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ITP4536

A Framework for Knowledge Management Adoption in a Steel Company

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ABSTRACT

Knowledge management is emerging as a key management tool for the new century. To achieve a sustained competitive advantage, management needs to understand, implement and support a new competence throughout the organization: the ability to manage knowledge effectively. Knowledge management is the process of making creative, effective and efficient use of all the knowledge and information available to an organization for the benefit of its customers, staff, and thus the company. Knowledge is therefore an intellectual asset, which in the new global economy will become more important than the traditional capital assets.

This paper aims to investigate the value of intellectual capital at EZDK (Steel Products Sales & Marketing Arm of Ezz-Dekheila Alliance - the largest steel products marketing and sales company in the Middle East, located in Egypt). It will help develop a clear understanding of knowledge and culture within EZDK. The research will also highlight the procedures necessary to establish a framework for knowledge management within the company. Finally, The research will try to depict the techniques to be used in order to generate, capture, distribute and measure knowledge in the company.

BACKGROUND

Knowledge and individual expertise are now seen as vital to the success of a business; "*the company that is not managing knowledge is not paying attention to business*", observed Thomas Stewart, author of *Intellectual Capital*, in his keynote presentation at Training 2000.

Knowledge management is a combination of management awareness, attitudes and practices, systems, tools and techniques designed to release the power of knowledge.

In fact, knowledge management presents a significant business opportunity. According to industry pundits Ovum (cited on the website, www.supportindustry.com), the worldwide knowledge management market will be worth $US 12.3 billion by the year 2004. More specifically, Ovum forecasts that the worldwide market for knowledge management-related software will increase from $US 515 million in 1999 to $US 3.5 billion by 2004. Knowledge management-related services are expected to grow from $US 2.6 billion in 1999 to $US 3.5 billion by 2004.

What's really driving knowledge management is something bigger: a desire by many organizations to harness the brainpower within them. More than merely trying to "work smarter, not harder", organizations see knowledge management as a means of cultivating their intellectual assets and realizing a harvest of efficiencies in operations, and innovations in products and business practices. (These assets range from documents, patents, and copyrights to the ideas and suggestions of employees). As significant, this harvest yields competitive advantages, which lead to tangible (and ideally, sizeable) profits.

This paper provides some guidelines useful to apply knowledge management concept within EZDK. It helps identifying knowledge within the organization, as well as transforming this knowledge from an abstract concept to an increasingly tangible and manageable asset. The paper demonstrates also the challenges facing knowledge management in the company, and the policies to be shaped. Finally, the research will reveal the approach that could be followed to measure the return on knowledge management, and the potential advantages of harnessing the skills and knowledge of EZDK employees.

KNOWLEDGE MANAGEMENT: STATE-OF-THE-ART

In seeking a definition of knowledge, Badenoch et al. (1994) consulted key sources in the field and found what could be the simplest definition of all: that knowledge is "organized information in people's heads." (Stonier, 1990).

Brooking (1999) differentiated between data, information and knowledge by explaining each one separately as follows:

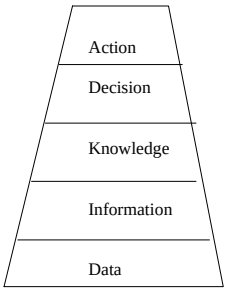
While Data are facts, pictures, and numbers – presented without a context, Information is organized data that has value to someone in the context of their work or life. Knowledge is information in context, together with an understanding of how to use it.

Wilson (1996) presents a useful illustration of this issue with the notion of the processing hierarchy see figure 1.

Theory and experience have demonstrated that, from a management perspective, there are clear distinctions between two types of knowledge. Common practice now refers to them as *explicit* and *tacit* knowledge. Macdonald (1999) described both types of knowledge as follows:

- ***Explicit knowledge*** is precisely and clearly expressed, with nothing left to implication. Generally in the business situation it is fully stated and openly expressed without reservation. Companies hold substantial documented knowledge in patents, technical specifications and procedures. Additionally, information is routinely collected, stored and distributed as management information. Financial, marketing, production and service information is usually codified and is ready for different distribution channels.

