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Knowledge Sharing: Assessment of Factors Affecting Employee' Motivation and Behavior in the Lebanese Organizations

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Authors' contributions

This work was carried out in collaboration between all authors. Author HJH managed the literature searches, designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors ZH and BH supervised the analyses of the study and reviewed the statistical analysis. Authors RAA and NB contributed in the literature searches and survey distribution. Author AJH contributed in the statistical analysis and protocol writing. All authors read and approved the final manuscript.

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ABSTRACT

For many companies today, the environments in which they operate have changed dramatically over the last decades. The atmosphere of corporate environment relies heavily on aspects concerning its workers and in particular its knowledge workers. Companies worldwide, in order to stay competitive, have started shifting their approach and outlook on how business should be conducted and as to what knowledge aspects are important. Knowledge sharing behavior varies within and between organizations. There are a number of factors that either motivate or hinder such a behavior. However; how these factors influence employees' motivation for knowledge sharing has not been carefully tested within Lebanese organizations.

Objectives: Given the increasing importance of knowledge capital and deployment of information technology to facilitate knowledge transfer in organizations, this paper aims: 1) To examine knowledge sharing attitudes within Lebanese organizations so as to study

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the factors that influence motivation for knowledge sharing; 2) To analyze how organizational and human factors influence the knowledge sharing behavior within these organizations.
Method: Mixed method approach. A qualitative approach was adopted to review current secondary data and information to prepare a background for the research in question. A quantitative approach using a questionnaire survey was used to collect data from a sample of 148 Lebanese employees in order to assess and validate the research model in question.
Results: A relationship has been proved to exist between knowledge sharing and trust, management's support, culture and psychological ownership of knowledge, indicating the importance of such factors as prerequisites of the success of knowledge sharing.
Conclusions: The results of this study have implications for staff and managers in organizations. Organizations have to create a culture that is pro-knowledge sharing, where knowledge sharing is valued by everyone, and strategies that are more knowledge friendly are implemented; this is done through the mentoring programs, creating communities, conferences and through generating a vision that emphasizes knowledge and its importance.

Keywords: Knowledge; knowledge sharing; Lebanon; motivation; sharing behavior.

1. INTRODUCTION

Knowledge generation and transfer is a vital source of firms' sustainable competitive advantage (p. 538) [1]. Today, a company's competitive advantage is largely built on the knowledge it possesses. Organizations are increasingly recognizing the need to support knowledge sharing amongst employees; they are searching, testing and using various proactive interventions to facilitate this. This is why the role of knowledge management, in particular knowledge sharing, has become an important issue for companies everywhere.

Many companies have realized that knowledge sharing is not a common practice. They have been disappointed in the fact that experiences and insights developed in one section of the organization never reach other sections. Therefore, several organizations have introduced motivation schemes to encourage employees to share their knowledge. Suciu, Bratescu-Ghitiu, Ivanovici, Neagu Trocmaer, Avram, Avram and Protopopescu [2] contend that "Knowledge transfer is intimately connected to motivation and that sustainable competitive advantage requires a corresponding motivation management" (p. 555). Helmstadter [3] also confirms that "Knowledge sharing cannot be considered separately from questions of motivation, it is essential for the self-perception of individuals, which in turn, influences systematically their orientation towards the task and their willingness to cooperate" (p.70).

In this study, the researchers focus on two types of factors that influence the motivation for knowledge sharing namely, organizational and human factors, in a sample of the Lebanese organizations. The following research questions are addressed:

1) What are the human factors that encourage knowledge sharing among the employees in Lebanese organizations?
2) What are the organizational factors that encourage knowledge sharing among the employees in Lebanese organizations?
3) What are the attitudes governing knowledge sharing in Lebanese organizations?

2. REVIEW OF LITERATURE

Knowledge is always shared and transferred within or between organizations. Knowledge sharing increases the competitiveness of a company and participates significantly in knowledge creation. The importance of leveraging knowledge in multinational corporations (MNCs), for example, gaining competitive advantage, is widely accepted (Birkinshaw, 2001; Grant, 1996 cited in [4], p. 191). Organizations usually possess abundant resources of unknown and unused knowledge in the form of 'know-how', 'best practices', and specialized knowledge. Communicating this individual knowledge to others is a vital activity to reach the status of knowledge-creating company [5].

Different methods can be used to transfer knowledge, depending on the knowledge type: explicit or tacit in nature. However, before addressing the transfer issue, it is important to shed light on the difference between explicit and tacit knowledge.

Seidler-de Alwis and Hartmann [6] reported that there are two types of knowledge: explicit and tacit. Several authors describe explicit knowledge as what can be embodied in a code or a language, and as a consequence, can be verbalized and communicated, processed, transmitted and stored relatively easily. It is public and widely known; it is the conventional form of knowledge which can be found in books, journals and mass media such as newspapers, television, Internet etc... (p. 134). It can be easily transmitted from someone skilled at a task to others within the organization through written or verbal communications [7]. However, only a small part of knowledge is explicit and the greater part of knowledge is tacit, since "We know more than we know how to say" [8].

In contrast, tacit knowledge is personal and hard to formalize. It is the less familiar, unconventional form of knowledge. Tacit knowledge is not codified, it is not communicated in a ''language''; it is acquired by sharing experiences, by observation and imitation [6]. Tacit knowledge is the experience and wisdom developed as a result of using and applying hard information [9]. Moreover, other researchers depicttacit knowledge as very personal in nature and hard to articulate, making it difficult to transfer and explain to others. It is often described as the 'hunches, intuition, and know-how' of people. It is manifested in people's behavior, way of acting, experience, as well as the ideas and beliefs they embrace ([5], p. 8; [10], p. 55; [11]).

Tacit and explicit knowledge are complementary, which means both types of knowledge are essential to knowledge creation. Knowledge is created through interactions between tacit and explicit knowledge and not from either tacit or explicit knowledge alone [12]. Competitive advantage will only be gained if companies value their tacit knowledge as explicit knowledge. Tacit knowledge creates the learning curve for others to follow and provides competitive advantage for future successful companies. Kikoski and Kikoski [13] stated that organizations who "thrive in this 21st century may not be those that just learn, but those that inquire to create new knowledge—which, for their competitor, may still be unknown" (p. xi).

Organizational tacit knowledge consists of tested methods or routines and practices which are rational and work without having explicit rules that individuals who carry the knowledge can draw and act upon. It enables the completion of an assignment or task ([14], p. 45). However, for tacit knowledge to be conveyed and shared within the organization, it has to be transformed into hard data that anyone comprehends ([5], p. 9). But, tacit knowledge is much slower and more costly to communicate and publicize than is explicit knowledge. It requires personal cooperation and not merely written rule or information technology ([14] p.

45). As such,, people need good grounds, motives and support for sharing their knowledge; for example, moderate organizational and goal commitment, may be good reasons ([15], p. 32). Organizational culture and leadership form a foundation for involvement in and willingness to share knowledge ([16], p. 4). Knowledge sharing takes place exactly during the time of the conversion —from tacit to explicit and back again into tacit" ([5], p. 9).

For explicit knowledge to be transferred, various communication and information technologies can be applied: Lotus Notes, Intranets, data warehouses, etc. Such technologies facilitate the collection, transfer and archive of information and data. Thus, making knowledge accessible at all times, and time is saved and geographical boundaries are conquered [17]. However, it is harder to transfer and disseminate tacit knowledge because of its personal nature.

The aim of knowledge sharing is to enhance an organization's capacity of doing things, and hence increase its competitive advantage. "Knowledge sharing will have no value if the new knowledge does not result in changing the current behavior, or the creation of a new behavior" ([17], p. 101). Knowledge should be obtainable by all employees with minimal effort ([18], p. 140). Some of the major problems that can affect an organizations' knowledge asset are the limited availability of knowledge when its holder has no time or willingness to transfer it, or the loss of this knowledge if the holder leaves the company. Therefore it is very crucial for companies to build strategies to prevent such losses ([17], p. 101). Companies that promote a knowledge sharing culture create an environment that can motivate people to share knowledge and exchange ideas, thoughts and experiences.

Adenfeltand Lagerström [4] contend that the importance of managing the creation and sharing of knowledge among corporations has gradually compelled these companies, with varied levels of success, to implement various mechanisms and means to facilitate and support interaction among individuals. They found that, initially, knowledge management was primarily considered to be a communication technology issue (Bollinger & Smith, 2001; Hansen and Oetinger, 2001, cited in [4], pp. 193-194), but the increased understanding of the characteristics of knowledge has led to new insights into the management of knowledge within organizations (Birkinshaw, 2001; Hansen et al., 1999; Soo et al., 2002, cited in [4], pp. 193-194). However, the leverage of knowledge still presents major challenges to the corporations, leading them to explore enabling factors or conditions that would allow the sharing to take place ([19], p. 109). According to Sydanmaanlakka [18], "though information systems can be very helpful in sharing knowledge, 'personal contact', 'informal networks' and 'traditional communication' are also of great importance" (p. 140). Furthermore, Lee and Choi [20] divided the creation and sharing of knowledge enablers into two perspectives: social and technical. The most important enablers under a social perspective are: organizational culture, structure and people. Communication technology and support are under the technical perspective. Adenfeltand Lagerström [4] stated that the organizational culture-enabling factor is attained through the establishment of an appropriate organizational culture; a culture that encourages individuals to create and share knowledge, and is one that defines what knowledge is valuable for the corporation. The second enabling factor, people, which is manifested within the basis of organizational culture or care and is discussed in terms of people's actions including collaboration, trust and learning (pp. 193-194). The third enabler, structure, is conceptualized in the form of the two key structural variables; centralization and formalization [20].

2.1 Effect of Knowledge Sharing on Business Performance

Montano [21] asserted that knowledge "is one of the main organizational assets that increase the value of an organization, and that when appropriately applied can lead to the development of a new or improved product or services" (p. 285). However, to maintain this advantage, the company should always look for new knowledge and utilize it in new creative ways. This requires securing an environment that will encourage individuals to employ and exploit this knowledge. Typically, this can be achieved by the existence of proper motivation, understanding and resources ([22], p. 202). Hence, knowledge management and motivation management are key strategic elements for securing and sustaining the competitiveness of a company ([14], p. 29).

2.2 Motivation for Knowledge Contribution

One of the basic roles of a knowledge-sharing company is to create and sustain the proper form of employees' motivation in order to fulfill corporate goals. Employees may work hard for two reasons: personal interest in the job itself and the pleasure and self-satisfaction it brings to them (intrinsic motivation), or because they want to get rewarded (extrinsic motivation) ([14], p. 5). Lam and Lambermont-Ford ([23], pp. 3-4), in examining motivation, used Deci's [24] original separation of motivation into extrinsic and intrinsic. They contended that extrinsic motivation allows individuals to satisfy their needs indirectly by obtaining additional resources (e.g. money, promotion and other nonfinancial resources). "Extrinsic motivation supports the transfer of explicit knowledge butoften fails in the case of tacit knowledge. This is because of the indeterminate nature oftacit knowledge and the difficulty of monitoring those who do not process tacit knowledge" [23]. While, Hall and Sapsed [25] believe that "the exclusive use of extrinsic motivation often places the individual in a transactional rather than a relational stance with respect to the organization, as for example, in the situation of using of consultants or where there is a need to codify tacit knowledge to a limited extent" (p. 73).

Intrinsic motivation gives immediate need satisfaction: an activity 'is valued for its own sake and appears to be self-sustaining' ([24], p. 105). Intrinsic motivation facilitates the generation and transfer of tacit knowledge under conditions in which extrinsic motivation fails [1].

Intrinsic motivation can be encouraged by increasing individuals' sense of 'self-determination' through facilitating participation and human relationship [14]. Intrinsic motivation is important in order to promote tacit knowledge sharing and to guarantee participation in the formation of the company's pool resources, as well as to facilitate contribution to the development of solutions for complex non-quantifiable objectives ([14], p. 5).

