T.R.
GEBZE TECHNICAL UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES

THE RELATIONSHIP AMONG INTUITION, CREATIVITY, AND LEARNING IN PROJECT TEAMS

NAZİFE ORHAN ŞİMŞEK
A THESIS SUBMITTED FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
DEPARTMENT OF BUSINESS ADMINISTRATION

GEBZE
2020

T.R.

GEBZE TECHNICAL UNIVERSITY

INSTITUTE OF SOCIAL SCIENCES

THE RELATIONSHIP AMONG INTUITION, CREATIVITY, AND LEARNIN IN PROJECT TEAMS

NAZİFE ORHAN ŞİMŞEK

A THESIS SUBMITTED FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF BUSINESS ADMINISTRATION

THESIS SUPERVISOR

PROF. DR. ALİ EKBER AKGÜN

GEBZE

2020

GEBZE TEKNİK ÜNİVERSİTESİ	**DOKTORA JÜRİ ONAY FORMU**

GTÜ Sosyal Bilimler Enstitüsü Yönetim Kurulu'nun 17../01..2020.. tarih ve 2020...2.. sayılı kararıyla oluşturulan jüri tarafından 10.../02../2020 tarihinde tez savunma sınavı yapılan Nazife ORHAN ŞİMŞEK'İN 'in tez çalışması İşletme Anabilim Dalında DOKTORA tezi olarak kabul edilmiştir.

JÜRİ

ÜYE
(TEZ DANIŞMANI): PROF. DR. ALİ EKBER AKGÜN

ÜYE : PROF. DR. HALİT KESKİN

ÜYE : PROF. DR. HÜSEYİN İNCE

ÜYE : PROF. DR. SALİH ZEKİ İMAMOĞLU

ÜYE : DR. ÖĞR. ÜYESİ VOLKAN POLAT

ONAY

Gebze Teknik Üniversitesi ..... Enstitüsü Yönetim Kurulu'nun ...../...../..... tarih ve ...../..... sayılı kararı.

ÖZET

Dünya çapında artan rekabet, hızla gelişen teknoloji, karmaşık yapıdaki iş süreçleri, sürekli değişen ekonomik şartlar ve diğer kişilerarası dinamikler, örgütlerde sezgilerini kullanabilen ve sürekli yeni bilgi ve/veya yaratıcı fikir arayışında olan takım üyelerinin varlığını zorunlu hale getirmiştir. Proje takımlarının başarısında yaratıcılık ve öğrenme gibi olguların önemli rol oynadığını gösteren bir çok çalışma olmasına rağmen; takım sezgisi üzerine yapılan gerek teorik gerek ampirik çalışmaların sayısı oldukça sınırlıdır. Buradan yola çıkarak, bu çalışmanın amacı (a) sezgi kavramını bütünüyle ele almak ve çok boyutlu bir yapıya sahip olduğuna işaret etmek (b) takım sezgisini tüm boyutlarıyla ele alan yeni bir ölçek geliştirmek; (c) proje takımlarında sezgi, yaratıcılık ve öğrenme arasındaki ilişki ve bunun yanı sıra karmaşıklık düzeyinin bu ilişki üzerindeki ılımlaştırıcı etkisinin olup olmadığını araştırarak proje yönetimi alanına katkı sunmaktır.

Bu bağlamda, 162 proje takımı üzerinde yapılan çalışmanın analiz sonuçları; (i) hem bilişsel hem de duyuşsal sezginin takım yaratıcılığını olumlu yönde etkilediğini; (ii) takım yaratıcılığının takım halinde öğrenmeyi olumlu yönde etkilediğini; (iii) duyuşsal sezginin takım halinde öğrenmeyi olumlu yönde etkilediğini ve (iv) takım halinde öğrenmenin projenin başarısını olumlu yönde etkilediğini ortaya koymuştur. Aynı zamanda yapılan analizler sonucunda iş karmaşıklığının (i) bilişsel sezgi ve takım yaratıcılığı (ii) duyuşsal sezgi ve takım yaratıcılığı arasındaki ilişkide ılımlaştırıcı değişken etkisine sahip olduğu (iii) teknik karmaşıklığın duyuşsal sezgi ve takım yaratıcılığı arasındaki ilişkide ılımlaştırıcı değişken etkisine sahip olduğu; (iv) iş karmaşıklığının takım yaratıcılığı ve takım halinde öğrenme arasındaki ilişkide ılımlaştırıcı değişken etkisine sahip olduğu ve son olarak (v) karar karmaşıklığının takım yaratıcılığı ve takım halinde öğrenme arasındaki ilişkide ılımlaştırıcı değişken etkisine sahip olduğu tespit edilmiştir.

