



Decision Making Under Stress: An Exploratory Study in Lebanon

Hussin J. Hejase^{1*} • Bassam Hamdar² • Fadi Hashem³ • Remi Bou Sleiman²

¹ Faculty of Business Administration, Al Maaref University, Beirut, Lebanon

² Faculty of Business and Economics, American University of Science and Technology, Beirut, Lebanon

³ Doha Institute for Graduate Studies, Doha, Qatar

hhejase@mu.edu.lb

Abstract: Nowadays, balancing work and family is getting more demanding, finding time for oneself is difficult, and the demands of work are overwhelming; life is becoming more stressful. Stress has become one of the factors that decision-makers must contend with in most life-or-death situations. In business, stress can be detrimental to the success of managers when making key decisions. This paper presents an exploratory study on the effect of stress on decision makers. It focuses on the impact of stress throughout the decision-making process and not only at the time of decision. It also highlights the importance of mitigating stress in order to reach an effective decision. The impact of stress is studied from two perspectives, one of the decision makers themselves and another of their subordinates. The findings of the research give a holistic view on stress and its impact on decision makers, and an insight into business stress mitigation strategies. The research adopts a quantitative approach where data is gathered from different conveniently selected employees, through survey questionnaires that are used to gather insight into the employees' perception of managers' performance under stress. Detailed results of the survey questionnaires are stated and are analyzed using the software SPSS for quantitative data. This research suggests that a better understanding of the interplay between stress and an individual's judgment and decision-making activities may yield a better understanding of how people reach the choices they make under stress.

To cite this article

[Hejase, H. J., Hamdar, B., Hashem, F., & Bou Sleiman, R. (2017). Decision Making Under Stress: An Exploratory Study in Lebanon. *The Journal of Middle East and North Africa Sciences*, 3(12), 1-16]. (P-ISSN 2412- 9763) - (e-ISSN 2412-8937). www.jomenas.org. 1

Keywords: Decision Making, Stress, Management, Lebanon.

1. Introduction:

Stress seems to be part of life these days. Individuals committed to their jobs are finding it difficult to balance work and family demands, and to find time for oneself; individuals feel that the demands of work are overwhelming. All persons experience good (or desirable) stress and/or bad (undesirable) stress – without the good stress in one's life that stimulates and challenges a person to work harder and do his/her best, he/she would be unmotivated, and would feel bored (Greenberg and Baron, 2008); bad stress can literally kill the person (Kendall, Murphy, O'Neill, and Bursnall (2000, p. 5). According to Oxford Brooks University (2012), "not all stress is bad. Every person functions best and feels best at his/her own optimal level of physiological arousal. One needs some stress to get everyday things done. Too little can lead to boredom and "rust out" - but too much can produce "burn out" (Para 2).

Stress is one of the factors that decision-makers must contend with in most life-or-death situations. Previous studies on the relationship between stress and decision making yielded conflicting results. Some studies

have indicated that the unorganized and inefficient approach to making decisions under stress yields to deficient decisions and outcomes (Johnston, Driskell, & Salas, 1997, p. 614); however, not all reactions to stress are the same (Kassam, Koslov and Mendes, 2009, p. 1394).

In business, stress may be considered a key determinant that leads managers to make successful or unsuccessful key decisions. Hansen (2016) asserts that research studies have "confirmed that workplace stress is, by far, the major source of stress for American adults, and it has been escalating during the last several decades" (Para 2). She adds that in "a 2007 nationwide poll by the American Psychological Association, more than half of those surveyed indicated that their work productivity suffered due to stress; almost half stated that they did not use their allotted vacation time and even considered looking for a new job because of stress" (Para 3).

Making decisions is inherent in the managers' job description. Though many of these decisions are minor, some are very significant, such as starting a project or hiring an employee; in addition, "Made well, good decisions become the foundation of personal advancement;



made poorly, they can end an otherwise promising career” (Useem, Cook, & Sutton, 2005, p. 462).

This paper explores the impact of stress on decision makers and the subordinates’ perception and evaluation of decision makers’ performance in selected organizations in the Lebanese market. The analysis presented is based on previous research done on the topic or similar topics. In order to gather information on this matter, field work and literature review have been conducted. Fieldwork includes survey questionnaires given to the subordinates of managers.

2. Literature Review:

This section provides an exposition of different views, definitions, approaches and factors that lead to stress, as well as a description of decision-making under stress theories; characteristics that are necessary to build the theoretical foundation of this research.

Mxenge, Dywili and Bazana (2014) assert in their research that many theories related to stress have been developed over the years; “These theories provide comprehensive frameworks and help us gain a better understanding of stress” (p. 14). Oosthuizen and Van Lill (2008) state that the stress-related theories have a common characteristic in that they all explain stress as “a dynamic process operating between an individual and his/her environment” (p. 64). In this paper, stress is defined as “a process by which certain work demands evoke an appraisal process in which perceived demands exceed resources and result in undesirable physiological, emotional, cognitive and social changes” (Salas et al., 1996, p.6, cited in Kowalski-Trakofler, Vaught, & Scharf, 2003, p. 279).

Greenberg (2011) contends that stress is an unavoidable fact of life today, and takes its toll on both the organization and the individual. Some researchers contend that stress is a result or product of the relationship between the environment and the individual (Gatchel & Schultz, 2012). Others argue that the power and authority of the aforementioned transaction depend on the process of the appraisal which binds the person and the environment; to yet others, this appraisal depends on what people think and do in a stressful encounter (Mxenge et al., p. 14). The said appraisal can be defined as the process that offers a causal bridge to the distinct emotions that best define the nature of stress (Dewe, O’Driscoll & Cooper, 2012). Moreover, Kowalski-Trakofler, Vaught, & Scharf, (2003), in their paper, assert the impact of stressful conditions on the managers’ judgment. The writers discuss the critical level of the decisions made at the beginning of work emergencies and uncertain events. “Those decisions are essential in the mitigation of damages, control of costs, and management of the outcomes of the emergency overall” (p. 278).

Multiple academics have also tackled the subject of making business decisions under stress. To Johnston et al., (1997) decision making under stress follows one of two

patterns: the vigilant or the hyper-vigilant patterns. A vigilant pattern is a systematic approach to search for information characterized by considering all decision alternatives, committing resources to evaluate each alternative, and by reviewing the data before making the decision (Janis & Mann, 1977, cited in Johnston et al., 1997, p. 614). In contrast, Johnston et al., contend that “a hyper-vigilant pattern is a nonsystematic approach characterized by a limited search of information and alternatives, limited resources, and limited review of data before making the decision” (p. 614). However, recently Yu (2016) posts in his literature review a different manner to look at the aforementioned patterns. He reports that “there are two routes to making decisions: a fast route labeled System 1 based on judgment and a slow route labeled System 2 based on decision-making process. System 1 operates quickly and automatically with little effort. It activates our innate and instinctive responses to stimuli. Such genetically hard-wired responses can enhance our ability to cope with vital environmental challenges of the type experienced during most of human history. Prolonged practice and experience also produce involuntary actions or habits. On the other hand, System 2 runs slowly and in an effortful manner, requiring complex computation” (p. 84). Comparing both systems, System 2 is thought to be an evolutionarily more recent system and can flexibly check, modify, and override the decisions from System 1.

3. Top Management Decision Making Under Stress:

Useem, Cook, and Sutton (2005) discuss the importance of developing leaders who are able to make business decisions under stress. Leadership decisions are defined by the authors as “the choice chosen by leaders ahead of other choices in the course of opportunities that lead to the achievement of the objectives of an enterprise” (pp. 462-464). They mention that decisions made by leaders are of high significance as they have an impact on people and the enterprise as a whole and that there are “attributes that characterize decision making leaders. These are summarized into four major attributes: strategic thinking, mobilization of resources, execution of strategy, and selflessness” (pp. 462-464).

Furthermore, Useem et al. discuss how to improve leadership decisions since improving these decisions not only improves the outcome of the enterprise but also improves the said decision making attributes. Leadership decisions can be improved by designing good incentive and compensation programs, providing training and development to decision makers and decision-making team, and empowering decision-making team members. They state that all organizations want their leaders to make optimal decisions; however, many managers and leaders fall into trap decisions and make suboptimal decisions (ibid, p. 465).



