes].

In his job, Ron cannot get by without computers. He uses them for data collection, analysis, reporting, communicating, and documenting. The nature of the business Ron manages is communication services. Hence, the business makes demands on technology in order to facilitate data collection, storage, migration, reporting, communication, etc. Comput-
ers are critical in facilitating day-to-day operations as well as data-centric problem solving. Computers are important because they store the business data of the organization. Discussions with other employees on an informal basis were consistent with Ron’s assessment. Everyone we spoke with believes that computers are vital part to accomplishing daily routines and assignments.

**Process Improvement**

This theme relates to the relationship between BPR and data-centric enterprise technology. That is, does technology facilitate or inhibit BPR and, if so, how does it do this? The idea of enterprise systems is that what someone does helps someone else down the line and that information is fed to them. This is not always the case.

Our biggest problem was that we were not willing to change our processes ... [When we got HPT] we ended up trying to modify the software to fit our processes which was a horrible approach ... we didn’t change anything and in the end we ended up bolting on hundreds of different systems ... because no one was willing to change and they wanted to keep doing the same process.

The relationship between BPR and technology was essentially nonexistent. There was no consideration for the existing process prior to implementation of HPT. No attempt was made to design new processes or redesign existing ones to match the procedures of HPT. That is, there were no synergies between the business objective and the technology. In addition, Vicro Communications programmers were not allowed to alter the enterprise system (HPT) to match existing processes. This is not uncommon when purchasing enterprise software. Looking at a common desktop operating system can draw an analogy. In most cases, source code is proprietary and is therefore not open or shared. Vendors of these types of products often force compliance to their rules as terms of the purchase. In this case, HPT did not enable information sharing across the enterprise.

A lot of people sent up tons of red flags, but when it came down to crunch time they had a lot of pressure from up above to get this in ... [existing processes] were working reasonably well, but there was a lot of room for improvement. They could have eliminated a lot of redundant steps. There were a lot of manual processes. Even just automating it would have helped to some degree, obviously it wouldn’t have changed the process, but it would have taken maybe the manual labor out of it

HPT has what it calls ‘best practices,’ but its best practices are many times too generic. Vicro Communications is in the communications business and its best practices should be based on the best performing organizations in its industry, not on those dictated by HPT. Top management decided to implement HPT without consideration for: 1) the existing processes, 2) how existing processes could be redesigned or 3) the match between the enterprise software’s view of best practices and the best practices of the industry within which Vicro Communications operates. Process workers knew that there was a mismatch between their processes and the ones dictated by HPT. However, they were powerless to resist the mandates from top management.

**HPT Adoption**

This theme relates to the adoption of HPT (and the issues surrounding the adoption of the technology itself). That is, why was HPT adopted and for what purpose?
We do mailings for our clients and we bring in millions of dollars ... to cover the cost of mailing ... We bring that in and we just sit on it ... We love to have the cash flow and the float on the cash ... but ... its client funds and it's a liability. There [is] no way to handle [this] in HPT ... we had a system that was written 12-13 years ago to track those funds, and then they had to be manually keyed into the GL, and system is still in place ... we modernized [the program], but it is still the same system and we automated it somewhat so that instead of hand-writing journal vouchers to be keyed into HPT, now the system will automatically kick them out. Someone still has to take them now from this home-grown system and key them into HPT, because there [is] no interface.

HPT was adopted to streamline processes and standardize databases on one platform. However, the ‘best practices’ built into the software did not match the existing processes. The result is that legacy systems are still in place to handle many processes that are unique to Vicro Communications. HPT is not flexible enough to handle customization of processes. Instead of improving process flow, HPT actually doubled activity because it is running and the legacy systems still have to operate as they have always done. The bottom-line is that HPT didn’t work as planned and the postage funds example (mailings) shows that business could not have been conducted using HPT for this process.

We got into time issues ... do we want to spend all of this time investigating it and coming up with a new ... process ... or is it easier just to keep the old process and try to ... bolt on to HPT [and] dump the raw numbers in? ... or instead of actually doing it with HPT, keep doing it the way we were doing it and just dump it in there ... the training expense with HPT was unreal.

The time commitments to learn how to use the software and apply it to existing processes are prohibitive. HPT is not user friendly. It also has a tremendous learning curve. Further, ‘best practices’ built into HPT do not align well with Vicro Communications existing processes. HPT is not a flexible software tool.

