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Integration of Knowledge and Performance: An Empirical Study

Mireille Chidiac El Hajj[1]

Abstract

This research presents an empirical study that explores the relationship between leading knowledge and organizational performance, revealing the importance of their integration. Empirical data related to the concepts are scarce in Lebanon, so to compensate, data was collected from managers in more than 102 IT companies in Lebanon. The study is based on a multimodal design aiming to understand the relationship between the knowledge creation and diffusion, and ultimately discern their relationship to performance. The review of literature and online search facilitates defining the standards; quantitative analysis of a survey is distributed to the study group; and qualitative analysis of face-to-face interviews is employed to corroborate the findings and to provide deeper understanding. Compiling the input from all participants revealed that knowledgeable employees, analytical adaptabilities and customer satisfaction are critical success factors for a firm's financial performance. Results of the study show that when knowledge and performance are employed together, they result in a synergy between the internal and external environments of the companies. Our theoretical model results and recommendations present new opportunities for future researches. They lead the way towards how to make potentials improvements while ensuring employees' participation and increasing clients' satisfaction.

Keywords: IT companies, Leadership, Knowledge, Customer satisfaction, Performance.

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1. Introduction

Software businesses operate in accordance to new business models that evoke debating four axes in organizational development: knowledge, innovation, change and leadership. In a small country like Lebanon, which is relatively new to riding the technology wave, a considerable number of Small and Medium-sized Lebanese Enterprises (SMEs) are taking up the challenge of developing not only new local software services, but international ones. However, only few studies have so far addressed the management processes in software companies, with a goal to shed light on leadership, knowledge, customer satisfaction and performance in the industry. The lack of research on this topic is due to: the lack of information; the failure to impose laws and policies; and the lack of awareness to the possibility of Lebanon to become a potential start-up hub, a veritable Silicon Valley in the Middle East[2]. Those issues among others have delayed the 2 emergence of, and the consequent transition process toward, a knowledge society in Lebanon. This ultimately constrained the publication of articles in this field.

New developments have altered the fields of the industrial organization though, while shaping the form of a new economy: "The Knowledge Economy". New technologies, networking, and digital evolution are building new platforms in new terrains, based on innovative capabilities, ensuring an added value to all stakeholders in a social context based on services rather than on manufacturing and producing. The exponential digital invasion is increasing competition and threatening commoditization. New challenges are observed since all stakeholders, suppliers, consumers, partners, and even employees have to rethink the business models and are

[2] On the occasion of Accelerate 2015, December 10-11 at Forum de Beyrouth, Howayek M., Head of the Governor's Executive Office at Banque Du Liban, stressed that Lebanon has the potential to become the regional and international hub, because it has the necessary human capital and talents to be placed. She argued that "Of course we are not going to compete with Silicon Valley but we can definitely compete with other ecosystems worldwide and be placed as a hub for startups. Lebanon's geographic location in addition to talents, creativity and ease of accessing funds can create the right ecosystem in the country" (Halawi, 2015).

pushed to become more and more engaged in innovation, and networking within a global context (Chidiac El Hajj & Abou Moussa, 2016).

The novelty of this research consists in revealing the importance of balancing leadership, knowledge management and organizational performance in the software companies in Lebanon. It aims to explore the relationships between knowledge sharing, customer satisfaction and firm performance from a holistic perspective. Based on a survey of 102 managers from IT enterprises in Lebanon, this study employed the structural equation modeling (L- Kn-CS-P)[3] to investigate the research hypotheses. The present study differs from previous works as no studies in Lebanon have linked knowledge sharing and firm performance directly; this research attempts to fill this gap. Moreover, this research outlines the importance of these approaches, but more importantly discusses the synergy and the added value that is created when they are integrated together.

2. Literature review

2.1. Leading and sharing knowledge

The capacity of creating Knowledge is a strategic intangible asset that can increase a firm's capacity to create, transfer and appropriate value (Grant, 1996; Nonaka & Takeuchi, 1995). It is one of the most important resources that can contribute to the competitive advantage of the companies. In companies- where the use of cross-functional project teams can fuel innovation sharing knowledge efficiently accelerates learning (Hsu, Ju, Yen, & Chang, 2007). Building, using, creating, and acquiring knowledge can effectively create new programs, services, and processes, since Knowledge is a stock and a flow (Bolisani & Bratianu, 2017; Bratianu, 2016). It is the result of a socially dynamic (Bolisani & Scarso, 2015) interaction in a given context (Nonaka, Kodama, Hirose & Kohlbacher, 2014). Sharing knowledge is therefore essential, as it is *a mixture of experience and values based on contextual information and insights* (Davenport & Prusak, 1998, p.5).

According to Nonaka and Takeuchi (1995), top managers are to develop

[3] This equation model is explained in the third section.

a vision, while the middle level managers act as knowledge engineers in charge of elaborating concepts and training the front-line managers and employees on methods of implementation. Such actions can improve knowledge transfer whether implicit or explicit (Polanyi, 1966): Explicit knowledge includes manuals, procedures, policies, market intelligence and other, while implicit knowledge includes beliefs, mental models, and perspectives. In this context, new studies developed research models that investigate the link between knowledge sharing, innovation and performance (Wang & Wang, 2012; Wang, Sharma & Coa, 2016).