Ganster (2005) discusses the demands entailed by the executive, usually holding a leadership position. He states that such a job demands stressful decision making; a process whereby he/she validates “the impact of stress on decision making and how executive job demands should be conceptualized and measured” (p. 492). He mentions that stress affects individuals’ ability to cognitively appraise environmental challenges and conditions, and the ability to cope with these challenges and conditions. Furthermore, he states that previous research had two explanations on the afore-stated statement; “one states that high job demands produce a group of physiological and psychological responses and the other, supported by himself, states that high job demands simply reflect high task difficulty responses” (ibid, p. 493).

Making strategic decisions is the most critical component of an executive’s job. Though executive decisions usually have very important consequences, executives must make decisions of high quality regardless of the situations and conditions they face, knowing that executives making decisions under stress in limited time and resources or uncertainty may be forced to narrow their alternatives. This may result in some alternatives and evidence cues that are not to be overlooked while making the decision, for this may jeopardize the quality and effectiveness of the decision made. Ganster (2005) suggests that prioritization when facing limited time and high overload pressure when making a decision is an extremely effective and important strategy. Prior research also proved that executives can follow other effective strategies to make effective decisions when faced with time pressure and information overload. These strategies include doing what the executive knows best and imitating what other firms do (ibid, pp. 494-496). Ganster concludes that “there is insufficient evidence that stress impacts the quality of the decision made. However, he states that the evidence on the impact of stress on the procedure and process of decision making is highly visible and sufficient” (ibid, p. 497).

4. Role of Intuition:

According to Yu (2016; citing Cannon, 1914), “the evolutionary perspective on stress posits that the stress response has been shaped by natural selection to increase the ability of organisms to cope with situations that require action or defense” (p. 85). Further, “when organisms are faced with possible damage or a loss of resources and a “fight-or-flight” response is required, they can express protective features that allow them to survive adverse conditions and help them mitigate the harmful effects of environmental stresses (Nesse and Young, 2000; cited in Yu, 2016, p. 85).

Yu (2016) asserts that “based on the evolutionary accounts of stress and the dual-system theories of judgment and decision making, it is reasonable to predict that stress promotes evolutionarily rooted intuitive responses in

System 1. These intuitive responses are fast and require fewer cognitive resources to execute than in System 2. In normal situations, the intuition system may initiate some default action tendency and the reasoning system checks whether such a tendency is compatible with the current goals and environment. That is, intuition proposes first and reasoning decides whether to approve or to modify it. When under stress, the reasoning system may not check these response tendencies and instead allow individuals to rely on these rigid default actions in response to environmental challenges” (pp. 85-86).

Earlier, Dane and Pratt (2007) had discussed the role of intuition in making managerial decisions when under stress. They discussed the impact intuition has on making quick decisions of high quality that include a high level of uncertainty and risk. The authors posit that a manager’s intuition is an integral and significant part of his/her decision-making process, and the completion of highly complex tasks with short time horizons. Based on previous research, Dane and Pratt contend that strategic decisions are heavily affected by intuition. Managers rely highly on their intuition while deciding in which project to invest, what measures to take when facing a certain crisis, what evaluation to give when performing performance appraisal, and what strategy to formulate when undergoing corporate planning.

The authors emphasize the fact that “the need for intuition is most present while making decisions under uncertainty or in organizations facing turbulent environments and situations” (p. 33). Usually, middle level managers rely on a quantitative systematic approach to making decisions and performing tasks; this is called System 2 by Yu (2016). The transition to senior and executive level management provides a new challenge whereby decisions are usually made with high level of ambiguity and stress, as depicted in System 1 by Yu (2016). This is where a manager’s intuition and gut feeling can impact the decisions’ success or failure (Hayashi, 2001, p. 61, cited in Dane & Pratt, 2007, p. 33).

5. Impact of Challenge and Threat States:

Kassam, Koslov, and Mendes (2009) contend that stress impacts decision making, taking into consideration the challenge and threat state; “The challenged state is the state where individuals perceive a situation as demanding but believe they have enough resources to cope with the situation. This state is characterized by efficient cardiovascular reactivity and motivation. While the threat state is where individuals perceive a situation as demanding and outweighing resources. This state is characterized by inefficient cardiovascular reactivity lack of motivation” (p. 1397-1398).

The first group when challenged showed greater cognitive adjustment than the second group when found in a threat state. The authors related these results to the fact that stress states might have led to differences in mental



and physical resources, which have, in turn, led to differences in cognitive adjustment. Furthermore, Kassam et al. assert that responses to stress have been found to correlate positively with performance with some, while others show that performance is hindered by stress. The authors explain this correlation conflict in response to the oversimplification of stress. The aforementioned physiological reactions to the challenge and threat states, are also explained by Yu (2016; citing Nesse & Young, 2000) who contends that “when organisms are faced with possible damage or a loss of resources and a “fight-or-flight” response is required, they can express protective features that allow them to survive adverse conditions and help them mitigate the harmful effects of environmental stresses” (p. 84-85).

Gary Klein (2008) discusses the contributions and attributes of the Naturalistic Decision Making (NDM) research approach that is based on fieldwork to discern the strategies employed by decision makers while making decisions under tough conditions including limited resources, limited time, uncertainty, high risk, and instability. This work enabled the analysis of the responses of decision makers and has been used as the basis for decision making and cognitive skills training (pp. 456-458). Further, Klein discusses the recognition-primed decision-making model. This model states that decision makers use their experience to formulate patterns of decisions. These patterns, according to the model, are the basis for future decisions to be taken. The model discusses decision making from two aspects: intuition and analysis.

The intuition is related to the patterns discussed above while the analysis is related to the mental analysis and contribution of decision makers in matching and analyzing the patterns to make the optimal decision. Both aspects should be considered by decision-makers while making decisions as the absence of intuition will lead to the slow process of decision making. This will, in turn, lead to either the loss of an opportunity or the occurrence of a threat. In contrast, the absence of analysis will lead to risky decision making as the lack of pattern identification leads to the disregarding of important information and previous experiences (ibid, p. 457).

6. Decision Making Based on Consequences:

Slovic, Peters, Finucane, and MacGregor (2005) focus on the importance of paying close attention to the likelihood of potential consequences of decisions made under stress or uncertainty. The authors state that decision maker should not only exploit all the technologies and quantitative techniques available to them at the time of taking a decision but should also base their decisions on their judgment of the possible consequences of the decision. This judgment is heavily linked to the feelings of decision makers towards the possible risk and benefits of the perceived decision (pp. 36-38). Along the same line of research, Dias-Ferreira, Sousa, Melo, Morgado, Mesquita,

Cerqueira, Costa, and Sousa (2009) stress the importance of selection of alternatives based on their consequences — “Decision makers should be goal oriented in order to face the ever-changing environment and the challenging conditions they encounter while making key business decisions. In order to control a decision and monitor its consequences, a flexible and efficient decision-making process should be implemented” (p. 621).

Dias-Ferreira et al. (2009) contend that “optimization of decision-making processes provides an important advantage in response to a constantly changing environment. Optimization capitalizes on the ability to select the appropriate actions on the basis of their consequences and on needs of the organization at the time of the decision, allows the decision maker to respond in an efficient way to changing situations” (p. 625). Moreover, “when behavior is repeated regularly for extensive periods without major changes in outcome value or contingency, or under uncertain situations where one cannot manipulate the probability of obtaining an outcome, general rules and habits can be advantageous. Thus, the more rapid shift to habits after chronic stress [chronic stress biases behavioral responding to become insensitive to outcome devaluation (p. 621)] could be a coping mechanism to improve performance of well-trained behaviors, while increasing the bioavailability to acquire and process new information, which seems essential for adaptation to complex environments” (ibid).

7. The Information-Gap Decision Theory (IGDT):

Duncan, Bras, and Paredis (2006) discuss an alternative approach to robust decision making under uncertainty. The authors state that multiple techniques are available to deal with decision making under uncertainty; they range from the use of subjective probabilities, possibility theory, intervals, evidence theory, to imprecise probabilities. After stating the above techniques, Duncan et al., discuss the Information-Gap Decision Theory (IGDT) approach regarding the nominal and true value of a decision. “IGDT is used to evaluate the robustness of the decision-making process applied by the decision maker” (pp. 1-5).

Also, Zhao and Zhang (2014) contend that IGDT is “a method to describe the uncertainties which cannot be described using PDF (Probability Distribution Function) or MF (Membership Function) due to the lack of sufficient information. IGDT models the errors between the actual and forecasted parameters. It is based on quantitative models and provides numerical decision-support assessments. Using this method, the decision maker can recognize priorities, evaluate risks and opportunities, and make more informed decisions ultimately” (p. 399).