Anahtar Kelimeler: Takım sezgisi, takım yaratıcılığı, takım halinde öğrenme, proje karmaşıklığı, proje başarısı

SUMMARY

The increasing level of competition all around the world, the rapid changes in technology, complex work processes, unexpected financial circumstances, and other interpersonal dynamics entail the presence of creative team members who can use their intuition and are continuously in search of new knowledge and ideas for project efficiency and success in organizations. While the significant role of team creativity and team learning on the project success has been addressed in some researches, the number of either qualitative or quantitative studies within intuition context is limited. Based on those ideas, the main goals of this study are (a) to examine the concept of intuition thoroughly and offer much more grounding information for the multi-faceted conceptualization of the team intuition since intuition has been widely discussed as a unidimensional variable (b) to develop a refined multidimensional scale to measure team intuition, which has been measured by a unidimensional scale so far; (c) to contribute to the enhancement of project management literature regarding the relationship among intuition, creativity, and learning including the moderating effect of project complexity.

Within this context, we examined 162 project teams and found that (i) both cognitive and affective intuition are positively associated with team creativity; (ii) team creativity is positively related to team learning; (iii) affective intuition positively relates to team learning; (iv) team learning is positively associated with project success. We also found that (a) task complexity has a moderation effect on the relationship (i) between cognitive intuition and team creativity; (ii) between affective intuition and team creativity; (b) technical complexity has a moderation effect on the relationship between affective intuition and team creativity. We also found that (a) task complexity has a moderation effect on the relationship between team creativity and team learning; (b) decision complexity has a moderation effect on the relationship between team creativity and team learning.

Keywords: Team intuition, team creativity, team learning, project complexity, project success

ACKNOWLEDGEMENT

I would like to express my gratitude and appreciation to all those who gave me the possibility to complete this thesis.

A special thanks to my thesis advisor Prof. Dr. Ali Ekber AKGÜN for his continuous support of my Ph.D study and for his patience, motivation, and immense knowledge. His guidance, enduring help, stimulating suggestions and encouragement helped me to broaden my line of vision and academically develop myself in all the time of research and writing of the thesis.

Besides my advisor, I would also like to thank the rest of my thesis committee: Prof. Dr. Halit KESKİN and Prof. Dr. Hüseyin İNCE, for their insightful comments and contribution to widening my research from various perspectives.

My sincere thanks also go to all contributors who made their precious time for filling in the questionnaire, which was a crucial part of the quantitative research. Without their precious support, it would not be possible to conduct this research.

I also wish to express my heart full thanks to my friend, Kevser ŞAHİNBAŞ who has supported me in every aspect, technically, psychologically and thoughtfully at heart.

Last but not least, many thanks go to my family whose love and guidance are always with me in whatever I pursue. Most importantly, I wish to thank my loving and supportive husband, and my son Pars, who is the center of my world and the whole of my heart.

TABLE OF CONTENTS

	Page
ÖZET	i
SUMMARY	ii
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	iv
LIST OF ABBREVIATIONS	vi
LIST OF FIGURES	vii
LIST OF TABLES	viii
1. INTRODUCTION	1
2. LITERATURE REVIEW	6
2.1. Key Concepts: Intuition, Creativity and Learning	6
2.1.1. Intuition	6
2.1.1.1. Historical Overview of Intuition	7
2.1.1.2. Basic Features of Intuition	19
2.1.1.3. Types of Intuition and Their Distinctive Features	21
2.1.1.3.1. Cognitive Intuition (CI)	21
2.1.1.3.2. Affective Intuition (AI)	24
2.1.1.3.3. Behavioural Intuition (BI)	27
2.1.1.4. Team Intuition	28
2.1.2. Creativity	33
2.1.2.1. Theories of Creativity	37
2.1.2.1.1. The Evolutionary Theory of Creativity	38
2.1.2.1.2. The Componential Theory of Creativity	38
2.1.2.1.3. The Systems Theory of Creativity	40
2.1.2.1.4. The Investment Theory of Creativity	42
2.1.2.1.5. The Propulsion Theory of Creativity	43
2.1.2.2. Types of Creativity	44
2.1.2.3. Team Creativity	46
2.1.3. Learning	49
2.1.3.1. Learning Theories	50
2.1.3.1.1. Behavioural, Cognitive, and Affective Learning Theory	50

2.1.3.2. Team Learning 52
3. THEORETICAL BACKGROUND AND HYPOTHESES 56
3.1. The Relationship between Intuition and Creativity 56
3.2. The Relationship between Intuition and Learning 59
3.3. The Relationship between Team Creativity and Team Learning 60
3.4. The Relationship between Team Learning and Project Success 60
3.5. The Moderating Effect of Project Complexity on the Relationship between Team Intuition and Team Creativity 62
3.6. The Moderating Effect of Project Complexity on the Relationship Between Team Creativity and Team Learning 66
4. METHODOLOGY AND IMPLEMENTATION 69
4.1. Measures 69
4.2. Sampling 70
4.3. Measure Validity and Reliability 72
4.4. Hypothesis Tests 78
5. DISCUSSION AND RESULTS 86
5.1. Discussion and Comments 86
5.2. Managerial Implications 90
5.3. Suggestions for Future Studies 91
5.4. Limitations of the Study 92
REFERENCES 93
BIOGRAPHY 110
APPENDIX 111