As such, organizations need to hire and retain knowledgeable employees and to build a culture in which knowledge is communicated, shared, and valued across the business. It would be up to the leader to provide and reinforce an organizational culture that supports learning, and surpasses learning disabilities (Couillard, 2007), and facilitate knowledge exchange among employees, within and among departments to ensure organization's effectiveness (Lu, Junye, & Ma, 2011; Bosua & Venkitachalam, 2013; Lin, Tsai & Wu, 2014) and to increase the firm's capacity for innovation (Christensen, 2003; Daellenbach & Davenport 2004; Kodama, 2009), to customers' satisfaction (Prahalad & Ramaswamy, 2000) and to competitive advantages (DeJong & Den Hartog, 2007; Andreu , Baiget & Canals, 2008).

Therefore, leaders should be willing to motivate their employees, grab a greater share of the marketplace and create a Blue ocean *well beyond existing industry boundaries* (Kim & Mauborgne, 2015). As the Red ocean represent the known market space, the industry limits are defined and accepted, and the competitive rules of the game are understood. By *implementing a strategic move (which is a set of managerial actions and decisions involved in making major market-creating business offering)* a blue ocean Leadership can lead to *new trajectories of strong profitable growth* and to *higher performance* (Kim & Mauborgne, 2015, p. 10-11). To mention that a Blue ocean Leadership makes it easier for people to change their acts and activities, while traditional leadership tend to be generic and detached from what firms stand for in the eyes of customers and from the market results.

Although different leadership styles have their own pros and cons, the transformational leadership contributes better to organizational learning, to firm innovation, to employees' creativity skills, through a Blue Ocean

strategy (Aragon-Correa, García-Morales & Cordón-Pozo**,** 2007; DeJong & Den Hartog, 2007). Initially introduced by Burns (1978) and later developed by Bass (1985), it stimulates employees' intelligence and recognizes and considers employees individually (Rafferty & Griffin, 2004). In this research, leadership approaches of IT managers are delineated, as they are essentially called to lead by virtue of their position in an environment that is highly dependent on information and technology. Bringing employees on board of the company's goals and vision can guarantee a higher organizational performance and help employees achieve the organizational goals (García-Morales, Jiménez-Barrionuevo & Gutiérrez-Gutiérrez, 2012; Herrmann & Felfe, 2013).

Some researchers developed models and frameworks to understand how knowledge management can improve Business processes (Nonaka & Takeuchi, 1995; Adesola & Baines, 2005). Kim and Mauborgne (2015) examine and propose three elements to be observed, in order to define any business process: *engagement, explanation, and clarity of expectation* (p. 175). Engagement means involving everyone in the strategic decisions and respecting their ideas. Explanation means that everyone who is involved should understand why final decisions are made. Clarity of expectation proposes the formulation of a new strategy and the establishment of the new rules of the game. Reaching these three elements contributes to fostering trust, commitment, and voluntary cooperation (Kim & Mauborgne, 2015, p. 174-175). When leaders and subordinates' attitudes and behavior go beyond their own duties, high performance can be reached.

2.2. Enhancing performance

The clear objective behind building a company is to make it survive, prosper, develop and show sound performance over the years. The concept of performance as viewed by McGrath (1982) *is a series of interlocking choices in which we try simultaneously to maximize several conflicting desiderata*. Despite the fact that Organizational performance is a very common context, and widely recognized (Goodman & Pennings, 1977; Campbell, 1977; Connolly, Conlon & Deutsch, 1980); many difficulties arise with attempts to define the concept because it has different meanings. It is an open question with few studies on definitions and measures (Kirby, 2005). Nonetheless, most recent studies have shown that it has two urges:

financial and non-financial ones. Table 1 summarizes the different points of view on performance.

Table 1: Performance under the loop of scholars

Authors	Ingredients for performance
Woo & Willard (1983)	14 indicators for four dimensions: cash flow/Profitability, relative market position and revenue growth.
Venkatraman & Ramanujam (1986)	3 Domains: (a) Domain of Financial performance (profits, return on assets, return on investment, etc.); (b) Domain of market performance (sales, market share, etc.); and (c) Domain of organizational effectiveness shareholder return: total shareholder return, economic value added…
Knight & Bertnoche (2000)	The balance sheet; Review of financial statements. The income and cash flow statements; The cost of capital; Valuation methods; Shareholder value: Key Performance Indicators (KPIs).
Kaplan & Norton (1996; 2001; 2005).	4 Perspectives: Customers- Financial- Internal process – Learning and Growth.
Stegerean & Gavrea (2010)	Adding 2 important determinants of business success and organizational performance: innovation, development and information technology
Blazey (2010-2013)	5 key drivers of high performance: a strong customer focus, engaged workers, efficient work processes, fact-based decision making, clear direction and continuous improvement and innovation.
Robinson, Philips, Phillips, & Handshaw (2015)	Improving the performance of endogenous variables will positively impact the external business performance measures.
Johnson, Christensen, & Kagermann (2016)	Gross margins, time to breakeven…Plus customer service, product-life cycles…

Source: Performance different perspectives as selected by the author.