As a summary of the above, multiple types of research have been conducted on the impact of stress on decision making. Stress has an impact not only on the quality of decisions made but also on the decision-making



process as a whole. This impact differs as a result of the skills of the decision maker and the techniques and approach adopted by him/her while evaluating alternatives under stressful or uncertain conditions, which may vary from short time period to a catastrophe. To leaders and executives of organizations, decision making is a critical part of their job's demands; hence, they are the most individuals who should be well-trained in and knowledgeable about how to deal with decision making under stress. Leadership decisions are those decisions upon which the survival and sustainability of an organization depend on. Stress impact on these decisions varies based on the type of stress, the type of approach of the leader to stress, and the techniques applied by the leader during the decision making process under stress.

8. Group Decision Making Under Stress:

Group decision making under stress was discussed by Driskell and Salas (1991) who stipulated that group interaction is a trend in decision making. They point out the fact that "multiple decisions require the collaborative effort of groups where decisions are largely affected by environmental factors including stress" (p. 473). They conclude that stress strengthens the hierarchical structure of a group, such that group members defer more to the leader, and the leader becomes less responsive to subordinates' task inputs (pp. 474-477). Furthermore, the authors discuss the numerous effects of stress on decision-making group members. They state that some members when under stress, are hesitant to adhere to authority. They explain this hesitancy by the fact that organizations usually respond to stress by centralizing control and authority to make decisions to high-level managers as these decisions are viewed as a response to threats from competitors: Organizational control is usually increased and the decisions of authority personnel prevail in stressful conditions. As for small-groups, it is more likely that group members will rely on the opinions and actions of the group leader while the group leader will likely reject input from group members (pp. 473-474).

Marshall (2014) contends that "for team tasks, the social behavior may be very important to overall performance. To build a shared knowledge and understanding within the team, members need to be able to communicate with one another. However, Driskell, Salas, and Johnston (1999) proposed that attentional narrowing caused by stress may extend to the social interactions between team members. They hypothesized that under stress team members may shift from a focus on teamwork to a focus on their individual subtasks" (pp. 36-37). In addition to a more individualist focus, research has found that stress has negative effects on team communication" (p. 37).

Finally, Marshall (2014) asserts that "among the contributing factors in lowering performance due to social effects of stress may be increased attention focused on

oneself, rather than on teammates, and a decline in team communication. It is likely that these effects stem from the cognitive decrements associated with stress. Whatever their origins, impaired communication, and coordination of operations will inevitably result in diminished performance outcomes" (p. 38).

9. Stress effects:

Harter, Schmidt and Hayes, (2002) assert that stress at work is associated with substantial economic consequences, including increased absenteeism, increased worker turnover, decreased worker job satisfaction and associated decreases in worker productivity. On the other hand, Chandola et al. (2008) contend that stress at work is a major public health risk associated with cardiovascular morbidity. Also, Thayer et al. (2011) measured two aspects of the physiological stress response: "vaguely mediated heart rate variability (HRV) and salivary cortisol, measures of the autonomic nervous system and the hormonal stress response, respectively. These measures were applied to workers in two different office settings namely, old office space, characterized by poorer lighting and air quality compared to the new office space with opposite better conditions" (p. 432).

The aforementioned study for the first time links the physical work environment to altered physiological aspects of the stress response. For example, Thayer et al.'s findings indicate "greater activation of both the autonomic and hormonal stress response in subjects in old office space, and a shift towards a more vaguely mediated, a lower stress hormone responsive state in subjects in the new office space" (p. 437). In addition, numerous studies have now reported that work stress is associated with increased risk of coronary heart disease (CHD) (Belkic et al., 2004; Aboa-Éboulé et al., 2007).

According to the American Institute of Stress (2017), "there are numerous emotional and physical disorders that have been linked to stress including depression, anxiety, heart attacks, stroke, hypertension, immune system disturbances that increase susceptibility to infections, a host of viral linked disorders, as well as autoimmune diseases. In addition, stress can have direct effects on the skin (rashes, hives, atopic dermatitis, the gastrointestinal system and can contribute to insomnia and degenerative neurological disorders like Parkinson's disease" (Para 1).

10. The Trier Social Stress Test (TSST):

The Trier Social Stress Test (TSST) is the most common psychological test used in stress studies and research. It is an effective laboratory protocol for stimulating stress in humans and measuring their responses. The TSST induces two types of responses to stress: physiological such as the response of the hypothalamus-pituitary-adrenal axis (HPAA) and the autonomous nervous system (ANS) and psychological

such as an increase in anxiety and emotional insecurity (Hellhammer & Schubert, 2011, p. 119). The TSST follows a systematic procedure and design. It consists of an interview and an arithmetic task (ibid, p. 120). TSST for groups follows a protocol called TSST-G protocol. It is a standardized motivated performance task protocol of socio-evaluative threat and uncontrollability in a group format (Von Dawans, Kirschbaum, & Heinrichs, 2010, p. 515). The subjects of TSST are usually required to follow a certain diet before sitting for the test. This diet is usually caffeine free in order to minimize the external stress effects (Hellhammer & Schubert, 2011, p. 120). The location and premises design are essential in ensuring the validity of the analysis of the data gathered through the test. Exhibit 1 shows a brief description of the process.

Exhibit 1. The Trier Social Stress Test (TSST) process

The TSST procedure includes a preparation period (50 min), the task (TSST-G or control condition (30 min), and a resting and debriefing period (60 min). The task phases depend on what the TSST is done for. The participants are usually subjected to different experiments that induce stress in specific situations related to the desired outcome and purpose of the test. For example, the task phase may include hypothetical job interviews, subject-area matter speeches, and some arithmetic tasks where participants may be asked to choose a number from 1 to 6 and perform certain arithmetic operations to reach a result under specific conditions.

Source: Von Dawans et al., 2010, pp. 516-518.

As a wrap-up, the TSST is a stress test that induces a physiological response, which becomes apparent by profound changes in heart rate and cortisol levels and a psychological response, which becomes apparent by subjective measures of stress, emotional insecurity and anxiety in subjects.

11. Summary of Literature Findings:

Clearly, the impact of the effect of stress on professional judgment is significant. During an emergency situation, critical judgments are frequently made under conditions of temporary or prolonged stress. Emergency decision-makers are required to process massive amounts of information, which is sometimes incomplete or faulty, under severe time constraints. The need to better understand judgment and decision-making under stress stems from high-risk occasions and emergency situations. Decision making is certainly the most important task of a manager and it is often a very difficult one.

The domain of decision analysis models falls between different cases that depend on the degree of knowledge about the outcome of the decisions. With all the advances in big data and in-memory computing, particularly the availability of big data in working memory,

it's no surprise that business leaders are relying more and more on analytics, or explicit memory to help them make the right decisions. However, this approach is only effective in routine decision making. When faced with decisions that are non-routine, and specifically those in mission-critical, time-sensitive scenarios, too much data can overwhelm executives causing them to delay key decisions, often indefinitely. In decision making under stress, or non-routine decisions, executives are better served by using their explicit memory to quickly narrow down choices, but trusting their implicit memory, and letting it override explicit memory to make the actual decision. The key is to use data to show the way, but the instinct to choose the path. Multiple tests and experiments are present to evaluate and measure the performance of individuals and groups under stress. Of those tests, the Trier Social Stress Test (TSST) has become a standard protocol for the experimental induction of moderate psychological stress in psychobiological research.

11.1. Problem definition:

In business, stress can be a determinant of the success or failure of managers in making key decisions. Stress is one of the factors that decision-makers must contend with. Managers usually don't feel the materialized impacts of stress on their performance and hence, they disregard the consequences of taking important business decisions while feeling stressed whether from personal or work-related issues. As such, managers and decision makers are furnished with an opportunity to improve their performance and decision making skills, at the same time, mitigate the impacts of stress not only on their performance but also on their daily life. This can only be done through a study that assesses and analyzes the different aspects of decision making under stress. In addition, this paper should result in the formulation of a preliminary mitigation strategy that may act as a basis for future studies and development of a complete and comprehensive business stress mitigation strategy.

11.2. Research Questions:

This research intends to answer the following questions:

- 1) What are the aspects of decision making that are affected by stress?
- 2) What is the response of managers when faced with stressful decisions?
- 3) What behavioral and physical stress impacts affect decision makers?
- 4) What is the perception of employees of their managers' performance when under stress?

