A BPR case study at Honeywell

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Abstract *We embarked on a case study to explore one organization's experiences with radical change for the purpose of uncovering how they achieved success. The organization we examined was Honeywell Inc. in Phoenix, Arizona, USA. From the interview data, we were able to devise a set of ten lessons to help others transform successfully. Two important lessons stand out above the rest. First, execution of a carefully developed change plan separates the high performers from less successful BPR projects. Second, recognition that dealing with change is difficult and complicated is not enough. Top management should make change management a top priority and communicate the change vision across the organization.*

Introduction

Global competition is driving organizations to become leaner and more streamlined. Many organizations have turned to business process reengineering (BPR) as a means to radically change the way they conduct business. However, dramatic improvements have failed to materialize in many instances (Davenport, 1993; Hammer and Champy, 1993; Kotter, 1995). We thereby embark on a case study to deeply explore one organization's experiences with radical change for the purpose of uncovering how they achieved success. The organization we examine is Honeywell Inc. in Phoenix, Arizona. From the data, we devise a set of lessons to help others transform successfully.

Honeywell (IAC Plant, Phoenix, Arizona)

The Honeywell industrial automation and control (IAC) business unit designs, manufactures, and configures the sophisticated TDC 3000X family of systems. These systems enable its customers (refineries, chemical plants, and paper mills around the world) to achieve world-class process-control capability.

In late 1989, the management team began a three-year world-class-manufacturing (WCM) program to examine lagging performance results. WCM established ambitious goals for defect reduction, short-cycle production, and materials management. Specific goals included reducing defects by a factor of ten (1,000 percent) and cycle time by a factor of five (500 percent).

WCM was created to provide resources and take a system-wide view of the plant. WCM supported a focused-factory environment that harnesses the

potential of teams. Instead of workers being assigned to a specific area on the factory floor, teams of multi-skilled workers were charged with building entire products or modules from start to finish. WCM provided resources to teams based on the process rather than piecemeal events or tasks. Training took on a system-wide view. In 1990, the entire plant was shut down and everyone was taken to another location for an intensive six-hour session. During the session, the need for radical change was articulated. In addition, management explained what the broad changes would be and how the changes would impact the workers.

To support the factory-focused paradigm, the "all-salaried" workforce was evaluated on a "pay for performance" basis. Factory-focused teams were rewarded for their performance. In a little over three years, teams helped reduce defect rates by 70 percent, customer rejects by 57 percent, cycle time on parts by 72 percent, inventory investment by 46 percent, and customer lead times by over 70 percent.

Improvements did not come without struggle. One problem was management of "white spaces". White spaces are gaps between different links in the internal-supply chain. Management found out that teams along the value chain for each product line had a tendency to sub-optimize the total supply chain because they were primarily focused on their own areas. To get the teams to think in unison, the Director of Strategic Planning and Organizational Development took the three team managers aside and told them that they were responsible for the whole product line. Performance evaluations would be based on how the entire product line performed.

Honeywell IAC observed through trial and error that teams needed to have control over things that impact their performance. When teams failed, the cause could almost always be attributed to lack of authority to make decisions where the work was actually being done. Another improvement that helped teams work well together was a change of work environment. Recently, manufacturing was moved to a handsomely landscaped site. Besides being a beautiful site, manufacturing facilities were designed to better suit a flow scheme. The flow scheme was designed to facilitate a "pull" system that is triggered by customer orders.

Conversion to an all-salaried workforce, worker empowerment, compensation for creativity, and a system-view helped IAC vastly improve its quality and performance for its customers. However, IAC management was not satisfied. To complement the WCM program and facilitate a culture of continuous improvement, IAC embraced a solid ISO 9000-certified quality program, a strong supplier alliance program, a globally oriented customer satisfaction organization, and a reconstituted WCM program office.

Honeywell calls their factory-focused program the TotalPlant™. The mission of TotalPlant™ is to unify business and control information to enable global customer satisfaction. To accomplish this mission, the plant is migrating to fully integrated hardware, software, and services that support plant management, process management, and field management. TotalPlant™

business and control information is also used to facilitate planning, implementation, and world-class applications. The TotalPlant™ paradigm is not limited to the IAC site. It is intended to support global delivery of its manufactured products, serve the needs of over 40 regional TotalPlants and delivery centers worldwide, and align with global suppliers.

