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DEVELOPING COMPETITIVE ADVANTAGE THROUGH KNOWLEDGE MANAGEMENT AND INTELLECTUAL CAPITAL

Key Words

***Knowledge
Management;
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Measurement and
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Strategic Alliances;
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Capital.***

Abstract

Organizations practice knowledge management through people processes and systems. But current performance measures focus mostly on financial indicators. The study examines intellectual capital as a competitive advantage and develops a monitoring framework. Based on a sample of Middle Eastern companies, it identifies five major factors that tie company performance to knowledge management: (1) employee knowledge and growth, (2) market intelligence, (3) strategic alliances, (4) decision-making knowledge flow, and (5) information systems. These factors prove to be applicable indicators and should, therefore, be used to drive higher performance in a learning organization. The statistical analysis shows a significant positive correlation between the first, third, and fourth factors and overall company performance. These three factors could be adopted as senior management key success factors.

Introduction and Research Rationale

The move from an industrial era to a knowledge economy pushed organizations to experience the competitive advantage of knowledge. However, companies still have not defined ways to evaluate and

monitor the role of knowledge in overall company performance. This is partially due to the fact that the know-how embedded within the organization is a soft asset and that there are no practical accounting techniques today that give enough structure

to its measurement. Further, since the know-how inside an organization depends directly on the stability and longevity of its human resources, senior managers are continually concerned about knowledge-worker mobility and flight.

We focus on five factors in which senior managers have taken or can take initiatives to put effective mechanisms. These mechanisms foster knowledge creation, validation, and sharing to ensure sound decision-making and better company performance. The factors that we focused on are based on (1) company initiatives for employee knowledge and growth, (2) gathering and use of market intelligence and forecasting techniques, (3) use of strategic alliances to complement or supplement organizational know-how, (4) mechanism for knowledge flow that clarifies roles and responsibilities in managerial decision-making, and (5) systems and information infrastructure that allow knowledge exchange in daily operations. Below, we briefly introduce each factor, and then provide our methodology and research results in the following sections.

Company initiatives for employee knowledge and growth

Knowledge management is concerned with capturing an organiza-

tion's know-how through its creation, collection, storage, distribution and application (Miller, 1998; Miller 1999). It means identifying and harnessing the collective knowledge of the organization gained through experience and competencies of its individuals. Wiig (1997) identified two objectives of knowledge management:

to make the organization act as intelligently as possible to secure its viability and overall success; and

to realize the best value of its knowledge assets.

Core competencies in organizations are based on the skills and experience of the people who perform the work on a daily basis. It is important that organizations establish methods to develop, nurture, and put into practice this knowledge base to preserve and expand the core competencies. Often, such know-how and capabilities are not easy to depict in physical or codified form (Manville and Foote, 1996). This non-codified knowledge is termed *tacit*. Grant (1997) asserts that tacit knowledge is demonstrated only in its use and application. Only when knowledge within the organization is shared and used towards a business objective, it manifests itself in business results and becomes embedded within the organi-

zation's processes, products, and services (Demarest, 1997).

Most of the opportunities of, as well as the barriers to, effective knowledge management involve people. Since humans have diverse psychological needs and knowledge is constantly changing both at the individual and organizational levels, the gap between what people actually do to perform their jobs and how it is documented is difficult to bridge. This is partially due to the spontaneous actions people take in response to unexpected challenges and problems (Brown and Duguid, 2000). In this regard, senior management has to play a role in actively and systematically managing the knowledge and growth of the employee.

Barriers to such employee development stem from various angles. From a group perspective, team members may be reluctant to share knowledge if they fear criticism from their peers, or recrimination from management. At the individual level, a person is often reluctant to share information as it is perceived as a source of power. Depending on the culture, a person may tend to have feelings of ownership towards a set of skills and may hog related knowledge. There can also be fear that there will be a diminished personal value after giving up the know-how. In certain settings, active

knowledge management fostered by senior managers may be confused with an attempt to control people, and if that is the employees' perception, the initiative will most likely fail (Manville and Foote, 1996).

Therefore, there is ample evidence in the literature about the large upside of fostering knowledge creation and sharing. But senior management must be able to drive it. We hypothesize in section 5 of this paper that company senior management initiatives to develop the employee's knowledge and remove barriers to employee growth has an important role in overall company performance.

Gathering and use of market intelligence and forecasting techniques for innovation initiatives

Focusing on the mining of internal know-how and using it systematically help carry the organization into higher levels of performance. However, this is not effective unless the organization truly understands and tracks how long term market needs and customer demands evolve. Senior managers are expected to establish a culture that seeks knowledge from outside the boundaries of the organization on a daily basis.