12. Methodology:

12.1. Research Strategy:

"Strategy is the overall approach adopted in the research" (Hejase & Hejase, 2013, p. 78). The strategy



(design) chosen for this research project is Exploratory Research Design. Therefore, this research paper is exploratory and explanatory in nature; it uses a quantitative research method. According to Hejase et al. (2012), “using quantitative methods oblige the individual using them to collect necessary information while taking into account the information’s value, reliability, appropriateness, ambiguity, fitness, timeliness, risks, and cost” (p. 17). Furthermore, “Quantitative research involves studies that make use of statistical analyses to obtain their findings. Key features include formal and systematic measurement and the use of statistics” (Marczyk et. al, 2005, p. 17). Moreover, quantitative research methods use surveys and experiments where the research is independent of the researcher. That is why quantitative research is objective (Williams, 2007, p. 66).

12.2. Research Philosophy:

According to Hejase and Hejase (2013), research philosophy is the first issue to be taken into consideration by the researcher. “It is the way to go about doing the research” (p. 77). This research uses positivism philosophy. “Positivism is when the researcher assumes the role of an objective analyst, is independent, and neither affects nor is affected by the subject of the research” (ibid). Quantitative research is applicable to phenomena that can be expressed by quantity (Kothari, 2004, p. 3). Therefore, a quantitative approach was chosen.

12.3. Research Approach:

Elo and Helvi (2008) contend that “a deductive approach is useful if the general aim was to test a previous theory in a different situation or to compare categories at different time periods” (p. 107). This research uses a deductive approach, where the basic premise behind adopting a deductive approach provides a better understanding of the research problem using statistical analysis. The outcome of this research depends on the data gathered during the research process whether from primary or secondary sources of data. This research will reach general propositions that will answer the questions set at the beginning of the research process based on the data and information collected. The propositions may as well serve as general conclusions useful for further research.

12.4. Time Horizon:

The researchers performed a Cross-Sectional study during this research. All survey questionnaires were conducted at a particular and specific time, that is, during the period extending from April 15, 2015, to September 20, 2015. The research covers employees’ reactions and views on the impact of stress on decision making during a specific period of time.

12.5. Data Collection Techniques

This research collected primary data from a survey distributed to employees of a selected number of Lebanese organizations.

12.6. Survey Questionnaire Design:

The questionnaire is targeted at employees to analyze their knowledge, attitude, and evaluation of their managers’ performance while taking decisions under stress. The questionnaire is divided into four sections. The first section is designed to assess the decision making knowledge of employees. The second is designed to evaluate the attitude of employees towards managers’ behavior under stress. The third is designed to capture the employees’ evaluation of their managers’ performance while taking decisions under stress. The fourth is targeted at demographic information of the respondents.

12.7. Data Analysis:

All responses were entered into the SPSS program “Statistical Product and Service Solutions, an IBM product acquired by IBM in 2009 (Hejase & Hejase, 2013, p. 58). The study was performed using descriptive statistics; data tables including frequency and percentage distributions were used. Moreover, crosstabs and regression analysis were performed to study relationships between variables that may add value to the findings of the research.

12.8 Sampling and Sample Size:

This research used convenience non-probabilistic sampling based on the respondents’ willingness to participate and their agreement to speak freely. The targeted number of employees was 120; however, 100 employees responded (response rate 83.33%). Twenty questionnaires were discarded based on the fact that 12 were half-incomplete, 5 were never returned and 3 were wrongly filled.

12.9. Research Ethics:

Ghuri and Gronhaug (2005) contend that “ethics is the moral principles and values that influence the way through which researchers conduct their research activities” (cited in Hejase & Hejase, 2013, p. 55). In undertaking this research various sources have been researched in order to ensure that this study meets acceptable ethical guidelines. The researchers took the responsibility to apply and abide by all the principles of research ethics mentioned by Churchill (1999; cited in Hejase & Hejase, 2013, p. 55-56) and Bryman and Bell (2011), including (pp. 128-142): Harm to Participants; Lack of Informed Consent; Invasion of Privacy; Deception; Data Management; Copyright; Reciprocity and Trust; and Affiliation and Conflict of Interest.



13. Findings:

13.1. Demographic Statistics:

Results show that 52% of the respondents are males and 48% are females. Also, 69% of the respondents are single, 26% are married and only 5% are divorced. Moreover, data show that the 25-31 years old is the age group with the most percentage (58%); the second being 18-24 years old (23%), and the third 32-38 years old (10%). The other two age groups have a total percentage of 9%. This shows that the sample chosen is of a young age. Further, 29% of the respondents have 4-6 years of experience, 26% have 1-3 years, and 18% have 7-9 years, while 14% have more than 10-12 years of experience. The remaining 10% have more than 13 years of experience and only 4% have less than 1 year of experience.

As for respondents' salary ranges, results show that 57% of the respondents have a salary range between \$1001 and \$2000, 23% between \$2001 and \$3000, and 11% less than \$1001. The remaining 9% of the respondents have a salary range above \$3000. Furthermore, results show that 10% of the respondents' primary industry consists of consumer goods, 7-8% engage in industries related to transportation, logistics, financial services, professional services, IT, healthcare, education, entertainment, and manufacturing, while 4-6% of the respondents deal with telecommunications, government, construction, and retailing. Only 2% of the respondents work in the chemicals industry. Table 1 depicts the aforementioned results.

Table 1: Respondents' Company Primary Industry

	Frequency	Percent
Financial services	7	7.0
Professional services	7	7.0
IT and technology	7	7.0
Healthcare, pharmaceuticals, and biotechnology	8	8.0
Telecommunications	6	6.0
Manufacturing	8	8.0
Government/Public sector	4	4.0
Education	7	7.0
Entertainment, media, and publishing	8	8.0
Chemicals	2	2.0
Consumer goods	10	10.0
Construction and real estate	5	5.0
Transportation, travel and tourism	7	7.0
Retailing	6	6.0
Logistics and distribution	8	8.0
Total	100	100.0

13.2. Statistics of Decision making knowledge:

This section studies respondents' knowledge of decision making under stress. The variables examined are stress indicators, causes of stress, awareness of physical and behavioral stress impacts. Results show that 61% of the respondents believe that work performance alteration is the most visible stress indicator at work. 49% believe that change in attitude and behavior at work is one of the stress indicators, while only 43% of the respondents chose alteration in relationships at work as a stress indicator. As for the causes of stress, 81% of the respondents agree that both environments inside and outside work, in general, are the major cause of stress; 11% related it to domestic problems; and, 8% to the physical environment. Moreover, the majority (97%) of the respondents are aware of the impacts of stress. Tables 2 shows the results of the impacts of physical and behavioral stress. This Table also shows that responses are classified into six scales as follows: LI: Least Important (code: 1); NI: Not Important (code: 2); SNI: Slightly Not Important (code: 3); SI: Slightly Important (code: 4); I: Important (code: 5); and MI: Most Important (code: 6).

Table 2: Physical Stress Impacts

Causes	Valid Percentage						Mean	Std. Dev.
	LI	NI	SNI	SI	I	MI		
Raised heart rate	9	12	24	17	26	12	3.81	1.450
Gastrointestinal problems	5	5	31	33	10	16	3.95	1.393
Skin conditions	43	19	12	4	11	11	2.54	1.804
Headaches	9	5	8	29	31	18	4.03	1.500
Nausea, aches and pains	9	18	18	9	17	29	3.89	1.712
Lowering of resistance to infection	23	41	8	7	7	14	2.86	1.813

Results show that the respondents rated headaches, gastrointestinal problems, and nausea as the most important, on the average, physical impact of stress. The respondents nominated skin conditions and low resistance to infection as the least and not important physical impact of stress. As for Table 3, it shows that the respondent's rate (based on 4-level scale) tiredness (mean = 3.05) and reduced quality of work (mean = 2.65) as the most important, on the average, behavioral impact of stress. While reduced attention span (mean = 2.24) and loss of sense of humor (mean = 2.19) are classified as the least important behavioral impact of stress.

Table 4 shows additional behavioral impacts of stress: the respondents nominated poor sleep pattern (mean = 2.57) as well as verbal or physical aggression (mean = 2.65) as the most important behavioral impact of stress (on the average). Poor timekeeping and increased sick leave



are rated as the least important behavioral impact of stress by the respondents.