Methodology

Case study analysis of Honeywell IAC began with a site visit on August 16, 1997. Data were gathered through late 1999 from interviews, annual reports, observation, e-mail, and informal discussions. Three people were formally interviewed including the Director of Strategic Planning and Organizational Development, the Manager of Worldwide Manufacturing Programs, and the Manager of Distribution Systems. Contact has been consistently maintained via telephone, e-mail, and fax.

The interviews lasted between one and two hours. We used a set of open-ended questions, related to BPR, to guide interview discussions. However, spontaneity was encouraged by allowing respondents to discuss any issues they considered important to the research. Transcripts of the interviews were transcribed within two days to reduce information loss.

BPR literature

Many early BPR initiatives failed to achieve predicted success (Davenport and Short, 1990; Hammer, 1990; Kotter, 1995). However, some organizations have been able to achieve dramatic results from BPR. For instance, Caterpillar, Inc. reported cost savings between $10 and $20 million over a five-year period from BPR initiatives (Paper and Dickinson, 1997). Caterpillar ties much of its success to its BPR methodology. Its methodology is systematic as it provides a disciplined problem-solving approach and acts as a rallying point for everyone involved along the process path. It also has in place an organizational structure conducive to cross-functional teamwork and a management structure designed for facilitation of empowered workers. Many of the earlier BPR projects reported in the literature failed to articulate and implement a BPR methodology and a proper structure.

There are few examples of in-depth studies of BPR in the literature (Fuglseth and Gronhaug, 1997). Caron *et al.* (1994) examined BPR initiatives at CIGNA for over five years. They offer a set of general guidelines, but fail to mention the importance of a systematic BPR methodology. Davenport and Stoddard (1994) addressed various myths associated with BPR based on detailed case study analysis of many companies. They conclude that successful BPR is not an IT initiative, but a business initiative with the goal of rethinking business practices to satisfy the needs of its customers and other constituents. Kotter (1995) synthesized information and knowledge gained from observations of more than 100 companies into a set of eight steps to facilitate organizational transformation. Paper and Dickinson (1997) examined BPR initiatives at Caterpillar. They found that BPR is driven by a

business need and requires support from top management, a systematic methodology, and an organizational structure that supports and rewards process thinking.

The TotalPlant™ paradigm

The paradigm is based on four principles of success – process mapping, fail-safing, teamwork, and communication. Each of these principles is critical to realizing the TotalPlant™. However, every team member must be educated in all four of the principles and empowered to use what they have learned to solve business and manufacturing process problems. The major obstacle to change is the employee attitude that "things are OK", so why change.

> TotalPlant™ developed a need for people to change. It created a level of dissatisfaction. We sent key people to benchmark HP (Hewlett-Packard) to see what was happening. When the people returned, they felt depressed that HP was better. Since they witnessed a major competitor doing better, they better understood the need to improve. They wanted to beat HP. The paradigm gave them a foundation to work with (E.J. Janik, Manager Distribution Systems, personal communication, August 16, 1997).

1. Process mapping

Process mapping is a tool that allows one to model the flow of any business process in a graphical form. The process map allows one to see how the process actually works across functional boundaries. It thereby enables all employees to see how the business process actually works and how it can be changed to be more effective. Process mapping also creates a common language for dealing with changes to business processes.

An experienced facilitator conducts process mapping training. The role of the facilitator is to encourage interaction and creative input from everyone by throwing questions back to the group. The idea is to facilitate learning by discovery and inquiry, not by being told what to do.

The training philosophy at Honeywell focuses on educating employees about the importance of total customer satisfaction and world-class manufacturing. It is important for employees to understand that optimization of the whole system is the goal, not individual departments or subsystems. Three principles underlie the philosophy – be non-blaming and non-judgmental, focus on process and results, and consider the big picture.

Many times organizations focus on individual and/or subsystem results to the detriment of the whole system. Results are important, but how they are achieved is equally important. A focus on process helps to rationalize enterprise-wide results over functional ones. If the process is not understood or is misunderstood, it is more difficult to justify sub-optimal results in an individual area. The only important result is total customer satisfaction.

Process thinking helps to justify overall results because the people involved understand how and why it is successful. Functional thinking concentrates only on individual performance, not enterprise performance. For process

thinking to work, employees must be empowered to do their jobs since they are the ones that actually do the work.