LIST OF ABBREVIATIONS

Abbreviations	Description
AVE	**:** Average Variance Extracted
CFI	**:** Comparative Fix Index
CR	**:** Composite Reliability
DF	**:** Degrees of Freedom
CFA	**:** Confirmatory Factor Analysis
IFI	**:** Incremental Fit Index
EFA	**:** Exploratory Factor Analysis
KMO	**:** Kaiser-Meyer-Olkin
CMV	**:** Common Method Variance
PNFI	**:** Parsimony Normed Fit Index
RMSEA	**:** Root Mean Square Error of Approximation
SRMR	**:** Standardized Root Mean Square Residual
TLI	**:** Tucker Lewis Fit Index
SEM	**:** Structural Equations Modeling

LIST OF FIGURES

Figure No: **Page**

Figure 1.1: Research model 5
Figure 2.1: Functions of Intuition 18
Figure 2.2: The Componential Model of Creativity 40
Figure 2.3: The Systems Model of Creativity 41
Figure 4.1: The Moderation Effect of Task Complexity on the Relationship between Mental Shortcuts and Team Creativity 82
Figure 4.2: The Moderation Effect of Task Complexity on the Relationship 82
Figure 4.3: The Moderation Effect of Technical Complexity on the Relationship between Affective Intuition and Team Creativity 83
Figure 4.4: The Moderation Effect of Task Complexity on the Relationship between Team Creativity and Team Learning 85
Figure 4.5: The Moderation Effect of Decision Complexity on the Relationship between Team Creativity and Team Learning 85

LIST OF TABLES

Table No: **Page**

2.1: Historical Overview of Intuition in Psychology, Management and Organization Literature 8

2.2: Antecedents and Consequences of Intuition based on the Studies in Psychology & Management and Organization Literature 18

2.3: Definitions of Cognitive Intuition 22

2.4: Definitions of Affective Intuition 24

2.5: Definitions of Behavioural Intuition 27

2.6: Some Representative Studies on Team Intuition. 31

2.7: The Stage Models of Creativity 35

2.8: The Six Resources of Creativity 42

2.9: Types of creative contributions 43

2.10: Creativity Types and Their Definitions. 44

2.11: Some Representative Studies on Team Creativity. 48

2.12: Some Representative Studies on Team Learning. 53

4.1: Results of One Dimensionality Test. 73

4.2: CFA Results. 74

4.3: Factor Loadings of the Items. 74

4.4: Correlations and Descriptive Statistics. 77

4.5: Fit Indexes for Team Learning and Project Success. 78

4.6: The SEM Results of Hypotheses. 79

4.7: The Moderating Analysis Results on H5. 81

4.8: The Moderating Analysis Results on H6. 84

1. INTRODUCTION

Intuition, creativity, and learning, which are as old phenomenon as the history of humanity, have been one of the most attractive subjects for humankind, and accordingly, numerous studies have been conducted on these concepts in different disciplines mostly within psychology. As for the significance of intuition, creativity, and learning in the management and organization field, it has gained acceleration due to worldwide economic, politic and social changes and developments throughout the late 20th and early 21st centuries. In the wake of developments and changes, not only have organizations but also their perspectives changed, and it has been of the opinion that the essential core competency of organizations for the sustainable competitive advantage is the existence of intuitive, creative and innovative human resources who can generate novel and innovative outcomes. In this sense, creativity and intuition, which stimulate learning (Botkin, 1982; Janesick, 2001) have become a vital human capital for the organizations.

Depending upon those critical changes, the main target of organizations has transformed from being productive or efficient into trying to survive in an arena where globalization and competition have been increasing gradually (Ocloo, Akaba, and Worwui-Brown, 2014). Thus the organizations, which are aware of the fact that such people are crucial actors to get at the target, have been in for incorporating such employees into their organizations. In other words, in the complex and fast-changing environment, the main mission of organizations is to develop an innovative and creative social structure to meet both internal and external demands. In this context, creativity and innovation play a critical role in increasing performance and providing permanent survival in the highly challenging competitive atmosphere (Loewenberger, 2013). Unfortunately, day by day since competition has evoked its power to that further depth and to find out the ways of getting out of it has become more of an issue, today's organizations have undertaken to understand that including such employees is not satisfying alone. Therefore, they have turned towards to congregate those employees within a team to benefit from their collective power (Tesluk, Farr, and Klein, 1997; Kozlowski and Bell, 2008; Hana, 2013). As a matter of the fact that this is already evidential, when investigated the number of organizations that embody project teams in their structures. It makes no difference

whether they are small, medium or large-sized enterprises. There has been a substantial increase in the number of project teams in almost all organizations as they are more effective to generate new and innovative ideas, and they are more open to sharing their ideas, which thus enhances learning as well (Iansiti and West, 1997). Chen (2006) also underlined the significance of project teams in organizations by stating that "project teams have increasingly become the fundamental units of organizations in order to enhance innovation and respond to shorter product development time" (Chen, 2006, p.114) with the increase of speed to market that provides some advantages like reaching customers with new products, services or ideas before the competitors or being more flexible and adaptive in an unpredictable environment. It is true in a sense that the diversity of expertise, knowledge, ideas, and even failures all have a strong influence on the overall performance of a team. Even though teams differ from each other in terms of their structure and functions as Mendibil and Macbrayde (2005) predicate, teamwork overall enables employees and managers to improve new work processes and methods.