According to Table 1, the choice of measures may offer an indication of future performance. These measures may include determinants of business success such as return of investments, shareholders' returns, continuous improvement, innovation and customer satisfaction and loyalty. By joining

different perspectives about strategic performance, leaders can communicate objectives and provide incentives for their knowledgeable employees to address long-term strategies.

However, to reach high levels of performance, some scholars pointed to the fact that Leaders should be in a position that can able them to overcome the resistance coming from employees who may have high investments in a specific area of expertise (Carlile, 2002). Such employees can show some reluctance in knowledge sharing (Carlile, 2002), and fear of losing authority and control (Darrah, 1995). Leaders, in this case, are to enforce a framework of cooperation to enhance knowledge sharing (Von Krogh, 2003), and form groups who can interact together (Grant, 1996).

3. Presentation of hypotheses and related research methodology

3.1. Presentation of the hypotheses

The different concepts and the argument delineated above lead this research to develop three hypotheses that explore the interconnection of the ideas so far:

H1: There is a positive relationship between leadership and knowledgeable employees;

H2: There is a positive relationship between knowledgeable employees and customers' satisfaction;

H3: There is a positive relationship between customers' satisfaction and the level of performance in an organization.

Based on the logical relationships between these different variables, this paper deduces the following model to explain the roles of Leadership (L), Knowledge (Kn), Customers' Satisfaction (CS) and Performance (P). Figure 1 is as follows:

$$L \rightarrow Kn \rightarrow CS \rightarrow P$$

3.2. The methodology

This research used a diversified approach. It is a combination of qualitative and quantitative research that has been developed and refined to suit a wide variety of research questions (Creswell and Plano Clark, 2011). This mixed methodology permits a more complete and synergetic utilization of data and provides an ideal opportunity to contribute to learning about best practices in how knowledge based leadership can lead to an overall sustainable performance.

Moreover, integrating qualitative and quantitative studies helps to:

- Collect, analyze, discuss and integrate data;
- Evaluate the ability of the IT companies to compete and sustain in the market.

Consequently, the methodology is based on:

- Literature selected in accordance to the different themes that can be linked to the proposed title and the preparation of the survey with IT managers.
- Online research adopted to identify all new reports concerning the IT business and software development. This secondary research approach permitted the selection of relevant existing data.
- A qualitative tool for explorative and recommendation purposes. Face-to-face semi-structured interviews are conducted with several managers and leaders to obtain primary data. This in-depth qualitative interviewing helped the researcher compare relevant data among managers in order to corroborate the quantitative data, as well as detect and recommend eventual strategies that can be adopted in Lebanon in the long term.
- A quantitative approach: The instrument used for this part of the study is a survey questionnaire consisting of different sections. It was designed and prepared by the researcher, and built on literature review of two main concepts: Leadership that is based on knowledge on one side; and enterprise performance on the other. The main objective was to collect all possible data concerning strategies that are adopted in these companies, and the different ways they are utilized in order to attain good performance. Balancing these two concepts allowed the researcher to collect information related to the

financial and the non-financial perspectives. This survey was distributed to 330 software companies. Only 102 managers and/or owners of those enterprises responded, accounting for 31% of the population. They preferred to remain anonymous in order to protect their companies' approaches.

Reasons why others did not respond:

- Managers were too busy to answer the survey;
- Managers were out of town, and refused to provide a date of availability;
- Fear of revealing information relating to tax issues (factor that affected our study when collecting data on companies' financial statements);
- Fear of revealing strategies to competitors.

All gathered information was integrated into specific files, using Windows 10, Word, and the SPSS manual to perform data entry and analysis and to create graphs and tables. Each file covered related themes in order to cross information and facilitate drawing connections.

4. Findings and discussion

4.1 Sample description

Table 2, ''Sample description'', collects general demographic information relating to the managers'/ owners' age, educational level, their shares in the company, and the status of their company.

Table 2: Sample description

Variable	Percentage	Mean	Standard deviation
Gender		1.10	0.299
Male	*90.2*		
Female	*9.8*		
Age		3.59	1.056
20-25	*2*		
25-30	*8.8*		
30-40	*40.2*		

50-60	*10.8*	
60 and over	*5.9*	
Education level		
Bachelor	*33.3*	
Computer Science	*20.6*	
MBA or equivalent	*23.5*	
Computer Engineer	*19.6*	
Doctoral Degree	*2.9*	
Owner? or Manager?		
Owner	*56.9*	
Manager	*43.1*	
Is it a family business	21.6 Yes	78.4 No
Is it a start-up?	24.5 Yes	74.5 No

4.2. Manager-employee perspective

Table 3 "Leading the team and sharing knowledge" aims at gauging the relationship between the managers and the employees. This table serves to understand the different perspectives on how the managers are communicating with their employees. Therefore, based on a five point Likert scale, 10 different questions were addressed to understand the leadership-employee relationship that may influence business performance.