For process mapping to work, decisions are pushed to the "process" level and employees are given the tools and training they need to excel. An example (Figure 1) of non-enterprise thinking is presented at the beginning of training to encourage participants to begin thinking "out-of-the-box". The story is about five blind men and an elephant. One man grabbed an ear, another the trunk, a third the tail, the fourth a leg, and the last touched the side.

The blind man holding the trunk thought he was holding a snake. The blind man holding the leg thought it was a tree. The blind man holding the ear thought it was a fan. The blind man touching the side thought it was a wall. The blind man holding the tail thought it was a rope. The moral of the story is each blind man's perception is based completely on his individual perception rather than on the reality of the situation.

This lesson is critically important when training people about enterprise optimization. Each employee works in his or her own "box", that is, they work within a functional area of the organization. Unless they see and understand that their work is part of the much larger enterprise, process sub-optimization will occur. To really improve the business, everyone involved in the process has to understand the whole system. Process mapping is a powerful technique that provides an understandable picture of the entire process and a common language to get and keep everyone on the same page.

At Honeywell, process mapping consists of eight steps – select process, identify boundaries, form teams, develop "as is" map, identify cycle times, identify opportunities for improvement, develop "should be" map, and develop the implementation plan (receive confirmation before implementation). The job of the facilitator is to encourage creative ideas from teams and guide the effort.

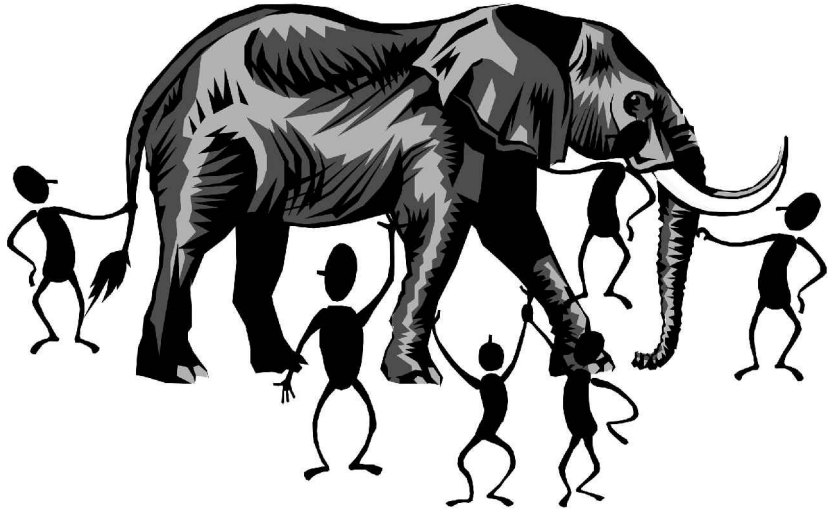

Figure 1.
Five blind men and an elephant

The first step is to select the process. The team lists the products it is responsible for and comes to a consensus. The customers for each product are then identified. Customer satisfaction depends on giving the customers what they expect, so they must be interviewed. Hence, teams are intensively trained in interviewing, data collection, and data analysis techniques.

The second step is to identify the boundary. The boundary spans from when the raw product is taken from the supplier (input) to when the finished product is handed to the customer (output). Defining the boundary is simple, but it is important to document them for each product.

The third step is to make sure that the team has cross-functional representation from each organization contributing to the process. Inclusion in the team should be based on who is involved in creating the product between the input and output boundaries.

The fourth step is to develop the "as is" map. The "as is" map represents the transformation of inputs into finished products. The map includes both information and product flow through the system. Starting at the input boundary, important questions to resolve are: What is done with the input and who does it? What happens next and who does it? At decision points, a branch is created that shows alternative routes for each decision alternative. Three potential problems can occur when process mapping – optimizing part of the process while sub-optimizing the process as a whole, making the map so far removed (too broad) from the actual process that it is not useful as a tool for change, and making the map too specific without involving those who must live with the changes.

The fifth step is to identify the cycle time for each step in the process. Cycle time is determined by measuring both the distance the product travels through its process and the time required for performing the steps in the process. Time is measured by average and range. Average cycle time is the mean rather than the midpoint between the minimum and maximum time. Range is the difference between the minimum and maximum time.