Ideally speaking, knowledge sharing should be intrinsically motivated. Employees who share knowledge enjoy a higher ability to do their jobs and fulfill their objectives. They also develop a reputation of being knowledge experts and important knowledge contributors. However, in a real world, it is necessary to build a reward scheme and a motivational structure to encourage people to share knowledge ([26], Para 1-2).

Therefore, companies must try to select the most appropriate combination of intrinsic and extrinsic motivation and compare the benefits and costs related to each type of motivation so as to benefit both employees and the concerned company.

2.3 Factors that Affect the Willingness to Share Knowledge

Connelly and Kelloway [27] investigated a number of factors that impact employees' perceptions of a knowledge sharing culture. The identified factors can be broadly categorized into groups: organizational factors and individual or human factors. The individual factors include: Rewards and psychological ownership of knowledge; the latter include the need for achievement and self- actualization, altruism, and reputation and status. While the organizational factors that will be discussed in this paper are: Organizational culture, knowledge management structures, communication/social interaction climate, leadership commitment, trust, and technology.

2.3.1 Individual/ human factors

Sveiby [28] contended that people are said to be true agents in business where all tangible and intangible assets "are results of human action and depend ultimately on people for their continued existence (p. 345). Moreover, people in organizations will share their well-earned knowledge if the outcome of the knowledge sharing process is rewarding and is satisfying to them ([7], p. 9). For Gilmer and Deci [29], people assume an outcome as satisfying if it fulfills one or more of their needs; hence, to understand the way individuals can reward themselves one must take their needs into consideration (p. 207). Needs initiate behavior and rewards fulfill these needs. People perform activities which they expect will result in a desired outcome ([29], pp. 210-211). Stenmark [30] asserted Gilmer and Deci's arguments; he found that people do not share knowledge without a strong personal motivation, and they would certainly not give it away without concern for what they may gain or lose by doing so (p. 21).

Organizations should motivate employees to learn and share knowledge. Employees need to comprehend and recognize the advantages they will obtain from learning and sharing their knowledge. They should be able to associate new obtained knowledge with special rewards, such as higher job security and personal satisfaction and fulfillment. After understanding and associating cost to benefits, people will start to see the psychological costs of change and learning as being less than the value they may attain from acquiring new knowledge ([22], p. 243).

2.3.2 Psychological ownership of knowledge

Montano ([21], p. 311) asserted that individuals usually resist sharing their knowledge with others. These individuals' behavior is controlled by "knowledge is power" mentality Knowledge to them is a competitive advantage over others who cannot create it or do not have the chance to rediscover it. The individual, who is aware of the importance of his/her knowledge, will probably hesitate to lose this power by sharing this knowledge. It becomes the responsibility of the organization to motivate knowledge sharing behavior among employees even if this may be against the latter's nature.

Employees will be also hesitant to share their knowledge if it negatively affects their 'job security'. They may feel that their knowledge is vital to their distinguished importance as employees; hence, their permanent status in the organization ([17], p. 154).

Moreover, individuals will be reluctant to share knowledge if they don't have the time to do so ([21], p. 311). Knowledge might be readily available for sharing; however, some people still find it hard to accept it. When asked to learn new knowledge or modify the existing one, many people will resist such change. It is easier for people to acquire new knowledge by

developing and expanding what they already know rather than totally discarding their current knowledge in exchange for new one ([22], p. 243).

2.3.3 Need for achievement and self actualization

People may share knowledge because of their intrinsic need to grow and improve their abilities through achievement and self-actualization [14]. According to Robbins and Judge [31], the "Need for Achievement, is manifested in the higher order needs for esteem and self-actualization which have the greatest potential for motivating employees" (p. 97); it is an intrinsic motive that arises out of a person's fundamental need for development and accomplishment. This feeling of success and accomplishment is a highly motivating reward which encourages 'effective performance' in organizations ([29], p. 208). In addition, people take pleasure in achievements and are likely to struggle for accomplishing challenging activities which require resourcefulness and creativity. These behaviors are allied with individual' need for self-determination and competence "which proposes that people prefer to feel they have control over their actions ([31], p. 101). Bono and Judge [32] suggest that people who pursue work goals for intrinsic reasons are more satisfied with their jobs, feel like they fit into their organizations better, and may perform better.

2.3.4 Altruism

Davenport and Prusak [17] contended that some people share their knowledge simply because it makes them feel happy about it; they share it willingly whenever they get the chance to. This kind of knowledge sharing is primarily motivated by the love of sharing or by an innate will to help others (p. 33), believing that they are serving the greater good without the need for any extrinsic motivation like rewards, incentives, recognition, encouragement or persuasion ([21], p. 311). This type of people is more concerned with his/her individual non materialistic goals. They are intrinsically motivated and do not usually get affected by the outer environment ([14], p. 76). Altruism can be noticed more in companies that hire nice people and treat them nicely.

2.3.5 Reputation and status

Some employees have the tendency to build a reputation of being knowledgeable and possessing expertise that can be of great benefit to others in the company if it was shared. Enjoying such a reputation can lead to higher job security and more rewards from one side, and can encourage others to reciprocate knowledge sharing. However; the political and social structure of the company usually determines the market value of reputation: Companies that systematically value and reward knowledge sharing will probably see more collaboration from these people who hope in future tangible rewards ([17], p 33). According to Frey and Osterloh [14] these people are extrinsically motivated. They care about external factors and react to the evaluation of others. They are competitive and tend to place themselves higher than others (p. 74).

Under reputation and status, there are two concepts which are worth mentioning, namely:

2.3.5.1 Strategic reciprocity

Employees willing to share knowledge with others will give the necessary time and effort to transfer their knowledge if they expect that others will respond with a similar behavior. They may think that being known for willingness to share knowledge encourage others to

share knowledge with them. This shows the close relation between reputation and reciprocity ([17], p. 32).

2.3.5.2 Reward perception: career advancement / monetary rewards

Employees who are extrinsically motivated are able to fulfill their needs through financial and monetary rewards and career advancement. They direct their efforts towards the tasks that will pay them the most. They do not bother to put any effort into tasks that have low, or no, monetary reward. In other words, if knowledge sharing is based solely on financial rewards, it will diminish when fewer incentives are paid; hence, the shared knowledge can become of lower quality, and individuals will tend more to hoard knowledge for themselves. Such attitude can create significant problems within a company. Therefore monetary incentives should only be used cautiously [14].

2.4 Organizational Factors

There are many ways for organizations to motivate and promote knowledge sharing. Knowledge exists in organizations; however, its existence does not guarantee its utilization. Organizations that don't manage their knowledge resources effectively will have less competitive advantage as compared to organizations that do ([17], p. 89). Therefore, organizations are required to build and maintain the leadership characteristics, reward scheme, culture, and technology that will support a knowledge sharing environment ([21], p. 296).

2.4.1 Organizational culture: open, communal and learning culture

According to Robbins and Coulter [33], "Organizational culture is described as the shared values, principles, traditions, and ways of doing things that influence the way organizational members act" (p. 80). Culture can widely affect the knowledge sharing process by facilitating or restricting the flow of knowledge. Levine [34] contended that "an organization that supports information sharing and knowledge creation among its members and is committed to including and reconciling multiple view-points is likely to establish effective and efficient processes as well as improving organizational life" (p. 23). Furthermore, Ahmed, Lim and Loh [35] asserted that knowledge transfer can be promoted in the organization based on the appropriate cultural norms widely held by the organization; they, however, warn that if the wrong norms exist, regardless of the effort and good intention of individuals trying to promote knowledge, little knowledge transfer is likely to be forthcoming as a result (p. 59). Even with the existence of the aforementioned culture scenario, employees will easily learn what values and behaviors are acceptable regardless of what is communicated officially by the company ([21], p. 291).

Organizations can benefit from a learning culture that promotes 'experimentation and risk-taking', and is tolerant of mistakes and failures. Mistakes should be positively regarded as chances for learning and development ([21], p. 295).

It is important for companies to establish a culture that has a high sense of commitment to knowledge sharing. A fair system of recognition and incentives guarantees that every employee will contribute to achieve the same goal. A knowledge-sharing culture does not only improve the company's welfare but it can also be of a personal benefit to all employees Girdauskienė and Savanevičienė ([36], p. 40).

2.4.2 Fairness and justice

Frey and Osterloh [14] contended that 'perceived justice and fairness' have a definite influence on employees' attitude towards knowledge sharing. The way employees perceive fairness affect their behavior and the passion driving that behavior. What matters to employees is not only the value of their paycheck, but rather the justice and fairness of the norms and rules applied to set the company's value (p. 173). When a company clearly expresses and communicates its principles, employees will feel that they are fairly treated, and become more like "company citizens". This can be observed, for example, in their adherence to rules, in their willingness to participate in activities useful to the organizations, in their support of colleagues in need of assistance, and by willingly working overtime when their job needs them to ([14], p. 187, 201).

2.4.3 Participation in decision making

Participation is the influence an individual can have over the company's decisions ([14], p. 84). McQuerrey [37] contends that "employees who are engaged in the corporate decision-making process are intrinsically motivated because they have a sense of camaraderie as well as a stake in the success of the company" (Para 7). This form of motivation can show how the company values the commitment of its employees. In other words, members of a work group should all have a word in all related decision making processes. They should be able to feel their influence on decisions made and at the same time be responsible for the smooth execution of these decisions ([14], p. 151). Consequently, 'Participative decision making' reduces conflicts when decisions are executed, since the various suggestions have already been included in the decision-making process. Those influenced by execution of the decisions will identify with the outcome because they were part of it (ibid).

2.4.4 Knowledge management structures

According to Davenport and Prusak [17], companies can promote knowledge sharing within and between different departments by introducing events and locations for employees to interact both formally and informally, such as knowledge fairs and forums, talk rooms, face-to-face meetings, communities of practice, etc..

2.4.5 Communication/social interaction climate

Communication is an essential requirement for establishing productive organization-employee relationships. It makes employees to willingly behave in a more collaborative way ([14], p. 200; Davenport and Prusak [17], p. 90). It is a key element in the process of creating and managing knowledge ([9], p. 19), and in increasing the intrinsic motivation of employees to cooperate ([14], p. 238).

Companies that encourage knowledge sharing will realize the importance of communication, and will try to formally manage their knowledge resources by creating plans, rules and procedures to serve this purpose ([9], p. 19). Communication must be used in all possible forms, i.e. formal, spontaneous, verbal, written etc. Its initiation should be encouraged at all organizational levels. Employees' ability to express their opinions and thoughts should be supported ([21], p. 293). They should feel free to express themselves; this would be achieved when they know that what they say will be tolerated and will not be criticized.

Davenport and Prusak [17] believed that motivation of spontaneous knowledge transfer remains one of the most important management tasks within an organization (p. 89). For example, some Japanese organizations attempted to facilitate communication among people; they created "talk rooms" to encourage a type of random and spontaneous knowledge exchange. Employees visiting these rooms were expected to interact with whomever they meet there, chat about their current work and establish relationships that are important to the knowledge sharing process ([17], p. 90).

2.4.6 Leadership commitment to knowledge sharing

Nonaka [10] believes that "leaders are like what they do, they are evaluated according to how they motivate their followers, how their styles interact with situational conditions and how they can make major changes in their organizations" (p. 347). Leaders are responsible for creating the ideal atmosphere for work by developing a sense of trust, enthusiasm, and optimism among their followers, and bringing them together by building strong professional relationships between them (ibid, p. 361). Moreover, Montano [21] contends that leaders are expected to develop a fair rewards system that acknowledges and encourages knowledge sharing and discourages hiding, and to create the proper work environment that supports and promotes interaction and communication (p. 294). Accordingly, leaders are supposed to enjoy a fair experience in various domains like project management, change management and technology management. Their role demands an exceptional blend of psychological, technological, and business competence ([17], p. 112).