Figure 1: The processing hierarchy (Wilson 1996)



- ***Tacit knowledge*** is understood but not clearly expressed. It is often personal knowledge embedded in individual experience and involves intangible factors, such as personal belief, perspective and values. The most valuable asset of every organization is the hidden or tacit knowledge buried in the memories of employees and other people in regular contact with the organization. This experience includes learning from doing as well as study, observation

and informal information or even gossip. By definition, this is more difficult to recognize and collect let alone codify, store and distribute. So, Knowledge management is an effort by organizations to manage some or all of the knowledge within them as a resource, much as they manage real estate, inventory, and human resources.

Managing knowledge as a resource spans a continuum from generating efficiency to fostering innovation. At the efficiency end of the continuum, knowledge management is seen as an effort to build a repository of data and information that workers need, and provide them with efficient access to it. As Microsoft founder Bill Gates noted in his presentation at COMDEX Fall 1999: "Corporate information today is so hard to find. It is kept in folders, or anecdotally understood by people in the company." He added, "Knowledge workers need to share things, and need access to the right information at the right time. This is so hard today." Corporate Yellow Pages – an effort to create a Yellow Pages-like listing of expertise in an organization, represent a popular method of providing efficient access to knowledge within an organization.

At the innovation end of the continuum, knowledge management is seen as an effort to spark new products, processes, and business opportunities that help an organization thrive. For example, Tom Davenport, a professor of information technology at the University of Texas and one of the key authors in this field describes efforts by Dow to "harvest value" from little-used patents and licenses.

Core Processes of Knowledge Management

There are a number of activities which can be regarded as the core processes of knowledge management, and which are all fairly closely related. Among the various knowledge management processes proposed, we found that the most appropriate to be applied in our case study are the following: (see **figure 2**)

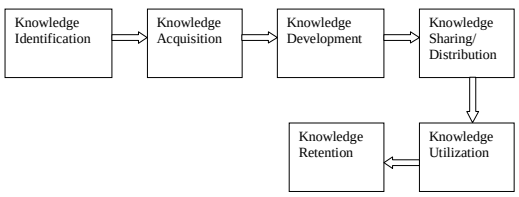
For details about each process, interested reader can consult the work of Probst, 1999 and Liebowitz 1999.

Intellectual Capital

Many people confuse knowledge management with intellectual capital. Carliner (2001) explained that intellectual capital is an effort by organizations to place a financial value on its tacit and explicit knowledge or in other words, it is the term given to the combined intangible assets that enable the company to function. Although many parts become involved in knowledge management projects, determining methods for measuring the value of intellectual assets is almost exclusively an effort of the financial community. Brooking (1999) demonstrated that the intellectual capital of an enterprise could be split into four categories; **Market assets, Intellectual property assets, Infrastructure assets, Human centered assets.** Webb (1998) stated that various techniques have been put forward for measuring the efficiency of information services, such as performance measures, but concrete measures of the actual value of the information provided have not been as readily available.

Hamel (1995) noted that in a world where knowledge is central, a company's value in terms of its intellectual assets is not shown on the balance sheet. As he says "there is no funds flow statement for knowledge". However, Robinson & Kleiner (1996) writing were discussing measurement and valuation techniques to be applied to intellectual capital, which they saw as not only to intellectual property concepts such as patents and licenses, but also to less tangible assets like know-how, skills and information systems.

Figure 2: Core processes of knowledge management (after Probst, 1999, Liebowitz, 1999)



Main Challenges of Knowledge Management

There are many challenges facing knowledge management, which are summarized by Santosus (2001) into the following points:

- **Getting employees on board:** the major problems that occur in knowledge management usually result because companies ignore the people and cultural issues.
- **Allowing technology to dictate knowledge management:** Knowledge management is not a technology-based concept. While technology can support knowledge management, it is not the starting point of a knowledge management program.
- **Not having a specific business goal:** a knowledge management program should be aligned with the business goal. While sharing best practices is a commendable idea, there must be an underlying business reason to do so.

