
Knowledge-management issues for smaller businesses

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Keywords

Small firms, Knowledge workers, Training, Mentors

Abstract

Knowledge management efforts are often seen as being more prevalent in larger firms. However, smaller organizations also have critical needs to share and maintain employee expertise. This paper examines some of the unique issues facing knowledge-management efforts in smaller firms and suggests techniques they can employ to retain and acquire knowledge.

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Introduction

Much of the recent interest in knowledge management and its potential leverage has come from the much-publicized examples of multinational corporations enabling their worldwide employees to interact, communicate and share knowledge through the use of information technology. Even though the potential of knowledge-management initiatives grows undoubtedly once a company has reached a size that makes direct communication between employees impossible, small companies can benefit just as much from the underlying tools and techniques that a well thought-out strategic knowledge-management initiative has to offer.

Small and medium-sized companies, meaning those that employ less than 500 people, are an economic force that should not be neglected. In Germany, for example, much of the recent economic growth has come from organizational form. According to statistics of the Institut für Mittelstandsforschung, 97.9 percent of German companies fall within this boundary, with an estimated 2.7 million jobs (41.6 percent of Germany's current jobs) being dependent upon them. Furthermore, 36 percent of all German industrial investments are being made by small and medium-sized firms (Wimmer and Wolter, 2000).

At the same time, few traditional small companies are using information technology. Recent statistics show that only every other German small company is using the Internet in its daily operations. For those that do, e-mail is the primary application employed. However, this will change drastically over the next few years, as the use of the Internet spreads across Germany and the rest of the world.

Small and medium-sized companies often experience erosion of knowledge that can have many forms. The most obvious is the leaving of a key employee, whether it is via retirement or leaving to work for a competitor's firm. In these instances, and for smaller firms in particular, Barchan (1999) states that:

... you lose more than that person's knowledge. You also lose any investments you have made in that person's professional development and competence – unless you find ways to capture it.

Other forms of knowledge erosion are particularly threatening to smaller firms.

Problems of succession in family-owned businesses can result in the abrupt crippling of a company if its owner decides to quit or dies. In Germany, for example, an estimated 32,000 companies (with about 411,000 employees) are expected to be left without their current leadership within the next five years (Schröer and Freund, 2000). This issue has become such a threat to the economic base of Germany that major German banks are initiating "succession help" offices that try to help family-owned businesses find adequate leadership successors. Also, special recruiting fares try to attract knowledgeable and skilled young professionals that could function as successors in small companies' leadership positions.

Aside from these life-threatening issues, smaller companies are also often battling the problems associated with acquisition, lay-offs, and other economic factors that can lead to major knowledge erosion when key employees leave the company.

Retaining and acquiring knowledge in smaller companies

Smaller firms can employ many techniques for retaining knowledge. These techniques include:

- training;
- job rotation;
- maintaining a repository of "lessons learned";
- expansion management;
- recruiting and human resource management;
- mentoring;
- knowledge maps;
- knowledge databases;
- best practice sharing;
- customer relationship management;
- e-Business;
- intelligent agents.

Training

One of the most obvious attempts to reduce the effect of knowledge erosion is training. Formal and informal, on-the-job, as well as off-the-job training offer the advantage of broadening employees' knowledge and skill base, allowing them to perform new tasks or old ones better. Even though such training requires time and money, new forms like computer-based training (CBT) allow smaller

companies to realize benefits without having to pay large sums to external training facilities.

In order to transfer tacit knowledge, training seems to be the only successful approach. Study tours of other companies, cross-training and twinning (matching similar organizations for transfer of know-how) all allow for exchange of tacit know-how that is otherwise hard to accomplish (Ellermann, 1999). Also, on-the-job training (learning by doing) is still one of the most effective ways of passing on tacit knowledge.

For companies that face the challenge of knowledge erosion in their management and fear the loss of basic or even niche business knowledge, there are special options to train specific employees about interdependencies particular to smaller organizations. Most of the training methods used here focus on job interdependencies and their implications for daily operative work.