Table 3: Leading the team and sharing knowledge

	Mean	Std. Dev
Q1. Do you enjoy sharing knowledge with your employees as it can strengthen the ties between you as a leader and them?	3.36	.830
Q2. Do you always have the ability to work with your team?	3.56	.638
Q3. Do you work closely with them to set strategic goals?	3.35	.828
Q4. Do you neglect employees' feelings or consideration?	1.03	1.245
Q5. Did you inform your employees about the vision and the mission of the company?	1.89	.984
Q6. Does your business have high employee turnover?	1.7	1.184
Q7. How clearly do you explain to the employees the company's business plans	2.83	.996

Q8. How often do you give your employees feedback about their work?	3.07	.787
Q9. How improved is their performance after getting feedback from you about their work?	2.89	.743
Q10. Do you allow them to have shares in the company?	1.2	1.298

Source of questions: Questions are based on surveys conducted in Wang and Wang (2012), and Lin et al. (2014) studies.

As the means are superior to average, the relationship between managers and employees is good. According to Table 3 and on a 1(very low) to 5 (very much) likert scale, managers tend to be flexible (3.36). They enjoy sharing knowledge with their employees (3.36); give them a feedback about their jobs (3.07); give them a clear idea about the business plans (2.83) and the strategic goals (3.35), which lowers their turnover (1.7).

However, there is a significant contradiction in terms of vision, as managers in the IT firms tend not to give their employees a clear vision about the company (1.89), while they work closely with them to set strategic goals (3.35). This dilemma can affect employees' engagement, as it reminds us scholars like Byrne (2001), Thompson and Strickland (2003), Macey and Schnieder (2008), and Kim and Mauborgne (2015) who are in favor of a well articulated vision that can create more engagement, loyalty and enthusiasm between all different levels of hierarchy in a firm. Moreover, managers tend not to allow employees having shares in their companies (1.2). According to Mr. Joe Hatem, Chairman and General Manager of Profiles Software:

> *"IT companies try hard to keep the best employees and do their best to reward them. In return, employees should show commitment, engagement, security and trust. And they are up to it. So in addition to their salaries, most of us offer employees other commodities-but not shares- to ensure their job satisfaction".*

Enforcing a framework of cooperation to enhance knowledge sharing, and forming groups who can interact together, and ensuring job satisfaction can help IT Leaders retain more knowledgeable, engaged employees.

4. 3. Retaining knowledgeable employees

Table 4 "Empowering knowledgeable employees", consisting of four questions, aimed to gauge specifically the perceptions of the managers on how to retain knowledgeable employees.

To retain, stimulate and inspire their employees, IT Leaders foster an environment that motivates and stimulates them via rewards (Bonuses in 70% of the cases, raise in 22% and promotions in 2% of the cases). They show trust in their competencies and skills and incorporate motivation-building manners into their organizational culture.

Table 4: Empowering knowledgeable employees

	Mean	Std. Dev
Q11. Would you take advice from your employees?	3.21	0.813
Q12. Do you share your knowledge at every opportunity?	3.31	0.744
Q13. Does your work depend on creativity?	3.21	0.978
Q14. Do you empower members of your team?	3.49	0.686

Source of questions: Questions are based on a survey conducted in Hsu et al. (2007) study.

It follows that most managers admit that they empower their employees and share knowledge with them at every opportunity (3.31). They also seek their input and advice (3.21), as their job is essentially built on creativity (3.21), as described in Table 4.

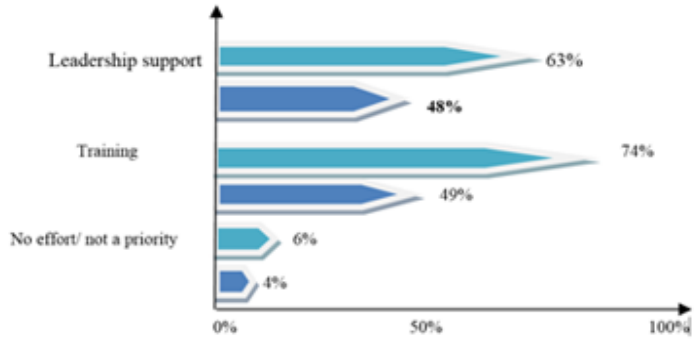
On another hand and according to the interviews, IT Leaders recruit employees who have the ability to mesh well with the company's culture.

> *"Skills can be trained but values cannot be as easily taught. Recruiting people only for their skills will undermine the team dynamic",* as argued by Mr. Hatem.

Interviews also revealed that managers and employees work on creating programs, designing websites, capturing information, storing it, and using and reusing it. Generally, the tasks are performed within collaborative teams that have proven that they can manage the flow of information, where compiling and exploiting information is the principal foundation of explicit and implicit learning, both of which are needed for knowledgeable activities.

More, and still according to the input from the interviews, figure 2 shows the rate of learning for the employees in the 102 organizations. The light colored bar indicates the newcomers employees with less than 5 years employment; and the dark colored bar indicates those with more than 5 years employment.

Figure 2: Rate of learning



Teaching and coaching are considered as main priorities in the IT companies. With the support of leadership, employees are gaining enough skills and competencies across the organization. However and as depicted in the interviews and in the above figure, the knowledge requirements needed to meet today's technical needs and tomorrow's expansion, are partly missing after 5 years of employment.