Nonaka [10] also asserts that managers can lead the organization to actively and dynamically create knowledge by providing and understanding the knowledge vision of the company, developing and promoting sharing of knowledge assets, and creating the time and place to share knowledge (p. 341).

2.4.7 Trust

For knowledge to be created, shared and exploited, there should be a high level of love, commitment, and trust amongst organization members, and an atmosphere in which they feel safe sharing their knowledge [10].

Nonaka [10] asserts that trust is one of the core elements for knowledge creation and exchange. It should exist in two directions; between peer employees, and between management and employees. However, several conditions must exist: first, the knowledge transmitter and the knowledge receiver should trust that the information exchanged is precise, accurate and fulfill their needs. Second, management should establish and cultivate a good reward system that motivates sharing and discourages hoarding which will later lead to the increase in the degree of trust, which is important to the knowledge process.

For organizations to support the knowledge process, Davenport and Prusak [17] suggested that trust to be set according to the following:

> "Trust must be observable, people must feel that their efforts as knowledge sharers are visible, reciprocated appreciated and directly rewarded. They must sense a direct evidence of trust not only declarations. Trust must exist everywhere. If trust is missing in any part of the knowledge globe of an organization, then the knowledge sharing process will be less efficient and becomes asymmetric" (p. 34).

> Upper management must present a good example for trust to flow downwards and to model the whole organization. However, if those managers abuse the knowledge of others for their own personal interest, distrust will prevail over the whole organization (p. 35). Therefore, trust strongly influences people's behavior: how they interact with each other, and how they communicate [11].

2.4.8 Technology

Technology is an important aspect of knowledge management ([17] p. 123). It is a key element in distributing information within the organization, and granting people the proper access to the right information at the right time. It facilitates the flow of information by designing and implementing systems that support communication, collaboration and knowledge distribution ([21], p. 293).

According to Coakes [38] technology adds significant value to the management and operation of organizations; it has a vital role in linking the different 'functional areas' of an organization. However, to gain the maximum benefit, people must be able to use and understand technology effectively.

Davenport and Prusak [17] as well as Dixon [7] emphasized the importance of systems such as databases, data mining, data warehouses, expert systems, and collaborative tools to the process of knowledge transfer. These systems can provide an infrastructure to recognize and obtain knowledge and make it available to a large number of users. However, though these technologies are exciting and clearly improving, it is important to remember their limitations in any program of knowledge management [17].

Chennamaneni [39] contends that the applications of technology to Knowledge Management (KM) are manifold. As such, a new class of information systems applications called *Knowledge Management Systems* (KMS) have emerged (p. 16). Alavi and Leidner [40] defined this system as "a class of information systems applied to managing organizational knowledge. That is, they are IT-based systems developed to support and enhance the organizational processes of knowledge creation, storage/retrieval, transfer and application". Some of the examples of KMS include knowledge repositories, knowledge networks, directories of subject matter expertise, intranets including corporate portals, group ware and collaboration tools, desktop computer conferencing, and so forth ([39], p. 17).

The role of technology becomes limited when it comes to creating teams, building trust or transferring tacit knowledge [17]. Though it disseminates knowledge to users, computers and technology do not guarantee or improve knowledge use or state what users should do with it thereafter (p. 142). Technology alone won't create a knowledge-creating company or culture, or make a person with a certain expertise share it with others. Successful knowledge management cannot take place without wide behavioral, cultural and organizational change. It requires support from within the entire organization ([17], p. 45). Nevertheless, the presence of knowledge management systems may sometimes positively influence the knowledge culture and behavior of employees within an organization. Employees realizing the investment in time and money that their company is putting into its website, for example, may consider their contribution to knowledge sharing and to the knowledge management system as more important ([17], p. 143).

2.5 Research Hypotheses

Based on the literature review, nine hypotheses were suggested to test a set of selected organizational and individual enablers of knowledge sharing. These are

2.5.1 Knowledge sharing activity

H1: People in Lebanese organizations share knowledge.

2.5.2 Management support

H2: Individuals who believe that their management values their contribution to knowledge sharing will share their knowledge.

2.5.3 Organizational culture

H3: Employees who work for organizations that consider knowledge sharing as part of the company's culture are more willing to share their knowledge.

2.5.4 Technology

H4: The presence of technology designed to promote knowledge sharing has a positive effect on individuals to share knowledge.

2.5.5 Communication and social interaction

H5: Individuals who have high opportunities to communicate are more likely to share knowledge than individuals who have few opportunities to communicate.

2.5.6 Trust

H6a: Employees who trust peers are more likely to share their knowledge.
H6b: Employees who trust management are more likely to share their knowledge with others.

2.5.7 Rewards

H7a: Rewards encourage knowledge sharing
H7b: People consider personal growth as the most important reward for sharing knowledge

2.5.8 Psychological ownership of knowledge

H8: Employees who think that knowledge hoarding ensures job security are less likely to share knowledge

2.5.9 Organizational size

H9: Employees from large organizations are less likely to share knowledge.

3. METHODOLOGY

The researchers used a mix of research approaches. Exploratory research was used to define the key variables; literature review is considered as secondary data and was collected to come up with a proper definition of the problem and its key variables. Conclusive or descriptive research was used in the form of a survey: after identifying the population and selecting the sample, a questionnaire based on the previous literature review was composed to obtain the primary data. The survey was conducted by distributing the questionnaire to the candidate respondents as per the selected sample. The third approach was causal research. After data collection, statistical tests were conducted to verify the hypotheses, and decide which one to reject or accept. Thus, clear answers and responses that help in correlating the variables with each other were attained.

3.1 Sample Selection

The target population is defined as all individuals who are currently employed in the public and private sectors in all Lebanese organizations within Greater Beirut area. No occupation or industry was excluded in an attempt to study all organizations.

A non-probabilistic sampling was used namely, judgmental sampling, "where the choice of respondents is based on the researchers' personal assessments and judgments" ([41], p. 118). All employees selected for this study are members of Lebanese organizations. Selected participants were asked if they are currently employed in an organization. If their answer was yes, and if they were willing to participate, they were asked to fill out the three-page survey.

A standardized self-administered questionnaire and cover letter (explaining the study and assuring confidentiality) were developed to obtain information about the knowledge sharing behavior within the Lebanese organizations, and the influence of organizational factors and human factors on the employees' behavior and motivation for knowledge sharing, in addition to demographic information. The questionnaire was intended to involve as many employees from different levels and from as many organizations as possible. It was pre-tested, for validity purposes, on a group that has the same characteristics of the targeted sample to ensure the clarity of the questions and to avoid interpretation errors. Revisions were made to the questionnaire based on the comments from these people.

Several checkpoints were included in the questionnaire through replicating certain questions in alternative ways. Moreover, it included a combination of positive and negative statements in order to encourage concentration and care while answering.

The survey instrument was distributed to 200 employees from several types of Lebanese organizations. The administration of the questionnaire was performed in a period of three months extending from October to December, 2013. One hundred forty eight usable questionnaires were returned. Therefore, the response rate was 74%.

The researchers edited the questionnaires when received. The questionnaires were checked for incomplete and inconsistent responses. There were 130 questionnaires with complete responses. Questionnaires with unsatisfactory responses were either disregarded (52 questionnaires) or returned to the field (18 questionnaires) to obtain the required information.

3.2 Questionnaire Design-measurement and Scaling

The questionnaire was designed to measure and assess participants' attitude and opinion on the knowledge sharing behavior and the influence of organizational factors such as culture, managerial support, communication, technology, trust, and human factors such as rewards and psychological ownership of knowledge.

A 5-point Likert scale assessment ranging from strongly agree = 5, to strongly disagree = 1, was used in order to assess the respondents' attitude and extent of agreement of the existing values and practices of the work environment within the organizational system. Other questions were based on the nominal, ordinal and interval scales, and fixed-alternative around which respondents were given specific limited-alternative responses to choose from. Finally, an open-ended question was used whereby respondents could freely express their opinion.

Multiple-item measures were used to enhance validity of these measures. The measures were developed based on what was gleaned from the literature review. Some questions were replicated in alternative manner to check reliability.

Measures for knowledge-sharing activities and factors affecting employees' motivation for sharing knowledge in Lebanese organizations were introduced to a model developed by the researchers to fit the literature review. To validate the research model shown in Fig. 1, measures of the organizational factors' sub-dimension (culture, management support, communication, technology, trust), and human factors' sub-dimensions (rewards and psychological ownership of knowledge) were developed in addition to the demographic information.

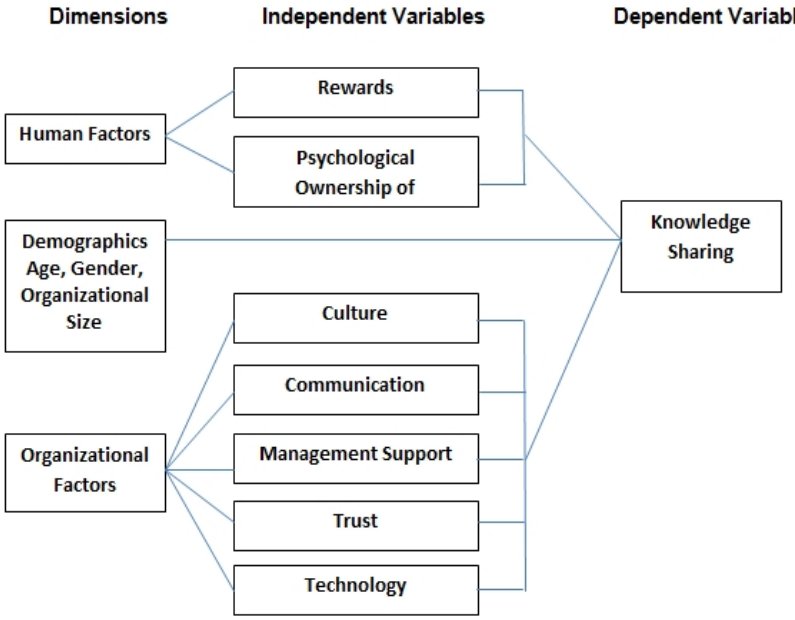

Fig. 1. Theoretical model of factors affecting knowledge sharing in Lebanese Organizations

3.2.1 Knowledge sharing activity

In order to measure knowledge sharing activities, three questions were developed to assess the participants' perception of the extent of knowledge sharing in their organization. Knowledge sharing was measured using a 5-point Likert type scale. Some questions were replicated in alternative means to check reliability.

3.2.2 Organizational culture

Respondents were asked to indicate on the same scale (Likert Scale) the organizational culture of their organization. Six questions were asked to assess participants' perception of the organizational cultures. Replicated questions in alternative means were used to check reliability

3.2.3 Management support

Respondents were asked five questions to determine their perception of the degree of management support and commitment towards knowledge sharing in their organizations. Respondents indicated this on a 5-point likert type scale. Some questions were replicated in alternative means to check reliability.

3.2.4 Communication and social interaction climate

Respondents were asked to answer five questions to determine their organizational social interaction climate. The same 5-point Likert scale was used to assess their perception. Replicated questions have been used to check reliability.

3.2.5 Technology

Three questions were asked to participants in order to assess the type and nature of technologies their organizations possess and which they can access to facilitate knowledge sharing. Two types of scales were used:

1) Respondents were asked to indicate on a 5-point Likert scale the extent to which their organizations apply good information systems,
2) A nominal scale was used for respondents to check the type of technologies their organizations possess.

3.2.6 Trust

Respondents were asked five questions, using the same 5-point Likert scale, to indicate the degree of trust that exists in their company among colleagues themselves and between colleagues and management. Replicated questions were used to check reliability.

3.2.7 Rewards

Four questions were asked to participants in order to assess the rewards affecting knowledge sharing behavior. Two types of scales were used:

1) Respondents were asked three questions to indicate the extent to which rewards affect employees' attitude toward knowledge sharing, and whether management rewards sharing. Respondents indicated this on a 5-point Likert scale
2) An ordinal scale was used for respondents to rank the level of importance and the perceived effect of each type of motivation on their knowledge-sharing attitude.