An example can be found in "Tango", a business simulation that provides a model to clarify business logic behind a knowledge-based organization. Participants learn the interdependency of effective marketing, profitability and good human resource management in simulations that mirror the real world. Simulations can be tailored toward specific industries or can be kept general, and the number of participants can vary between 12 and 24, with simulations lasting one to two days.

Overall, the key objective in training for smaller firms should always be to have a firm grip on what key knowledge is needed to stay or become competitive and to establish who should receive what kind of training in order to meet these future requirements.

Job rotation

A smaller company might find advantages in rotating its employees throughout parts of the company to ensure that many of its employees have the broad knowledge of how to perform a certain task that is not necessarily part of their job. Such rotation can prevent the breakdown of certain processes once a key employee leaves. While this form of rotation is rather uncommon in European companies, Japanese firms have long used what Nonaka (1991) calls "strategic rotation", implying that such rotation should take place between comparable or complementary functions of the company. He cites a company that

expects its employees to hold at least three different jobs in any given ten-year period (Nonaka, 1991).

Even though rotation to this extent may not be viable for a smaller company struggling to take care of its daily operations, it is imperative to the success of any form of knowledge management that companies understand the importance of committing time and resources to learning and knowledge sharing. Rotating its employees may be one of the easiest, cheapest and most effective ways of doing that. If such rotation takes place, a positive form of knowledge redundancy can be accomplished, which gives all employees a form of common ground when facing problems within daily operations. Problem solving can then be shared between functions, allowing for the optimal solution for all areas involved, since marketing, for example, knows exactly what logistics is talking about.

When an employee gets sick, his or her knowledge is unavailable for the company for a certain amount of time. In some cases, especially in small companies that depend on each employee, such situations can become threatening to the overall operation.

The only effective way to prevent such knowledge gaps is the systematic training and rotation of employees in complementary divisions. Only if other employees are able to take over, without a long period of "having to figure out how to do the job", can smaller companies survive the unpreventable short-period loss of an employee.

At Plastic Revolutions, a small recycling company in Reidsville, North Carolina, the maternity leave of a key employee left the company with the serious problem of finding someone who could take over, since the woman had done all inventory tracking manually on a board on the wall. Without her, the complete inventory control and administration of all orders was impossible to keep track of, especially because her way of handling all orders was very complex and, without her explanation, almost impossible to understand. The only solution for this problem was the systematic on-the-job training of another employee to handle the tracking and administration of orders. Jobs were rotated to make sure the administrative staff learned other key tasks than those they were paid to perform. Most of inventory tracking was changed from a manual system

to an easy-to-use spreadsheet file that allowed systematic checks and analyses as well.

In this case, the company was fortunate enough to have ample time to rotate and train other people to perform the task, even though the woman leaving was at first reluctant to teach others, for fear of losing her job once her key knowledge was available others in the firm.

Maintaining a repository of "lessons learned"

Many companies, both large and small, have realized that understanding why a project failed is just as important as why another one succeeds. Therefore, knowledge management in a smaller company should also include some means of maintaining a repository of "lessons learned", whether done in a structured, time-consuming way, or through unstructured debriefings. Such analysis and opportunity for collective reflection of why something went wrong serves as an important tool to learning. Also, these "lessons learned" sessions allow employees, whose opinions were ignored when the project was under way, to step forward and explain their point of view of why something went wrong. The emphasis should lie on preventing such failures repeating themselves, which in turn only works under the prerequisite that errors are not kept in the closet and openly admitted without fear of reprimand. Here, as with almost every knowledge-management initiative, culture and leadership style are very much the driving forces of such open admittance of failure.

A structured approach can be used by creating some sort of "learning history", a form of "storytelling", seen through the eyes of several people involved. Such histories are then distributed and discussed throughout the organization, challenging decisions and debating alternative actions that would have led to a favorable outcome of the project (Kleiner and Roth, 1997). Again, these tools require time and dedication, which can be a major stepping-stone in a smaller company.