You almost have to become an expert in one part of the finance module ... not only in just [one] module, but one part of a module. The human resources for that are unreal.

There are over 20 modules in HPT. Just one part of one module takes tremendous time and practice to master and gain expertise. Further, mastery does not guarantee that the best practice will work for a given process. That is, once a module is mastered, it may not be useful for automation of a process that doesn’t fit the rules of the HPT best practices. In short, HPT is not easily customizable and it forces its idea of best practices on an organization regardless of industry or business.

CEO Mandate

This theme relates to the HPT mandate called for by the CEO to implement HPT. That is, why was the mandate forced upon the organization?

The reason why HPT is so marketable is because it says ‘we will force everyone.’

HPT appeared to be an ideal solution to BPR problems since the HPT vendors advocated its ability to standardize all processes on one platform. Assuming that HPT is completely implemented, it effectively forces everyone to use a standard. Thus, a non-technical CEO can easily be tempted to opt for solutions like HPT. Of course top management found out that the HPT solution was not as effective as promised.
There were time constraints from above, they had spent a lot of money on [HPT], and the board of directors was saying, we want to see some results, so just get it out there, which didn’t leave time to investigate and change processes. Instead, we took the old processes and the old systems in a lot of cases [and] just took the numbers from them to dump them into HPT. There was some [tension] ... between divisions. Our division does it this way and we don’t want to change, we like it and the other division says, we do it this way, so there was obviously some battle of wills.

Since the boards of directors (including the CEO) have invested hundreds of millions of dollars in HPT over the past several years, they wanted results. However, top management had no real experience with BPR or data-centric enterprise software. The CEO and board may have had a good understanding of the business and industry within which Vicro Communications competes, but it did not understand the fundamentals of IT-enabled process flow redesign.

In our division, we were working on our own ERP [enterprise resource planning] system ... we had spent a number of years developing a data collection system that collected data from the production floor, employee hours, machine hours, pieces, feed of paper ... actually it was a pretty good system ... when HPT came along, they [top management] just put it on hold ... because HPT is going to replace it ... now that HPT out of the hundreds and hundreds of people that were employed just for that [HPT development], they are down to 4 or 5 people. Guess what we have been doing for the last year? Updating the old system again for our division, we are updating it [legacy systems], we are back to it... we are now putting it into one of our plants.

Although the management reporting, accounting, and production systems were working pretty well, HPT was purchased and implemented to replace them. Hundreds of HPT consultants were brought onsite to implement HPT. Over time, it was found that HPT wasn’t working as promised. Hence, the number of HPT consultants was drastically reduced and Vicro is actually moving back to their legacy systems and upgrading them. That is, they are trying to phase out HPT.

One major problem facing Vicro Communications over the past few years has been change of leadership. The current CEO is the third one hired in the past few years. He was therefore confronted with the HPT problems when he assumed office. He had two choices; he could continue to support HPT or he could phase it out. Considering the lack of effectiveness even with massive amounts of budgeted resources, his choice to phase it out was not unexpected by the organization.

[The CEO] would just assign someone to go [look at quality of processes]... what ended up happening is that 70%-75% of our company is our forms division ... the HPT team ... dominated ... our forms division ... we ... got told, these are the practices you will use ... they never did address our issues and the differences from our division vs. the other divisions ... [after failure of HPT] ... the stop got put on and it got stopped and we went back to our home-grown systems ... accounts payable [is] ... pretty much the same process in all divisions, but other components ... manufacturing, our sales force are different ... so much is different once you start looking down into the different divisions, down to those finite levels, it never got that far.
The CEO never looked at the state of the existing processes. There was never an assessment made concerning which processes were working well and which were not. Further, there was never any analysis of processes across divisions. That is, there was never any concern for differences in processing from one division to the next. Generic processes like accounts payable are pretty much the same, but most processes are very different. The new CEO who came in December [2000]—his goal was $100 million in savings [and cost reductions] this year—when you consider that we spent $280 million... on HPT over a about a three-year period... we could have already met the goal in savings... the CEO at the time [prior CEO]... threw a bunch of money into HPT... halfway through the HPT project, he was sent packing... And they brought in a new CEO. He was there for less than a year, but he just kept dumping money into HPT as if it were still the answer... and now, he's gone and they sent the second CEO packing and brought in their own guy—who is now slashing and cutting and chopping [with no regard for process quality].