3.2.8 Psychological ownership of knowledge

Respondents were asked to answer two questions to determine the psychological ownership of knowledge. The same 5-point Likert scale was used to assess their perception.

3.2.9 Demographics

Demographic details included age, gender, occupation (job), type of business, number of people in company, and number of people in department. Interval and Nominal scales were used.

After data collection, this study used Statistical Product and Service Solutions (SPSS) ([41], p. 58) for descriptive statistics and hypotheses testing.

4. RESULTS

4.1 Descriptive Statistics

Results show that 57.8 % of the respondents were females and 41.5% were males. 49.7% of the respondents were 24 to 30 years old, nearly 14.3 % were under 23 years, and 21.8% were between 31 and 35 years of age. About 5.4% of the respondents were above 40 and only 8.8% were between 35 and 40 years of age.

As for work status, results show that 21.6 % of the respondents were in management positions, 21.6% were technical staff, 18.2% were administrative employees, 9.5% were engineers, and 29.1% had other job categories e.g. services, accounting, marketing, sales and others. Moreover, participants belonged to a total of 33 different types of business. The most common were Telecom 8.8%, Information Technology 13.5%, Healthcare 10.8%, Biomedical 12.8%, banking 5.4%, insurance 4.7% and research 3.4%. The sample also included people in the education, travel and tourism, hospitality, construction, governmental, FMCG and media domains. Furthermore, 58.1% of the respondents had more than 50 employees in their companies, 24.3% had a number of employees ranging from 11 to 30, 16.2% with number ranging from 31 to 50, and 10.1% had less than 10 employees in their companies.

Respondents' extent of agreement to the research related statements

4.1.1 Knowledge sharing

There were three questions that dealt with knowledge sharing within organizations. Each question had a different mean score as shown in Table 1. Results show that knowledge sharing, as respondents reported, is marginal since the average mean is 3.5541.

Table 1. Respondents' assessment of knowledge sharing in their organizations

	Agree	Neutral	Disagree	Mean	Std. Deviation
People share knowledge	**54.0%**	23.0%	23.0%	**3.5541**	1.03203
Organization uses employees' ideas	**59.5%**	26.3%	14.2%	3.5946	.98863
Employees share ideas explicitly	**44.5%**	33.6%	21.9%	3.2603	.97595
Total number = 148 respondents					

(Note: Strongly Disagree=1, Strongly Agree=5)

Table 1 shows that on the average, 52.7% of the respondents share knowledge among themselves, and among themselves and their respective organizations. Such an average is considered low if organizations seek to develop their human capital and capitalize on the implicit knowledge stored in the heads of the employees. One may also contend that the respondents who were neutral to the questions, 27.6% (on the average), represent a sample of respondents who either did not comprehend the question or simply shy away from sharing their opinions for personal reasons.

4.1.2 Organizational culture

There were six questions that dealt with people's assessment of the culture in their organizations. Each question had a different mean score. Respondents' lowest mean scores were allocated to the following issues: people share only when they are ordered to do so (2.8176); it is natural to share knowledge (3.1351); and, people are hesitant to talk about mistakes (3.2703). The middle mean scores were allocated to: people act like company citizens in their companies (3.3581); and, people have individual influence over decision making (3.3605). The highest mean score (3.5676) was in response to the question that employees share knowledge out of professional obligation. These results are shown in Table 2.

Table 2. Respondents' assessment of their organizational culture

	Agree	Neutral	Disagree	Mean	Std. Deviation
People act like company citizen	**54.0%**	23.0%	23.0%	3.3581	1.05631
It is a professional obligation to share	**58.8%**	28.4%	12.8%	3.5676	.94157
It is considered natural to share	**43.9%**	26.4%	29.7%	3.1351	1.09202
People are hesitant to talk about mistakes	**44.6%**	32.4%	23.0%	3.2703	1.08543
People influence decision making	**51.7%**	30.6%	17.7%	3.3605	.86757
People share only when obliged to do so	31.1%	22.3%	**46.6%**	2.8176	1.07562
Total number = 148 respondents					

(Note: Strongly Disagree=1, Strongly Agree=5)

Table 2 shows that five of the dimensions measured range between 43.9% and 58.8%. Respondents allocated an average of 27.18% to neutral responses which is considered high, however, typical for Lebanese respondents when they feel threatened, knowing that they were assured confidentiality by the researchers. Furthermore, the average of the results was 49.93%, which shows that respondents' organizations are not ready to act as organizations

which capitalize on their implicit knowledge. Furthermore, results show that knowledge sharing is initiated by the sense of professionalism of the employees.

4.1.3 Management support

There were five questions that dealt with management support of knowledge sharing. Each question had a different mean score. Respondents' lowest mean scores were allocated to the following issues: management is neutral about sharing (2.4189), management ignores employee's opinions (2.5743). Respondents' middle mean scores were: organizations are clear about how to measure performance (3.3310), and management values contribution to sharing knowledge (3.4932). The highest mean score (3.6824) was in response to the question that management obliges sharing. Results are shown in Table 3.

Table 3. Respondents' assessment of management support in their organizations

	Agree	Neutral	Disagree	Mean	Std. Deviation
Management obliges sharing	**70.3%**	12.8%	16.9%	3.6824	1.03040
Management values contribution to sharing	**54.2%**	32.9%	12.9%	3.4932	.94136
Management neutral about sharing	19.0%	20.0%	**61.0%**	2.4290	1.10100
Management ignores opinions	25.0%	25.0%	**50.0%**	2.5743	1.08300
Management measure performance clearly	**51.7%**	24.8%	23.5%	3.3310	1.09959
Total number = 148 respondents					

(Note: Strongly Disagree=1, Strongly Agree=5)

Table 3 shows three important outcomes (marked as bold), however, reflecting an averaged assessment to management's support. A more salient result is that the respondents' managers oblige them to share knowledge; a fact that may cause a self-restrain feeling of individual's initiatives to share knowledge.

4.1.4 Communication

There were five questions that dealt with the communication and social interaction climate within an organization. Respondents' lowest mean scores were allocated to the following issues: individuals feel isolated at work (2.1361), and employees belong to particular groups within their organizations (3.2838). The middle mean score was in response to the question that management communicates news regularly (3.7007). The highest mean scores were achieved on the fact that issues can be discussed with management openly (3.7143), and in response to the fact that employees feel at ease starting a conversation with their colleagues (3.8311). Results are delineated in Table 4.

Table 4. Respondents' assessment of the social interaction climate in their organizations

	Agree	Neutral	Disagree	Mean	Std. Deviation
Belong to a particular group	**51.4%**	20.3%	28.4%	3.2838	1.11904
Isolated at work	12.2%	13.6%	**74.2%**	2.1361	1.03129
Communicate with management openly	**70.0%**	15.0%	15.0%	3.7143	1.04028
Feeling at ease starting a conversation with colleagues	**73.6%**	18.2%	08.2%	3.8311	.86022
Management communicates news regularly	**71.5%**	17.7%	10.8%	3.7007	.86337
Total number= 148 respondents					

(Note: Strongly Disagree=1, Strongly Agree=5)

Table 4 shows that respondents were more positive with regards to describing their social interaction within their organizations. Respondents' communication with peers and management is described as positive and they had no barriers to belong to work groups.

4.1.5 Technology

There were two types of questions that dealt with technology. The first type consisted of two questions which asked for employees' assessment of information systems within their organizations. Table 5 shows that respondents agreed on the average that their organizational information systems are well presented (mean = 3.5390), and helpful to complete their jobs (mean = 3.3878). However, respondents also showed reservation by selecting a neutral answer, a fact, that either reflects ignorance about the details of technology used in-house or non-disclosed negative opinion.

Table 5. Respondents' assessment of technology in their organizations

	Agree	Neutral	Disagree	Mean	Std. Deviation
Information system well presented	55.5%	21.3%	24.2%	3.5390	.89801
Helpful information system	55.4%	33.1%	11.5%	3.3878	.98932
Total number = 148 respondents					

(Note: Strongly Disagree=1, Strongly Agree=5)

The second type of question was to select the knowledge sharing technology that exists in their organizations. As Table 6 shows, the lowest mean score was for email (1.0270), indicating that email was the most common knowledge sharing technology (97.3% respondents' agreement), and the highest (1.8986) was for group-ware which rarely exists in Lebanese organizations (10.1% respondents' agreement).

4.1.6 Trust

There were five questions that dealt with people's assessment of trust in their organizations. 67.5% of the respondents agreed that they trust their peers to help them if they got into difficulties (mean = 3.8446); 52.4% agreed that they rely on their peers to keep their word (mean = 3.4150); 54.5% agreed that they trust management to keep its promises (mean = 3.4898); 44.9% agreed that they trust management to treat employees fairly (mean =

3.3333); and, 50% agreed that people believe their companies' management deceive their employees. Results show that respondents believe that employees trust each other more than they trust the companies they work for (Table 7).

Table 6. Respondents' responses to the type of technology in their organizations

	N	Yes	No	Mean*	Std. Deviation
Intranet	148	**85.8%**	14.2%	1.1419	.35012
Portals	148	44.6%	55.4%	1.5541	.49876
Organizational databases	148	**70.3%**	29.7%	1.2973	.45862
Email	148	**97.3%**	2.7%	**1.0270**	.16271
Video conferencing	148	31.8%	68.2%	1.6824	.46711
Groupware for cooperative work	148	**10.1%**	89.9%	**1.8986**	.30282
Total number = 148 respondents					

** The mean is calculated based on the following codes: Yes = 1.0 and No = 2*

Table 7. Respondents' assessment of trust in their organizations

	Agree	Neutral	Disagree	Mean	Std. Deviation
Trust peers for help	67.5%	23.0%	09.5%	3.8446	.94554
Believe that company deceives employees	50.0%	31.0%	19.0%	2.6014	1.02180
Trust Management to keep promises	54.5%	27.8%	17.7%	3.4898	1.00932
Management fair treatment	44.9%	38.1%	17.0%	3.3333	.96040
Rely on peers to keep their word	52.4%	34.0%	13.6%	3.4150	.83456
Total number = 148 Respondents					

(Note: Strongly Disagree=1, Strongly Agree=5)

4.1.7 Rewards

There were three questions that dealt with the effect of reward on knowledge sharing. Table 8 shows that 57.4% of the respondents agreed that rewards encourage knowledge sharing (mean = 3.4730); 48.7% of the respondents agreed that the higher the level of reward, the higher is the level of knowledge sharing (mean = 3.3716); and 50.7% disagreed that they are rewarded for sharing their knowledge with others (mean = 2.5338). Table 8 shows an interesting observation. Respondents believe in the power of rewarding knowledge sharing, but they practically manifested that their management do not reward such sharing.

Table 8. Respondents' evaluation of rewards for knowledge sharing

	Agree	Neutral	Disagree	Mean	Std. Deviation
More rewards more sharing	57.4%	19.6%	23.0%	3.3716	1.08346
Rewards encourage sharing	48.7%	30.4%	20.9%	3.4730	1.13955
Management rewards sharing	15.5%	33.8%	50.7%	2.5338	.91410
Total number = 148 Respondents					

(Note: Strongly Disagree=1, Strongly Agree=5)

Respondents were also asked to rank order what they considered as important rewards for their knowledge sharing (multiple responses were permitted). Based on the calculation of the rank order, the lowest total score—i.e., nearest to 1— indicates the first (highest) preference ranking and nearest to 5—indicates the last (lowest) preference ranking ([42], p. 482), the results showed the following rank ordering per importance as accumulated by multiple responses:

(1) Personal growth (total score 351)
(2) Reputation (total score 481)
(3) Getting career opportunities (total score 514)
(4) Reciprocity (total score 516)
(5) Moral obligation (total score 555)

Fig. 2 shows that people considered personal growth as the most important reward for knowledge sharing. They regarded moral obligation as being the least important factor.