Table 3: Behavioral Stress Impacts

Causes	LI	Not So Important	I	MI	Mean	Std. Dev.
	Valid Percentage					
Tiredness and irritability	17	14	32	37	3.05	1.129
Reduced quality of work, indecisiveness and poor judgment	7	30	33	30	2.65	1.033
Reduced attention span and impaired memory	27	38	17	18	2.24	1.038
Loss of sense of humor	48	18	16	18	2.19	1.175

Table 4: Behavioral Stress Impacts

Causes	LI	Not So Important	I	MI	Mean	Std. Dev.
	Valid Percentage					
Poor sleep pattern, impaired concentration or excessively 'jumpy'	21	20	29	30	2.57	1.168
Increased sick leave	23	18	29	30	2.46	1.120
Poor time keeping	36	37	22	5	2.43	1.068
Verbal or physical aggression	26	18	20	36	2.65	1.207

Table 5: Pearson Correlation

Manager's reactive decision-making plans	R	P. Sig.
Manager's reactive decision-making plans	1.000	-
Manager is a good role model	-.549	.000
Manager treats the team members with respect	-.119	.119
Manager does what he/she says	-.342	.000
Manager acts calmly in pressured situations	-.328	.000
Manager takes a consistent approach to managing	-.549	.000
Manager moods are predictable	-.081	.211
Manager does not transmit his/her stress to the team	-.118	.120
Manager approaches deadlines calmly	-.293	.002
Manager welcomes suggestions for improvements from the team	-.447	.000
Manager allows the team to plan their workloads	-.271	.003
Manager creates realistic deadlines	-.300	.001
Manager deals with problems by himself rather than relying on others	-.533	.000
Manager allows his/her team to approach their work in their own way	-.443	.000
Manager shows a consideration for the team's work-life balance	-.230	.011
Manager's adherence to normal decision-making process	.541	.000
Manager's implementation of Risk Assessment Matrix (RAM) to analyze the risks of unexpected decisions	.378	.000
Manager's evaluation of the consequences of decisions made under pressure	.254	.005
Manager's applied technique under stressful situations	-.170	.046
Manager's applied tool under stressful situations	.229	.011

Note: Correlation Count is based on 100 respondents.

13.3. Decision making under stress: implementation issues:

Results show that 79% of the respondents' managers have plan in place for situations that call for reactive decision-making, 68% answered that their managers follow the normal decision-making process in stressful situations, 65% answered that their managers implement a risk assessment matrix to analyze the risks of unexpected decisions, and 62% replied that their managers evaluate the consequences of decisions made under pressure. Moreover, when respondents are asked about the applied technical tools to support decision making in stressful situations, their responses are as follows: 50% use brainstorming, 8% use weighted average approach, 8% use Net Present Value (NPV) analysis, and 34% use scenario analysis. Furthermore, respondents assert that their managers use Balanced Score Card approach for comprehensive analysis (22%), Decision Checklists (73%), as well as Pareto Charts (5%).

13.4. Inferential Statistics – Regression Analysis:

According to Hejase & Hejase (2013) a multiple regression model is needed when the researcher faces the scenario where more than one independent variable is causing variations in the dependent variable under study (p. 478). Therefore, the next step is to construct possible relationship which may help in stating the relationship and the potential effects of stress on decision making.

For this regression analysis:

Dependent variable: the manager's reactive decision-making planning since it reflects how managers make decisions under stress.



Independent variables: Manager is a good role model, Manager treats the team members with respect, Manager does what he/she says, Manager acts calmly in pressured situations, Manager takes a consistent approach to managing, Manager moods are predictable, Manager does not transmit his/her stress to the team, Manager approaches deadlines calmly, Manager welcomes suggestions for improvements from the team, Manager allows the team to plan their workloads, Manager creates realistic deadlines, Manager deals with problems by himself rather than relying on others, Manager allows his/her team to approach their work in their own way, Manager shows consideration for the team's work-life balance, Manager's adherence to normal decision-making process, Manager's implementation of Risk Assessment Matrix (RAM) to analyze the risks of unexpected decisions, Manager's evaluation of the consequences of decisions made under pressure, Manager's applied technique under stressful situations, and Manager's applied tool under stressful situations. Table 5 depicts the values of Pearson Correlation R and P-sig between all the different variables. All p-Sig above 5% are excluded.

Next, regression analysis using Step-wise Regression method is performed and the resultant model, after eight cycles of computations, has led to the final model depicted in Table 6 with 8 independent variables only (out of 19 variables).

Dependent variable: Manager's reactive decision-making plans

Eight independent variables: Manager takes a consistent approach to managing, Manager's adherence to normal decision-making process, Manager's implementation of Risk Assessment Matrix (RAM) to analyze the risks of unexpected decisions, Manager allows his/her team to approach their work in their own way, Manager does not transmit his/her stress to the team, Manager is a good role model, Manager treats the team members with respect, Manager deals with problems by himself rather than relying on others.

Results from Table 6 show that the resultant model 8 (after 8 cycles of regression analysis) is quantitatively suitable due to the values of the coefficient of correlation ($R = 0.847$, where index 'h' represents the resultant regression predictors) and the coefficient of determination ($R^2 = 0.718$); moreover, the model is qualitatively acceptable and statistically significant with F-value = 4.235 with an associated probability of 0.042 which is less than $\alpha = 0.05$. Durbin Watson statistic gives information about whether the assumption of independent errors is tenable. The result indicates 1.619, which is relatively close to 2 indicating that assumption is almost met.

Moreover, results of ANOVA testing indicate that the regression equation predicts better than would be expected by chance. The F-value = 28.913 with an associated probability of 0.000 which is less than $\alpha = 0.01$. From the above results and interpretation, it can be concluded that the model is the best fit model for this regression analysis. In addition, Table 7 shows the standardized coefficients with their corresponding P. Sig. characterizing the independent variables.

Table 7 gives the values of the unstandardized as well as the standardized coefficients with the p-sig value for each variable. Herein is the analysis of the results of the model.

The resultant standardized regression equation is
 Reactive Plans =
 - 0.367 Con. App. + 0.237 Dec. Proc. + 0.248 RAM
 (0.000) (0.001) (0.000)
 - 0.218 Team App. + 0.286 Trans. Stress - 0.343 Role
 (0.004) (0.000) (0.000) Model
 + 0.269 Respect - 0.142 Problems
 (0.000) (0.042)

The analysis of the coefficient values is based on the fact that for every one standard deviation change in the independent variable, the dependent variable will either increase (Beta has a positive value) or decrease (Beta has a negative value).

Table 6: Model 8 Summary

Model	R	R ²	Adjusted R ²	Std. Error of Estimate	Change Statistics					Durbin-Watson
					R ² Change	F Change	df1	df2	Sig. F Change	
8	.847 ^h	.718	.693	.227	.013	4.235	1	91	.042	1.619

h. Predictors: (Constant): Manager takes a consistent approach to managing; Manager's adherence to normal decision-making process; Manager's implementation of Risk Assessment Matrix (RAM) to analyze the risks of unexpected decisions; Manager allows his/her team to approach their work in their own way; Manager does not transmit his/her stress to the team; Manager is a good role model; Manager treats the team members with respect; Manager deals with problems by himself rather than relying on others

i. Dependent Variable: Manager's reactive decision-making plans



This reverse relation is due to the reverse coding of original 5-level Likert scale variable where the scale is in a decreasing order). Finally, the following interpretation is presented:

Respondents have characterized their managers' decision making under stress, which is measured as having plans in place for reactive decisions as consistent, systematic (normal decision making or step by step approach), readiness by applying RAM analysis, considerate to their employees' responses, respectful to employees, and cautious not to transfer his/her own stress to subordinates, and deal with problems on their own.

By analyzing the p-sig values for all the independent variables, all the variables have a p-sig value less than 5% (.000). This indicates that the standardized regression equation is suitable and statistically significant. Furthermore, Figures 1 and 2 show the regression. Standardized residual histogram and the Normal P-Plot of regression standardized residual.