Expansion management

A smaller company can find itself in a situation where massive and rapid expansion is necessary because the economic success of the firm demands it. Even though a positive sign, this can be a challenging task, especially when a company has to grow quickly beyond

its original scope. If not managed properly, such growth can harm the company tremendously. Integration of new personnel, design of a technology infrastructure, distribution of processes and organizational design all are issues that can create turmoil and unrest, and need to be managed carefully and in a far-sighted way.

Rapid expansion quickly shows companies that are in knowledge-intensive industries the importance of a knowledge-management function to manage growth without making tremendous mistakes that can cost the firm its future. Only through careful analysis and selection of key knowledge and its active management can important knowledge be attracted and retained. Examples of the problem of growth can be found endlessly in Silicon Valley and other clusters around the world, where knowledge management and clever human resource management are key factors of success when looking at the employee pool of high-tech industries. Without properly educated and qualified personnel, no company can grow successfully.

Recruiting and human resource management

Knowledge-based companies critically depend on the contribution of their employees. Mediocre employees produce mediocre results, and therefore the selection of high-skilled workers is of essential importance for any fast-growing company in a knowledge-intensive environment.

Careful recruiting should be a key focus of such an organization, making sure that a potential employee is not only screened for professional competencies, but also for his or her inquisitiveness, creative problem-solving abilities and attitude toward learning and sharing of knowledge. As stated before, cultural fit is very important both in small companies and in knowledge-friendly organizations, therefore an impressive résumé does not necessarily mean that a potential employee is suited to fit the profile of a knowledge-managing company.

On the other hand, time-consuming selection, screening and integration of potential employees means that smaller companies need to take the time to grow in a smart way, often slower than expected. In the long run, such careful recruiting and human resource management can mean the difference between a short-term and a

long-term, sustainable advantage in the marketplace. Again, superior employees produce superior results, and retaining a perfectly skilled and integrated employee is much more effective and efficient than facing a high turnover in an organization's workforce. Therefore, an active human resource management with personal career development assures that employees see a perspective in their employer and have a feeling of pride and entrepreneurship in their company.

Mentoring

Knowledge management depends upon effective human interaction – especially in smaller firms. Nurturing relationships and promoting employee networks are two of the most effective ways of allowing knowledge generation and transfer to take place.

Mentoring should therefore be one initiative that a growing company takes seriously. Not only does it enhance integration of new employees and offer them a possibility, quickly and without friction, to adapt to the culture and customs of a company, it also offers the dual opportunity for learning from each other. In times of rapid expansion, common ground in values, beliefs and culture is extremely necessary since quick integration can then prevent many problems that could otherwise keep employees from performing their best.

On a professional level, mentoring assures that an employee keeps track of his or her development beside yearly performance evaluations. It also allows an individualized career, if mentors take their "job" seriously and try to help their protégé to put his or her knowledge to perfect use within the organization.

On a social level, mentoring can be seen as a very powerful tool of building a network within a company, which is extremely necessary once a growing company has reached a scope that cannot be overseen easily. Then, the knowledge of who to ask becomes the most important factor of knowledge management. Pointing employees toward holders of key knowledge is crucial and can only be managed through active networking that expands over time.

Knowledge maps

Knowledge maps can have different forms and scopes, with structure and complexity

varying from company to company. The Center for Project Management, a ten-person, high-tech consulting and training company of San Ramon, California, has used simple post-it notes to develop a knowledge flow chart of a scheduling process, for example. Once the skeleton of this chart was done, other functions of the company were asked to add to the chart from their point of view. The resulting map was then digitally filed, and can now be downloaded by anyone opening the "logistics support" folder in the electronic database (Fryer, 1999). Such knowledge-flow charts can be enhanced when adding the names and contact numbers of those responsible for each item on the chart.

Other forms of knowledge maps include some sort of corporate yellow pages, with the names, education, expertise and contact number of each employee. As one can imagine, such yellow pages can be of tremendous help in a company that is expanding rapidly and whose employees have not had enough opportunity to develop personal relationships with others.