The CEO who originally bought in HPT was fired because the software was draining money from the organization with no visible results. The next CEO was an advocate of HPT and promised that results would be forthcoming soon. However, he was fired in less than a year. The most recent CEO has embarked on a cost-cutting strategy. He doesn’t seem to be concerned with process quality, that is, the cost cutting is 10% across-the-board regardless of productivity. Both formal and informal interviews revealed that this has done little to improve overall performance, but has drastically decreased employee morale.

**Enterprise Integration**

This theme relates to the efforts at Vicro Communications to promote enterprise information sharing, standardization of processes, increased efficiencies, and process improvement. That is, how is the environment being changed to promote these efforts? HPT to me is a technology solution to a business problem rather than a business solution to a business problem... The top management solution was, let’s throw a bunch of money into IT—that’ll solve it. [To handle integration with so many home-grown systems] you need to pass through work... the only thing we have is at the month-end close, we just feed up the final numbers... the only integration between divisions is accounting—we just roll the numbers up at the month end and quarter ends and year ends... the idea was initially we need to have more integration... if we can have everyone in a centralized shared service of purchasing... we can have more purchasing power [and more information sharing].

HPT was brought into Vicro to facilitate enterprise integration. Top management however failed to grasp the essence of the problem. HPT is a technology solution that may be appropriate for some organizations, but it is not flexible enough to allow customization. Further, business processes should be engineered based on business objectives prior or at least in conjunction with IT implementation. It appears that HPT did nothing to facilitate enterprise integration. It actually worsened the situation because it drained $280 million dollars in cash from the organization that could have been put to better use.

The company was having legitimate problems. The forms division just wasn’t profitable and it was a huge chunk of our business and we just didn’t keep up with the computer age... People just don’t need pads of forms anymore to write sales and pricing... so when the business was going bad, their [top management]
solution wasn't [to] reevaluate what we are doing with our forms division, it [was] lets throw a bunch of money [at the problem].

Vicro Communications produces forms for a variety of organizations. However, the organization failed to realize that ‘paper and pencil’ forms would eventually be replaced by computer or web based forms. When profit margins for the forms division began plummeting, the solution was to invest in HPT rather than looking at rethinking the business.

As far as integration between divisions like HPT was going to give us, I would say that is completely dead. I think we’ll just keep rolling up division number to get the final numbers and go from there.

Ron’ division has effectively abandoned HPT and gone back to the legacy systems they used before the technology was adopted. It appears that HPT did absolutely nothing to increase enterprise integration.

Resistance to Change

This theme relates to internal resistance to change brought on by the HPT process reengineering initiative. That is, how are people reacting to the implementation of HPT as a process improvement tool?

Our biggest problem in our division [is that] ... we have all of these little plants [that] ... have been allowed to do a lot of things for themselves ... So now we try to bring a system in [HPT] and we’re forcing them to change some process – if we use Logan [and] we have decided that they are doing it best and try to tell the plants in Chicago and out in Maryland and Connecticut that they need to do it this way, huge resistance [occurs] and the hardest thing in our group [Logan, UT plant] is [that] we haven’t had the support at the top.

HPT was forced upon all divisions without input from workers. Further, best practices are defined from a plant that is doing well, like Logan, UT. Other divisions are then told to use these ‘so-called’ best practices, but no real support is given from top management to enforce them. Resistance to change is therefore very strong because there is no real punishment for failing to adhere to the best practices and there is no employee involvement in the effort to obtain buy-in.

No one’s had the balls to tell them [other divisions] that this is how you are going to do it. They [other divisions] can stall for months and not implement it. We will get a system implemented and they [other divisions] will kind of halfway use it because no one has said this is how it is, it is not optional ... It has been very frustrating from our standpoint even within the division.

Actually, no one had the power to tell other divisions what to do. Top management endorsed HPT, but did not actively pursue implementation on an enterprise-wide basis.

[When each CEO] actually really did stress it [HPT] ... there was the least amount of resistance. It was said, this is it, [and] it is coming in.

When one of the three CEOs was actively pontificating that HPT was going to be the standard, resistance was less profound. The problem was that each CEO would stress HPT for a short time and then get distracted by other business. Once the CEO pressure was off, resistance to change increased dramatically.