The sixth step is to identify opportunities for improvement that would not add resources (extra costs). Typical opportunities include waiting and storage steps, non-value-added steps, decision points for approval, steps with a wide range of cycle times, sequential operations that could be done in parallel, and information that does not flow to those who do the work. Waiting, storage, and non-value-added steps are just waste. If the process is streamlined, these should not be necessary. If a step has many decision points, it can be improved by removing most of them. If a step has a wide range of cycle times, this indicates that it is probably inefficient. If a step can be done in parallel with others, cycle time is greatly reduced at no extra cost. Finally, information flow is just as important as product flow. If information is not flowing to those that do the work and make decisions, the process is inefficient.

The seventh step is to develop the "should be" map. This map includes a "picture" of the improved processes and projections of their new cycle times. The "should be" map depicts what the process will look like after

improvements are made. It provides a graphical picture of what the process team needs to work toward. It should only include improvements that do not require significant new resources. "A major limitation is that process mapping takes a long time. The market wants cycle time reduction to happen very quickly. However, we need it because it provides a road map for our business" (L. Holloway, Director of Strategic Planning and Organizational Development, personal communication, September 21, 1999).

The eighth step is to develop the process implementation plan, establish confirmation, and implement. The team prioritizes opportunities for improvement based on the impact on cycle time and quality. The team also considers the impact of possible changes on other processes and customers. The team specifies specific changes, responsible parties, and timetables. Cycle time goals are set for each of the process steps. Finally, the team consults with the steering committee for input and confirmation before implementation can begin.

2. Fail-safing

Fail-safing is a method to identify a defect, analyze it to understand its root cause, and then develop a solution that will prevent that defect from occurring again. Fail-safing guarantees that a process will be defect-free. While process mapping diagrams the entire flow of a business process, fail-safing is done to diagnose a defect within the process. The PDCA (plan, do, check, act) cycle offers a road map to help teams work together to prevent errors from occurring 100 percent of the time. PDCA offers a sound method for collecting "good" data, but technology is needed for proper delivery. Honeywell invests heavily in state-of-the-art technology to help guarantee data delivery.

Fail-safe planning (Plan) has five steps (see Figure 2). The first step is to identify the problem (defect). Defect detection involves analyzing data using a pareto chart. The pareto chart principle proposes that 20 percent of causes create 80 percent of the problems we experience. Once the data is analyzed, a defect description is logged that describes the defect and its impact on other processes. Similar to process mapping, a map of the existing process is made with the defect. The map should include documentation concerning the people involved (team) in the operation as well as where the defect is discovered.

The second step is to identify the root cause(s) of the problem. The team identifies places in the process map where red flag conditions exist. The "Five Whys" technique is used to identify root causes. First, the team asks – why does this cause of error occur? For each reason, they ask again why the error occurs. After asking "why" five times, the team is able to converge on the root cause of the error. To test the validity of a root cause, a simple test can be used. A root cause has three characteristics:

(1) it is a cause of the defect identified;

(2) it is possible to change the cause; and

(3) if eliminated, the defect will be eliminated or at least reduced.

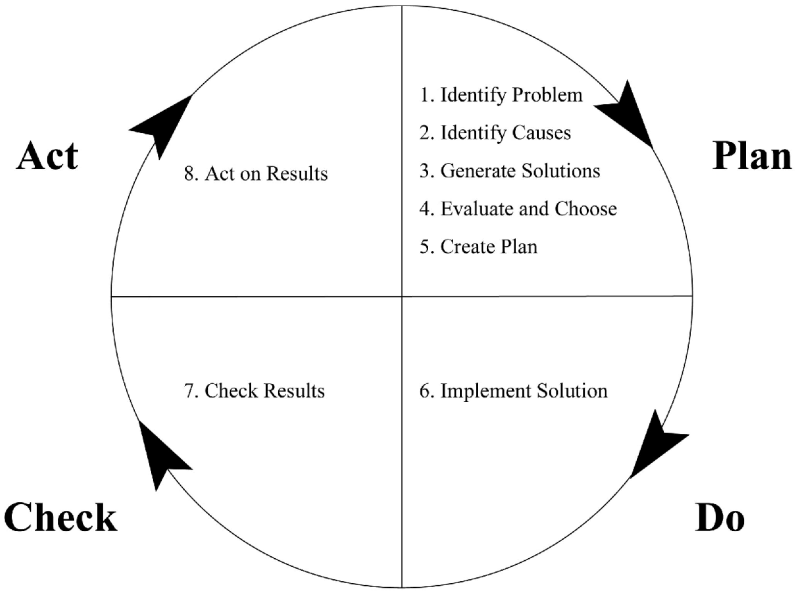

Figure 2.
PDCA cycle with fail-safing steps

If the cause satisfies all three characteristics, it is a root cause.