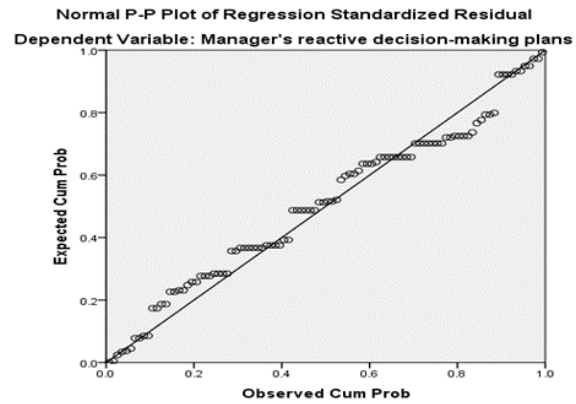


Figure 2. Normal P-Plot of Regression Standardized Residual.

Table 7: shows the standardized coefficients with their corresponding P. Sig. characterizing the independent variables.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.354	.199		6.803	.000
Manager takes a consistent approach to managing	-.147	.033	-.367	-4.410	.000
Manager's adherence to normal decision-making process	.207	.058	.237	3.552	.001
Manager's implementation of Risk Assessment Matrix (RAM) to analyze the risks of unexpected decisions	.212	.051	.248	4.184	.000
8 Manager allows his/her team to approach their work in their own way	-.075	.026	-.218	-2.918	.004
Manager does not transmit his/her stress to the team	.086	.022	.286	3.856	.000
Manager is a good role model	-.126	.032	-.343	-3.987	.000
Manager treats the team members with respect	.114	.031	.269	3.636	.000
Manager deals with problems by himself rather than relying on others	-.047	.023	-.142	-2.058	.042

Dependent Variable: Manager's reactive decision-making plans

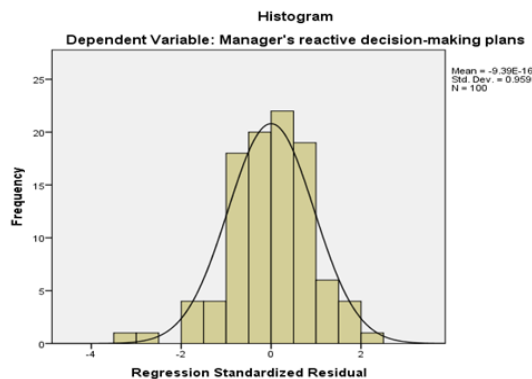


Figure 1. Regression Standardized Residual Histogram

13.5. Reliability analysis:

In regards to reliability, an assessment of the internal consistency of each survey set of items is performed, essentially assessing whether all the items belonging to one set measure 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 (Burns & Burns, 2008), 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 (Hair, Anderson, Tatham, & Black, 1998; Nunally, 1978).

Thus, the resulting Cronbach's alphas, after the suggested eliminations is 0.908, which is excellent as measures of internal reliability for the attitude scale in the Likert section.

13.6. Quantitative Data Analysis Summary:

Based on the above analysis, the following conclusions can be drawn: Employees in their evaluation of their managers' decision-making skills and performance under stress don't rely on the managers' attitudes and behaviors as the results show that most of the variables related to the managers' attitudes are eliminated automatically when creating the regression model.

Moreover, the analysis shows that even though managers can be regarded as role models by their employees; however the managers' performance under stress is evaluated negatively by said employees, though employees relate managers' allowing them to participate in problem-solving and adopting a team approach to their performance under stress. In addition, the regression model adopted shows that the employees rely mostly on the managers' adherence to the normal decision-making process and the tools and techniques they apply in their assessment of their managers' reactive decision plans under stress. From the above, it can be concluded that employees rely on objective criteria when evaluating their managers' performance without consideration to their managers' attitudes or behaviors.

14. Discussion:

The purpose of this paper is to assess the impact of stress throughout the decision-making process and not only at the time of taking a decision. The paper also highlights the importance of mitigating such stress in order to reach an effective decision. The impact of stress is studied from two perspectives, decision-makers themselves and their subordinates.

As mentioned earlier, this research addresses several questions:

(1) What are the aspects of decision making that are affected by stress?

Table 5 shows that respondents believe that their managers' decision making under stress shows positive signs as to the following aspects: Consistency, dealing with deadlines, attitude toward welcoming suggestions for improvement and involving teams to plan their workload.

It is worth mentioning that the above aspects, if not managed well, lead to depression as asserted by Murali (2009; cited in Sushmitha, 2011), "depression is usually related to work and stress people undergo because of the pressure to perform better, compete with other colleagues and meet tight deadlines. Most of their work is target-oriented and if targets are not met, it can lead to anxiety. Peers are not very supportive as they also competing in the same field" (p. 35).

(2) What is the response of managers when faced with stressful decisions?

The regression model shows that respondents have characterized their managers' response to stress as positive when: Having consistent plans in place, practicing systematic (normal decision making or step by step approach), showing readiness by applying RAM analysis, being considerate to their employees' responses, being respectful to employees, being cautious not to transfer own stress to subordinates, and dealing personally with problems rather than relying on others.

The aforementioned dimensions reflect a mature attitude of the respondents' managers who work under stress; a fact that mitigates work burnout for employees. According to Leger-Hornby and Bleed (2006), "a person who is overwhelmed, overworked, or burned out can not only be ineffective in his or her job and have a very negative effect on colleagues but also is at risk of serious depression that can threaten employment, relationships, and health" (Para 35, section 7.8).

(3) What are behavioral and physical stress impacts to affect decision makers?

Results show that the respondents rated headaches, gastrointestinal problems, and nausea as the most important, on the average, physical impacts of stress. On the other hand, respondents rated tiredness and reduced quality of work as the most important, on the average, behavioral impacts of stress. Coetzee and Rothmann (2005, p.48) raised a concern that "stress is the second most frequently reported condition of individuals who disclosed a work-related illness". Therefore, organizations whose employees suffer from frequent cases of illness due to stress have to train the management on stress management actions and occupational health and well-being improvement (Gatchel & Schultz, 2012).

(4) What is the perception of employees towards their managers' performance under stress?

Respondents perceive their managers positively along the following dimensions: Allowing their teams to approach their work in their own way, Showing a consideration for the team's work-life balance, Adhering to normal decision-making process (step-by-step), Implementing Risk Assessment Matrix (RAM) to analyze the risks of unexpected decisions, Evaluating the consequences of decisions made under pressure, Applying decision making technique under stressful situations (brainstorming, scenario analysis, etc...), and Applying of decision tools under stressful situations (Balanced Score Cards, Check Lists, Pareto Analysis, etc...).

The aforementioned behavioral perspectives of respondents' managers under stress relieve employees from being under stressful conditions while managers themselves are managing organizational stressful condition necessitating adequate attitude towards decision making.



Such an outcome leads to the inference that employees will not be obliged to think about alternative jobs with less stressful conditions. Mxenge, Dywili and Bazana (2014), contend that “there is a significant positive relationship between organizational stress and intention to quit. It shows that employees experiencing organizational stress have high turnover intentions” (p. 26). Furthermore, this research shows that 61% of the respondents believe that work performance alteration is the most visible stress indicator at work; 49% believe that change in attitude and behavior at work is noticed as one of the stress indicators, while only 43% of the respondents choose alteration in relationships at work as stress indicator.

These results fit what is reported by El Shikieri and Musa (2012) in their research, “lack of participation by workers in decision making, poor communication in the organization, lack of family-friendly policies, poor social environment and lack of support or help from co-workers and supervisors are considered job stressors” (p. 137). As for the causes of stress, 81% of the respondents agree that both environments inside and outside work, in general, are the major cause of stress. Such results shed light on the recurrent issue at work, namely, work-life conflict. Though this research did not investigate the impact of work-life conflict as a stressor, it is worth mentioning that reported research findings provide evidence of negative consequences. A study conducted by Noor and Maad (2008) tested the relationship between work-life conflict, stress and turnover intention. “The study yielded results showing that turnover intention is positively correlated with stress. In their study, Noor and Maad (2008) confirmed that as an individual’s stress level increases, they are more likely to leave their stressful position and seek alternative positions either within the field or in another industry” (Mxenge, Dywili and Bazana, 2014, p. 26).