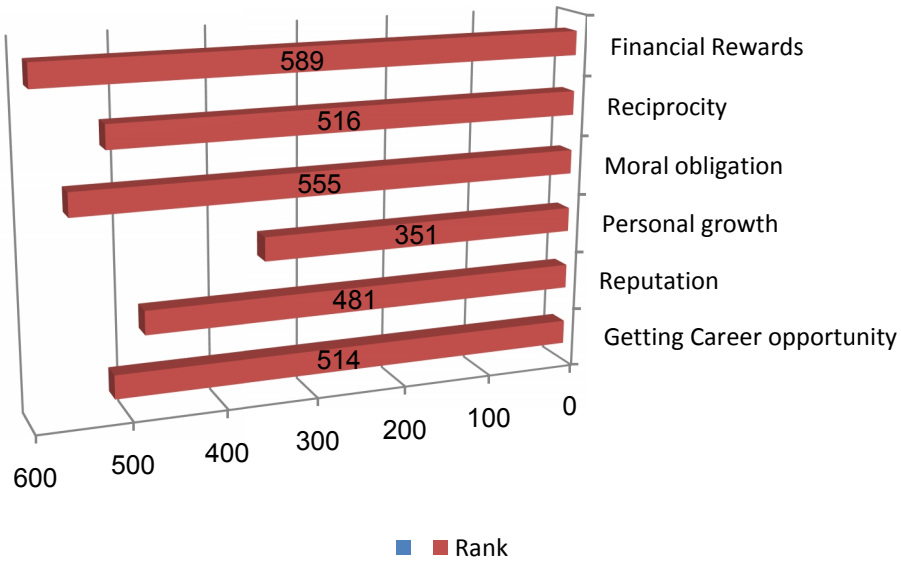

Fig. 2. Respondents evaluation of the most important reward

4.1.8 Psychological ownership of knowledge

There were two questions that dealt with knowledge sharing within organizations. According to Table 9, respondents had varying opinions regarding hoarding knowledge where 60.8% of the respondents disagreed that knowledge hoarding ensures security and power, 28.4% agreed, and 10.8% were uncertain (mean = 2.5203). When asked whether people keep ideas to themselves and not easily share them with others, 25.9% agreed, 46.9% disagreed, and 27.2% were uncertain (mean = 2.7007).

Table 9. Respondents' evaluation of the psychological ownership of knowledge

	Agree	Neutral	Disagree	Mean	Std. Deviation
Knowledge ensures security and power	28.4%	10.8%	60.8%	2.5203	1.27493
People keep ideas to themselves	25.9%	27.2%	46.9%	2.7007	.99598
Total number = 148 respondents					

(Note: Strongly Disagree=1, Strongly Agree=5)

4.2 Factor Analysis

A Principle Component Analysis (PCA) with subsequent rotation (initially using Varimax and later on Direct Oblimin) was conducted on 26-item scale that was designed to measure attitudes towards knowledge sharing. The survey questionnaire was completed by 148 Lebanese employees who work in the different economic sectors of the city of Beirut concerning selected factors that influence knowledge sharing in Lebanese organizations.

A. PCA using Varimax Rotation

An examination of the correlation matrix (not included here for the sake of size) indicates that a considerable number of correlations exceed 0.30 and are statistically significant with α=1% and 5%, so the matrix is suitable for factoring.

Table 10 shows that the Bartlett test of sphericity is significant and that the Kaiser-Meyer-Olkin measure of sampling adequacy is far larger than 0.6, namely KMO = 0.873. This means that the variables do have some correlation to each other, which is what needed to try to find an underlying factor that represents a grouping of variables [43, 44]. Also, worth mentioning that upon inspecting the anti-image correlation matrix, it reveals that all measures of sampling adequacy (MSA) are well above the acceptable level of 0.5 and range between 0.593 and 0.933 (p. 133) [43].

Table 10. KMO and Bartlett's test

Kaiser-Meyer-Olkin	Measure of Sampling Adequacy.	.873
Bartlett's Test of Sphericity	Approx. Chi-Square	1831.952
	Df	325
	Sig.	.000

Table 11 shows that Communalities varied from 0.824 to 0.465. Communalities show how much of the variances in each variable have been accounted for the extracted factors (p. 455) [44]. For example, over 77.8% of the variance in "Enthusiastic to share knowledge with others" is accounted for, while only 46.5% of the variance in "Feeling Isolated at work" is accounted for.

The Table that follows namely, Table 12, displays the total variance explained at three stages. At the initial stage, it shows the factors and their associated eigenvalues, the percentage of variance explained and the cumulative percentages. With respect to the eigenvalues, one would expect six factors to be extracted because they have eigenvalues

greater than 1. If these six factors were extracted, then 64.6 Per cent of the variance would be explained.

The following scree plot depicted in Fig. 3 displays the eigenvalues for each factor and suggests that there is one predominant factor accompanied by five other factors whose eigenvalues are larger than 1, so only six factors are retained. This is consistent with Kaiser's Rule (p. 456) [44].

Table 11. Communalities

	Initial	Extraction
Enthusiastic to share knowledge with others	1.000	.778
Organization uses and benefits from employees' knowledge	1.000	.610
Sharing knowledge is Professional obligation	1.000	.695
Natural to share knowledge	1.000	.700
People hesitant to talk about job mistakes	1.000	.535
Trusting peers for help	1.000	.559
Rewards encourage employees' positive attitude towards sharing knowledge	1.000	.824
Higher level rewards encourage knowledge sharing	1.000	.805
Management deceives people by taking advantage	1.000	.641
Management ask employees to share knowledge	1.000	.567
Feeling Isolated at work	1.000	.465
Management values employees' contribution to knowledge sharing	1.000	.669
Employees share ideas explicitly	1.000	.777
Communicating issues and problems openly with management	1.000	.633
Have a very good information system that is helpfully presented	1.000	.725
Learning and personal growth	1.000	.547
Expect to receive financial rewards	1.000	.551
Management asks about opinion but keeps final decision	1.000	.561
Feeling at ease starting a conversation with anyone in company	1.000	.607
Information system provides all info for the job	1.000	.694
Knowledge Hoarding ensures Job security and guarantees power	1.000	.536
Management communicates company news regularly	1.000	.476
Trust company to keep promises to employees	1.000	.785
Clarity of Performance Measurement	1.000	.791
High Confidence in Firm's fair treatment	1.000	.767
Peers are reliable	1.000	.508

Extraction Method: Principal Component Analysis.

The factor or component matrix seen in Table13 is a matrix of loadings or correlations between the variables and factors. Pure variables have loadings of 0.3 or greater on only one factor. Complex variables may have high loadings on more than one factor, and they make interpretation of the output difficult. Rotation may therefore be necessary.

Table 12. Total variance explained (using varimax)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.962	34.469	34.469	8.962	34.469	34.469	4.479	17.228	17.228
2	2.326	8.947	43.416	2.326	8.947	43.416	3.604	13.860	31.088
3	1.680	6.463	49.879	1.680	6.463	49.879	2.286	8.792	39.880
4	1.415	5.444	55.322	1.415	5.444	55.322	2.280	8.769	48.648
5	1.382	5.315	60.637	1.382	5.315	60.637	2.252	8.661	57.309
6	1.040	3.999	64.637	1.040	3.999	64.637	1.905	7.328	64.637
7	.949	3.652	68.289						
8	.826	3.176	71.464						
9	.780	3.001	74.465						
10	.747	2.872	77.337						
11	.698	2.683	80.020						
12	.656	2.522	82.542						
13	.588	2.262	84.804						
14	.542	2.085	86.889						
15	.468	1.799	88.688						
16	.425	1.636	90.324						
17	.389	1.495	91.819						
18	.337	1.295	93.114						
19	.330	1.268	94.382						
20	.301	1.158	95.540						
21	.271	1.044	96.584						
22	.222	.855	97.439						
23	.217	.835	98.274						
24	.188	.722	98.996						
25	.133	.513	99.509						
26	.128	.491	100.000						

Extraction Method: Principal Component Analysis.

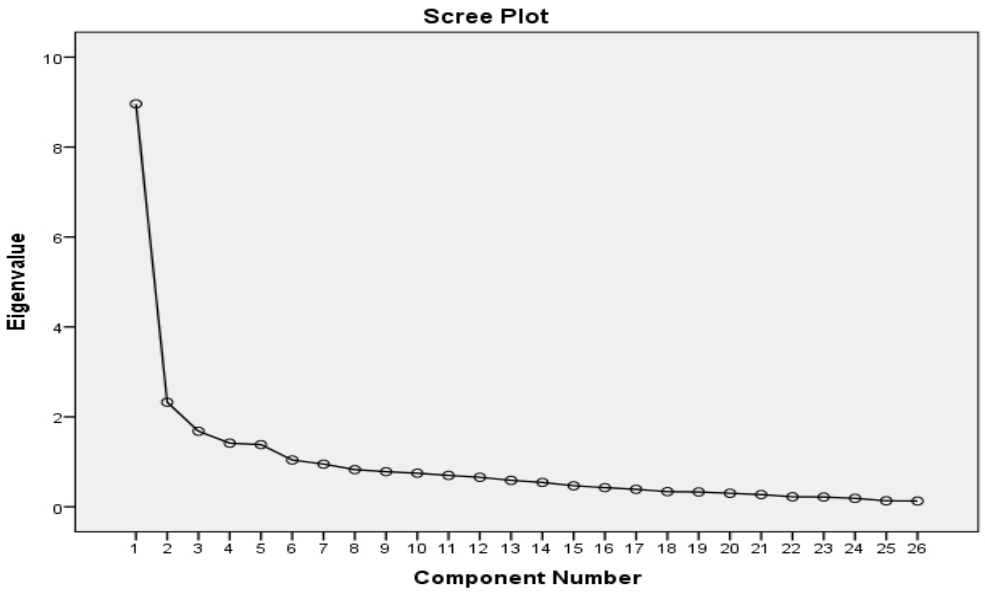

Fig. 3. Scree plot of eigenvalues

Table 13. Component Matrix[a]

	Component					
	1	2	3	4	5	6
Enthusiastic to share knowledge with others	.795					
Organization uses and benefits from employees' knowledge	.684					
Sharing knowledge is Professional obligation	.665					
Natural to share knowledge	.783					
People hesitant to talk about job mistakes	-.462					.516
Trusting peers for help	.651					
Rewards encourage employees' positive attitude towards sharing knowledge		.819				
Higher level rewards encourage knowledge sharing		.848				
Management deceives people by taking advantage	-.545		.427			
Management ask employees to share knowledge	.497					.426
Feeling Isolated at work	-.587					
Management values employees' contribution to knowledge sharing	.729					
Employees share ideas explicitly	.826					
Communicating issues and problems openly with management	.634					.374
Have a very good information system that is helpfully presented	.614			.511		
Learning and personal growth					.530	
Expect to receive financial rewards			.371		-.400	
Management asks about opinion but keeps final decision	-.596					
Feeling at ease starting a conversation with anyone in company	.530		.385			
Information system provides all info for the job	.443		.452	.413		
Knowledge Hoarding ensures Job security and guarantees power	-.473					
Management communicates company news regularly	.444			.388		
Trust company to keep promises to employees	.745		-.410			
Clarity of Performance Measurement	.564		-.445		-.429	
High Confidence in Firm's fair treatment	.679		-.485			
Peers are reliable	.663					

Extraction Method: Principal Component Analysis.
a. 6 components extracted.

