

Knowledge Management For The **Software Industry**

With an increasing awareness and importance of the 'knowledge' residing in organizations, there has been a rise in awareness of methods and tools to retain and grow this knowledge. The most obvious and arguably most successful discipline to achieve this has been **Knowledge Management.**

KM helps companies enrich and share this knowledge residing in products, processes and people by various tools and methods. This KM exercise is often helped by IT. Knowledge Management is often supported in its implementation by IT tools and software which makes a subset of knowledge management – IT enabled KM.

At the same time the software industry itself has great benefits to reap from KM. The IT industry today is in a state of great pressures. The last couple of years have seen a distinct pattern of buyer behavior towards lesser spending resulting into lower revenues for the industry vendors. The business confidence in real IT value is at an all-time low, holding new purchases while companies determine how to get more use of what they already have.

Software companies meanwhile, are working hard at streamlining their processes to make themselves more cost efficient, build better products and software, offer better customer service than the competition and retain the best talent. Knowledge management activities in these companies can help them achieve these results.

For purposes of elaboration, let's pick 3 distinct areas in the software industry and try to analyze how Knowledge Management can effectively help companies in these areas fight back their challenges. The three different areas of focus are 1) custom application development 2) product development and 3) system integration.

Each of the areas are aplenty with challenges offered by the business environment today in the way they work.

Custom application development:

Employee turnover is perhaps the most persistent and difficult challenge that software development companies have to face today. It's often a matter of great pressure when employees leave in middle of projects and worse, in numbers more than one. **The company often has a tough time replacing the void at a short notice and often has to source talent from another project ongoing in the company or hire fresh talent and train him over the project.**

Companies are turning to Knowledge Management for **competency mapping** to help themselves in such situations. Competency mapping involves blueprinting the talent and competence levels of employees within the company so that at any point of time the organization is in a position to ascertain the available competence levels and **resource allocation** and it saves on valuable search time for suitable candidate in the company or hiring (and often duplicating) new talent. Competency mapping also **helps the companies understand the training needs of the employees** and arrange for training programs that really help employee development.

Extensive, explicit communication between the organization and the employees is essential to make this happen. This is important to achieve yet another major challenge of any organization – to **align the employees vision an objectives with the organization's**. Doing this enables organizations to contribute to fulfill the employee's career aspirations and keep the workforce motivated.

Competition and lower sales figures put pressures on software companies for **rapid execution and implementation of projects** and **cost effective manufacturing**. Companies can tackle this challenge by sharing **best practices** within the enterprise. Often for a project on hand in one development branch of the company certain project challenges may have been already experienced and tackled by another SBU of the same company. Creating a centralized **knowledge base** with information on the people and projects they have worked upon gives development teams assistance in the form of project experiences, code reuse to cope with the project challenges.

Creating **Communities of Practice (CoP)** also greatly enhance the quality of work that a software organization churns out. CoP simply denotes **sharing a common communication space** (e.g.: discussion group) among people of common interests so that

they can share ideas and experiences. Every organization has such communities that exist irrespective of different geographical locations or functions in an organization but they rarely appear on the organization charts. They are among the primary channels for knowledge flows. Technology acts as a supporting infrastructure but it is the connections between people that turn an individual's knowledge and experience into a real organizational asset.

A CoP is also useful in situations where teams are assigned and reassigned to different projects and it is essential that employees carry their past experiences to further projects to aid the teams they later form part of.

Packaged software development:

Software product development requires high level of commitment especially for a company that is building a software product for a global market. The risk involved in selling a software product is enormous as against a custom application development activity. Specifically the software product development company faces challenges right from the conceptual level.

The very idea for the product to be developed needs to be researched and brainstormed upon to check its feasibility in present market conditions. Depending on the needs and maturity of the market the idea is evolved into a product. This involves **high level of study and confidence about the products, markets and customers.**

While most of the challenges faced by custom application development companies are common to product development companies too, software product development companies also face challenges faced by traditional product development companies, namely product marketing issues like market research, branding, pricing, distribution pattern.

Moreover there are licensing issues specific to software product companies where the company has to decide the right way to distribute and sell the product (whether to release shareware, free, 'lite' copies of the product, the number of users per license etc). Last but not the least, the **company has to understand and pay close attention to the product**

life cycle in different markets and introduce upgrades, offer discounts or bring in changes according to the product life cycle stage.

To combat the above challenges the company can experiment with CKM or **Customer Knowledge Management**. Briefly CKM is gathering and using information about a company's customer and his behavior pattern. CKM includes external as well as the internal customer in its purview. So while studying the external customer gives answers to questions pertain product marketability, branding, pricing and distribution, understanding the internal customer – the workforce helps the company keep them motivated and build robust products faster with more quality and less bugs.

Besides CKM, product development companies would need to apply other principles of knowledge management mentioned above such as **developing knowledge bases** to train and inform new employees who join an ongoing product development exercise in place of an existing member. Companies' aiming for an international audience mostly has to deal with **internationalization and localization** – making the product match global standards of customer expectations and quality and at the same time customize it to the local taste of the foreign customer. In such cases (or even otherwise) if the company happens to have teams sitting in different geographical locations the organization needs to build a **best practices** database as well as develop a **CoP** to ensure that experiences and best practices of different markets and teams permeate in the product.

System integration:

The upper layer of the software industry – the consulting market includes a category of system integration vendors. Companies that consult customers on solutions developed by technology vendors and implement and integrate the same at the customer's organization.

Like any consulting business the major **challenge here is to facilitate smooth adoption of the implemented solution at the client's premises and bring about effective change management** (also an area where the consulting company's re-engineering skills are tested). On a more basic level system integrators need to have perfect knowledge of the vertical industry that the application is made for. **System integrators in fact exist because they are 'assumed' to have a sound knowledge of business processes of the vertical industry in question.**

On the other end of the system integration spectrum the consultants **need to build robust partnerships** with the most carefully selected set of solution providers. System integration project success is partly dependent on how well the consulting company collaborates with the vendor to offer the customer a product that fits the enterprise it is implemented in. The system integration company **needs to be strong on the re-engineering process** because much of the integration projects involve working with the customer to adapt their processes

Knowledge Management can help system integrators by helping them **capture and retain the business process knowledge** derived out of working on various projects and apply the learning on newer projects. Similarly creating access to **individual project best practices** in change management techniques gained 'on the job' help the consulting company implement subsequent projects faster and more effectively. Collaboration techniques and forming CoP can help the consulting company and the technology vendor customizes solution to be most suited for the client's needs. Overall the system integrator greatly benefits from a **culture of innovation** in its processes and an explicit double loop learning mechanism leading to ensure an incremental increase in effectiveness from project to project.

Thus the benefits to be derived from Knowledge Management for a software company are many. It has to be remembered however that while the Knowledge Management mechanisms mentioned above are mostly aided by the use of IT, companies must learn to appreciate KM as more than that – not just a piece or module of software that records transactions and churns out reports but a innate process culture aimed at improving organizational knowledge and organization learning.

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