Market research and systematic intelligence gathering are as valuable as internal knowledge management programs. Companies have been in-

creasingly developing mechanisms for research and new knowledge generation. But such mechanisms require funding and time investment in developing the external arsenal of knowledge about the market, customers, and competitors, to make decisions about potential strategic moves.

As we experience the emergence of rapid changes in the market, the organization must be fast, flexible, responsive, innovative, and able to quickly move in new directions. Therefore, organizations are under an increasing pressure to strike a balance between the accommodation of new trends through rapid reactions and the stable, pre-planned actions in the market. These two forms of logic need to be fully understood and utilized simultaneously.

Innovation initiatives, albeit necessary to move fast with market changes, may cause disturbances and disorder in unprepared organizations as they may range from minor variations in current practices to radical departures and major re-orientations. As Kimberly (1981) put it, an innovation is a departure from the state of the art at the time it appears. That departure could be broad or narrow as it may impact the whole organization or only a small part or “subsystem” of the organization. So rather than wait and face resistance to that change,

senior managers must actively prepare the culture for those changes. According to Drucker (1998), innovation is the means by which the entrepreneur either creates new wealth-producing resources or endows existing resources with enhanced potential for creating wealth, and in both cases, an active management of change programs is needed of senior executives.

We hypothesize in section 5 of this paper that the establishment of market intelligence gathering processes, the use of forecasting techniques, and the application of such knowledge to innovation is one of the critical factors in overall company performance.

Importance of strategic alliances to complement or supplement organizational know-how

There is ample evidence in the literature that the traditional basis of competitive advantage has been changing dramatically in that competition and cooperation need to co-exist. Over the last three decades, several driving forces have emerged including globalization of business and international competition, the increasing sophistication of customers, competitors and suppliers, and the increased technological capabilities and the shortening of product life cycle (Valeria, 1996; Wiig, 2000).

Companies can no longer re-invent the wheel and grow capabilities

organically at every turn in the market. The strategic move to find an ally capable of sharing the know-how has become key in the strategic management field during the last decades. In that context, knowledge management and the use of intellectual capital through alliances are becoming an important component in the company strategy (Grant, 2000). As human capital represents the knowledge stock of an organization represented by its employees, alliances are certainly the mechanism that enables large and fast increases in know-how (Bontis 1998; Bontis *et al.*, 2002; Skandia, 1994).

Alliances add value in terms of strategic positioning, market share, name recognition, and the like through the acquisition of innovations from other firms. Successful firms are those which routinely maximize the value from their intellectual capital without necessarily inducing large costs from creating that capital from scratch (Harrison and Sullivan, 2000).

Therefore, we believe that one of the pillars of successful knowledge management is the acquisition of human capital through alliances as a part of company strategy and what it must excel in to deliver competitive products or service (Danish Agency for Trade and Industry, 2001). We hy-

pothesize in section 5 of this paper that the use of strategic alliances to search for, obtain, develop, and use external knowledge resources is positively correlated with higher company performance.

Clarity of roles and responsibilities that facilitates managerial decision-making

The distribution of organizational responsibilities and a clear definition of managerial roles have a significant impact on the management of organizational knowledge. But since clarity of roles and responsibilities in organizations is often confused with the word *hierarchy* among practitioners in management, we provide further definition of the concept. Our point of view is that clarity in roles and responsibilities is about letting sets of tasks gravitate around the one who has the most relevant knowledge about the specific problem at hand. Knowing where to go for help, to whom, and how are part of better decision-making within the organization. We term this concept knowledge-based role distribution.

At the outset, this concept seems quite simple and intuitive. However, we found that many organizations have handled roles and responsibilities in many ways that are not knowledge-based. Relational factors such as personal chemistry with the person, prior social relationship, informal networks,

or kinship, are but a few examples of what we found as reasons behind the appointment of people in many critical positions within their organizations. Although we believe that these factors are almost unavoidable in many Middle Eastern countries in senior management appointments, we propose that knowledge be the prerequisite and that these other relational factors be the checkpoints, if needed at all.

Letting problem-solving gravitate to those best equipped with relevant knowledge is an opportunity for the business owner or senior manager and not a threat. This approach provides access to different realms of ideas, different groups of people and offer different opportunities for utilizing ideas.

We believe that knowledge-based definition of roles and responsibilities and clearly communicating it across the organization make knowledge management relevant in focusing individuals or teams on their priorities. We hypothesize in section 5 of this paper that clarity in roles and responsibilities on the basis of know-how is positively correlated with overall company performance.

Systems and information infrastructure

If organizational knowledge is a strategic asset, then the method used to implement a knowledge management *system* is critical. The intentions of senior managers and the mere con-

cepts of knowledge management and the learning organization are certainly attractive and intellectually stimulating, but bear no results unless they are applied and woven into daily operations through systems and procedures (Chalhoub, 1999).