Varimax rotation, where the factor axes are kept at right angles to each other, is most frequently chosen. Ordinarily, rotation reduces the number of complex variables and improves interpretation. However, in this research, the rotated solution still includes several complex variables as seen in Table 14 Factor 1 comprises 12 items with factor loadings ranging from .413 and .780. Factor 2 comprises 8 items with factor loadings ranging from

.395 and .802, and so on so forth. These items must be interpreted with caution because simple structure is not apparent. In order to lessen the intensity of the observed ambiguous structure, oblique rotation (Direct Oblimin) would be a more appropriate choice (p. 137) [43].

Table 14. Rotated Component Matrix[a]

	Component					
	1	**2**	**3**	**4**	**5**	**6**
Enthusiastic to share knowledge with others	.780					
Organization uses and benefits from employees' knowledge	.491	.396	.385			
Sharing knowledge is Professional obligation	.413		.632			
Natural to share knowledge	.697					
People hesitant to talk about job mistakes	-.598					
Trusting peers for help	.693					
Rewards encourage employees' positive attitude towards sharing knowledge					.874	
Higher level rewards encourage knowledge sharing					.879	
Management deceives people by taking advantage		-.681				
Management ask employees to share knowledge			.647			
Feeling Isolated at work	-.442					
Management values employees' contribution to knowledge sharing	.560		.372			
Employees share ideas explicitly	.732					
Communicating issues and problems openly with management		.445	.524			
Have a very good information system that is helpfully presented			.352	.709		
Learning and personal growth						-.716
Expect to receive financial rewards						.712
Management asks about opinion but keeps final decision		-.508	-.385			
Feeling at ease starting a conversation with anyone in company	.439			.381	-.362	
Information system provides all info for the job				.763		
Knowledge Hoarding ensures Job security and guarantees power	-.413					-.591
Management communicates company news regularly				.591		
Trust company to keep promises to employees		.779				
Clarity of Performance Measurement		.749		.357		
High Confidence in Firm's fair treatment		.802				
Peers are reliable	.449	.395				

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 8 iterations.

B. PCA using Oblimin Rotation

The Oblimin rotation provides a far more interpretable solution than that of the Varimax rotation. Two matrices are produced and shown in Tables 15 and 16: A pattern and a structure matrix. The difference between high and low loadings is more apparent in the pattern matrix, so this matrix is interpreted. The loadings in the pattern matrix represent the

unique relationship between the factor and the variable. As illustrated in Table 15, the matrix has fewer complex variables and simpler structure. The factor correlation matrix indicates the relationship between factors. All factors appear moderately related.

Table 15. Pattern Matrix[a]

	Component					
	1	2	3	4	5	6
Enthusiastic to share knowledge with others	.748					
Organization uses and benefits from employees' knowledge	.381					
Sharing knowledge is Professional obligation						.605
Natural to share knowledge	.637					
People hesitant to talk about job mistakes	-.632					.356
Trusting peers for help	.685					
Rewards encourage employees' positive attitude towards sharing knowledge		.861				
Higher level rewards encourage knowledge sharing		.867				
Management deceives people by taking advantage			.691			
Management ask employees to share knowledge						.652
Feeling Isolated at work						
Management values employees' contribution to knowledge sharing	.472					
Employees share ideas explicitly	.663					
Communicating issues and problems openly with management			-.394			.464
Have a very good information system that is helpfully presented				.710		
Learning and personal growth					.731	
Expect to receive financial rewards					-.714	
Management asks about opinion but keeps final decision			.470			
Feeling at ease starting a conversation with anyone in company	.353	-.399		.353		
Information system provides all info for the job				.782		
Knowledge Hoarding ensures Job security and guarantees power	-.367				.574	
Management communicates company news regularly				.595		
Trust company to keep promises to employees			-.769			
Clarity of Performance Measurement			-.792			
High Confidence in Firm's fair treatment			-.810			
Peers are reliable	.351					

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.
a. Rotation converged in 20 iterations.

Table 16. Structure Matrix

	Component					
	1	2	3	4	5	6
Enthusiastic to share knowledge with others	.846		-.420			.421
Organization uses and benefits from employees' knowledge	.590		-.535			.508
Sharing knowledge is Professional obligation	.518		-.415			.723
Natural to share knowledge	.778		-.510			.451
People hesitant to talk about job mistakes	-.614					
Trusting peers for help	.737					
Rewards encourage employees' positive attitude towards sharing knowledge		.872				
Higher level rewards encourage knowledge sharing		.882				
Management deceives people by taking advantage	-.392		.718			
Management ask employees to share knowledge						.703
Feeling Isolated at work	-.528		.391	-.397		
Management values employees' contribution to knowledge sharing	.653		-.389		-.418	.533
Employees share ideas explicitly	.817		-.453			.530
Communicating issues and problems openly with management			-.549	.433		.601
Have a very good information system that is helpfully presented			-.388	.791		.440
Learning and personal growth					.723	
Expect to receive financial rewards					-.724	
Management asks about opinion but keeps final decision			.591			-.468
Feeling at ease starting a conversation with anyone in company	.506	-.372		.476		.405
Information system provides all info for the job				.789		
Knowledge Hoarding ensures Job security and guarantees power	-.469				.645	
Management communicates company news regularly				.642		
Trust company to keep promises to employees	.495		-.859	.371		
Clarity of Performance Measurement			-.776	.442		
High Confidence in Firm's fair treatment	.468		-.858			
Peers are reliable	.549		-.525			.437

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

C. Interpretation of Factors

The final step in factor analysis involves determining how many factors to interpret and then assigning a label to these factors. The number of factors to interpret largely depends on the underlying purpose of the analysis namely, to confirm the factor structure of a scale.

Applying Kaiser's Rule and the scree-test, six factors were deemed important. Following Oblimin rotation, factor 1 was loaded on 10 items that reflected knowledge sharing and

accounted for 17% of the variance exemplified by the four highest loading items (see the pattern matrix), “Enthusiastic to share knowledge with others, Natural to share knowledge, trusting peers for help, and employees share ideas explicitly”. Factor 2 was loaded on 2 items and accounted for 13.9% of the variance. It was labeled rewards and was represented by “rewards encourage employees’ positive attitude towards sharing knowledge” and “higher level rewards encourage knowledge sharing”. The third factor accounted for 8.8% of the variance. It was labeled management support and was represented by two items “management deceives people by taking advantage” and “management asks about opinion but keeps final decision”. Other factors follow the same criteria and are shown in Table 17.

Table 17. Interpretation of factors/components

Rotation Sum of Squared Loadings (Varimax) % of Variance	Component
17.228	**Knowledge Sharing** * Enthusiastic to share knowledge with others * Natural to share knowledge * Trusting peers for help, and * Employees share ideas explicitly
13.860	**Rewards** * Rewards encourage employees’ positive attitude towards sharing knowledge, and * Higher level rewards encourage knowledge sharing
8.792	**Management Support** * Management deceives people by taking advantage, and * Management asks about opinion but keeps final decision
8.769	**Information Systems Role (Technology)** * Have a very good information system that is helpfully presented * Information system provides all information for the job * Management communicated company news regularly
8.661	**Psychology of ownership of knowledge/ Learning & Growth** *People share knowledge because of Learning and Personal growth opportunities * Knowledge hoarding ensures job security and guarantees power
7.328	**Communication** * Sharing knowledge is a professional obligation * Communicating issues and problems openly with management * Management ask employees to share knowledge

4.3 Reliability Test

The Cronbach's Alpha is 0.651 for all five-level Likert scale questions of the survey questionnaire and is shown in Table 18.

Table 18. Cronbach's Alpha for all questions

Cronbach's Alpha	N of Items
.694	31

In regards to reliability, an assessment of the internal consistency of each survey set of items was performed, essentially assessing whether all the items belonging to one set were measuring the same thing by using Cronbach's alpha technique where the reliability increases when the alpha value approaches 1. An alpha value of 0.8 or above is regarded as highly acceptable for assuming homogeneity of items, while an alpha value that is greater than 0.7 is considered appropriate even though this value could be as low as 0.6 for exploratory research (p. 427) [41].

4.4 Correlation Analysis

A correlation is a measure of the degree of linear association (magnitude and sense) between two variables ([41] p. 436). Table 19 shows the correlation between the tested variables.

Other correlations were tested, however, knowledge sharing correlation with Gender (Sig. p =0.127), age (Sig. p =0.359), organizational size (Sig. p =0.071) were not a significant predictor of knowledge sharing; all Sig. p's > 0.05.

4.5 Regression Analysis

In regression analysis, a predictive model is integrated into the data and that model is used to predict an outcome of the dependent variable form one or more independent variables ([45] p.144; [46] p. 511). Therefore, a number of elements were regressed against the knowledge sharing scale (dependent variable). A backward stepwise analysis was used to find out the individual contribution of each predictor (independent variables). Table 20 shows the elements considered for regression. These elements were extracted from Table 17 which was defined by factor analysis. Moreover, demographic variables were added including age, gender, and number of employees to reflect the organization's size.

Of these elements "trust peers for help" (Sig. P=.000), company's culture manifested by "natural to share knowledge" (Sig. P=.000) were highly statistically significant predictors of knowledge sharing. Whereas, psychological ownership of knowledge manifested by "knowledge hoarding ensures Job security and guarantees power" (Sig. P=0.023), "management values employees' contribution to knowledge sharing" (Sig. P=0.04), were statistically significant at the 5% level.

The regression model summary is shown in Table 21. The R square value is the measure of how much of the variability in the outcome is accounted for by the variability of the predictors ([45], p. 154). Accordingly, one can tell that culture, trust among peers, management's support of sharing and psychological ownership of knowledge accounts for 62.5 % (R. Square =.625) of variability in knowledge sharing activity. Adjusted R square is .614 (less than the R square by .011). This shrinkage means that if the model were derived from the population rather than a sample it would have accounted for approximately 1.1% less variance in the outcome.

Table 19. Testing of Correlations

	Pearson R	Sig. P
1. Enthusiastic to share knowledge with others * Natural to share knowledge	0.694	.000**
2. Enthusiastic to share knowledge with others * Trusting peers for help	0.598	.000**
3. Enthusiastic to share knowledge with others * Employees share ideas explicitly	0.716	.000**
4. Enthusiastic to share knowledge with others * Rewards encourage employees' positive attitude towards sharing knowledge	0.289	.000**
5. Enthusiastic to share knowledge with others * Higher level rewards encourage knowledge sharing	0.181	.028*
6. Enthusiastic to share knowledge with others * Management deceives people by taking advantage	- 0.357	.000**
7. Enthusiastic to share knowledge with others * Management asks about opinion but keeps final decision	- 0.305	.000**
8. Enthusiastic to share knowledge with others * Have a very good information system that is helpfully presented	0.376	.000**
9. Enthusiastic to share knowledge with others * Information system provides all info for the job	0.282	.001**
10. Enthusiastic to share knowledge with others * Management communicates company news regularly	0.347	.000**
11. Enthusiastic to share knowledge with others * Learning and personal growth	- 0.190	.022*
12. Enthusiastic to share knowledge with others * Knowledge Hoarding ensures Job security and guarantees power	- 0.433	.000**
13. Enthusiastic to share knowledge with others * Sharing knowledge is Professional obligation	0.514	.000**
14. Enthusiastic to share knowledge with others * Communicating issues and problems openly with management	0.319	.000**
15. Enthusiastic to share knowledge with others * Management ask employees to share knowledge	0.390	.000**
16. Enthusiastic to share knowledge with others * Management values employees' contribution to knowledge sharing	0.594	.000**

** *Correlation is significant at the 0.01 level (1-tailed).*

* *Correlation is significant at the 0.05 level (1-tailed).*

Table 22 shows that the F ratio is high (F ratio of 57.096, p<.001), which means that the model significantly improved ability to predict the outcome variable. Besides, since significance results are less than .001, the probability of getting the F ratio by chance is almost negligible.