Sometimes our division [Logan] is kind of looked on as the maverick division, but no one comes down on it because it has also been very profitable ... It is still frustrating ..., because we will [build] a really nice system and one plant will use
it because it’s the greatest thing since sliced bread and the other plant—they might just keep doing their manual process or whatever they are doing because they have been given that leeway.

Highly effective processes can be either used or mirrored in other divisions with active top management support. We can see that in this case top management was not actively involved in identifying effective processes. They just bought into HPT with the hopes that it would solve all of the organization’s problems. Hence, effective pockets of well-designed processes and systems in support of these processes could never really impact the entire enterprise.

Even if you do change [processes] ... with HPT it [is] hard for [people] to let go of their old processes ... [people] didn’t want to let go of the old numbers from the old legacy system ... [people] had worked there for 18 years and the customer’s account number was this. Well, that format didn’t fit HPT so there’s a new number, so what was happening was that ... in some of the text fields in HPT they would still type in the old number, so that they could run analysis by the old number ... You’re pretty stuck, we weren’t able to use the same account numbers that the customers had had forever ... it was very stressful to the people ... very stressful.

Long-time veterans of the company were used to using specific customer numbers for clients. HPT was so inflexible that it would not allow the existing numbers to be input in its databases. Resistance to change was thereby greatly increased because people had internalized these numbers and couldn’t understand why they had to change them. The original effort was effectively doubled because people were forced to use HPT, but actually used the old legacy numbers for reporting purposes. Hence, HPT did not really add any value to the process.

[HPT] cost a lot of money, and I said, for our division, we have the world’s most expensive AP [accounts payable] system ... for our division ... we went back to our home grown system.

The sarcasm here is obvious. From the $280 million dollars spent on HPT, Ron’s division is only using it for accounts payable (AP) and this is only because they must show top management that they are using the product. It is well known throughout the organization about failure of HPT and this has done little to quell resistance to change. In fact, it appears the top management cares little for employee opinion about ongoing efforts.

CURRENT CHALLENGES/PROBLEMS FACING THE ORGANIZATION

This section describes current issues facing the organization. It also develops a useful set of factors that should be useful to other organizations facing similar problems.

Current Issues

The BPR effort did not produce significant performance improvements and HPT did not live up to vendor promises. From our discussions with Ron and informal interactions with other employees, it appears that the BPR effort was not well designed or planned by top management (we don’t think that there was a plan). The CEO and the board seemed to embrace
BPR as something that they had to do to keep competitive rather than as a holistic method to transform the organization. That is, BPR was fashionable rather than substantive.

Ron was a key player in the BPR effort, but was not able to convince the CEO of the scope required for successful transformation. Effective BPR requires people to understand the process and the role technology plays in the transformation effort. It also requires a lot of capital (which will make a big dent in the operating budget). In addition, it requires a participatory commitment from top management. Top management cannot delegate BPR. It must be actively involved in its planning, design, and deployment. In Vicro’s case, BPR was delegated to people like Ron. Ron is a capable executive, but only has clout within his domain. He did not have the tremendous political clout required to change organizational processes and battle resistance to change on an enterprise basis. The only parties with enough power to implement real enterprise-wide change are top managers.

In terms of the enterprise software, Ron was never consulted about the investment in HPT nor was he ever a part of the organization-wide plan to implement the software. This was counterproductive considering that Ron is responsible for many of the enterprise systems in his area. Top management trusted the software vendor to plan and implement HPT to improve performance (even though the vendor has no experience or understanding of the Vicro business model). Ron knew that this plan was flawed, but was not consulted. Moreover, many other key people at the process level were left out of the software decision. By not involving employees at all levels of the organization, resistance to change is bound to increase. At Vicro, people resisted HPT because they didn’t understand its complexities and they were never consulted for their opinions about how existing processes and systems work. Hence, there was a mismatch between what the existing processes are really doing and what the encapsulated processes (best practices) within the software itself do.