Knowledge Management in Practice

Many organizations worldwide took wide steps in incorporating knowledge management on their business; these organizations adopted this concept differently choosing the ways that could best sustain their competitive advantage to attain the most benefits they can get.

Many organizations had to change their management style from a centralized to a decentralized one to speed up the decision making process, because a rigid company cannot manage knowledge effectively especially when the company is operating in many countries worldwide like Buckman laboratories, which are serving customers in 90 countries (Buckman, 1997).

Sometimes, however, decentralization could hinder knowledge sharing due to the fact that business units could be isolated the one from the other. Hewlett Packard (HP) managers however were able to overcome this problem; although business units that perform well have a high degree of autonomy which does not encourage these business units to invest time or money in leveraged efforts that do not have an obvious and immediate payback for the unit, the fact that employees move from one business unit to another allows a great degree of informal knowledge transfer within HP (Davenport, 1998).

In EZDK, the management style is centralized, which will not constitute an obstacle for applying knowledge management in the organization due to the small number of the employees (50 employees) and the fact that most of them work in the head office. Moreover, the nature of the business itself dictates that all decisions should be taken in the head office, which leaves limited responsibilities for EZDK's employees working in the plants.

To oversee and better manage knowledge in many organizations, new positions were created; companies like Coca Cola, Sequent, Hewlett Packard, and PriceWaterhouse Coopers have established positions like Chief Knowledge Officer (CKO). Another position, which is Knowledge Analyst, exists at FedEx; knowledge analysts assist the CKO in analyzing the knowledge process within the firm in order to improve human performance (Liebowitz, 1999).

Case Study Site

EZDK (Steel Products Sales & Marketing Arm of Ezz-Dekheila Alliance) is Egypt's largest steel marketing company. EZDK was founded by Mr. Ahmed Ezz in 1999. EZDK's product range includes steels used for construction (long products) – such as rebars, wire rod and wire mesh – and flat steel that is demanded by the expanding industrial sector, both in Egypt and in many countries worldwide. EZDK was created as a result of the strategic alliance of both Ezz industries and ANSDK (Alexandria National Steel – Dekheila) companies, and is responsible for the sales, marketing, and coordination of the products of both companies. Ezz industries comprises two plants: ESR (Ezz Steel Rebars, established in 1995) and ESM (Ezz Steel Mills, established in 1994). ANSDK - established in 1982 (in Alexandria) as a joint stock company - was the main competitor to Ezz before the alliance took place.

Ezz-Dekheila Alliance was created in 1998 to satisfy the growing demand for steel products. Nowadays, this alliance has a full control over the market as their local market share reached more than 60%. Ezz Industries tends to use its technical and marketing skills to unlock unused potentials in ANSDK. The production capacity of the company

is 5 million tons per year; 2 million tons of flat steel (used in the manufacturing of many products such as cars, machines, home appliances, etc.) and 3 million tons of rebars used for construction. Most of the rebars production is targeted to the local market (75%), and the rest is allocated for exports; whereas the flat steel is the other way around.

PROBLEM DEFINITION

EZDK is growing fast, and so its accumulated knowledge. There is no formal system that can capture and exploit the company's dispersed knowledge. Knowledge acquired through experience doesn't get fully reused because it is not represented in an appropriate form to the employees who might call for it.

OBJECTIVE OF THE STUDY

The research objective is to propose a framework for adopting knowledge management in EZDK.

This objective would be realized over two phases. In the first phase, we will try to identify the knowledge in the company as well as to assess the current culture. While in the second phase, we will set a knowledge strategy to support EZDK's business strategy.