Designing a knowledge map should always be seen in context with organizational politics. Since the categorization "key knowledge" is likely to be a matter of interpretation, knowledge maps will always be pictures of the current status, importance and success of employees and therefore all involved will try to influence the design of such a map to be situated well in it (Davenport and Pruzak, 1998).

Again, the interdependence between cultural issues and knowledge management must not be underestimated. If knowledge sharing and learning are not explicitly part of the values of a firm, internal politics will undermine any half-hearted knowledge-management initiative.

For companies that are staffing their projects with people across divisions, or that are working closely with other companies on bigger projects, expertise profiling might be a great tool to get a grip on its knowledge base. Out-of-the box software enables companies to search such expertise databases by the ability and background of workers, as well as by the success ratio of employees' previous work (Borin, 1999).

Knowledge databases

Knowledge management is often coupled with an information technology infrastructure

that supports networked data mining of codified knowledge. However, many of these information technology solutions were designed for multinational companies, often in the consulting industry, that were faced with the task of leveraging their worldwide knowledge and experience through a company network that enabled each user, no matter where and when, to search a database. In smaller companies, such heavy investment is not viable, and also not necessary, to start a knowledge-management initiative. Instead, smaller companies with rapid expansion plans should start with small databases that are easy to use and relatively cheap to implement and uphold.

The design and implementation of databases that allow targeted search through keywords of such documents is a challenging task for a growing company, since structuring the existing data and searching for knowledge is a time-consuming task. Therefore, smaller companies that see great leverage potential in the use of their already codified knowledge should think about getting outside professional help when designing the structure and user interface of such a database. Also, there are many standardized, out-of-the box solutions on the market that allow even the smallest companies to use and structure existing knowledge.

Best practice sharing

Benchmarking has gained in popularity in the past decade, and many *Fortune* 500 companies have undertaken enormous efforts to identify and analyze best practice companies across industries in order to learn from them. Areas where such knowledge exchange might be helpful include marketing, production, research and development, and logistics.

For smaller companies, efforts in benchmarking need not be as formal and time-consuming as these big projects suggest. Instead, much of such best practice knowledge exchange happens on a daily basis, when employees of different companies talk to each other. Other forms of knowledge and best-practice exchange can be found when smaller companies start developing their relationships with suppliers. When working together on certain tasks, both parties can gain from such exchange.

As is the case with other forms of knowledge sharing, the openness of a best

practice firm to share its expertise in a certain function is considerably influenced by the belief in the reciprocity of such exchange. Only if the company feels that it will gain from such a study in the long run will it participate.

Customer relationship management

In business, "knowing your customers" has always been the credo. Micro-marketing, the targeting of products or services toward individual customers, instead of selected groups, is still the ultimate goal of any marketing-savvy company, whether big or small. Information technology is now starting to enable companies to keep track of their customers' "history" with the firm, as well as their personal dislikes.

If intelligently designed, even small customer databases allow an organization to use most data it has about a customer to the fullest extent possible. Such databases go beyond address and order history. Today, such programs even allow direct routing of phone calls to the person in charge when a customer calls in. Preferences, dislikes, special needs and wishes, as well as previous problems with a client and his or her order can all be entered, if viable, and allow anyone pulling up the file to know exactly who he or she is talking to. As Patterson (1997) states:

Customer relationship software . . . lets employees sound as if they're intimate with an account they may never have dealt with before.

One example of superior customer service through customer knowledge is the hotel chain Ritz-Carlton, which has long been known for superior customer service, and which is using information technology to "send one voice to the customer" and keep track at all points of contact. Even servants are expected to record any contact or wish of a customer on a special service pad, to be entered into the system at a later time. It has also been the first hotel company to receive the exclusive Malcom Baldrige Award, which is given to organizations excelling in quality management and achievement (Desai and Weiss, 1995).