HPT has a set of business processes built into the logic of the enterprise system it touts. The vendor calls these processes ‘best practices’. There were never any discussions (at any level within the organization) with the vendors to see if its ‘best practices’ fit with what Vicro really wanted to accomplish. As such, HPT attempted to force its ‘best practices’ onto the Vicro business processes it was supposed to support. Since Vicro could not practically change its customized business processes to fit HPT, performance wasn’t improved and it had to resort to using its legacy systems to keep the business going. In the end, Vicro spent 280 million dollars on software that did not work and thereby didn’t improve business performance. As a result, enterprise integration wasn’t improved.

Currently, Vicro is only using HPT for accounts payable (AP). This means that Vicro has maybe the most expensive AP system in the world. This debacle has caused very few organizational changes except for a revolving set of CEOs (at least most of the blame was put in the right place). Since the budget for this software is approximately 10% of total revenue for year 2000, it may put Vicro’s future viability in jeopardy. We got a sense from Ron that this might be the case. He (as well as many other Vicro employees) believes that they face a precarious future with the company as a result of the BPR/HPT failure.

The reasoning behind adopting HPT in the first place was to better integrate the enterprise in terms of information sharing, reporting, standardization, and effective processes (BPR). From the case we saw that HPT was a complete failure. However, from the themes we were able to garner a set of factors that can vary from one organization to the next. Hence, we believe that analyzing these factors can help other organizations better deal with enterprise BPR and system adoption success.
Contributions to BPR Literature

Further analysis of the data by classification theme enabled us to generate three “super themes”—immersion, fluidity, and top management support or mandate. One of the principles of phenomenology is to continue classification until it cannot go any further and simplify as much as possible. This process of simplification also establishes the basis for new theory. Although we do not have many themes, we wanted to see if the negotiated themes are actually part of a simpler set of even fewer themes. As such, we were able to synthesize even further down to only three themes. Technology usage and HPT adoption reveal that Vicro Communications is immersed in technology, that is, they depend on technology to do their work. Process improvement reveals that Vicro is attempting to become a more fluid organization, that is, they want information to flow freely so that it can be shared across seamless processes that effectively support business activities, and to delight their customers. CEO mandates reveal that top management was concerned with fluidity and immersion issues and wanted to do something about it. Although their choice of HPT appears to be misguided, they realized that change must be supported from the top. Resistance to change reveals that fluidity and CEO mandates are inextricably tied to how people perceive change. Process improvement is accomplished through people at the process level who do the work. They therefore need the resources and support of management to engineer and redesign processes.

In short, Vicro is immersed in technology because people need them to do their work, that is, technology is critical and important. Technology also enables people to comply to work demands. For instance, if an ad hoc report is required within two hours, the use of technology (databases, networks, computer terminals, and printers) allows people to comply with demands. Fluidity relates to responsiveness, effectiveness, knowledge sharing, and knowledge capture. The objective of process improvement is to improve responsiveness to customers by designing and redesigning effective processes. To improve responsiveness to customers processes must enable effective knowledge sharing and capture, reduce unnecessary costs, and save time. In addition, enterprise systems must work in alignment with business processes. Database technology, networks, software, operating systems, and desktops are the main technology components in a business. Each of these components need to be streamlined in a seamless manner, that is, desktops should be able to talk to databases through networks without concern for hardware, software, and operating system platforms.

Analysis of the Vicro case enabled the researchers to generate a set of themes and, from these themes, a set of “super themes.” The BPR literature is thus enhanced because we now have evidence to support the importance of immersion, fluidity, and CEO mandate. Although the idea of CEO mandate has appeared in the literature, immersion and fluidity are new concepts at least with respect to IT-enabled BPR. Moreover, the BPR literature does not really consider the role of enterprise software in BPR (with few exceptions). Since enterprise software issues are more relevant today than in the past as many organizations buy-into HPT and other vendors, we believe that this case adds significantly to this area of research.

Summary

Vicro Communications made no attempt to analyze existing processes and systems to see if they were fluid. That is, they failed to obtain feedback and opinions from people along the process path and legacy systems experts. From the data, it was apparent that many people
at Vicro were uncomfortable with HPT and BPR. Many of these same people tried to communicate to management what they thought was going wrong with planning and implementation, but were never listened to or asked for their opinions. We believe that this is the main reason for failure. Every organization has experts with legacy systems and business processes. Both systems and processes must be understood on an enterprise level if change is going to be successful. Hence, people that know the business and systems should be carefully consulted before enterprise change and software is undertaken. Vicro is immersed in technology, but fluidity is a major obstacle and probably the major reason for the failure of HPT. Business processes are not streamlined and efficient at this point so automating them with software will only speed up bad processes. Vicro went one step further. They didn’t try to automate existing processes; they forced HPT processes onto a business that is too customized to client needs to work.