The third step is to generate alternative solutions. The team starts by selecting one root cause. A recorder and timekeeper are then selected to mediate. Brainstorming can then begin. Keep in mind that this process may seem simple, but trained facilitators are needed to ensure that everyone is involved and an open forum for ideas is maintained.

The fourth step is to evaluate and choose a solution. Each alternative is considered against criteria such as time, ease, and cost to implement. Ideas that take too long to implement are eliminated. Evaluation helps the team choose the best device(s) to fail-safe the error condition.

Finally, an implementation plan is created. Everyone affected by the change is identified. The team considers customers, suppliers, and support people on the team. The team then determines how the device will be measured and completes an action register. The purpose of the register is to create a "visible" listing of all the actions required to implement the device, the people involved, the completion dates, and the status of each action.

Step six (Do) is to implement the chosen solution. The team now completes each action item involved in installing the fail-safe device. Everything needs to be recorded so that the team has a visual memory of the steps involved. Evaluation is also facilitated because data can be analyzed before and after the fail-safe device is implemented.

Step seven (Check) involves checking results. Data is analyzed using the action register, pareto charts, and histograms. The team also asks themselves if they got the results that they expected. If not, rework of the device is undertaken.

Step eight (Act) is to determine the next steps for continuous improvement. The team asks itself what can be improved and then begins the cycle again. Fail-safing is a continuous process. Fail-safing is only effective if it works 100 percent of the time.

3. Teamwork

Teamwork does not occur naturally. It is difficult and complex. It takes special effort, management support, training, and a nurturing environment to make it work. Special training is needed to familiarize people (including managers) with what teams are, how they work, and how they will help the company. After training, workers need to "feel" that the work environment is conducive to teams.

The manufacturing vision creates the first step toward a new work environment that fosters teamwork. It proposes that the workforce take ownership for the success of the overall business. Accordingly, all people need to understand their roles and team together to achieve success. Creativity, risk-taking, and innovation are encouraged and viewed as learning experiences. People are trusted, respected and empowered to execute their duties. Cross-training is endorsed, work is challenging and enjoyable, and everyone is involved in leadership and doing the "right things".

Process mapping and fail-safing are laid out very specifically because their very nature is systematic and controllable. However, training is "softer" because people are at its center. People are the biggest challenge in dealing with change because they are not predictable, naturally resist change, and are diverse. Process mapping and fail-safing are proven techniques that can help people solve problems. They are also set up to be very conducive to teaming. Therefore, Honeywell focuses on these techniques to help people focus on real problems and become familiar with teamwork gradually. People can be trained to effectively map processes and fail-safe defects in a short time. However, getting a diverse workforce to work as a team takes time. The key is the environment. Hence, Honeywell rewards teamwork, expects team ownership and responsibility, empowers teams to solve problems, and provides training dollars to make teaming a natural part of the work life.

4. Effective communication skills

Communication of the TotalPlant^{TM} vision is paramount to success. "The number one problem in most organizations is lack of effective communication. Faulty interactions between people often lead to conflicts, hurt feelings, and damaged relationships" (G.J. Kristof, Manager Worldwide Manufacturing Programs, personal communication, August 16, 1997). Communication of a vision is especially susceptible to conflict because its message is broad and its audience is the enterprise.

Honeywell provides conflict resolution training to teams to help them deal with conflict in a positive way. Basic interpersonal communication skills for

enriching relationships with people and effective means for solving problems are also part of the training.

One training module concentrates on listening skills. If people are not willing or able to listen to other people around them, conflict and misunderstanding is very likely to arise. The module offers team-based exercises to "role-play" conflict and resolution. Another module focuses on confronting skills. Many times it is difficult (but necessary) to confront people in a positive way about unacceptable behavior. The goal is to be able to offer an objective, non-blameful description of the problem.

One of the major difficulties of dealing with conflict and unacceptable behavior is to keep it from becoming a personal attack on a person's character. The conflict and/or the behavior are the problem, not the person! People tend to become defensive when their behavior is questioned. This is a natural reaction. The key is to develop conflict resolution skills that recognize this tendency and practice these skills in a non-threatening environment until a certain level of mastery is reached.