Table 23 shows that knowledge sharing is significantly predicted by the culture of the organization that considers knowledge sharing as natural. This shows a positive relationship (B=.397), indicating that as the organization promotes a knowledge sharing culture, in which to share knowledge is natural, knowledge sharing will increase too. Trusting colleagues also seems to significantly predict knowledge sharing (B=.258). Management's support for

knowledge sharing significantly predicts willingness to share knowledge (B=.216), indicating that as management increases its support of knowledge sharing, this sharing increases too.

Table 20. Descriptive Statistics

	Mean	Std. Deviation	N
Enthusiastic to share knowledge with others	3.5563	1.03502	142
Natural to share knowledge	3.1127	1.10510	142
Trusting peers for help	3.8380	.95752	142
Rewards encourage employees' positive attitude towards sharing knowledge	3.3732	1.09550	142
Higher level rewards encourage knowledge sharing	3.4789	1.14680	142
Management deceives people by taking advantage	2.5986	1.03183	142
Management asks about opinion but keeps final decision	2.5563	1.05538	142
Have a very good information system that is helpfully presented	3.5282	.88881	142
Information system provides all info for the job	3.4085	.99041	142
Learning and personal growth	2.3944	1.59324	142
Knowledge Hoarding ensures Job security and guarantees power	2.4930	1.27578	142
Communicating issues and problems openly with management	3.6972	1.05178	142
Management ask employees to share knowledge	3.6972	1.03820	142
Management values employees' contribution to knowledge sharing	3.4930	.95090	142
Age	2.4155	1.02620	142
Gender	1.4155	.50869	142
Number of employees	3.4577	1.48096	142

Table 21. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
13	.791[m]	.625	.614	.64296	-.007	2.463	1	136	.119

m. Predictors: (Constant), Knowledge Hoarding ensures Job security and guarantees power, Trusting peers for help, Natural to share knowledge, Management values employees' contribution to knowledge sharing

Table 22. ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
13	Regression	94.414	4	23.603	57.096	.000[n]
	Residual	56.636	137	.413		
	Total	151.049	141			

a. Dependent Variable: Enthusiastic to share knowledge with others

n. Predictors: (Constant), Knowledge Hoarding ensures Job security and guarantees power, Trusting peers for help, Natural to share knowledge, Management values employees' contribution to knowledge sharing

Table 23. Regression coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
13	(Constant)	.847	.335		2.524	.013
	Natural to share knowledge	.397	.063	.424	6.284	.000
	Trusting peers for help	.258	.070	.239	3.712	.000
	Knowledge Hoarding ensures Job security and guarantees power	-.109	.047	-.135	-2.308	.022
	Management values employees' contribution to knowledge sharing	.216	.074	.199	2.912	.004

a. Dependent Variable: Enthusiastic to share knowledge with others

Table 24 shows the excluded variables where Sig. P > 5%.

Table 24. Excluded variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
13	Learning and personal growth	.013[m]	.240	.811	.021	.894
	Number of employees	.014[m]	.271	.787	.023	.962
	Management asks about opinion but keeps final decision	.009[m]	.150	.881	.013	.810
	Higher level rewards encourage knowledge sharing	.078[m]	1.421	.158	.121	.911
	Information system provides all info for the job	.064[m]	1.162	.247	.099	.887
	Gender	-.025[m]	-.475	.636	-.041	.973
	Management deceives people by taking advantage	-.003[m]	-.049	.961	-.004	.795
	Age	-.055[m]	-1.049	.296	-.090	.978
	Rewards encourage employees' positive attitude towards sharing knowledge	.085[m]	1.509	.134	.128	.857
	Have a very good information system that is helpfully presented	.058[m]	.995	.322	.085	.813
	Communicating issues and problems openly with management	-.054[m]	-.902	.369	-.077	.762
	Management ask employees to share knowledge	.095[m]	1.569	.119	.133	.739

a. Dependent Variable: Enthusiastic to share knowledge with others

m. Predictors in the Model: (Constant), Knowledge Hoarding ensures Job security and guarantees power, Trusting peers for help, Natural to share knowledge, Management values employees' contribution to knowledge sharing

Therefore, the final model is depicted as:

Knowledge sharing = β1(culture) + β2(Trust peers) + β3 (Management support),
+ β4 (psychological ownership of knowledge)
= .397 (culture) + .258 (Trust peers) + .216 (Management support) - .109
(psychological ownership of knowledge)

All standardized betas are statistically significant with Sig. $p < 0.05$.

It is worth mentioning that there was no statistical support for some other variables (all Sig. $p>0.05$). The presence of technology that facilitates knowledge sharing (0.247), trust in management (0.961), social interaction climate (0.369), rewards (0.134), organization's size depicted as number of employees (0.787), age (0.296), gender (0.636) were all excluded variables and not significantly associated with employees' knowledge-sharing behavior.

5. DISCUSSION

In light of the correlation coefficients of Table 19, the variables of culture (0.694), trust in peers (0.598), management's support (0.594), and psychological ownership of knowledge (-0.433), were all significantly correlated to knowledge sharing at $P <0.01$; however, the variables rewards (0.289) and technology (0.282), although statistically significant at $P <0.05$, they demonstrated weak correlation with knowledge sharing. On the other hand, the multiple regression equation depicted statistical significance at .05 level, and among all the variables entered to the equation: culture, trust in peers, and management's support variables were positively associated with high levels of knowledge sharing activities; while, the psychological ownership of knowledge variable was negatively related to knowledge sharing. These results show that employees, who enjoy a knowledge sharing culture, trust their peers to help them, and have management support and encouragement, will be more likely to share knowledge with others. Hence, employees who have the "knowledge is power" mentality will be less likely to share knowledge with others. As for the demographic variables age, gender, and organization size, these were excluded from the model as analyzed earlier.

Therefore, the aforementioned resultant regression model leads to a new representation of the researchers' proposed theoretical model of Fig. 1 which shows that the variables technology, trust in management, social interaction climate, rewards, organization's size, age and gender were all not significantly associated with employees' knowledge sharing behavior. This new model named parametric model is illustrated in Fig. 4.

Fig. 4 shows the resultant parametric model which helps in answering the research questions addressed in the beginning of this paper. For the sake of clarity, these questions are repeated next:

1) What are the human factors that encourage knowledge sharing among the employees in Lebanese organizations?
2) What are the organizational factors that encourage knowledge sharing among the employees in Lebanese organizations?
3) What are the attitudes governing knowledge sharing in Lebanese organizations?

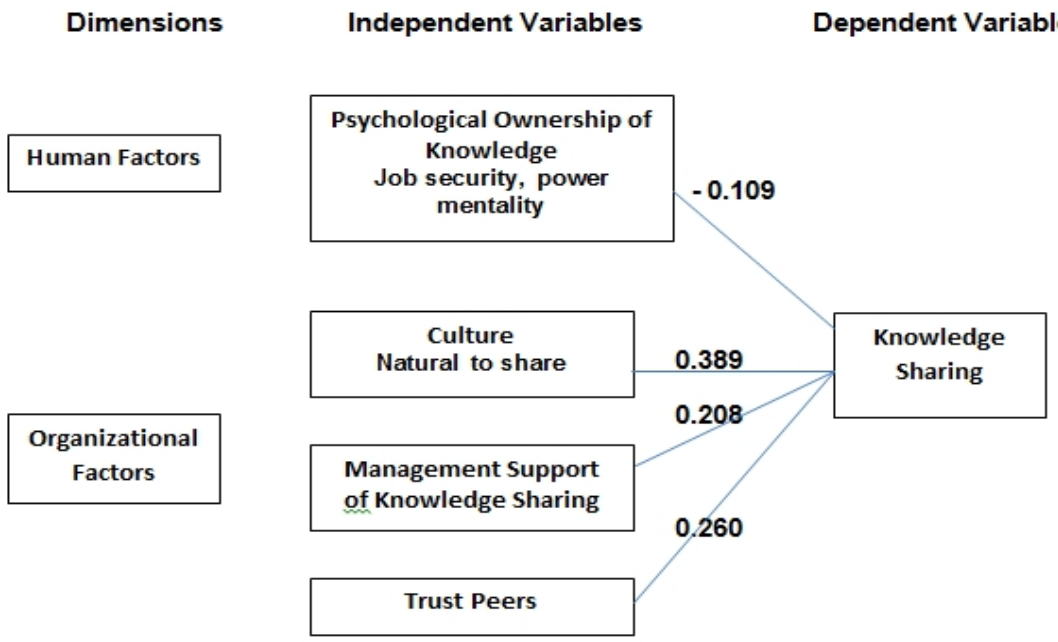

Fig. 4. Parametric model of factors affecting knowledge sharing in Lebanese Organizations

Fig. 4, constructed based on statistically significant relationships, shows that the human factors that encourage knowledge sharing among employees in the Lebanese organizations are manifested by the psychological ownership of knowledge. Respondent employees believe that the more people believe that knowledge is power the lower is knowledge sharing (question 1). As for the organizational factors that encourage knowledge sharing among employees in the Lebanese organizations, Fig. 4 shows that three factors are essential namely, organizational culture, trust in peers, and management support. Finally, to answer the third question, an analysis of the research hypotheses is needed.

It is worth mentioning that the research questions and the hypotheses of the current research are characterized by a strong fit leading to a clear manifestation of Lebanese employees' attitudes toward knowledge sharing and the identification of the human and organizational factors necessary for Lebanese organizations to encourage knowledge sharing.

5.1 Hypotheses Analysis

Table 25 confirms that all hypotheses were accepted and the proposed relationships were statistically confirmed. Only hypothesis H9 was excluded. Next, more details support the aforementioned hypotheses.

5.1.1 Knowledge sharing

54% of the respondents seem to agree that people in their organizations do share knowledge; however, 23% of the respondents disagreed. These results support hypothesis one (H1: People in Lebanese organizations share knowledge). This result indicates that the

majority of Lebanese employees contribute to knowledge sharing activities in their organizations.

5.1.2 Managerial support of knowledge sharing

According to the regression model, hypothesis two (H2: Individuals who believe that their management values their contribution to knowledge sharing are more likely to have positive attitudes towards knowledge sharing) was supported. It seems that employees are interested in acting as per the management's directions and share knowledge, believing that their management would be pleased whenever they notice their contribution to knowledge sharing.

These finding were also supported by the comments that participants added onto their questionnaire when they filled them out. Herein is a sample:

> "I work for an organization where management encourages us to help each other, and there is a complete transparency between management and employees"
> "Managers should not only put rules, but should listen to employees and let them express themselves and talk about their ideas and problems"

The importance of a manager is not only in the control and communication policies and procedures that he/she follows, but should be supportive, encouraging, and should try to foster a good team spirit that would be supportive to knowledge sharing. It was noted as well, by some participants, that sometimes management could unfortunately help to reduce knowledge sharing activity by promoting a hostile and very competitive environment.

5.1.3 Culture

The regression model provides strong support for a significant contribution of organization's culture to the prediction of knowledge sharing. Hypothesis three (H3: Employees who work for organizations that consider knowledge sharing as natural and part of the company's culture are more willing to share their knowledge) was supported.

Obviously, employees are strongly affected by the organization's culture as to the sharing of their knowledge. It seems that if the organization fosters or creates a culture that is cooperative, friendly and does not exhibit competitiveness, the knowledge sharing efforts will be successful. Psychological safety is a prerequisite to creating a knowledge sharing culture, where people willingly share knowledge and do not feel scared or threatened.

5.1.4 Psychological ownership of knowledge

The regression model as well provides support for a significant negative contribution of "knowledge is power" mentality to the prediction of knowledge sharing. Hypothesis eight (H8: Employees who think that knowledge hoarding ensures job security are less likely to share knowledge) was supported as well. It is obvious that this mentality exists in Lebanese organizations and affects knowledge sharing behavior.