The interviewees also stated that in order to attain high performance. Without being aware of it, they do follow the Boisot's (1998) model. Therefore, with the coordination of their employees:

- They scan the insights from available data;
- They solve the different problems whilst codifying knowledge;
- They generalize the knowledge and transform it into abstract notions;
- Then they diffuse it and internalize it;

- The internalization produces learned behavior that can become tacit or implicit;
- Finally the impact of the embedded knowledge is translated into concrete practices and behavior.

In view of the above inquiries, **H1** that states that: There is a significant and positive relationship between Leadership and engaged and knowledgeable employees in a learning organization, is therefore validated.

4.4. The reflection on the customer perspective

In the customer perspective argument, the companies are to identify the customer and market segments in which they are willing to operate and compete. These segments represent the sources of the revenues of the companies. There is significant disparity in the number of clients that companies hold: in some firms, the number reaches 3000 clients, while it is far less in others, as it is around 20.

The average of the approximate number of the clients is 100. They are divided between national (87%) and international (13%) customers. This means that the companies are not only working with Lebanese clients but are also expanding their activities abroad. Gaining an advantage in today's local, regional and international markets not only requires competitive services and products, but also superior customer interactions in order to attract, maintain and enlarge the client base. However, more is to be done to increase the number of international clients.

The interviews revealed that the respondents completely acknowledge that they are working in a fierce market; where their customers' needs can be fulfilled by the offerings of their competitors who can better align with the clients' preferences. Thus, they are now shifting their focus; to not only satisfy their customers, but also to deliver more than expected value. In a five point Likert scale, rated on a 1 (very low) to 5 (very much), table 5 explains how the Lebanese software companies under study operate.

Table 5: Fulfilling customers' needs

	Mean	Std. Dev
Q15. Is it sometimes hard to understand customers' needs?	2.90	1.154
Q16. Is the consumer market variable?	2.50	1.016
Q17. Does your offer include product feature/benefit comparison tables?	2.49	1.481
Q18. Do you think that employees' knowledge and expertise affect the relationship with the customers?	4.02	1.257
Q19. Have you ever used Customer Management Relationship (CMR)?	2.72	1.423
Q20. Do you engage your customers in all details to make sure all needs, requirements and expectations are met?	3.28	0.850
Q21. Do you use IT systems and software to better manage your relationship with your clients?	3.38	0.870

Table 5 explains that it is easy for IT companies to understand customer needs, as the mean tends to (2.90). They engage their customers in all details to make sure that they are fulfilling all their requirements (3.28), offering them high level quality products in a changing market (2.50). Moreover, managers work hard to attract their clients: they use CRM (2.72), refer to their knowledge and expertise (4.02) and to analytics.

As far as knowledge is concerned: The majority of the interviewees admitted that codified knowledge sources are combined to create knowledge, which goes in alignment with Nonaka and Takeuchi (1995) in reference to combination.

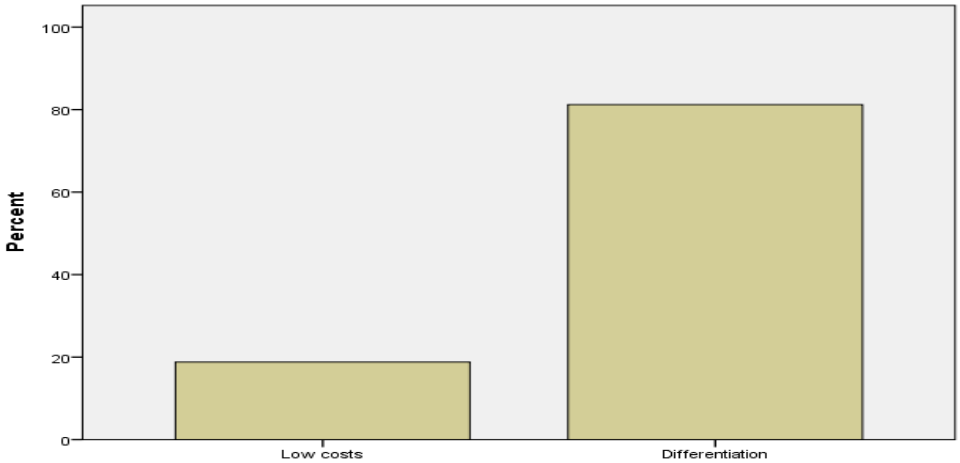
Why analytics? Nowadays IT companies, like other enterprises, are driven to deliver good outcomes and to increase their revenues and profits, while lowering business risks and costs. The role of analytics is to maximize business performance (SAS, 2017). Analytics help identify new opportunities and help organizations respond to change situations faster. In this respect, analytics appear to be critical in improving competitiveness. Therefore, the pressure to adapt analytics strategies is vital to deliver competitive and accurate insights. In the pursuit of these objectives, IT Leaders in Lebanon are tackling new analytics to ensure competitiveness, and increase their revenues while decreasing the costs and achieving more business goals with faster time-to-value.

> *"Leveraging analytics to secure and deliver fast solutions to the clients, exceeded clients expectations. We are taking smart decisions by just listening to their customers, which opens up cross-sell opportunities",* said Mr. John Fahed, owner of Itegrators.

In the pursuit of reaching their objectives, IT leaders are doing more with less. They are getting things done as inexpensively as possible, while continuously raising the bar of competition by going after growth and differentiation. Figure 3 shows that for software leaders, differentiation is more important (80.4%), than low costs (18.6%).