Just like teaming, effective communication depends heavily on the work environment. An unlimited training budget would still be wasted if trainees return to a work environment of "command and control". Therefore, Honeywell communicates the TotalPlant^{TM} paradigm needs to everyone and fosters an environment that rewards teamwork, creativity, and value-added thinking.

Management is responsible for team facilitation. Management's job is to nurture and coach the team. Another important role is to help the team set "stretch" goals. Stretch goals are lofty objectives that are beyond what people are normally expected to reach. "Pushing people to achieve beyond their normal expectations causes them to realize that they must change the way they do things. It also creates a healthy level of dissatisfaction. If people are satisfied, they will never try to get better" (E.J. Janik, Manager Distribution Systems, personal communication, September 12, 1999).

Information technology

Honeywell depends on information technology (IT) automation to keep its plant in operation. It produces automation and control devices that must meet stringent levels of quality because its customers will accept nothing less. Its devices are very sophisticated and require complicated processes to manufacture properly. The role of the worker is that of monitoring the devices to make sure they are performing within strict tolerances. Therefore, information is "built into" the systems that build other systems. Information that supports manufacturing is viewable at each production cell through color monitors and other visual devices.

Information technology supports office processes that are integrated into the total system. Computer technologists, engineers, and systems analysts keep systems running properly. Every IT system is aligned with manufacturing. Otherwise it is not value-added. Managers tap into the system to obtain information about productivity, cycle time, and performance. Many of the

business managers have an engineering background that helps them link the business systems with manufacturing.

Prior to 1989, the IS department was centralized and "separate" from manufacturing. "The systems were technically elegant and centralized, but they didn't meet the needs of the business. The IS department was transformed into the IT department to better align with the business of making controls. IT was charged with mapping business processes that supported the products and then transforming systems to match the maps" (E.J. Janik, Manager Distribution Systems, personal communication, August 16, 1997). The IT department has made great strides to align its services with the needs of the business.

Execution

Honeywell has four mechanisms in place – process mapping, fail-safing, teamwork, and communication – for promotion of an enterprise-wide integrated plant. Process mapping is a systematic BPR methodology to guide team process improvement efforts along process paths. Fail-safing is a vehicle to help process teams identify and correct defects quickly and permanently. Teaming is encouraged through communication of the vision and rewards based on value-added activities. These four mechanisms facilitate successful change, but do nothing to guarantee it.

What separates success from failure is execution. Top management has to be willing to dedicate substantial training resources to educate the workforce about the four mechanisms and how they work. Management behaviors have to change from autocratic to facilitative. Teams have to be rewarded for enterprise value-added activities. Finally, the organizational structure has to change to allow an environment conducive to innovation. Execution flows from the corporate vision statement and strategic plan down to management and workers. The vision statement has to reflect the desired outcomes. Moreover, the strategic plan has to incorporate specific steps, policies and standards that will make real change happen. Top management has to live the new paradigm by being active participants in the change process. Top management endorsement is not enough. They have to interact with teams and management to let their people know that change is a priority and that they understand what is being done at the process level to make change happen. Top management therefore has to facilitate the paradigm through resources, executive actions, rewards, and recognition.

At Honeywell, the path toward change is probably much smoother than in most organizations because the organization has embraced change for many years. Honeywell is a pioneer in quality management and has always developed its people through training programs and rewards for value. Hence, execution is easier and resistance is not as big an issue. However, problems have occurred.

The biggest obstacle to execution was within the middle management ranks. Members of middle management were too used to being experts in a specific

area. For instance, one operations manager was the resident expert in materials flow, but he managed technology, engineering, and manufacturing people. He would manage sub-optimally because every problem was solved through materials flow. He could not see the cross-functional or cross-specialization nature of the problem because of his narrow focus on materials flow. He had to "let go" of his expertise and let his people solve the problem as a cross-functional team. It may sound like a simple change for this manager, but it took years.

Behavioral change is the most difficult type of change. It takes time and patience. Execution of a major change program therefore requires a lot of time to reap desired benefits. With quick profits and impatience the norm in many organizations, execution will be the biggest hurdle to success. Adoption of mechanisms, like those used at Honeywell, are therefore worthless without a plan for change and proper execution of that plan.

Lessons learned

From the case study, we developed a set of general lessons. The case experience allowed us to speak in-depth with people involved in enterprise transformation that should make the lessons more practical.