Stress is one of the factors that decision-makers must contend with in most life-or-death situations. Understanding how stress affects decision-making is complicated by the fact that not all stress responses are created equal. The authors of this paper recommend the following insights:

Decision-making is certainly the most important task of a manager that is based on decision analysis models, depending on the degree of knowledge of the outcome of the decisions. According to Bapat (2014), “it’s no surprise that business leaders are relying more and more on analytics, or explicit memory (involving the conscious recollection of information, experiences, and events) to help them make the right decisions. This is fine for routine decisions – though even here, I would argue, insights from big data should still be combined with instincts honed over years of experience” (Para 5). However, and again according to Bapat, “when faced with decisions that are non-routine, and specifically those in mission-critical, time-sensitive scenarios, too much data can overwhelm

executives causing them to delay key decisions, often indefinitely (i.e., suffering analysis paralysis). In these scenarios, executives are better served by using explicit memory to quickly narrow down choices, but a trusting implicit memory (involves anything one learns to go through repetitive practice), and letting it override explicit memory to make the actual decision. The key is to use data to show the way, but the instinct to choose the path” (Para 6).

Employees rely on objective criteria when evaluating their managers’ performance without consideration for their managers’ attitudes or behaviors.

14.1. Research Contribution:

The work of the researchers throughout and after the completion of this paper slightly contributes to the existing body of knowledge regarding the impact of stress on decision-making. The contributions are limited by the fact that the research was done within the context of few Lebanese organizations and sectors. Nevertheless, this research is new in the Lebanese market and helps in minimizing the gap of knowledge and the lack of research and case studies on the subject of the impact of stress on decision-making in the Lebanese market.

The findings of this research are also new and contribute to prior research findings on the subject of the research. Moreover, these findings can serve as the basis for future more comprehensive research in the larger context of Lebanese market and in the region. The researchers are also able to formulate an adjusted model for the impact of stress on decision-making that is used as a benchmark in this research. This adjusted model is the basis for the development of the organizational specific model. Finally, the findings of the research can be useful in the future preparations and training in promotions of managers in organizations.

15. Recommendations:

Based on the conclusions mentioned above, and in order to ensure the smooth success of future decisions taken under stress, multiple measures can be recommended to organizations. First, organizations should run a yearly employee engagement survey across each department, giving the employees the opportunity to express their point of view. As Macey and Schneider (2008) suggest, “a commonality exists amongst all definitions of engagement, regardless of the source, which in essence depicts employee engagement as a ‘desirable condition’ that has an organizational purpose and ‘connotes involvement, commitment, passion, enthusiasm, focused effort and energy, so it has both attitudinal and behavioral components” (p. 4). The employee engagement survey is designed to assess areas such as leadership, agency culture, motivation, collaboration, empowerment, trust, training, and work-life balance. However, speaking at the Employee Engagement Summit in 2009, John Purcell, Strategic



Academic Advisor at Acas National, suggested six key factors that limit or damage employee's engagement; these are depicted in Exhibit 2.

Exhibit 2. Key factors that damage employee's engagement

- Job insecurity: fear of job loss is particularly likely during a recession.
- Unfairness, particularly in reward and pay systems.
- Jobs with no space, i.e. repetitive work with short cycle times such as call center work with very short call times.
- Highly stressful jobs with very little flexibility or autonomy.
- Poor line management behavior and bullying.
- Working for long periods of time without a break.

Source: Purcell, 2009; cited in Robertson-Smith and Markwick, 2009.

Moreover, organizations should rely on professionals that work in the sector of business stress training in order to promote stress management and introduce for both management and employees' ways of actively managing wellness and well-being that will help them evaluate any decision taken under stress

15.1. Decision Making Under Stress:

In order to reduce the failure rate of decisions made by managers under stress and the consequences of such failure, it is useful to establish a guideline that governs the procedures that should be followed by managers as well as employees. The development of a comprehensive strategic policy that covers the whole reactive decision-making process can help in reducing the likelihood and impacts of the negative consequences of such decisions.

In the case of Lebanon, organizations and their managers should review prior decision making processes and studies before embarking on uncertain decisions taken under stress. Multiple case studies with various industries and various organizational sizes can be conducted to identify the reasons for decision's success or failure. Specific industries or organizational sizes and even managers from different levels might have different decision-making skills and reactions to stress; this may have an influence upon decision's success. All of the above factors could drive Lebanese organizations to create a research framework and model which may be useful for understanding critical success factors for reactive decisions within the context of the Lebanese market or simply create a set of best practices that may be used as a reference.

This research proposes a solution that would meet the needs of all parties related to the subject matter. For decision makers, the implications represent a means of highlighting stress impacts and ways to control and minimize those impacts. For subordinates of decision

makers, the research addresses the need of adapting to stressful decision makers and assisting them to reach the best decisions. As for the research itself, the project addresses the need of help in reducing an existing gap and highlights new gaps in the analysis of the effects of stress throughout the decision making the process at selected Lebanese organizations.

16. Limitations:

Sample size and the convenience sampling is one of the limitations. Consequently, findings of this research must not be generalized, although these findings are eminent from primary data which provides originality to the exploratory research presented herein. Furthermore, the limited number of variables investigated would not label this study as comprehensive.

Regardless of the aforementioned limitations, this research offers an important insight into how Lebanese companies deal with decision making under stress and contributes to further understanding of the Lebanese employees' views of their managers.

17. Future research:

Based upon the work done during the course of this research, the researchers have identified the following benefits that can serve as lessons learned for future research:

Defining a new gap

The researchers were able to define a new gap in the context of the Lebanese market regarding decision making under stress. The gap defined can serve as the basis for future studies.

Creating a need for qualitative research

Developing and conducting focus group sessions with managers may enrich the outcomes. Conducting these sessions with managers from different levels adds a direct insight into the subject, and results would serve to validate the quantitative results.

Future research should further broaden the investigation

There is an opportunity to study and analyze the impacts and implications of stress in all its types and resources, on the decisions taken by managers. These impacts can be analyzed from the gender perspective, where gender-specific strategies can be developed based on this analysis.

Acknowledgements:

The authors would like to acknowledge the valuable constructive criticism and editing performed by Mrs. Henriette Skaff, senior editor at American University of Science and Technology's Publications Department.

Corresponding Author:

Hussin J. Hejase, Ph.D.

Faculty of Business Administration, Al Maaref University, Beirut, Lebanon.

E-mail: hhejase@mu.edu.lb

References:

1. Aboa-Éboulé, C., Brisson, C., Maunsell, E., Mâsse, B., Bourbonnais, R., Vézina, M., ... & Dagenais, G. R. (2007). Job strain and risk of acute recurrent coronary heart disease events. *Jama*, 298(14), 1652-1660.
2. American Psychological Association (APA). (2010). Ethical Principles of Psychologists and Code of Conduct. Retrieved April 13, 2014, from *American Psychological Association (APA)*: <http://www.apa.org/ethics/code/index.aspx?item=3>
3. Bapat, V. (2014, July 29). *Choke Point: How To Make Critical Decisions When Under Pressure*. Retrieved September 10, 2017, from <http://www.digitalistmag.com/innovation/2014/07/29/make-critical-decisions-when-under-pressure-01256483>
4. Belkic, K. L., Landsbergis, P.A., Schnall, P.L., & Baker, D. (2004). Is job strain a major source of cardiovascular disease risk? *Scandinavian Journal of Work Environment Health*, 30(2):85–128.
5. Bryman, A., & Bell, E. (2015). *Business research methods*. Oxford University Press, USA.
6. Burns, R. B., & Burns, R. A. (2008). *Business research methods and statistics using SPSS*. London: SAGE Publications.
7. Cannon, W.B. (1914). The emergency function of the adrenal medulla in pain and the major emotions. *Am. J. Physiol.*, 33, 356-372.
8. Chandola, T., Britton, A., Brunner, E., Hemingway, H., Malik, M., Kumari, M., Badrick, E., Kivimaki, M., & Marmot, M. (2008). Work stress and coronary heart disease: what are the mechanisms? *European Heart Journal*, 29(5):640–648.
9. Coetsee, S.E. & Rothmann, S. (2005). Occupational stress, organizational commitment and ill health of employees at a higher education institution in South Africa. *South African Journal of Industrial Psychology*, 31(1), 47-54.
10. Dane, E., & Pratt, M. G. (2007). Exploring Intuition And Its Role In Managerial Decision Making. *Academy of Management Review*, 32(1), 33-54.
11. Dewe, P.J., O'Driscoll, M.P., & Cary L. Cooper, C.L. (2012). Theories of Psychological Stress at Work. In: R.J. Gatchel and I.Z. Schultz (eds.), *Handbook of Occupational Health and Wellness*, (pp. 23-38). New York, NY: Springer Science + Business Media.
12. Dias-Ferreira, E., Sousa, J. C., Melo, I., Morgado, P., Mesquita, A. R., Cerqueira, J. J., et al. (2009, July 31). Chronic Stress Causes Front striatal Reorganization and Affects Decision-Making. *Science*, 325, 621-625.
13. Driskell, J. E., & Salas, E. (1991). Group Decision Making Under Stress. *Journal of Applied Psychology*, 76(3), 473-478.
14. Driskell, J. E., Salas, E., & Johnston, J. (1999). Does stress lead to a loss of team perspective? *Group Dynamics: Theory, Research, and Practice*, 3(4), 291-302. <http://dx.doi.org/10.1037/1089-2699.3.4.291>
15. Duncan, S. J., Bras, B., & Paredis, C. J. (2008). An Approach to Robust Decision Making under Severe Uncertainty in Life-Cycle Design. *International Journal of Sustainable Design*, 1(1), 45-50.
16. El Shikieri, A. B., & Musa, H. A. (2012). Factors associated with occupational stress and their effects on organizational performance in a Sudanese University. *Creative Education*, 3(01), 134.
17. Elo, S., & Helvi, K. (2008). The Qualitative Content Analysis Process. *Journal of Advanced Nursing*, 62(1), 107-115.
18. Ganster, D. C. (2005). Executive Job Demands Suggestions from a Stress and Decision-Making Perspective. *Academy of Management Review*, 30(3), 92–502.
19. Gatchel, R. J., & Schultz, I. Z. (2012). *Handbook of Occupational Health and Wellness*. Handbooks in Health, Work, and Disability. New York: Springer Science and Business Media. DOI, 10, 978-1.
20. Greenberg, J. (2011). *Behavior in Organizations*. (10th edition). England: Pearson Education Ltd.
21. Greenberg, E., & Baron, R.A. (2008). *Behavior in Organizations*. (9th ed.). Upper Saddle River, New Jersey: Pearson-Prentice hall
22. Hair, J., Anderson, R., Tatham, R., & Black, W. (1998). *Multivariate data analysis*. Upper Saddle River, NJ: Prentice Hall.
23. Hansen, F. (2016). *Stress in the Workplace*. Retrieved January 20, 2016, from <http://adrenalfatiguesolution.com/stress-in-the-workplace/>
24. Harter, J.K., Schmidt, F.L., & Hayes, T.L. (2002). Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. *Journal of Applied Psychology*, 87, 268–279.
25. Hejase, H. J., Hejase A. J., & Hejase, H. A.N.J. (2012). *Quantitative Methods for Decision Makers: Management Approach*. Beirut: Dar Sader Publishers.
26. Hejase, A.J., & Hejase H.J. (2013). *Research Methods: A Practical Approach for Business Students*, (2nd edition). Philadelphia, PA: Masadir Inc.
27. Hellhammer, J., & Schubert, M. (2012). The physiological response to Trier Social Stress Test relates to subjective measures of stress during but not before or after the test. *Psych neuroendocrinology*, 37, 119–124.
28. Johnston, J. H., Driskell, J. E., & Salas, E. (1997). Vigilant and Hypervigilant Decision Making. *Journal of Applied Psychology*, 82(4), 614-622.
29. Kassam, K. S., Koslov, K., & Mendes, W. B. (2009). Decisions under distress: Stress profiles influence anchoring and adjustment. *Psychological science*, 20(11), 1394-1399.

30. Kendall, E., Murphy, P., O'Neill, V., & Bursnall, S. (2000). Occupational Stress: Factors that Contribute to its Occurrence and Effective Management. *Centre for Human Services, Griffith University*. Retrieved January 20, 2016, from <http://www.mentalhealthpromotion.net/resources/occupational-stress-factors-that-contribute-to-its-occurrence-and-effective-management.pdf>
31. Klein, G. (2008). Naturalistic Decision Making. *Human Factors*, 50(3), 456–460.
32. Kowalski-Trakofler, K.M., Vaught, C., & Scharf, T. (2003). Judgment and decision making under stress: an overview for emergency managers. *International Journal of Emergency Management*, 1(3), 278-289.
33. Leger-Hornby, T., & Bleed, R. (2006). Work and life: Achieving a reasonable balance. Retrieved August 1, 2012.
34. Macey, W.H., & Schneider, B. (2008). The meaning of employee engagement. *Industrial and Organizational Psychology*, 1, 3–30.
35. Marshall, A. D. (2014). *Toward a Model of Team Decision Making Under Stress*. (Honors Thesis). Program in Psychology in the College of Sciences and in The Burnett Honors College at the University of Central Florida Orlando, Florida, USA. Retrieved September 10, 2017, from http://etd.fcla.edu/CF/CFH0004629/Marshall_Alyssa_D_201405_BS.pdf
36. Mxenge, S.V., Dywili, M., & Bazana, S. (2014). Organizational Stress and Employees' Intention to Quit amongst Administrative Personnel at the University of Fort Hare, Eastern Cape, South Africa. *International Journal of Research in Social Sciences*, 4(5), 13-29.
37. Nesse, R.M., & Young, E.A. (2000). Evolutionary origins and functions of the stress response. *Encycl. Stress*, 2, 79-84.
38. Noor, S., & Maad, N. (2008). Examining the Relationship between Work-Life Conflict, Stress and Turnover Intentions among Marketing Executives in Pakistan. *International Journal of Business and Management*, 3(11), 93-102.
39. Nunally, J. (1978). *Psychometric* (2nd edition). New York: McGraw Hill.
40. Oosthuizen, J.D., & Van Lill, B. (2008). Coping with stress in the workplace, *SA Journal of Industrial Psychology*, 34(1), 64- 69.
41. Oxford Brooks University. (2012). *Stress management*. Retrieved January 20, 2016, from <https://www.brookes.ac.uk/student/services/health/str ess.html>
42. Purcell, J. (2009). *Maintaining employee engagement in difficult times*. Employee Engagement Summit 2009.
43. Robertson-Smith, Gemma, & Markwick, Carl (2009). *Employee Engagement A review of current thinking*. Brighton, UK: Institute for Employment Studies. Retrieved September 10, 2017, from <http://www.employmentstudies.co.uk/system/files/resources/files/469.pdf>
44. Salas, E., Driskell, J.E., & Hughes, S. (1996). Introduction: The study of stress and human performance. In J.E. Driskell & E. Salas (Eds.), *Stress and Human Performance* (pp. 2- 38). Mahwah, NJ: Lawrence Erlbaum Associates Inc.
45. Slovic, P., Peters, E., Finucane, M. L., & MacGregor, D. G. (2005). Affect, Risk, and Decision Making. *Health Psychology*, 24(4 (Suppl.)), S35–S40.
46. Sushmitha, Uma Devi (2011). A Study on Stress Management and Coping Strategies With Reference to IT Companies. *Journal of Information Technology and Economic Development* 2(2), 30-48.
47. Thayer, J. F., Verkuil, B., Brosschot, J.F., Kampschroer, K., West, A., Sterling, C., Christie, I.C., Abernethy, D., Sollers, J.J., Cizza, G., Marques, A.H., & Sternberg, E.M. (2011). Effects of the Physical Work Environment on Physiological Measures of Stress. *European Journal Cardiovasc Prev Rehabil.*, 17(4): 431–439.
48. The American Institute of Stress. (2017). *Stress Effects*. Retrieved September 10, 2017, from <https://www.stress.org/stress-effects/>
49. Useem, M., Cook, J., & Sutton, L. (2005). Developing Leaders for Decision Making Under Stress: Wildland Firefighters in the South Canyon Fire and Its Aftermath. *Academy of Management Learning & Education*, 4(4), 461–485.
50. Von Dawans, B., Kirschbaum, C., & Heinrichs, M. (2010). The Trier Social Stress Test for groups (TSST-G): A new research tool for controlled simultaneous social stress exposure in a group format. *Psych neuroendocrinology*, 36(4), 514–522.
51. Yu, R. (2016). Stress potentiates decision biases: A stress-induced deliberation-to-intuition (SIDI) model. *Neurobiol Stress*, 3, 83–95.
52. Zhao Y., & Zhang, S. (2014). Application of Information-Gap Decision Theory to Generation Asset Allocation. In: Li K., Xue Y., Cui S., Niu Q. (eds) *Intelligent Computing in Smart Grid and Electrical Vehicles*. LSMS/ICSEE 2014. Communications in Computer and Information Science, 463. Springer, Berlin, Heidelberg.