RESEARCH METHODOLOGY

In the beginning, it must be clear that developing a knowledge creating organization is not a short-term project. The process takes time, resources and eventually involves everyone in the organization. Before developing a strategy to adopt knowledge management within EZDK, we need first some important information to help us prepare and plan for this strategy.

We used two means to realize these assessments, which are interviews with key people in the company, and a survey conducted on the employees:

Interviews

Three interviews were carried out, with EZDK's Marketing Director (structured interview), a Sales Analyst (unstructured interview), and the third interview was held with the IT Specialist (structured interview). The main questions in these interviews were:

- What are the various products and their markets?
- What are the structure and the main activities of the employees in EZDK?
- What is the knowledge that exists in the company and where can it be found?
- What is EZDK's competitive advantage and the knowledge required to sustain it?
- What is the IT situation in EZDK?

Questionnaire

A questionnaire was distributed to 40 employees (including 15 middle and senior managers) in EZDK, due to the relatively small number of staff in the company. The questions of this questionnaire were adapted from previous research on knowledge management conducted by Jordan and Jones (1997), Anderson (1998), and Wolf (1999). The result of this questionnaire will contain quantitative and qualitative data types, that need to be analyzed through descriptive statistics (frequency distribution) in order to assess the culture of people in the company.

Research Conceptual Framework

Determining the culture in EZDK depends on two independent variables and a moderating one. The independents variables are the methods used by staff to acquire information and the knowledge management environment. The moderating variable is demographic.

The questionnaire is divided into three parts. The following lines state the main questions in the questionnaire. For a complete listing of the questionnaire, the reader could refer to the (Azab, 2002).

Part I: Personal information

- Do you want to mention your name?
- Please indicate your sex.
- Please tick the group of age you are belonging to.
- Which function do you have in EZDK?

Part II: Questions concerning the methods used by staff to acquire information in EZDK

- Do you have an overview of the knowledge available in EZDK?
- What kind of media do you use predominantly to obtain information?
- What occasions do exist for an exchange of information in EZDK?
- How does information exchange take place between older experienced employees and younger ones in EZDK?
- What does the EZDK management do to improve the information acquisition of the employees?

Part III: Questions testing the knowledge management environment in EZDK

- Do you have a general overview of knowledge management?
- Please rank barriers facing you to share knowledge in EZDK?
- The availability of the knowledge base makes you less creative?
- Do you feel that privacy of employees is an issue concerning the sharing of knowledge?
- The knowledge gathering process may require reviewing your personal work documents/or emails so as to add information to the knowledge repository. Do you feel this invades your privacy?
- Does sharing of knowledge in your job situation decrease your competitiveness with other colleagues for promotions?

DATA COLLECTION, AND ANALYSIS

Interviews' Analysis

The main information obtained from the interviews is presented in the following lines. For a complete interviews' analysis, the reader could refer to (Azab, 2002).

Analysis of the knowledge in EZDK:

The actual knowledge that exists in EZDK, i.e. its competitive knowledge position, could be classified into four types:

- Documented explicit knowledge.
- Undocumented explicit knowledge.
- Observable tacit knowledge, which can be obtained by watching a professional's behavior.
- Embedded tacit knowledge, which is almost impossible to identify and acquire.

We will focus in our research on the first two types; the following lines will explain these two knowledge types within the organization.

Documented explicit knowledge:

This knowledge is easy to acquire; it could be found in patents, files and on simple computer applications like word processors and spread sheets. Documented explicit knowledge includes the following:

- ISO certifications. EZDK trademarks, its position in the steel market as a steel producer, its market share and its customer base.
- Market advantages (local market): low production costs, stable prices, high quality products, fast orders deliveries, and reliable services to customers.
- Market advantages (international market): low prices.
- Key assets: flat steel products, which are considered a new industry line (production started in 2000). There exist few competitors in these products.
- Policies and procedures set in ANSDK.
- High standards in technical knowledge in all production lines.
- Local and international competitors.
- Products' prices of local and international competitors.
- Local market share.
- Local market consumption.
- Excess capacities in EZDK and competitors.
- Discounts and incentives offered by competitors.
- Monthly price differentials between EZDK and other producers in the

local market.
- International export prices versus EZDK export prices.
- Local sales and average selling prices by sector for flat steel products.
- International development for flat steel prices.