Wiig (1997) identified five strategies that are used by organizations to implement *knowledge management systems*. The first makes the pursuit of knowledge as part of the business strategy, focusing on processes for knowledge creation, capture, organization, renewal, sharing, and use at each point of interaction within and outside the organization. The second focuses on intellectual asset management such as patents, technologies, and structural knowledge assets within daily operations. The third stresses the personal knowledge asset whereby each employee is responsible for his own renewal and sharing of knowledge assets within his or her area of accountability. The fourth highlights organizational learning, research and development, and employee motivation to innovate and learn. The fifth is the knowledge transfer strategy where the emphasis is placed on systematic approaches to transferring knowledge, such as acquisition, organization, restructuring, warehousing, and repacking for distribution to the point of use (Wiig, 1997).

The above approaches all materialize through the information technology

as a tool to help capture and organize what we know, and enable collaboration among people who may not otherwise be able to discuss their ideas. The choice of technology must be commensurate with the type of knowledge to be captured, and the specific situation of the organization. According to Quintas *et al.* (1997), cohesion across the organizational structure through supporting technology is a prerequisite.

Unfortunately, most knowledge management programs implemented across organizations reviewed in the literature were reduced to the implementation of an enterprise resource planning system (ERP), or the installation of a company intranet hoping that the rest will happen naturally and without any process. The mere presence of information technology infrastructure is not enough. It has to be built into the employee's daily job to ensure that it is naturally used in most transactions.

We hypothesize in section 5 of this paper that technology infrastructure, including the selection, installation, and utilization of the relevant tools is positively correlated with overall company performance.

Research Methodology

Our research methodology comprised two phases. The first phase was exploratory in nature, whereas the second one used regression analysis

applied to a set of research hypotheses presented in subsequent sections.

The first phase addressed existing concepts and their applicability to the sample of companies that we studied. The sample comprised 120 Middle Eastern companies from Lebanon, Jordan, and Egypt, in which we explored the attitudes of senior managers towards knowledge management, its relevance to their business, and its perceived results. We processed one questionnaire per company as it was filled by one of its senior or middle managers. The representative person, i.e. the senior or middle manager responding on behalf of his/her company, compiled the data necessary for the questionnaire from within his/her organization and submitted it. This resulted in 120 data sets showing two major sections: one for the three performance measures, i.e. growth, profitability, and customer service, and the other for the five dimensions of knowledge management initiatives. The reason we selected senior or middle management levels as representatives is to allow for enough involvement in both the input in the internal knowledge management initiatives, as well as the monitoring of overall company performance.

The second phase tests five factors that we believe could be used as a framework to translate knowledge management into tangible and mea-

surable senior managers' initiatives that can be carried out operationally within the organization.

Phase One Research Methodology - Exploring senior management attitudes towards knowledge management

As mentioned earlier in this paper, the focus here is to evaluate the importance and contribution of knowledge management and intellectual capital to management decision-making and organizational performance.

The aim was to confirm that in general terms, firms that are engaged in knowledge management practices claim to base their investment decisions on the premise of business benefits in the longer term. Such practices would presumably result in equipping themselves with better market intelligence, more efficient new product development processes, more focused strategy with respect to peer competition, and internal benefits in terms of employee satisfaction and culture.

A series of qualitative focus interviews were conducted with senior and line management within 120 companies in Lebanon, Jordan, and Egypt. The sample of firms was selected to represent companies in the Middle East in countries that are in an intermediate stage of development in terms of management practice, with opera-

tional history of over seven years and a size of over twenty employees.

These focus interviews provided a first hand appreciation about their attitudes towards knowledge management, and was used to develop a framework to measure the relationship between "knowledge management practices on the one hand, and business results on the other.

Our first set of interview results were used to validate hypotheses related to managing intellectual capital. Generally speaking, the level of awareness within management teams in the Middle East sample was promising but mainly founded on their readings and personal efforts in self-improvement rather than execution within their firms. A clear majority acknowledged that the daily applications among managers and across their organizations are yet to come. We provide below the validated observations.

Phase One Results

Overall, we observed that managers increasingly realize the importance of knowledge management. Although, traditionally, the role of the manager has been defined in terms of boundaries of authority and reporting structures within job descriptions, it was observed that establishing networks among people, through systems and processes, is increasing.

We were able to condense the following subset of company initiatives as future variables to measure the relationship between knowledge management and company performance

and business results. These initiatives, their selection, and their corresponding brief explanation are provided in Table 1.