As stated above, owing to the increasing level of competition all around the world, project teams play a chief role in organizations and choosing the right members for the respective project has become more significant. In addition to the competitive environment, the rapid changes in technology, complex work processes, unexpected financial circumstances, and other interpersonal dynamics have all required effective and creative project team members who are continuously in search of new knowledge and ideas in order to cope with such important issues (Baer, Oldham, Jacobsohn, and Hollingshead, 2008; West and Richter, 2008). Team members can achieve this by exchanging interpersonal information and sharing their experiences within a common purpose. As for the project success, it is in direct proportion to the team members' success, which results from their ability, personal knowledge, experiences, and their relationship among each other (Harris and Harris, 1996; Matthews and McLees, 2015).

By taking all mentioned considerations above into account, the main goal of this study (1) is to expand the scope of this field and contribute to the enhancement of literature regarding the relationship of "intuition", "creativity" and "learning" in project teams and to create a comprehensive model. The study discusses the variables at a team level rather than an individual one because a single source of intuition, creativity or learning coming from only one individual is not adequate for today's

organizations to survive and/or sustain due to changing business world and the growing complexity of problems. To say it more clearly, it is essential to bear in mind that the power of collectivism in the context of project-based tasks is not possible through only individual skills, only team/group dynamics, or only organizational solutions. The integration of all gives the collective power, which allows an organization to be one-step ahead of its competitors. Harrison already highlights this by stating that there has been an outstanding tendency to make group decisions rather than individual ones especially in situations that include a high level of uncertainty, complexity or strategic features (Harrison, 1987).

Another purpose of this study (2) is to develop a refined multidimensional scale to measure team intuition, which has been measured by a unidimensional scale so far developed by Dayan and Di Benedetto (2011) and then has been adapted or used directly as it is without any contribution by other authors (Dayan and Elbanna, 2011; Elbanna, 2015; Zeeshan, Yuosre, Mir, and Bilal, 2016; Zacca, Dayan, and Elbanna, 2017). However, after having a depth analysis and a closer inspection of the definitions of the construct and the compounds of its items, it gives an impression that the construct is multidimensional comprised of (a) cognitive (i.e., reaching the plausible solution(s) by means of mental shortcuts developed on the basis of experiences or tacit knowledge provided by more than one subconscious mind (Raidl and Lubart, 2000), (b) affective (i.e., gut feelings or hunches that come to the front abruptly and direct them to the best solution without understanding the underlying reason behind the oversensitivity against the respective situation or subject (Vaughan, 1979), (c) behavioural (i.e., a form of inference behaviour, which is ultimately based on inexplicit sensory data, which are combined rapidly and inexplicitly, leading to a plausible or correct conclusion without the subject being able to specify how these conclusions were reached (Westcott, 1968).

Finally, the last purpose of this study (3) is to contribute to the measurement of the concept of decision complexity, which has been measured only through experiments or qualitative scales so far. In this study, we used a questionnaire technique and we prepared the questionnaire items based on the comprehensive literature review on decision related concepts and complexity (Weiss, 1982; Hipel, Radford, and Fang, 1993; Bonner, 1994; Nutt, 1998; Rehg, McBurney and Parsons, 2005; Dijksterhuis, Bos, Nordgren, and van Baaren, 2006; Certo and Certo, 2011; Forester-Miller and Davis, 2016).

To sum up, as can be seen from the proposed research model of the study in Figure 1.1, we seeked to investigate i) the impact of team intuition on team creativity; ii) the impact of team intuition on team learning; iii) the impact of team creativity on team learning; iv) the impact of team learning on project success; v) the moderating effect of project complexity on the relationship between team intuition and team creativity; and finally vi) the moderating effect of project complexity on the relationship between team creativity and team learning.

After having presented the introduction part of the dissertation, the following sections will comprise the literature review of key concepts; proposed research model with the theoretical background; methodology and implementation; and finally discussion and results.