Through what we learned from this case study, we hope to shed light on what can happen when decision makers rely on outside vendor promises to improve performance without regard for their employees’ knowledge and a comprehensive understanding of the existing state of their business processes. In the Vicro case, analysis of the data suggests that the software investment decision was paramount to the failure of the effort. Vendor promises were not kept and Vicro was stuck “holding the bag”. In short, the reengineering effort failed miserably even after investing hundreds of millions of dollars in software implementation. As a result, performance was not improved and the software is being phased out.

FURTHER READING
REFERENCES


BIOGRAPHICAL SKETCHES

David Paper is an associate professor at Utah State University in the Business Information Systems department, USA. He has several refereed publications appearing in journals such as Journal of Information Technology Cases and Applications, Communica-
Kenneth B. Tingey is a doctoral student at Utah State University in the Business Information Systems Department, USA. He has more than 25 years of experience in industry, working as a venture capital fund founder and general partner, entrepreneur, general and line manager, and executive staff assistant. He is founder, chairman, and CEO of OpenNet Corporation, an enterprise software developer. His academic credentials include a master’s degree in Pacific International Affairs from the University of California, San Diego, a Master of Business Administration from Brigham Young University, a Bachelor of Arts in Music Education from Utah State University, and a Baccalaureate Major in Accounting from Brigham Young University. His professional affiliations include Strategic Information Division of Ziff-Davis Publishing Company, the Ventana Growth Fund, and Sunrider International. In addition, he has conducted many business consulting and systems development projects on contract with direct selling companies, software development companies, and government contractors. Mr. Tingey has engaged in many enterprise-level systems development projects with special emphasis on requirements of supporting the mission of institutions by means of information processing models and information technology tools. Mr. Tingey is the author of Dual Control, a book on the need to support top-down policies and horizontal processes in a unified system environment.

Wai Yin Mok is an assistant professor of Information Systems at the University of Alabama in Huntsville, USA. From 1999 to 2001, he was an assistant professor of Information Systems at Utah State University. From 1996 to 1999, he was an assistant professor of Computer Science at the University of Akron in Ohio. He was an assistant lecturer of Computing at Hong Kong Polytechnic from October 1992 to August 1993. His papers appear in journals such as ACM Transactions on Database Systems, IEEE Transactions on Knowledge & Data Engineering, Journal of Database Management, and Data & Knowledge Engineering, and Information Processing Letters. He serves on the editorial review board of the Journal of Database Management. He received a BS, an MS, and a PhD in Computer Science from Brigham Young University in 1990, 1992, and 1996 respectively.
## APPENDIX