Figure 3: Which is more important:

Differentiation or lowering the costs?



Moreover, on the internal business process side, and according to managers, creating value to customers is reached by offering unique products and services performance [measured by quality software (88.2%), project duration and speed (54.9%), development effort (60.8%), and treatment of data (61.8%); as our study reveals]. These elements enable companies to earn high margins on sales for targeted clients and market segments.

However, study also implicates that little is done in the post sale service, as enterprises do not offer any money-back guarantee. Knowing that this type of services is essential for the success and the survival of the IT

companies in a highly competitive business environment, this negative approach can have its consequences on the business, as argued by Takeuchi and Quelch (1983). Diminishing such services into the core offerings has crucially negative consequences on the companies' market shares, leading to an increased risk of losing customers.

Therefore, **H2** that says that**:** There is a significant and positive relationship between engaged and knowledgeable employees in a learning organization, and the customers' satisfaction, is partly validated, as little is done for the post sale service.

4.5. On the financial perspective

This research aimed to identify three main measures for financial performance: the Return on Assets (ROA), the Return on Equity (ROE) and the net profit margin; with the expectation that the enterprises will deliver good figures concerning the enterprises' potential. Except for a few companies, all enterprises reported losses and negative incomes, which raise doubts around this issue.

Further secondary research provided the needed information of 54 out of the 102 participating companies, which is accepted as representative of the general financial performance of the studied group. To mention that managers/owners didn't want to share info around or to show up their financial statements[4]. Therefore, researcher referred to external sources to get needed information.

Financial statements can differ at each stage of the business life cycle. The focus was on the Return on Assets (ROA) calculation, as it helps in the analysis of the companies' abilities to generate profits from their assets. The ROA is a guiding metric that reveals -on average- how much every dollar spent on assets is capable to generate profit. The net profit being the amount of the total revenue that remains after calculating all expenses while the average total assets can be found in the balance sheet.

[4]According to the basics guide to financial statement; financial statements include: the balance sheet (what the company owns and owes in a fixed period of time), the income statement (that shows how much money is spent over a fixed period of time, the cash-flow statement (it indicates the exchange of money between company and outside over a period of time) and the statement of shareholders' equity.

Return on Assets (ROA) = Net profit / Average total assets.

The Return on Equity (ROE) measures company profitability. It is the amount of net income returned as a percentage of shareholders equity. Where, the Net income is calculated after dividends to preferred stock and before they are paid to common stockholders.

Return on Equity (ROE) = Net income / Shareholder's equity.

While ROE is a guiding metric that informs investors in which company or sector to invest, as it has the ability to reveal which companies are generating profit and which ones have real competitive advantage, the net profit margin gives an explicit indicator of net profitability in relation to sales revenue. The results of these indicators are listed in table 6:

Table 6: ROA, ROE, and the Net Profit Margin

	Min	Max	Mean	Std. Dev
ROA=Net Profit / Average Total Assets	-.20	1.60	0.3967	0.35408
ROE=Net Profit / Shareholder's Equity	-6.67	1.70	0.6448	1.20698
Net Profit Margin=Net Income / Sales Revenue	-4.00	17.00	8.8546	5.26640
Valid N (listwise) = 54				

The results can be summarized by the following points:

- For the ROA: The average of the responses to this ratio is 0.3967. In other words, every dollar spent by the shareholders on assets within a year, is capable to generate 0.4$ of net income (when rounded upwards). The investors compare this return with the return on assets from other investments, in order to assess how well they are managing their assets.
- For the ROE: After dividends are removed from the net income, the ROE is 0.6448. This average means that every dollar spent on shareholders equity, generates 0.6548$. In other words, shareholders are earning 64% return (when the figure is rounded) on every dollar they spend. This reflects the company's financial health and gives the investors a better perspective on the growth

of the company. Investors will be therefore interested to invest in similar companies.

- For the net profit margin: these companies converted an average of 8.85% (close to 9%) of their sales into profits.

The results within the figure are average, which means there are not any remarkable financial performances. However if the companies want to achieve ambitious financial objectives, managers should identify stretch targets for their internal business process, their customers and their learning objectives. These targets come from different sources such as exceeding customers' expectations and selling better programs. Benchmarking can therefore be used with external (international) companies to assess existing and desired practices, and to verify whether the internally proposed strategies are adequate or need improvement, reengineering and development.

To sum up, the financial perspective in IT companies in Lebanon is average. Shareholders are gaining around 0.4$ on every dollar they spend, as the ROA shows. Investors will be interested to invest in these companies, as the ROE revealed. However, more is needed, since the IT companies are not building collaborative capabilities and strategies to position themselves on high national and international levels.

To validate or not hypothesis 3, we had to correlate all results. Table 7 was therefore needed to present the correlation matrix among all different variables. It shows that whenever the value of one variable changes, a corresponding change is observed in the value of other variables.