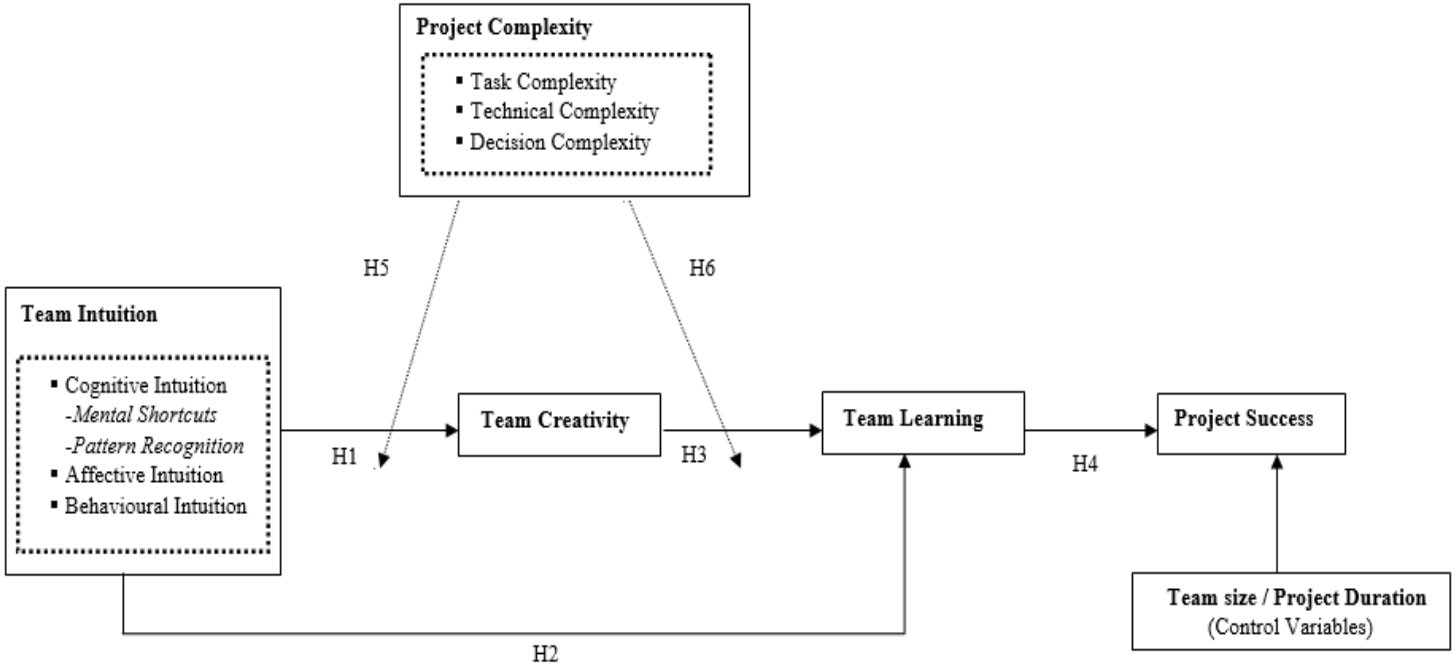


Figure 1.1: Research model

2. LITERATURE REVIEW

2.1. Key Concepts: Intuition, Creativity and Learning

In this section, the key concepts of the study are discussed with literature. Furthermore, each concept are defined in a broad sense with different perspectives, and they are examined under three categories as i.e. affective, cognitive, and behavioural. The main reason of categorizing them in this way is to discuss each domain thoroughly, and to see what they have in common and in what ways they differ from each other. Over and above, this section also includes some representative studies to enable readers to have a general idea about the concepts especially in a team level.

2.1.1. Intuition

> *"The really valuable thing is intuition. The intellect has little to do on the road to discovery. There comes a leap in consciousness, call it intuition or what you will, and the solution comes to you and you don't know how or why".* --- Albert Einstein

In spite of the fact that intuition is a nonphysical phenomenon and it is unexplainable by its very nature, numerous researchers have laid emphasis on its value and significance in terms of decision-making and problem solving processes in organizations (Agor, 1989; Shapiro and Spence, 1997; Crossan, Lane and White, 1999; Dane and Pratt, 2007). The leading motive for making intuition more fundamental than rationality is the increasing number of options or alternatives that people are required to opt or the challenge of sorting complex problems out entirely through rational reasoning especially in a limited period. After some researchers do realize the fact that intuition is more effective in situations especially where there is high level of uncertainty, time pressure or need of creativity, they have started to make considerable progress in terms of exploring the significance of intuition in the field of management and organization (Agor, 1986; Behling and Eckel, 1991; Dane and Pratt, 2009).

However, balancing between intuition and reasoning; or only focusing upon one of them changes according to one's perspective or the situation that they are

in. It is because “people with high levels of personal mastery cannot afford to choose between reason and intuition, or head and heart; any more than they would choose to walk on one leg or see with one eye” (Senge, 2010, p.157). Namely, if intuition is treated as an approach to deal with the situation that takes place in a dynamic social context, it helps to accelerate the decision-making process or increase decision-making efficiency. Nevertheless, if the decision-maker has ample time and the situation takes place in a stable environment, rationality makes a major contribution. After having introduced the importance of intuition in general, it is time to present the historical overview of intuition before leading in the significance of team intuition comprehensively.

2.1.1.1. Historical Overview of Intuition

Intuition, which has been one of the most prominent matters notably in philosophy, mathematics, and psychology, is considered as the foremost tool for the justification of knowledge. When going back to the starting point of intuition especially in the theory of knowledge that seeks for the questions of where knowledge comes from; what knowledge refers to; and how knowledge is attained; most of the important philosophers like Descartes, Kant, Bergson, and Husserl seemed to accentuate intuition in a considerable extent (Köz, 2004; Eroğlu, 2012).