When designing a customer database under knowledge-management aspects, an organization needs to keep in mind that each function has different interests and needs for customer data. Therefore, pulling together customer knowledge in one common format may be a challenging task. As with any other knowledge-management initiative, it might

me helpful to start small with one function, with the option of expanding the database beyond its original scope to other functions of the company.

A small or medium-sized company that can successfully leverage its knowledge about current and potential customers can ultimately beat competitors through this sustainable advantage. Especially in small and medium-sized companies, personal relationships have traditionally been major contributors to success. Utilizing these already existing bonds through the intelligent use of information technology, coupled with a clear understanding of what the company wants to accomplish strategically, can become a sustainable competitive advantage that can not only lead to growth but also to increased profitability.

If a company can develop a deep understanding of what goes on in its target market and what its customers really want, it can use this knowledge to create even better suited products and services. Leonard-Barton (1998) calls this form of product development "empathic design", implying the company's profound and deep understanding of its customers' needs.

Another form of learning from knowledge about customers can take place when companies start to focus not only on direct competition, but also on substitute or complimentary industries that can satisfy a customer's needs. Once such an analysis is complete, an organization might find ways to expand its potential market, or even create new market space, breaking free from the cycle of "competitive convergence". This, however, involves a form of double-loop learning, of challenging existing views of target groups and industries. "Instead of looking within the accepted boundaries that define how we compete, managers can look systematically across them" (Kim and Mauborgne, 1999).

Companies need to remember that one customer that stays with the firm is much more profitable than any new-won customer. However, it should also be noted that customer data and knowledge are usually dispersed throughout a company and often hard to collect and codify. Also, as with every knowledge-management initiative, it needs massive support from within the company, especially if customer knowledge

management revolves around a customer database.

Therefore, investments in a knowledge-management initiative that targets customer knowledge and its leverage potential should always be seen as long-term investments that can create an advantage that is hard to beat. Such a sustainable advantage is even more powerful if knowledge about customer preferences and dislikes is part of the design process of new product development.

e-business

The rise of the Internet offers tremendous opportunities, as well as threats, for small and medium-sized companies trying to establish some form of knowledge management. In this case, e-business implies not only the use of customer knowledge to sell goods and services through the Internet, it also encompasses the use of the Internet for linking people within the firm with suppliers, to allow real-time exchange of knowledge through Web-based communication tools.

E-commerce offers new opportunities for smaller firms since innovative use of technology often compensates for firm size. That is, the Internet can become a tool that enables smaller companies to compete for the same customers worldwide that were traditionally only able to be pursued by larger companies with extensive sales staff. Moreover customer and supplier knowledge can more readily be used to gain a competitive advantage over larger and less Internet savvy companies, allowing a small company to outmaneuver a larger "brick-and-mortar" player.

The old tale of David versus Goliath is especially true when looking at Internet-based commerce today. This can be attributed, in large, to the fact that bigger companies often battle internal problems and bureaucratic organizational structures that make them less flexible and agile, and therefore much slower than smaller companies, especially when it comes to abandoning old strategies to reflect the rise of the Internet and its business opportunities (Flitter, 1998).

The Internet can also be seen as the biggest knowledge repository of explicit knowledge that is currently available. While all the knowledge is for free, the downside is the time it takes employees to sift through all the information to find the knowledge desire. However, the future will bring more sophisticated search engines, as well as

connections that can handle more data in a shorter period of time, which in turn will lessen the problem:

As a source of outside knowledge, the Internet can overcome some of the disadvantages of the localness and asymmetry of knowledge, since a subject search will return results from the whole system (Davenport and Prusak, 1998).

Aside from these opportunities, the Internet enables smaller companies to interact with its suppliers and allows them to form strategic alliances on the basis of virtual knowledge exchange on the net. More and more, smaller firms will search for partners on the Web that will help them achieve their goals and that will also direct their joint knowledge and energy to the common goal: surviving and prospering in the Internet age. In Germany, the big pharmaceutical companies like BASF are already showing how it is done: forming virtual marketplaces where experts from participating companies are sharing their knowledge, interacting, jointly developing new medication and finding ways outside the beaten path and beyond regular bureaucracy.