Undocumented explicit knowledge

This knowledge is uncontrollable and not easy to be documented, it resides only in people's heads. Acquiring it requires costs and efforts to get it from professionals. Undocumented knowledge can be summarized as follows:
- Products specifications of the competitors, their qualities and their defects.
- Market advantages of the competitors locally and internationally.
- Prime competencies of competitors.
- Business strategies and production plans of competitors.
- Competitors' positions with regard to knowledge.
- Customers' behaviors.
- Customers' relationships and treatments.
- Customers' business and the projects they are involved in.
- Business strategies of customers.
- Product optimization between the products of the different plants.
- Market forecasts.
- Characteristics of successful and bad transactions.

Questionnaire Analysis

The response rate was 100%, and the average response time was from 10 to 15 minutes. Time spent on the questionnaire was satisfying allowing respondents to give fair answers.

We will explore some of the questionnaire analysis. For a complete analysis, the reader could refer to (Azab, 2002).

Analysis of part I:

Name	70% (28 employees) of the respondents mentioned their names.
Sex	77% (31 employees) of the respondents were male.
Age group	67% (27 employees) of the respondents are from 21 to 30, 28% (11 employees) are from 31 to 45, 5% (2 employees) are from 46 to 65.
Job title	12% (5 employees) of the respondents are officials in charge, 25% (10 employees) are team leaders, 15% (6 employees) are heads of departments, 38% (15 employees) have other job titles.

Analysis of part II:

Questions in part II investigate the methods used by employees to acquire information in EZDK.

- Do you have an overview on the knowledge available in EZDK?

The more employees are aware of what knowledge exists in EZDK, the higher the chance of sharing knowledge and using knowledge base in the company. 50% (20 employees) of the respondents have a good general overview on the knowledge available in EZDK; they are mainly head of departments and team leaders. The other 50% (20 employees) have good overview in their field of activities (see **figure 2**).

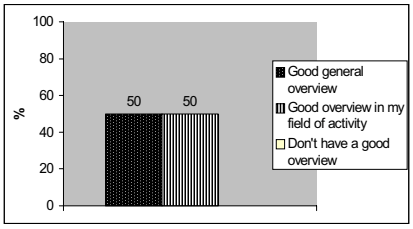
- *What kind of media do you use predominantly to obtain information?*

Telephone	53% (21 employees)
Facsimile	18% (7 employees)
Email	48% (19 employees)
Internet	75% (30 employees)
Magazines/Catalogues	43% (17 employees)
Professional literature	30% (12 employees)

- *How does information exchange take place between older experienced employees and younger ones in EZDK?*

This question was developed to investigate whether knowledge is transferred from experienced employees to fresh ones and how it is transferred.

Figure 2: Staff overview on the knowledge available in EZDK



40% (16 employees) of the respondents revealed that there is no regular exchange; whereas 40% (16 employees) of the respondents declared that knowledge transfer is accomplished through mixed project teams.

23% (9 employees) of the respondents stated that individual trainings are carried out before older employees leave the company. Few respondents (mainly managers) proclaimed that there exists regular instruction sessions for younger employees (8% - 3 employees) (see figure 3).

Analysis of part III:

- Do you have a general overview of knowledge management?

53% (21 employees) of respondents have a general idea about knowledge management; whereas 47% (19 employees) of them don't (see **figure 4**). This reflects that almost half of the employees are aware of this concept, which means that adopting it in EZDK would be easier for them than for others.

- Please mark barriers facing you to share knowledge in EZDK?