While Descartes notes, all kinds of knowledge include intuitive components and the luminary of mind is adequate for attaining intuition, Kant thinks that experience is the chief root of knowledge and the source material of knowledge is provided by intuition based on senses. He also states that it is the mind, which turns the knowledge into conception. As for Bergson, he believes that it is not possible to understand life through mind and science, but it is only possible through intuition, which is an intrinsic means of knowledge. Finally, Husserl argues that although intuition is essential for acquiring knowledge, it is not sufficient alone. To get the knowledge, intuition and perception must be coexisted (Özdemir, 2012).

Besides the main viewpoints of the outstanding philosophers about the function of intuition on the theory of knowledge, touching upon their views about how intuition occurs is believed to be favorable to understand the process. According to Descartes, intuition is an intellectual tool for acquiring specific knowledge and it springs suddenly and instantly. For Kant, intuition does not emerge abruptly as

Descartes thinks. On the contrary, it comes out for quite a while. However, at the same time, Kant has a similar manner with Descartes in terms of describing intuition as cognitive ability for getting the required knowledge. Unlike Descartes and Kant; Bergson sees intuition apart from the intellect and defines it as a tool of knowledge to understand the non-stable reality. He also adds that intuition does not emerge spontaneously or by chance (Westcott, 1968). As for Husserl, he has a similar view with Kant and notes that intuition arises out of a long and complex process and it is a method of grasping the substantiality of knowledge (Öktem, 2000).

Except for the epistemological perspective summarized above, it is possible to witness different points of view about what intuition is, and what kind of process it has. Even though different researchers or theorists treat intuition differently, they all share a common idea that intuition is "an unconscious process" where gut feelings come to the front and direct you to the best solution (Agor, 1989; Vaughan, 1979). It can be considered as the capability of getting knowledge without logical reasoning or a way of discerning which "reports meanings, relationships and/or possibilities that have been worked out beyond the reach of the conscious mind" (Fields, 2001, p.19). In other words, it is "a non-conscious, holistic processing mode in which judgments are made with no awareness of rules of knowledge used for inference and feeling right despite one's inability to articulate the reason" (Shapiro and Spence, 1997, p. 64).

Having presented a general introduction about what intuition refers to, the following table is prepared in an attempt to the historical overview of intuition from a broader literature review in the fields of psychology, management, and organization. It involves the author(s) name(s), the aim of the study, definition of intuition, antecedents and consequences of intuition (if mentioned), and finally implications of the study.

Table 2.1: Historical Overview of Intuition in Psychology, Management and Organization Literature

JUNG (1921)	
Aim(s)	To put forward the theory of main functions of consciousness.
Definition(s)	Intuition is a "psychological function that transmits perceptions in an unconscious way" (p.568).
Antecedent(s)	Feeling cues
Consequence(s)	New ideas, new solutions to old problems
Implication(s)	Managers who use their intuition can see new possibilities, sense

	and/or see the future that enables them to take action rapidly.
WESTCOTT (1968)	
Aim(s)	To demonstrate the differences among individuals in terms of intuitive thinking.
Definition(s)	Intuition is to be aware of things perceived just beneath the conscious mind.
Antecedent(s)	Previous knowledge, experience
Consequence(s)	Creativity
Implication(s)	Thanks to intuition, the conclusion is arrived at with limited information.
BARNARD (1976)	
Aim(s)	To describe the differences between logical and non-logical mental processes To provide a different approach to the concept of leadership
Definition(s)	Intuition is "a vague feeling based on previous experience that has not yet emerged into articulate thought" (p. 306)
Antecedent(s)	Knowledge and experience, chunks of information or patterns stored in the long-term memory
Consequence(s)	Rapid pattern recognition, quick response(s) or solutions to the problems
Implication(s)	In logical decision-making process, executives determine the essential goals and alternatives explicitly and make decisions analytically. In non-logical decision-making process, the executives make decisions rapidly without using any rational decision-making tools. Since logical reasoning processes are not adequate alone, the executives should also integrate intuition into decision-making process.
MINTZBERG (1976)	
Aim(s)	To analyse the function of the hemispheres of human brain in terms of planning and managing functions in organizations. To highlight the importance of right hemisphere that has been ignored in management so far.
Definition(s)	Intuition is something that cannot be articulated explicitly but known implicitly (p.51)
Antecedent(s)	Experiences
Consequence(s)	Effective management
Implication(s)	The ones who deal with managing issues in organizations mostly use their gut feelings/intuitions that operate in the right hemisphere; as for the others who deal with planning issues mostly use their analytic skills that operate in the left hemisphere.
ISAACK (1978)	
Aim(s)	To demonstrate the importance of intuition in management**.** To inspire more interest in intuition among scholars and bridge