In the USA, companies like buzzsaw.com bring companies in the highly fragmented construction business together to build a platform where virtual collaboration can take place on blueprints and documents, and where employees of all involved companies can meet virtually to discuss common problems and share their knowledge (Keen and McDonald, 2000).

However, all these opportunities do not come without drawbacks. One of the most obvious, and also most important negative side-effects is the lack of security that the Internet currently offers companies when exchanging data. The fact is, almost any mainstream computer system can be hacked into and therefore no data are safe beyond all doubt. A company that is planning on using Internet-based tools to organize, communicate, learn and exchange its knowledge internally as well as externally needs to give careful thought as to the extent of safety that is needed and how to obtain it (through software or firewalls).

Intelligent agents

Once a company uses an Internet-based approach for managing its customer relations,

intelligent agent software, coupled with collaborative filtering, can provide even more potential benefits for smaller firms. Such programs are designed to record customers' viewing and ordering behavior on a corporate site, which is then analyzed to suggest special items of interest or special product and service to the customer, once he or she returns (Flynn, 2000). The more a customer uses the site and its ordering system, the better the suggestions become, since the intelligent agent software "learns" from each visit.

This form of "learning" is achieved through comparison of one person's "click-behavior" and ordering history with that of all other customers that have looked at the same information or ordered the same product or service. Then, the software suggests information, products or services based on what these reference customers looked at or ordered. One of the best examples of the possibility of such personal suggestions can be found at Amazon, an Internet bookstore that even offers a "my Amazon" site, where a customer finds a completely personalized platform to the company. This form of micro-marketing can revolutionize marketing on the Internet in the future, especially once Internet use and on-line ordering are widely accepted.

Conclusion

While many published anecdotes celebrate the success of knowledge-management efforts in large companies, there are clearly many methods for achieving success in smaller companies as well. Technology has in many instances leveled the knowledge-management playing field. However, there are also many conventional knowledge-management techniques that afford additional gains for smaller firms.

Along the same line, however, one needs to keep in mind that the openness of the Internet, with all its chances and opportunities for smaller companies, especially when it comes to communicating, exchanging knowledge and sharing information, also poses threats to these companies. Often, data security has not been an issue and being online was not seen as a threat. The more a company becomes part of the virtual world on the Net, the more important privacy and security will become,

which in turn will require investment in that area.

On the other hand, smaller companies have the overwhelming advantage of being intimate and, since knowledge management initiatives live from the buy-in of knowledge holders within the company, this fact makes smaller companies the perfect place quickly and effectively to try some of the techniques because buy-in can be generated without as much effort as is needed in bigger corporations.

Many projects can be started at a grass-roots level, with employees gaining enthusiasm quickly because results can be realized in a short period of time. One key employee can often lead the whole company through an initial knowledge-management project, especially if he or she is the owner of that company. In these smaller firms, the owner is then not only the chief operating officer but also the chief knowledge officer, because he or she pushes these initiatives through.

Those of us engaged in knowledge management often take for granted the resources needed to establish and run knowledge management efforts. For example, those smaller companies which have even heard of the concept of a chief knowledge officer would probably see such a function as an unaffordable luxury. As a result, smaller firms are often a neglected audience for promoting these initiatives, maybe because of this fact.

This, however, does not mean that knowledge management itself is an unaffordable luxury; instead, smaller companies in particular can benefit tremendously from many of its tenets. On the contrary, many companies should see knowledge management, both externally and internally, as a major opportunity to utilize their potential to the fullest degree possible. While the Internet used to be a medium where being the first mover was the most important issue, today this has changed and the focus now lies on being a "first learner" (Keen and McDonald, 2000), utilizing the knowledge the company has about itself and its customers and suppliers, and applying it to the marketplace. Then, these companies, even if very small, have the opportunity to outmaneuver all bigger players and come in ahead of last year's champions.

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