Lesson one: people are the key enablers of change

Business processes are complex, but process mapping offers a comprehensive blueprint of the existing state. The blueprint enables systematic identification of opportunities for improvement. IT is complex, but vendors, consultants, and system designers can create models of the system. In contrast, people are unpredictable. They cannot be modeled or categorized universally. However, people do the work and therefore must be trained, facilitated, and nurtured.

Lesson two: question everything

Allowing people to question the way things are done is imperative to change. Fail-safing provides a systematic approach to effectively question the status quo. People are encouraged to question the existing state.

Lesson three: people need a systematic methodology to map processes

Process mapping is the mechanism used to map and understand complex business processes. The systematic nature of the process mapping methodology keeps people focused and acts as a rallying point. Moreover, process mapping provides a common language for everyone involved in the project.

Lesson four: create team ownership and a culture of dissatisfaction

Once a team perceives that they "own" a project, they tend to want to make it work. It becomes "their" project. In addition, management should encourage people to be dissatisfied with the way things are currently done. However, punishing people for complaining about ineffective work processes is an effective way to promote the status quo.

Lesson five: management attitude and behavior can squash projects
If the managerial attitude remains that of "command and control" and/or their behavior does not change, transformation will most likely fail. Success depends on facilitative management and visible and continuous support from the top. When Honeywell got its new president in 1996, the attitude toward criticism changed dramatically. The new president was not as accepting of casual criticism. Criticism of the status quo had to be based on well-thought-out ideas and presented with the logic behind their thinking. This drastically reduced the complaints about existing processes without justification.

Lesson six: bottom-up or empowered implementation
While support from the top is critical, actual implementation should be carried out from the bottom-up. The idea of empowerment is to push decisions down to where the work is actually done. Process mapping and fail-safing are two systematic and proven methodologies that help support empowered teams.

Lesson seven: BPR must be business-driven and continuous
Process improvements should be aligned with business objectives. Process mapping, fail-safing, and teaming should be based on what the business needs to change to become more successful. In this case, effective communication of ideas from top management throughout the enterprise is imperative. In addition, organizations should be wary of the "I've arrived" syndrome. Change is continuous and is never over.

Lesson eight: IT is a necessary, but not a sufficient, enabler
IT is not a panacea. IT enables BPR by automating redesigned processes. However, information is for people. People work with people to produce products for other people. In addition, people need quick and easy access to quality information to help them make good decisions. Therefore, IT needs to be designed to support the business and the production of products to be effective.

Lesson nine: set stretch goals
Goals should be set a little higher than what the team believes they can accomplish. Since teams have little experience with the new paradigm, goal setting will tend to be based on the past. Project managers should work with the team to help them develop stretch goals.

Lesson ten: execution is the real difference between success and failure
The Honeywell case introduces four powerful mechanisms to facilitate enterprise change. However, real change will not happen without a plan for change and aggressive execution of that plan. We believe this is where most organizations fail. We believe that execution fails in many cases because organizations are not willing to dedicate resources, time, and energy to the effort.

Caveats and conclusions

The major limitation of case study research is sample size that limits generalizability. A specific limitation is that this case is industry-specific. Honeywell IAC is a manufacturing plant that produces special high quality controls. IAC customers demand world-class quality that pushes the organization to continually improve. Different industries and organizations within those industries have different environmental forces to deal with. Both of these limitations reduce generalizability. However, transformation is a new area. It is very dynamic and the scope is enterprise-wide. According to Yin (1994), case studies are appropriate in new and dynamic areas of research, therefore the case study approach appears to be viable in this instance.

Although case studies rate low on generalizability, they rate very high on data richness. By researching the Honeywell transformation paradigm, we were able to uncover some very important insights regarding successful change. Most importantly, we discovered that execution separates Honeywell from other organizations involved in transformation. We were also able to identify nine other important change lessons. We concluded that the only way this information can be collected is through the case study methodology.

Another major issue is dealing with change. Change is painful and difficult to implement. "Change of even the simplest sort is hopelessly complex . . . even making the case for change is close to impossible" (Peters, 1992, p. 628). However, change is a fundamental aspect of BPR. Organizations should therefore openly deal with change. Top management needs to communicate to its people why the change is necessary and how it will impact everyone's current job and future with the company. Top management needs to convey to its people that BPR is not being used to replace workers, but to improve quality, reduce cycle time, and create value for customers. Patience is also needed. Change takes time.

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