	the gap about the subject.
Definition(s)	Intuition is "hunch, guess or feel that alludes to arriving at knowledge without conscious awareness of rational thinking" (p.919).
Antecedent(s)	Sudden insights, feeling
Consequence(s)	Creativity
Implication(s)	Intuition has a positive impact on creativity and innovation. In the left hemisphere of the brain, the process operates in a linear and sequential way with logic based function. As for the right hemisphere, the process operates in a spatial way with creativity, intuition, and visual imagery based functions.
DENHARDT & DUGAN (1978)	
Aim(s)	To examine the contributions of Chester I. Barnard and Carl Jung to the understanding of rationality and intuition
Definition(s)	No exact definition
Antecedent(s)	Inner experience
Consequence(s)	Unmentioned
Implication(s)	It depends on the situation to use rationality or intuition. If there is high degree of complexity or fuzziness during decision-making and/or problem solving process, intuition is more effective. Nevertheless, if there is stability and low level of complexity, rationality is more effective.
VAUGHAN (1979)	
Aim(s)	To show the significance of intuition on creativity, problem solving, and interpersonal relationship. To present some exercises designed to bring about a well-balanced integrations of the rational and intuitive functions. To change the negative perception of intuition into positive one by presenting the benefits of it. To describe four types of intuition; mental, physical, emotional, and spiritual.
Definition(s)	Intuition is "knowing without being able to explain how it is known" (p. 27)**.**
Antecedent(s)	Experience, feelings, unconscious knowledge, insights, images
Consequence(s)	Creativity, pattern recognition
Implication(s)	Intuition operates in four levels (physical, emotional, mental and spiritual) and the levels all emerge in different ways: • The physical level of intuition shows itself with bodily sensations or physical reactions. • The emotional level of intuition shows itself with emotional reactions or a kind of feeling towards something or someone (such as liking or disliking them) for no plausible justification. • The mental level of intuition shows itself with images or novel

	ideas that come to the mind suddenly. • The spiritual level of intuition shows itself with high self-awareness and transpersonal experiences rather than sensations, feelings, or thoughts.
TAGGART & ROBEY (1981)	
Aim(s)	To present "a concept of dual human information processing as an aid to understanding the decision styles of both left hemisphere (logical, analytic etc.) and right hemisphere (non-logical, intuitive) and decision strategies of managers" (p.187).
Definition(s)	No exact definition
Antecedent(s)	Unmentioned
Consequence(s)	Unmentioned
Implication(s)	The awareness of decision styles and strategies helps managers be more effective in decision-making process.
SIMON (1983)	
Aim(s)	To examine the formal models of rationality (the Olympian model, the behavioural model, and the intuitive model) To find out the way of employing reason in human social affairs. To analyse the limits of rationality and its effects on organizational behaviour.
Definition(s)	Intuition is an immediate and reliable recognition based on experiences**.**
Antecedent(s)	Expertise, emotions, knowledge stored in long term memory
Consequence(s)	Creativity, quick recognition
Implication(s)	People who use their intuition based on their experiences frequently reach the correct solutions. Intuitive and behavioural model of thinking do not contradict each other. Emotions play an important role in human beings' thought.
GOLDBERG (1983)	
Aim(s)	To provide a comprehensive picture of what intuition means; how it affects our life; and how it can be developed.
Definition(s)	Intuition is "anything knowable, including vague hunches and feelings about mundane matters, significant discoveries of concepts and facts and divine revelation" (p.31).
Antecedent(s)	Feelings, experiences, personal knowledge
Consequence(s)	Creativity, discovery, illumination
Implication(s)	Intuition serves for the functions of discovery, creativity, evaluation, operation, prediction, and illumination. It does not matter to have more intuition; it matters to have better intuition. It does not matter to trust intuition; it matters to make it more trustworthy. Intuition is more effective when dealing with complex problems that cannot be solved by rational analysis.

ISENBERG (1984)	
Aim(s)	To present some general thought processes (intuition, managing problems, dealing with ambiguity etc.) that senior executives rely on in order to make their weighty decisions. To discuss how managers can improve themselves on using the skills necessary for management.
Definition(s)	Intuition is "not something opposite of rationality, or a random process of guessing. Rather, it is based on extensive experience both in analysis and problem solving and in implementation, and to the extent that the lessons of experience are logical and well-founded, then so is the intuition" (p.85).
Antecedent(s)	Past experience, gut feeling, years of practice
Consequence(s)	Rapid problem solving, rapid pattern recognition
Implication(s)	Managers use their intuition and analytical skills at the same time while making decisions.
AGOR (1986)	
Aim(s)	To demonstrate the logic of intuition To find out why and how top managers make important decisions
Definition(s)	Intuition is "a product of a series of input sources including both factual and feeling cues" (p.15)
Antecedent(s)	Experiences, both factual and feeling cues
Consequence(s)	Quick and effective decisions, managerial productivity
Implication(s)	Top managers perceive intuition as a penetrating facility for administering the organization. They prefer to use their intuitive skill to lead their weighty decisions. The errors they sometimes do when making decisions by using their intuitive skills are not because of their intuition but rather because of failing to follow their intuition. The use of intuition is found out to be more appropriate in the following conditions "when; • the level of uncertainty is high, • there are less scientifically predictable variables • there are limited facts, • analytical devices or data do not work, • there is little previous precedent, • the number of rational alternative solutions is high and it is difficult to opt from, • time is limited and there is pressure to come up with the right decision" (p. 9).
ROWAN (1986)	
Aim(s)	To make executives be aware of their intuition and encourage them to develop and use it with high confidence. To show the value of "hunches, instinct, and gut feelings" as powerful management tools.