Employees were asked to indicate the barriers or obstacles to knowledge sharing in their organization. **Table 1** displays the respondents' opinion regarding the barriers they encounter to knowledge sharing. As we can see one of these main barriers is that most of the employees retain knowledge they possess because it consolidates their position in the company. Another important obstacle to sharing knowledge is that there exists a lack of trust among employees that makes them think that their ideas could be taken over or that others data could be incorrect.

Questions concerning privacy:

The next three questions investigate privacy issues concerning the employees at EZDK (see **table 2**).

As a result of the questionnaire analysis, we deduced that an adequate number of employees (50%) has good overview of the knowledge available in the company. There is no regular information exchange from older to younger employees. Employees are interested in gathering information from various sources, depending mainly on the Internet, which means that they are computer literates and makes using a knowledge base a natural act for them.

More than half of the staff (53%) is aware of the knowledge management concept, which will facilitate adopting it in the company. We also realized that there is not enough policies and procedures set and implemented from the part of the management to support knowledge sharing; this process should be considered when developing a knowledge strategy to adopt knowledge management in EZDK.

Figure 3: Information transfer from older employees to younger ones in EZDK

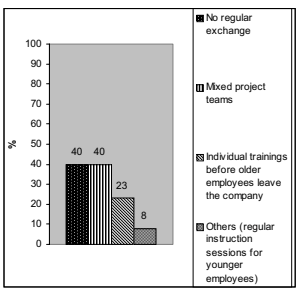
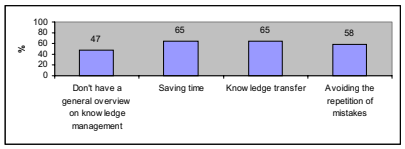


Figure 4: Staff awareness about knowledge management and their perception of its purpose



There are many barriers that hinder knowledge exchange between employees that should be overcome in order to build a learning organization, which creates the environment for knowledge management.

Table 1: Barriers to knowledge sharing

"Turf protection" knowledge is power.	60% (24 employees)
People scare that ideas will get hijacked.	60% (24 employees)
Distrust in other colleagues data.	58% (23 employees)
Organizational rigidity and specialization (lack of multi-skills)	55% (22 employees)
Culture of working alone in small offices.	48% (19 employees)
Strong departmental barriers.	48% (19 employees)
Lack of communication	48% (19 employees)
Expert knowledge in the heads of individuals.	48% (19 employees)
Personal data stores are common.	45% (18 employees)
Management doesn't encourage knowledge sharing between employees.	43% (17 employees)
Rapidly changing technology makes keeping up difficult.	8% (13 employees)

When it comes to the employees' privacy, most of them don't find that sharing knowledge will be intruding their privacy, except when it is related to viewing their personal work and emails.

This cultural assessment indicate that there exists a promising knowledge sharing culture among a high percentage of the staff, but it is done occasionally on individual basis, and not through EZDK policies. This is not a good foundation for knowledge sharing because employees may change their behavior toward transferring knowledge depending on different situations or perhaps on different colleagues relations.

The questionnaire don't only help in providing a cultural assessment on EZDK, but it also helps to increase understanding of the need for change and individual ownership of the process. As a result, this questionnaire not only gathers the information for planning, but it actually starts the process of change.

DISCUSSION AND FINDINGS

Knowledge has to be seen as a strategic resource that must support business strategy; knowledge architecture then is constructed at a strategic level forcing us to link knowledge strategy to the business strategy of the organization (see **figure 5**).

We should start by performing a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis on EZDK from which we will derive the company's business strategy. Once stating EZDK's business strategy, we could then recognize the knowledge required to execute it. By comparing the knowledge that the company should acquire to its actual knowledge, we could then indicate the knowledge gap in the company. After accomplishing these processes, we should be able to develop a knowledge strategy that supports the company's business strategy.