Table 1
Selected Company Initiatives and their Rationale that were Identified and Discussed with Members of Senior and Line Management

Initiative	Components of the initiative*	Selection and discussion rationale**
1. Development of employee knowledge and growth		
	1.1. Effort in Training programs and their results in terms of performance	Developing human resources in terms of aptitude and skills provide the basic premise of group performance (the one to contribute to the whole). Ensuring that the training has resulted in a net change in individual performance.
	1.2. Allocation of R&D resources (human, financial, other)	Actively managing the planning and resource allocation to ensure an orderly conduct of R&D. We contrast this by random reactions to market needs.
2. Processes in knowledge creation through market intelligence and forecasting techniques		
	2.1. Effort in generating competitive intelligence	The company's having a systematic approach to identify, gather, analyze, and interpret market intelligence helps guide internal processes to meet existing or expected competitive challenges.
	2.2. The use of forecasting techniques (and managing their learning across the organization and its partners)	Sound forecasting helps sales and business development managers use market and customer data to make decisions. It also provides heads-up for production and purchasing. Such learning can be propagated throughout the organization.
3. Mechanism in forming and managing strategic alliances		

Initiative	Components of the initiative*	Selection and discussion rationale**
	3.1. Effort in creating and managing alliances (to avoid re-inventing the wheel)	When a company chooses to collaborate with an ally, applying the know-how in identifying, pre-screening, selecting, and operating with an ally instead of incurring high cost in copying the other party's competitive advantage.
4. Knowledge-sharing about internal organization and managerial decision-making		
	4.1. Assigning clear management responsibilities	Clarifying roles and attaching incentives to pre-requisite targets provides ownership and helps the team.
5. Information systems and knowledge-exchange tools		
	5.1. Collaborative techniques inside and outside the organization	Collaboration (in all its forms) helps the transfer of tacit knowledge - the know-how that cannot be codified in documents but rather requires direct interaction and collaboration - and, therefore, pushes the performance curve upwards. (Further research is currently underway by the authors on modern forms and structures of collaboration).
	5.2. Investment in supporting tools (Information Technology, Management Information Systems)	Equipping the individual performer (knowledge worker) with the proper communication tools enables collaboration and the exchange of information and ideas. <i>(IT investments do not guarantee business results, for it depends on how they are utilized).</i>

* Only initiatives undertaken after the planning phase and practiced for over 6 months were included.

** What makes the initiative worthwhile tracking as seen by managers that were interviewed, by their management consultants, and by the authors.

The five major dimensions that were addressed are summarized as follows:

- Initiative 1: development of employee knowledge and growth
- Initiative 2: processes in knowledge creation through market intelligence and forecasting techniques

- Initiative 3: mechanism in forming and managing strategic alliances
- Initiative 4: knowledge-sharing about internal organization and managerial decision-making
- Initiative 5: information systems and knowledge-exchange tools

The majority of the interviewees expressed their commitment to developing the intellectual capital in their companies. However, most of them acknowledged that there is a gap between concepts that they read and trained about, and real life application. For example, a senior manager in a light manufacturing company in Lebanon faced challenges in gathering true market intelligence; “you don’t know if the answers you get from your own survey, or from your sub-contractor entrusted with data collection really portray what is really going on in the market,” he says.

Another executive heading up three divisions related to the textile industry in the Levant had to rely on “..correction factors of his own... that

account for overstated or understated results from employees in various divisions following a seven-month training program - those who overstate their benefits from training may do it to portray that they are doing well in the company and that they appreciate our training initiatives...”

Nevertheless, our point of view remains that the benefits of measuring knowledge management and intellectual capital initiatives still hold and are necessary for further advancement in the field. Further refinements on methodologies and indicators can be pursued in subsequent phases of the research. Table 2 summarizes the results.

Table 2 shows the support for each initiative and the perception from

Table 2
Responses of Senior Managers, Line Managers, and Interviewees
from Medium Size Companies who Initiated Initiatives Related
to Knowledge Management and Innovation.
Effect on Business Results within Three Quarters Time Span

Company Initiative	Low	High	Don't know	Comments
1.1. Training programs and their effect on individual performance	20%	45%	35%	Positive perception overall, but measuring benefits of training needs major focus and development.
1.2. R & D resource development and allocation	10%	75%	15%	Very positive perception overall, but lack of public policy support.
2.1. Effort in generating competitive intelligence	40%	35%	25%	Lack of internal resources to do it continuously.
2.2. Effective use of forecasting techniques	35%	40%	25%	Positive perception overall.
3.1. Effort in creating and managing strategic alliances	15%	55%	30%	Positive perception overall, but simultaneous competition and cooperation are still not mastered in this market.

Company Initiative	Low	High	Don't know	Comments
4.1. Clarity in managerial roles and responsibilities	45%	35%	20%	Personal objectives often overshadow organizational objectives, and clarity in roles is not seen as a priority.
5.1. Collaborative tools and techniques	20%	65%	15%	Positive perception, but further definition is needed.
5.2. Investment in supporting tools and technology (IT, MIS)	20%	60%	20%	Positive perception of technology overall.

management as to how effective is each initiative with respect to business results within three consecutive quarters. We separated the short and medium term from the long term so that we make the interview practical and applicable. When asked about 3- and 5-year strategic objectives, the interviewees often referred to the macro-economic and political environment in the region and were unable to go beyond 12 to 18 months in providing useful answers.