Table 7 : Correlation matrix

		Leadership	Knowledge	Customer	performance
Correlation	Leadership	1.000			
	Knowledge	0.296	1.000		
	Customer satisfaction	0.213	0.143	1.000	
	Performance	0.196	0.444	0.292	1.000

Determinant = .669

Referring to Table 7, the correlation between different variables is positive. It indicates that when the value of Leadership increases, knowledge (0.296) increases as well. The same reflection is then observable on the customer's perspective (0.143) which is positively correlated to performance (0.196). It is noteworthy to point to the fact, that among all the studied factors, the strongest and most significant positive correlation is between knowledge and performance (0.444), which means that an increase knowledge positively impacts performance.

Consequently Hypothesis **H3** saying that there is a significant and positive relationship between customers' satisfaction and the level of performance in an organization, is partly validated, as the correlation between variables is positive but not significant (0.292).

Whereas, it was found that there is a more positive significant relationship between the knowledge acquired from predictive analysis of customer satisfaction (Kn PACS) and the level of performance in an organization (0.444).

Despite the fact that all suggested variables are positively linked to performance, knowledge seems to be the main ingredient needed in an IT company. It is the most important asset, if not the most important one. Without a formalized and continuous knowledge, IT companies can hardly recognize success, dynamism and efficiency.

5. Concluding notes

Despite all limitations, this study broke new grounds and helped develop a framework for understanding the effectiveness of Leadership on knowledgeable employees, customers' satisfaction and the general performance of the IT companies. In line with Wang and Wang (2012), and Wang et al. (2016) studies, we found that there is a link between knowledge sharing, innovation and performance in IT companies in Lebanon. We also found that while following the Boisot's (1999) model, leaders coordinate with their employees in terms of solving different problems whilst codifying knowledge, generalizing, transforming, diffusing and internalizing it.

However, as they can spread the knowledge economy, it is time for the leaders in this industry to seize new opportunities. These companies are mainly SMEs that confront different types of barriers. Building their

absorption capacities can promote their growth and innovation. Enhancing knowledge can better inform decision-makers and strengthen their ability to support development and innovation, to create jobs and employ the youth. What is needed is to make a smart move to put a touchstone in the digital age. Spotting new opportunities, tracking consumers' and technology trends can add more value and lead to a real business growth through new products and processes. Therefore, there is a need for the Leaders to eliminate some boundaries, raise their commitment to clients, reduce their monetary profit and substitute it with other non financial activities, and create new horizons. Table 8 is inspired by Kim and Mauborgne (2015), shows the way forward.

Table 8: A proposed framework of smart moves to spot new opportunities for IT companies in Lebanon

Eliminate They need to ELIMINATE geographic boundaries and expand globally because they can be competitive due to the low cost of salaries in Lebanon	**Raise** They need to RAISE their commitment to customers, as not enough is done in customer post sale service. Particularly that this is a highly competitive industry at both local and international levels, since the digital world can be accessed globally. They need to RAISE their financial performance based on indicators that will guide their strategies. They also need to RAISE (increase) their market niche in Lebanon because all businesses are looking for their services in order to enhance performance in a technology dominated world. Enterprise leaders should develop their leadership potential and look to invest themselves into more productive technologies.
Reduce They need to REDUCE their focus on monetary profit by becoming aware that other non-financial activities will enhance their image and increase their goodwill and profit in the long run.	**Create** They need to CREATE a shared vision and collaborative clusters. Sharing the same vision can enhance learning and capitalize knowledge, in order to fathom their possible contribution to the outer world.

Source: Framework inspired from Kim and Mauborgne (2015), p. 10.

On the other hand, this study reveals that IT firms in Lebanon work separately and do not have a common background. The results of the study are in line with Bolisani and Scarso (2015) and Bolisani & Bratianu (2017), as they showed that to attain successful Knowledge Management programs, more planning, goals and relevant resources are needed.

Moreover and in accordance with Senge (1990), study pointed that there is an intense need for change if these firms want to become part of a general ecosystem primarily based on Knowledge; because learning and capitalizing on knowledge has become imperative in modern industries and societies. Institutional transformation, technological innovation, personal growth and collective *system thinking* (Senge, 1990) ensure the creation of such a required knowledge society (Zack, 1999). It can supply the country with competitive advantages, as a *Knowledge society is understood as the ability that people have in the face of information, to develop a reflective competence, relating its multiple aspects, according to a particular time and space, with the ability to establish connections with other knowledge and use it in their everyday lives* (Pelizzari, 2002).

Both quantitative and qualitative approaches revealed that Lebanon is in need of a new, innovative industry, capable of creating jobs and securing the youth's involvement and integration in society. Software companies, built on innovation and creativity, can be the platform that allows an across-industry service that not only offers the other bigger industries with analytics and Database that they need for better performance; but also enable SMEs, startups and innovative enterprises to optimize their decision making and their investments. The creation of clusters can facilitate forming new business activities, and can raise company productivity, influenced by the presence of similar institutions, firms, and infrastructure that surround it.

These companies are mainly SMEs who confront different types of barriers. Building their absorption capacities can promote their growth and innovation. Spotting new opportunities, tracking consumers' and technology trends can add more value and lead to a real business growth through new products and processes. What is needed on different levels?

1- In terms of vision: The study suggests that there is a significant need for leaders in IT companies to transmit an appropriate vision to their employees. This corresponds with the Thompson and Strickland's (2003)

model that claims that leaders can only function effectively, if a future-orientated view of the business is installed.