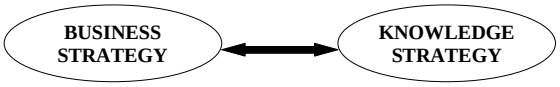
Knowledge Strategy

Having identified the knowledge required to execute the EZDK's business strategy, the actual knowledge that EZDK's possesses, and the strategic knowledge gap accordingly, we are then ready to set the firm's knowledge strategy. Ultimately, this knowledge strategy must be translated into an "*intellectual capital* strategy" and a "*knowledge management strategy*" to support its implementation (see **figure 6**).

Table 2: Employees privacy issues

	Yes	No
- Do you feel that privacy of employees is an issue concerning transferring of knowledge?	35% (14 emp.)	65% (26 emp.)
- Does sharing of knowledge in your job situation decrease your competitiveness with other colleagues for promotions?	13% (5 emp.)	87% (35 emp.)
- The knowledge gathering process may require reviewing your personal work documents/or emails so as to add information to the knowledge repository. Do you feel this invades your privacy?	70% (18 emp.)	30% (12 emp.)

Figure 5: Linking knowledge strategy with business strategy.



We conclude then that a strategic view of knowledge comprises in fact three strategies: the knowledge strategy, the intellectual capital strategy, and the knowledge management strategy.

These strategies are related to each other and each one represents knowledge from a relevant perspective. In order to clarify the difference between these three strategies, we can consider knowledge strategy as the ends or what we need to achieve, intellectual capital strategy as the means or how, and knowledge management strategy as the management aspect or wherefore concerned with defining the roles, structures, controls and policies, etc.

Time constraints impose an order to addressing the issues identified while setting a knowledge strategy; because of the time required to develop and manage knowledge, knowledge strategy will be devised into 2 parts: a short-term knowledge strategy and a long-term one.

The short-term strategy is directed first toward exploiting the existing documented and controllable explicit knowledge within the company in order to make better use of it, and second by combining the external knowledge identified in the knowledge gap and adding it to the company's knowledge base. The long-term strategy tackles first the current non-documented and uncontrollable knowledge present in the company, then the knowledge that should be acquired internally in the company and demonstrated in the knowledge gap.

All three strategies are explained thoroughly in (Azab, 2002).

FINDINGS

- Knowledge in EZDK is scattered and not harnessed to its maximum efficiency, which constitutes a loss in such valuable organization resource.
- Knowledge in EZDK is not reused in a transparent and neutral way.
- The main impediments towards applying knowledge management within EZDK are the lack of motivating employees from the part of the management in the company, and the culture that tends toward knowledge hoarding as a result of the staff worries about loosing individuals' credibility of ideas.
- There exists two types of explicit knowledge within EZDK, the first is documented and controllable; and the second is undocumented, uncontrollable and documenting it necessitates cost, time and effort.
- A high percentage of employees use the Internet efficiently.
- There is a potential sharing culture among employees but needs to be better organized.

CONCLUSION

The research started by highlighting some of the important knowledge management topics that was used throughout the research, then by assessing the company from various perspectives. The next in the research was working toward setting a knowledge strategy for EZDK, which should definitely be aligned with the company's business strategy.

To be capable of realizing the suggested knowledge strategy, this strategy should be interpreted into two other strategies: "*the intellectual capital strategy*" and "*the knowledge management strategy*". The intellectual capital strategy deals with the ways to leverage the in-

Figure 6: Components of knowledge strategy

tellectual capital of the organization, whereas the knowledge management strategy is concerned with the means to manage the intellectual resources and capabilities in the firm including choosing the right people for each job, determining the schedules and policies to be put, and the decisions to be made in order to execute the knowledge strategy proposed before.

Applying the recommendations of this research to the company would allow the reuse of knowledge to become a part of the corporate culture. This would leverage the skills of the employees, which predominantly would allow the company to sustain its competitive advantage.

The research succeeded in presenting a practical and clear depiction regarding applying knowledge management on the case study chosen. It went smoothly from one idea to another following the predetermined logic.

A future work could be to try to capture the tacit knowledge within EZDK, since it is the most valuable knowledge in the company. Managing such knowledge remains a major challenge because it cannot be codified.

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