Phase Two Research Methodology

The research focused on five key questions drawn directly from the exploratory research in the previous section. The first question is whether internal initiatives supported by senior management and aimed at growing employees' knowledge are positively correlated with overall company performance. Conger (1995) focused on employee creativity and how it is a major processor to the company's competitive advantage. Fostering creativity and encouraging employees to grow intellectually are realized

through professional training, continuing education, on-the-job coaching and mentoring programs. Our first hypothesis is:

H1: Senior management initiatives to develop employee knowledge and growth are positively correlated with overall company performance.

The second question is whether companies that consistently practice market data collection and employ forecasting techniques perform better than the companies that do not. In this regard, Bernstein (1998) research expands the notion of knowledge management to broad and macro information networks that transcend company boundaries. Market intelligence collection is a major part of external market research. Further market intelligence is an important input into company strategy. Our second hypothesis is:

H2: Using market intelligence gathering processes and forecasting techniques is positively correlated with overall company performance.

The third question relates to the use of knowledge transfer across company boundaries through alliances. The logic is to use collaboration to extend the company's knowledge system and benefit from the partner's know-how rather than rely on a single set of resources. This emphasizes the importance of partner networks primarily to allow for knowledge sharing and enhanced joint performance. Hence, our third hypothesis is:

H3: The use of strategic alliances in knowledge management is positively correlated with overall company performance.

The fourth question has to do with the internal organization and ensuring clarity in managerial decision making. The relationship between knowledge management and speed and quality of management decision making has been amply documented in recent research. The fourth research question extends the notion above to link both knowledge management organization and sound decision making to overall company performance. Our fourth hypothesis is:

H4: shared knowledge about the internal organization and managerial decision making contributes positively to company performance.

Our fifth question addresses the usefulness and effect of tools and templates on the company perfor-

mance. Results from our exploratory research showed that employees value the presence of tools, forms, templates and electronic communication media (e.g. such as company intranet). There is ample literature that describes such IT tools as a key factor in information exchange and the employee's performance. Most ERP (enterprise resource planning) packages rely heavily on instantaneous electronic data exchange across departments. Tools and templates are simplified mechanisms that the employee uses as a vehicle to share knowledge with peers. This point was confirmed further over the last five years as most ERP packages in the market were repositioned to become smaller, more manageable and more accessible to most enterprises. Our fifth hypothesis is:

H5: The choice and use of information technology infrastructure is positively correlated with overall company performance.

Since the nature of knowledge management makes it challenging to measure the effects of knowledge sharing in hard terms, we adopted a category scale questionnaire that attempts to link our five key questions related to knowledge management to the overall company performance. As mentioned earlier in this paper, the sample of 120 companies was drawn from Lebanon,

Jordan and Egypt. The questionnaire used a five-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

The independent variables correspond to the five research questions that we focused on in the introduction and research rationale (section 2), followed by the exploratory research (section 3.1, and 3.2).

X1 = Employee knowledge and growth and overall company R&D

X2 = Generation of competitive intelligence and use of forecasting techniques to gain advantage

X3 = Strengthening intellectual capital through strategic alliances

X4 = Internal organization and managerial decision making

X5 = Supporting tools, work templates, and information systems

The dependent variable was formulated to represent company business performance. Knowing that company performance can be measured in many ways, we used three basic scales representing company growth, company profitability, and customer perspectives of company service as rated by its senior management. We developed an overall company performance index from these three critical components:

$$Y = \text{performance index} \\ = \sum_{i=1, 2, 3} (Y_i)/3$$

Where: Y1 = Growth rating, Y2 = Profit rating, Y3 = Customer Service rating

SPSS was used to analyze the data. A reliability test for the questionnaire, a correlation test, and a regression analysis were conducted.

Phase Two Results

We conducted a regression analysis on the variables developed and described in section 5.0 and looked at the reliability, the correlation, and covariance (for more details, see Appendix A). The questionnaire achieved the desired level of reliability with Cronbach's alpha ranging between 0.896 and 0.908. Cronbach's Alpha measures the coefficient of reliability or consistency. As shown in Appendix A, Cronbach's Alpha of the eight variables ranges between 0.896 and 0.908, while the Cronbach's Alpha for the eight variables combined is 0.914.

The SPSS application calculates automatically the T-test which becomes embedded in the output as a measure of the significance level. As can be seen in Appendix A, the significance level was calculated for the company performance index as well as the five dimensions of knowledge. Results show that dimensions one, three and four are significant at 95%. Nevertheless, as noted in our inter-

pretation in later sections, we still recommend that all five dimensions be used in tracking knowledge management initiatives.