Table 25. Hypothesis testing using chi-square tests

Hypothesis	Value	df	Asymp. Sig.(2-sided)	Relation
1. Knowledge sharing activity				
H1: People in Lebanese organizations share knowledge	119.966	16	.000	Related
*** Employees share ideas explicitly**	76.875	16	.000	Related
* **Sharing knowledge is Professional obligation**				
2. Management Support				
H2: Individuals who believe that their management value their contribution to knowledge sharing will be more likely to have positive attitudes towards such a sharing	61.297	16	.000	Related
*** Management ask employees to share knowledge**	41.592	16	.000	Related
*** Management asks about opinion but keeps final decision**				
3. Organizational Structure				
H3: Employees who work for organizations that consider knowledge sharing as natural and part of the company's culture are more willing to share their knowledge	108.231	16	.000	Related
* **Natural to share knowledge**				
4. Technology				
H4: The presence of technology designed to promote knowledge sharing has an effect on individual's attitude towards sharing knowledge	45.901	16	.000	Related
* **Have a very good information system that is helpfully presented**	33.062	16	.007	Related
* **Information system provides all info for the job**				
5. Communication and social interaction				
H5: Individuals who have high opportunities to communicate are more likely to share knowledge than individuals who have few opportunities to communicate	43.438	16	.000	Related
* **Communicating issues and problems openly with management**				
6. Trust				
H6a: Employees who trust peers are more likely to share their knowledge	87.986	16	.000	Related
* **Trusting peers for help**				
H6b: Employees who trust management are more likely to share their knowledge with others	37.186	16	.002	Related
*** Management communicates company news regularly**	32.692	16	.008	Related
*** Management deceives people by taking advantage**				

Table 25. Continued…….

7. Rewards				
H7a: Rewards encourage knowledge sharing				
*** Rewards encourage employees' positive**	76.957	16	.000	Related
attitude towards sharing knowledge	74.885	16	.000	Related
*** Higher level rewards encourage knowledge sharing**				
H7b: People consider personal growth as the most important reward for sharing knowledge	39.541	20	.006	Related
* **Learning and personal growth**				
8. Psychological Ownership of Knowledge				
H8: Employees who think that knowledge hoarding ensures job security are less likely to share knowledge	33.260	16	.007	Related
* **Knowledge Hoarding ensures Job security and guarantees power**				
9. Organizational Size				
H9: Employees from large organizations are less likely to share knowledge	9.297	16	.901	Unrelated
* **Number of employees**				

The following responses by some respondents further emphasize this point:

> "Colleagues don't share information to give the impression to their managers that they are irreplaceable"
> "People wouldn't want to share knowledge because this will make them guarantee higher job security and power over others"

This result could be attributed to a competitive rather than cooperative environment, where people compete to impress management, secure their positions and get personal rewards rather than achieve the company's goals.

In addition to the above, given the complexity of human characters, it is also possible to argue that other factors such as the characteristics of employees' personality, for example conservatism, selfishness and low self-confidence, may also contribute to knowledge hoarding.

The following response by one of the respondents emphasizes this point:

> "If all employees try to get rid of their egoism, the job performance will be certainly better. Unfortunately employees don't care for the job as much as they care for themselves".

5.1.5 Technology

According to the findings of the regression against knowledge sharing scale, hypothesis four (H4: The presence of technology designed to promote knowledge sharing will affect individual attitude towards knowledge sharing) was not supported.

It is possible that this study did not use suitable measures to discern the effect of technology on knowledge sharing. It would have been different if the measures included the level of

training and awareness that respondents had of the technology available at their organizations. As noticed from the questions raised while filling the questionnaires, many employees were not even aware of the technologies available at their organizations.

It is possible as well that in Lebanon, and in most organizations, technology is almost limited to emails (confirmed by 97.3% of the respondents) and intranet (confirmed by 85.8% of the respondents), and employees are not aware of other knowledge-sharing technologies that may facilitate knowledge sharing in their organizations (portals, 44.6%; video conferencing, 31.8%; groupware, 10.1%). On the other hand, because of the Lebanese culture, and the rather small organization's size as relative to other countries, it is relatively easy for people to meet and interact face to face or over the phone to share knowledge or get feedback.

Future research is necessary to determine whether technology impacts knowledge sharing in Lebanese organizations or not.

5.1.6 Communication and social interaction

Regression analysis showed that communication and social interaction were not significant contributors to knowledge sharing. Hypothesis five (H5: Individuals who have high opportunities to communicate are more likely to share knowledge than individuals who have few opportunities to communicate) was not supported. However, in correlation analysis, communication and social interaction climate were significantly correlated to knowledge sharing.

Although it is not possible in this case to infer causality, it is possible that knowledge sharing is encouraged by increased social-interaction climate. Employees are more likely to share knowledge with those whom they consider as friends; social interaction may contribute to knowledge sharing since it increases the likelihood of an employee making friends with others. However, according to some respondents' feedback, though people might enjoy a good social interaction climate with their colleagues (feeling at east starting a conversation with colleagues, 73.6%; belong to a particular group, 51.4%), this does not necessarily mean that they share knowledge due to other different reasons. Social interaction in this case is probably used for mere social interaction rather than sharing knowledge.

5.1.7 Rewards

In contrast to the researchers' expectations, the regression model did not support the contribution of rewards to the prediction of knowledge sharing. Hypothesis seven (H7a: Rewards will encourage employees to share knowledge) was not supported. This result could be due to the fact that rewards for knowledge sharing are not that common in Lebanese organizations. Reward systems in Lebanon are mostly based on individual and group performance, and are usually measured by tangible quantities or qualities. The respondents probably thought of knowledge sharing as an abstract concept, making it hard to fit in the reward system they are used to. Some respondents as well might have preferred to hoard knowledge to secure their jobs rather than to receive rewards and risk losing their jobs.

Further research needs to be done to determine if in fact rewards impact knowledge sharing. Respondents were also asked to rank what they considered important as a reward for their knowledge sharing activities. The results show that respondents believed that personal growth is the most important reward for knowledge sharing. The second most important

reward is reputation; the third rank goes to getting career opportunities. Reciprocity comes as fourth, and finally moral obligation is ranked as the least important. Hence, Hypothesis 7b (H7b: People consider personal growth as the most important reward for sharing knowledge) was supported.

5.1.8 Trust

According to the findings of the regression analysis, Hypothesis 6a (H6a: employees who trust peers are more likely to share their knowledge with others), was supported. However, Hypothesis 6b (H6b: Employees who trust management are more likely to share their knowledge with others) was not supported.

Hence, it can be deduced that Hypothesis 6a: Employees appear to share and reciprocate knowledge by carefully selecting the type of people with whom they want to share knowledge. People would not simply give their well-earned knowledge unless they are assured that they are leaving this knowledge in good hands, and that there is a good chance of reciprocity.

It is possible as well that past experiences with trust have a strong impact on one's ability to reciprocate and to trust others in the future. When employees trust each other, knowledge sharing becomes natural. One of the respondents commented:

> "Sharing information is the key towards success. Honesty and trust are very important for information exchange. At my organization, we trust each other and share information unconditionally"

The interference of other factors such as employees' characters might affect their knowledge-sharing attitude. A person with good sense of trust thinks that the majority of the people is sincere and has good intentions; however, people low in trust think of others as egotistic and deceitful. More research is required to clarify this phenomenon.

More research needs to be done as well to assess whether employees become more likely to trust their colleagues if there is more social interaction. It may be that increased social interaction leads to increased trust, which in turn might lead to more knowledge sharing.

Accordingly, Hypothesis 6b: Trust in management was significantly correlated to knowledge sharing; however, it was not supported by the regression model. It is possible that this study did not use suitable measures as to the effect of trust in management on knowledge sharing. It would have been different if the measures differentiated between immediate management and senior management. As noticed from the questions raised while filling the questionnaires, many employees had some concerns as to whether the question was related to immediate or upper management. It may be that some employees trust their immediate supervisors but not upper management and vice versa.

Future research is necessary to determine whether trust in management, both immediate and senior management, impact knowledge sharing in the Lebanese organizations.

5.1.9 Organization's size

The regression model did not support any contribution of organization's size to the prediction of knowledge sharing. Hypothesis 9 (H9: Employees from large organizations are less likely to share knowledge) was not supported.

5.1.10 Age, gender

According to the regression model, age and gender were not significant contributors to knowledge sharing.

6. RESEARCH IMPLICATIONS AND CONCLUSION

Several insights may be drawn from the current research. First, both the research questions and the corresponding hypotheses were suitable to assess and identify the factors necessary to encourage knowledge sharing in the sample of Lebanese organizations approached. Second, the results of this study have implications for staff and managers in organizations. The relationship that has been proved to exist between knowledge sharing and trust, management's support, culture and psychological ownership of knowledge, indicates the importance of such factors as prerequisites of the success of knowledge sharing. There are several ways to achieve the aforementioned relationship.

According to Hussain, Lucas and Ali [47], "knowledge management requires a major transformation in organizational culture to create a desire to share, the development of methods that ensure that knowledge bases are kept current and relevant, and a commitment at levels of a firm for it to succeed".

Therefore, organizations have to create a culture that is pro-knowledge sharing, where knowledge sharing is valued by everyone, and strategies that are more knowledge friendly are implemented; this is done through the mentoring programs, creating communities, conferences, and through generating a vision that emphasizes knowledge and its importance. Reinforcing trust among coworkers by organizing social events and outdoor discussions occasionally is another approach. Nonaka and Konno [48] contended that during the socialization process, tacit knowledge is exchanged through activities, such as individuals' spending time together or learning together. It helps to produce some form of shared mental model, metaphor, analogy, or culture that can serve as a framework for moving forward in future.

Practicing job rotation, where applicable, to facilitate knowledge transfer and movement throughout the organization and to increase motivation. Moreover, establishing a strong relationship between top management and employees is essential along with expressing the importance of knowledge sharing for the success of the organization as a whole. Islam, Low and Rahman [49] contend that, "Individual sharing of tacit knowledge in the organization may use different approaches such as employee's rotation across areas, brainstorming camps, and cooperative projects across directorates, which encourage knowledge transfer process" (p. 151).

According to the American Productivity & Quality Center [26], different approaches to rewards and recognition are appropriate for different stages of knowledge-sharing programs. The goal is to reinforce desired behavior with desirable rewards – recognition, time, endorsement, etc. (p. 1).

Managers must not limit their attention to the above factors only. It is highly recommended that they bear in mind the existence of factors outside the scope of this study as ethics and loyalty, which may impact sharing.

It is important as well to recognize the uniqueness of every organization's culture in removing obstacles to knowledge sharing. Hence, the best option for a given organization would be to investigate potential problems that may exist in its own culture and accordingly suggest the proper solution.

Another important insight for the current research is its academic contribution to the minimal literature found on the subject matter in Lebanon. It is worth noting that the results of this paper will provide exploratory findings that can be used by other researchers, in the Middle East region or other regions; consequently cross-cultural comparisons could be performed.

7. LIMITATIONS

Several limitations to this research should be noted. The measures used in this study were perceptual rather than objective; a more comprehensive study would include data from interviews with managers and employees, and longitudinal researches of the patterns of knowledge sharing motivators and behavior in Lebanese organizations.

While the response rate of the survey was quite respectable, the sample size is still considered to be small. Future studies should use larger samples.

8. FUTURE RESEARCH

Future research should enrich the understanding of the relationships addressed in this paper by replicating them in larger and diverse samples. The scales used in this research were developed for this project. Further work in this area could help validate these measures.

There are still other unidentified factors that influence general attitudes of employees toward knowledge sharing. These may include the study of intrinsic versus extrinsic rewards and employee job autonomy as discussed by Llopis-Corcoles& Foss [50], as well as studying the influence of organizational structure on knowledge sharing [49], and the difference between private and public institutions in their endorsing knowledge sharing as well as the impact of organizational leadership in such a role [51].

Addressing the aforementioned factors may improve the suggested theoretical model tested in the current paper, and will shed light on the practice of knowledge sharing through a broader angle.

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COMPETING INTERESTS

Authors have decided that no competing interests exist.

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