### Vicro Financials

Table 1. Vicro Communications Five Year Summary

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>2,258,418</td>
<td>2,425,116</td>
<td>2,717,702</td>
<td>2,631,014</td>
<td>2,517,673</td>
</tr>
<tr>
<td>Income loss from operations</td>
<td>(46,234)</td>
<td>141,681</td>
<td>(630,500)</td>
<td>49,411</td>
<td>482,608</td>
</tr>
<tr>
<td>Per Dollar of Sales</td>
<td>$(0.02)</td>
<td>$ 0.058</td>
<td>$(0.232)</td>
<td>$ 0.019</td>
<td>$ 0.057</td>
</tr>
<tr>
<td>Income tax expense (recovery)</td>
<td>(17,377)</td>
<td>35,286</td>
<td>(94,330)</td>
<td>49,171</td>
<td>48,570</td>
</tr>
<tr>
<td>Percent of pre-tax earnings</td>
<td>21.3%</td>
<td>27.4%</td>
<td>14.7%</td>
<td>47.2%</td>
<td>24.4%</td>
</tr>
<tr>
<td>Net earnings (loss)</td>
<td>(66,372)</td>
<td>92,599</td>
<td>(547,869)</td>
<td>55,099</td>
<td>149,923</td>
</tr>
<tr>
<td>Per Dollar of sales</td>
<td>$(0.029)</td>
<td>$ 0.038</td>
<td>$(1.202)</td>
<td>$ 0.021</td>
<td>$ 0.06</td>
</tr>
<tr>
<td>Per common share</td>
<td>$(0.75)</td>
<td>$ 1.05</td>
<td>$(6.19)</td>
<td>$ 0.59</td>
<td>$ 1.50</td>
</tr>
<tr>
<td>Dividends</td>
<td>17,594</td>
<td>17,692</td>
<td>34,057</td>
<td>85,830</td>
<td>94,183</td>
</tr>
<tr>
<td>Per common share</td>
<td>$ 0.20</td>
<td>$ 0.20</td>
<td>$ 3.85</td>
<td>$ 0.94</td>
<td>$ 0.94</td>
</tr>
<tr>
<td>Earnings retained in (losses and dividends funded by) the business</td>
<td>(83,966)</td>
<td>74,907</td>
<td>(581,923)</td>
<td>(30,731)</td>
<td>55,740</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Assets</td>
<td>$699,641</td>
<td>$ 750,860</td>
<td>$943,349</td>
<td>$ 965,078</td>
<td>$1,369,579</td>
</tr>
<tr>
<td>Current liabilities</td>
<td>468,247</td>
<td>622,464</td>
<td>941,034</td>
<td>790,494</td>
<td>485,739</td>
</tr>
<tr>
<td>Working Capital</td>
<td>231,394</td>
<td>128,336</td>
<td>48,691</td>
<td>174,624</td>
<td>883,840</td>
</tr>
<tr>
<td>Ratio of current assets to current liabilities</td>
<td>1.5:1</td>
<td>1.2:1</td>
<td>1.0:1</td>
<td>1.2:1</td>
<td>2.8:1</td>
</tr>
<tr>
<td>Property, plant, and equipment (net)</td>
<td>409,099</td>
<td>458,808</td>
<td>466,198</td>
<td>635,770</td>
<td>603,750</td>
</tr>
<tr>
<td>Long-term debt</td>
<td>272,465</td>
<td>201,686</td>
<td>4,841</td>
<td>49,109</td>
<td>53,811</td>
</tr>
<tr>
<td>Ratio of debt to equity</td>
<td>0.4:1</td>
<td>0.3:1</td>
<td>0.1:1</td>
<td>0.1:1</td>
<td>0.1:1</td>
</tr>
<tr>
<td>Shareholders’ equity</td>
<td>624,685</td>
<td>672,674</td>
<td>610,145</td>
<td>1,185,612</td>
<td>1,549,819</td>
</tr>
<tr>
<td>Per common share</td>
<td>$ 7.06</td>
<td>$ 7.60</td>
<td>$ 6.90</td>
<td>$ 13.40</td>
<td>$ 15.49</td>
</tr>
<tr>
<td>Total assets</td>
<td>1,868,426</td>
<td>1,630,293</td>
<td>1,726,135</td>
<td>2,174,572</td>
<td>2,224,040</td>
</tr>
<tr>
<td>Average number of shares outstanding</td>
<td>88,457</td>
<td>88,457</td>
<td>88,456</td>
<td>93,200</td>
<td>99,967</td>
</tr>
<tr>
<td>Number of shareholders of record at year-end</td>
<td>4,455</td>
<td>5,074</td>
<td>5,506</td>
<td>6,482</td>
<td>6,901</td>
</tr>
<tr>
<td>Number of employees</td>
<td>16,166</td>
<td>15,812</td>
<td>17,135</td>
<td>20,084</td>
<td>18,849</td>
</tr>
</tbody>
</table>
Table 2. *First Call Earnings Estimates Summary, Vicro Communications*

<table>
<thead>
<tr>
<th>Fiscal Year Ending Dec</th>
<th>Last Changed: 15-Jan-2002</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year Ending</strong></td>
<td><strong>Q1 Mar</strong></td>
</tr>
<tr>
<td>2003</td>
<td>0.07</td>
</tr>
<tr>
<td>2002</td>
<td>-0.08A</td>
</tr>
<tr>
<td>2001</td>
<td>-0.09A</td>
</tr>
<tr>
<td>2000</td>
<td>0.11A</td>
</tr>
<tr>
<td>1999</td>
<td>0.06A</td>
</tr>
</tbody>
</table>

**Consensus Recommendation:** 2.8