The five dependent variables X1 through X5 have a positive correlation with the growth rating, profit rating, and customer satisfaction rating, as indicated by correlation scores above 50%. Further, the covariance values are positive indicating that the dependent variables change in the same direction as the independent variables (Appendix A).

In the linear regression analysis, we used X1 through X5 as the independent variables, and the company performance index Y as the dependent variable (section 5.0). The five inde-

pendent variables represent the research questions that we presented in section 2, and that were further developed in our exploratory research in section 4.1 (Tables 1 and 2).

The objective was to test the hypotheses H1 through H5 about the significance and correlation of the five dimensions of knowledge management with company performance. The regression equation is:

$$Y = \text{Composite index rating} = 0.513 + 0.361 X1 + 0.088 X2 + 0.135 X3 + 0.171 X4 + 0.062 X5$$

Table 3 below presents the summary results of the regression analysis. At 90% confidence level we found that X1, X3 and X4 are significant and

Table 3
Coefficients and Significance Related to the Regression Analysis of the Company Performance Index in Relation to the Five Dimensions of Knowledge Management

		Beta	Sig.
	Constant	0.513	0.000
X1	Employee knowledge and growth and overall company R&D	0.361	0.000
X2	Generation of competitive intelligence and forecasting techniques to gain advantage	0.088	0.111
X3	Strengthening intellectual capital through strategic alliances	0.135	0.005
X4	Internal organization and managerial decision making	0.171	0.000
X5	Supporting tools, work templates, and information systems	0.062	0.221

(With $R=0.8831$ the regression is positively correlated. The composite performance index is 78% explained by the given independent factors. The regression is significant at $F= 80.788$, $\text{Sig} = 0.000$ significance level of 0.05).

positively correlated with the overall company performance index.

The role of knowledge management as a key initiative for senior executives aimed at developing the company's human capital, represented by X1, proved to be significant. We expected to find that human capital development is significantly correlated with company performance, but we further recommend that "senior management initiatives to grow the know-how of employees through training and on-the-job knowledge sharing" be used as a measurement tool.

The company's ability to move strategically in the market through alliances using knowledge management across company boundaries, represented by X3, was significantly correlated with overall company performance. This finding for X3 confirms that the ability to share the know-how through the formation of alliances is indeed a strategy for growth as opposed to using only organic means and bearing the risk of reinventing the wheel in the market.

The importance of alliances is especially true as the markets become geographically spread and where goods and service requirements become increasingly sophisticated. Turning an external business entity with deep expertise in a given field

into an ally makes much more sense than opening a competitive front with that same entity.

The company's mechanism for knowledge management that clarifies areas of individual expertise, and its senior management initiative to apply knowledge-based distribution of roles and responsibilities, allows for sound and timely managerial decision-making. This mechanism, represented by X4, was significantly and positively correlated with company performance.

The case for clarity in roles and responsibilities in an organization is not new. Indeed, it goes back to some of the earliest management theories. But we need to highlight here that our approach is more focused on the knowledge-based design of the organizational chart using the know-how and the ability to share it for better managerial decisions. Our results illustrate the need to use knowledge management as both a design and measurement tool in making short term and long term managerial assignments in organizations. This will certainly require a cultural effort within organizations to depart from existing practices in filling managerial positions.

However, the analysis indicates that X2 and X5 were not significant with respect to the company performance index. The use of market intelligence

gathering and forecasting techniques, represented by X2, can be explained in the context of Middle Eastern companies. The mechanism of regularly gathering market intelligence and using forecasting techniques was given high priority by managers from a process perspective. However, as mentioned in section 4.0, most managers argued that their markets suffer from a relative difficulty in obtaining reliable market data. At best, some companies find the process feasible but onerous as they would need to hire specialized companies in market data gathering and analysis rather than have access to reliable data at large, as we are accustomed to doing in regions in the Western hemisphere.

As for the use of tools and IT infrastructure, represented by X5, managers responded favorably about the role of IT infrastructure within an organization. But its lack of significance in our regression analysis may be attributed to two potential reasons. The first reason is that IT is merely a support function whose benefits become embedded in individual and group performance. The second reason is that, ultimately, the relevance of IT infrastructure, and not its budget or expenditures, contributes to the system performance.

Nevertheless, we recommend further investigation of these two fac-

tors as they are important support functions in knowledge management and in corporate terms to other factors such as employee know-how, managing alliances, and improving the speed and quality of decision-making. (I can't understand the phrase in red! Ask author about it)

Conclusions and Recommendations

The present study relies on an exploratory research followed by a statistical analysis performed on a sample of Middle Eastern companies to better understand the relationship between knowledge management and overall company performance. Notably, the research identifies five areas of intervention that senior executives can perform to measure and track the benefits of knowledge management.