2- On rethinking the leadership role: To integrate knowledge, leaders should strive to empower the organization as a whole, and to inspire everyone. Therefore, by fulfilling his responsibilities with a proactive forward-thinking way, the leader should be able to incorporate new characteristics and qualities of a leadership style to execute strategic plans and objectives, and to develop employees' knowledge sharing behaviors.

***3- On the employee knowledge level*:** There is a need for leveraging the employees' profiles, coaching and mentoring them in order to gain more engagement and promote retention. Creating a pipeline of skilled employees can improve financial and operational performance management. A plan of action geared towards raising learning and knowledge, and implementation of a good strategy amongst the employees is needed to better benefit from knowledge management and marketing skills. Formulating a holistic approach to global talent management can strengthen the national talent pool. Because the IT domain requires continuous learning, the companies need to boost employees' skills and pursue training, not only in IT, but also in communications as this job requires continuous learning.

Retaining employees who possess valuable knowledge can be ensured through motivating employees to participate in knowledge activities, and pushing them to translate the implicit knowledge to an explicit one. Fear comes from the fact that the tacit organizational knowledge can become a threat when employees leave an organization, and take the acquired knowledge with them. For it means not only the loss of knowledge, but also the probability of its transfer to competitors. The level of commitment should therefore be high as it is likely to affect loyalty, following Byrne (2001, p. 325) who argued that: "*without loyalty, knowledge is lost"*.

4- On the need for agility: As rapid innovations are the source of comparative advantage, future needs are continually changing. The agility of a business is determined by its capacity to change through adapting its prevalent conditions, and relying on human resources, in order to meet customer demand or regulate a changing environment (Sernack, 2017). Creating a combination between the software development and information technology operations, called DevOps, can build a tightened collaboration

leading to agile operations in the entire service lifecycle of the products in a software company, from design through the development process to production support (Rudder, 2016).

Because the clients normally require promptness and simplicity, and because they care for an appealing cost-value service as well quality and flexibility (Sernack, 2017), projects in IT companies are shifting to short-term with the tendency to change rapidly. Consequently, employees' tasks cannot be plotted out years in advance. Priorities and short-term goals should therefore replace long-term goals, focusing on teamwork to ensure clients' satisfaction, as continuous help from the front-line and back-office employees will often be required.

***5- On analytics*:** There is a consensus that information and knowledge contribute to influence on organizations (Ransbotham & Kiron, 2017). Analytics provide knowledge and understanding on how well they are generating demand and quality; and how well they are providing customer experience. Consequently, more companies see gains in analytics, and this is due to several reasons including: the spread of analytics in companies with an increased realization of their use, ensure innovation and strategic advantages (Ransbotham & Kiron, 2017). Moreover, *as the pace of business continues to accelerate, forward-looking organizations are beginning to realize that it is not enough to analyze their data; they must also take action on it. To do this, more businesses are beginning to systematically operationalize their analytics as part of a business process* (Halper, 2016, p. 4). In this direction, executives, managers and professionals are cultivating their analytic skills, operationalizing and embedding analytics into the business processes, as they can help them make better decisions, optimize their resources, improve their financial performance, increase their productivity, reduce the risks and accelerate innovation (SAS, 2017).

***6- Reinforcing the business process*:** Developing a roadmap for future business processes and redefining job descriptions to update not only technology but also talents and business processes can help realize the full value of Learning, according to a recent study, conducted by ServiceNow and Oxford Economics (2017). Study points to the fact that Business is gaining more confidence in the software, and that computers are getting smarter. Therefore: (a) Spending on Artificial Intelligence (AI) and on machine learning is expected to grow rapidly and to attain important levels;

(b) Transferring to the digital enterprise and moving from the traditional Business models to new ones will be realized sooner than expected. Meanwhile CIOs in the Lebanese software companies are to get ready to put all strategies to work and to think ahead while focusing on innovation and building high developed skills.

7- On creating more competitive advantages: There is a need to continuously improve qualitative and quantitative metrics in the IT companies. These improvements can be triggered by the enterprise positioning, and calibrated against the competitors. It would be of high importance to mandate some disruptive trends in the IT industry to cope with the new emerging technologies. Joining forces to create a common culture between the enterprises of the industry can develop a richness that shifts demand in the market, and creates a healthy competition that leverages their status in both the national and the international markets.

8- On expanding: There is a need to grow through acquisitions, as they can facilitate the transfer of knowledge and new technologies. By ensuring these elements, the whole internal business process can rise to a higher level. Time-to-market ensures that purchasing companies whose technology is in-demand is more attractive than developing in-house technology.

9- On becoming global players: With the low-entry cost to become a global player, IT leaders have the opportunity to increasingly participate in global markets, to offer their services and to intensify their global competition. By applying new tools to pursue blue oceans strategies, they can meet the challenges and develop the four actions framework (reduce, eliminate, raise and create).

In this research, we have presented the important role played by knowledge creating, sharing, and diffusing in today's companies. Knowledge provides companies with the competitive advantage they need and contributes to Business value creation, as it became their *"raison d'être"*. Our theoretical model results and recommendations present new opportunities for future research. They lead the way towards how to make potentials improvements while ensuring employees' participation in collective knowledge and increasing clients' satisfaction.

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