First, company initiatives for employee knowledge and growth were found to be significantly and positively correlated with overall company performance. We recommend that components of employee development initiatives become a key element of the executive manager's agenda.

Second, the mechanisms of gathering and using market intelligence and forecasting techniques are already on the rise in these companies but still have not shown a significant correla-

tion with company performance. Secondary data from other parts of the world attest to the importance of such techniques in business results, but these markets can benefit from reliable market data. As for the region under study in this paper, we still recommend that gathering of market intelligence and the use of forecasting techniques be practiced in preparation for new development in the regional markets and the availability of data.

Third, the use of strategic alliances to increase organizational know-how is significantly and positively correlated with company performance. This is certainly an up and coming trend that we believe will continue. Further, the executive manager is encouraged to seek alliance opportunities rather than have his or her organization go to market alone through organic means.

Fourth, the establishment of a mechanism for knowledge flow that clarifies roles and responsibilities in managerial decision-making is significantly and positively correlated with company performance. The senior executive is encouraged to add such mechanisms to his or her strategic agenda, especially in situations where the company is trying to apply concepts of the learning organization.

Fifth, information systems and infrastructure allow for reliable and

speedy knowledge exchange in daily operations but were not found to be significantly correlated with company performance. Nevertheless, we recommend that this component be included in the senior executive's strategic agenda. This is supported by our exploratory research results and by the fact that there are global trends confirming that IT investments are becoming a visible part of yearly budgets or percentages of annual turnover.

Most companies are challenged by similar questions about knowledge management. Employee growth and knowledge are major drivers of performance and loyalty. Training and development programs and their effect on individual performance are closely related to the overall organizational performance.

Establishing knowledge valuation techniques is still under development and will require several iterations between lead and lag indicators. Only after these suggested indicators are tested by companies and by the market they operate in, would they become valid and useful. Nevertheless, there is widespread agreement that old audit techniques, albeit still in use all over the world, are no longer adequate in this new knowledge era.

Another subject that requires continuous work is to better define and

establish a practical link between knowledge management and the balance of strategic strengths and weaknesses within a company. The knowledge base of an organization is important, including its infrastructure. Whether knowledge management is supported technically through old style paper document

exchange, or in ultra-modern e-media, the concepts and incentives for collaboration still need to be instilled. In addition to codifying knowledge in a form of media for consultation and decision-support, processes that help co-workers benefit from each other's implicit know-how need to be designed and implemented.

Appendix A

Appendix to the Phase Two research results presented in section 5.1.

Reliability. Cronbach's Alpha measures the coefficient of reliability or consistency. As shown in the Table below, Cronbach's Alpha of the eight variables ranges between 0.896 and 0.908, while the Cronbach's Alpha for the eight variables combined is 0.914. The results show that the questionnaire achieves a high level of reliability.

Questionnaire Items	Min	Max	Mean	Stdv.	Cronbach's Alpha
Employee knowledge and growth and overall company R&D	1	4	2.48	0.799	0.896
Generation of competitive intelligence and forecasting techniques to gain advantage	1	4	2.58	0.729	0.903
Strengthening intellectual capital through strategic alliances	1	4	2.53	0.809	0.904
Internal organization and managerial decision making	1	5	2.54	0.839	0.903
Supporting tools, work templates, and information systems	1	4	2.52	0.83	0.901
Growth	1	4	2.59	0.716	0.904
Profit	1	4	2.55	0.818	0.908
Customer Service	1	4	2.56	0.786	0.905
Cronbach's Alpha for the eight items:					0.914

Correlation Analysis. The five dependent variables have a positive correlation with growth, profit, and customer satisfaction. They all score above 50% correlation.

Inter-item Correlation Matrix	Growth (Y1)	Profit (Y2)	Customer Satisfaction (Y3)
X1: Employee knowledge and growth and overall company R&D	0.68	0.613	0.685
X2: Generation of competitive intelligence and forecasting techniques to gain advantage	0.573	0.557	0.527
X3: Strengthening intellectual capital through strategic alliances	0.591	0.512	0.552
X4: Internal organization and managerial decision making	0.525	0.566	0.595
X5: Supporting tools, work templates, and information systems	0.514	0.556	0.595

Covariance Analysis. In the Table below, the covariance values have a positive sign indicating that the dependent variables change in the same direction as the independent variables.

Inter-item Covariance Matrix	Growth (Y1)	Profit (Y2)	Customer Satisfaction (Y3)
X1: Employee knowledge and growth and overall company R&D	0.389	0.4	0.43
X2: Generation of competitive intelligence and forecasting techniques to gain advantage	0.299	0.332	0.302
X3: Strengthening intellectual capital through strategic alliances	0.342	0.339	0.351
X4: Internal organization and managerial decision making	0.315	0.389	0.393
X5: Supporting tools, work templates, and information systems	0.305	0.377	0.381

Appendix B

Questions addressed by the respondents

Below are the questions used in our research inquiring about the business performance and the five internal knowledge management factors of performance. The respondent was asked to use a scale of 1 (low) to 5 (high) to rate the following:

- | | | | | | |
|--|---|---|---|---|---|
| 1- Rate your company's ability to meet its REVENUE GROWTH targets over the last three years, from 1 (low) to 5 (high). | 1 | 2 | 3 | 4 | 5 |
| 2- Rate your company's ability to achieve its PROFITABILITY targets over the the last three years, from 1 (low) to 5 (high). | 1 | 2 | 3 | 4 | 5 |
| 3- Rate your company's ability to meet CUSTOMER SERVICE targets over the last three years, from 1 (low) to 5 (high). | 1 | 2 | 3 | 4 | 5 |

Rate on a scale from 1 (strongly disagree) to 5 (strongly agree) the effort expended in management initiatives related to your company's overall performance:

- | | | | | | |
|--|---|---|---|---|---|
| 1- Managing programs that support employee knowledge and growth, including R&D initiatives | 1 | 2 | 3 | 4 | 5 |
| 2- Generating competitive intelligence and using forecasting techniques | 1 | 2 | 3 | 4 | 5 |
| 3- Developing intellectual capital through strategic alliances | 1 | 2 | 3 | 4 | 5 |
| 4- Sharing knowledge about roles and responsibilities for managerial decision-making | 1 | 2 | 3 | 4 | 5 |
| 5- Investing in and using information technology infrastructure and support tools | 1 | 2 | 3 | 4 | 5 |

Appendix C

Elaboration on the choice of company performance measures

The performance measures were chosen using several constraints to balance the collection of meaningful data while keeping the data collection process relatively straightforward. Further, the 1 to 5 scale allowed the required confidentiality of revenue and profitability figures, as expressed by the managers [respondents] during the exploratory research phase.

The performance measures comprised three major components related to company **GROWTH**, **PROFITABILITY**, and **CUSTOMER SERVICE**. We did not restrict the definition of organizational achievement to growth per se. So we included two other measures, profitability and customer service (see below). The reason for including other measures is because certain companies may pursue aggressive growth in terms of volume or geographic expansion at the expense of their profit margins. Aggressive expansion may also negatively affect the company's focus on its customer service quality level.

Growth -

Growth here refers to revenue growth as the company targets in its three-year strategy. The scale of 1 to 5 allows the respondent to express his/her company's level of achievement in terms of growth over the last three years. Although the past does not predict the future, we preferred to perform a regression analysis based on actual results against internal knowledge management initiatives instead of looking for the relationship with an unrealized plan.

Profitability -

Profitability here refers to the company's ability to meet or exceed its profit margin targets. Commanding a positive profit margin reflects on the company's performance and sustainability. Profitability is also indirectly related to the company's ability to control its cost structure, which in turn would allow it to price at reasonable levels without jeopardizing its margins.

Customer Service -

Customer service here refers to the quality of meeting or exceeding client expectations. Different companies may measure it in common or different ways; one may look at the frequency of recalling a sold item, while another may measure it in terms of rate of decrease or increase in customer complaints. For this reason, we asked the respondent to use a normalized scale of 1 to 5, with 1 meaning low customer perception of company service, and 5 high perception.

Performance Index -

We then defined a company performance index that uses the three measures above to ensure that all three performance indicators are captured on a normalized scale of 1 to 5.

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الملخص

تطوير التميز التنافسي من خلال إدارة المعرفة والرأس المال الفكري

ميشيل سوتو شلهوب

نوري محمد بيروت

الجامعة اللبنانية الأمريكية

تمارس مؤسسات إدارة المعرفة تزويد العنصر البشري بآليات العمل المناسبة. ولكن مقاييس الأداء الحالية تتمحور حول المؤشرات المالية. وتبحث هذه الدراسة الرأس المال الفكري (Intellectual Capital) بوصفه قوة تنافسية ويقوم باقتراح برنامج متابعة. تناول البحث نموذجاً من شركات تعمل في الشرق الأوسط وحدد للدراسة خمسة عوامل تربط أداء المؤسسة بإدارة المعرفة: (١) معرفة العنصر البشري ونموه، (٢) معلومات السوق، (٣) التحالفات الإستراتيجية، (٤) انسياب المعرفة لاتخاذ القرار، (٥) المعلوماتية. وجميع هذه العوامل هي مؤشرات مناسبة يقترح اعتمادها لتحسين أداء المؤسسة المعرفية. ويدل التحليل الإحصائي على وجود علاقة إيجابية بين العامل الأول والثالث والرابع والأداء الإجمالي. لذا تكون هذه العوامل الثلاثة شروطاً أساسية لنجاح المؤسسة.

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