Definition(s)	Intuition is "knowledge gained without rational thought and comes from some stratum of awareness just below the conscious level" (p. 11).
Antecedent(s)	Feelings, accumulated experience, tacit knowledge
Consequence(s)	Creativity, learning, quick decisions, effective management, high profit, new solutions to old problems
Implication(s)	Reliance on intuitive thinking provides executives with creative and innovative solutions; and accelerates the decision-making process. Prospering executives who do not rely only on their rational mind but also their gut feelings can manage the complexity of the whole system in business world. Executives should not ignore the warning signals stemming from deep inside of them to respond to any situations automatically. Intuition comes into play and provides the required information or solution suddenly when one stops thinking on the respective problem.
SIMON (1987)	
Aim(s)	To discuss decision-making in terms of logical and non-logical processes To find answer to the questions; "What is known about how judgemental and intuitive processes operate, and how they can be improved?"
Definition(s)	Intuition is "analyses frozen into habit and the capacity for rapid response through recognition" (p.63)
Antecedent(s)	Cues, knowledge saved in the long term memory
Consequence(s)	Rapid recognition, quick decisions
Implication(s)	Intuition is the significant part of effective managerial behaviours.
EISENHARDT (1989)	
Aim(s)	To find out how executive teams actually make fast decisions in rapidly changing and uncertain environment. To find out the relationship between fast decision and firm performance
Definition(s)	No exact definition
Antecedent(s)	Experience
Consequence(s)	Fast decision-making
Implication(s)	Decision makers who make fast decisions can easily adapt to changes and thus show higher performance. The results contradict the idea that extensive information slows the decision-making process. Executives who use and rely on their intuition can respond to changes accurately and make decisions quickly. The number of alternatives affects the decision-making speed; • more alternatives=fast decision-making • a few alternatives=slow decision-making

ALLINSON & HAYES (1996)	
Aim(s)	To develop a "psychometrically sound instrument" which is appropriate for application in large-scale organizational studies To measure cognitive dimension of both intuition and analysis with the developed instrument
Definition(s)	Intuition is "an immediate judgement based on feeling and the adoption of a global perspective" (p. 122).
Antecedent(s)	Experience, feeling
Consequence(s)	Unmentioned
Implication(s)	To have effective performance, one needs to use intuition and analysis rather than using only one of them
CROSSAN, LANE, & WHITE (1999)	
Aim(s)	To develop theoretical framework for the organizational learning process To identify organizational learning processes To discuss the levels of learning processes
Definition(s)	Intuition is "the recognition of a pattern or possibility that comes from within an individual" (p.526).
Antecedent(s)	Experiences, images, an unexplainable sense
Consequence(s)	Metaphors (use different language to make the unknown thing be known or to describe the insight)
Implication(s)	Organizational learning processes are identified as "intuiting, interpreting, integrating, and institutionalizing" and they operate in three levels; individual, group, and organizational. • Intuition arises in the first level. • Interpretation arises at both individual and group level. • Integration also arises at both individual and group level. • Institutionalization arises in all three levels. As for the organizational learning, it is realized as follows; • feedforward (from the individual level to the organization level) • feedback (from the organization level to the individual level).
SADLER-SMITH (1999)	
Aim(s)	To analyse "the relationship between learning preferences (reflective, collaborative, group et c.), and the intuition-analysis dimension of cognitive style in the field of business and management education" (p.31). To provide empirical data for the "onion and cognitive control models of cognitive style" (p.26).
Definition(s)	No exact definition
Antecedent(s)	Unmentioned
Consequence(s)	Unmentioned

Implication(s)	The environment and the context affect the relationship between cognitive style and learning preferences
BURKE & MILLER (1999)	
Aim(s)	To examine the significance of intuition in decision-making process.
Definition(s)	Intuition is "a cognitive conclusion based on one's previous experiences and emotional inputs" (p.93).
Antecedent(s)	Experience, feeling, novel insights
Consequence(s)	Creativity, personal development, faster decision-making
Implication(s)	Judgment is an affective part of intuition. Creativity is enhanced by providing employees with environments that allow them to use and develop their intuition. Intuition is beneficial for decision-making due to the following reasons; • expediting decisions • improving ultimate decision • supporting the self-improvement • making contribution to the decisions consistent with the organizational culture and values
KHATRI & Ng (2000)	
Aim(s)	To analyse the intuition process in strategic decision-making.
Definition(s)	Intuition is "not an irrational process. It is based on a deep understanding of the situation. It is a complex phenomenon that draws from the store of knowledge in our subconscious and is rooted in past experience" (p.62).
Antecedent(s)	Stored experiences or knowledge
Consequence(s)	Unmentioned
Implication(s)	The understanding of intuition in decision-making process is quite incontrovertible. The use of intuitive synthesis positively associates with the organizational performance in a high velocity environment.
SADLER-SMITH & SHEFY (2004)	
Aim(s)	To discuss the importance of two aspects of intuition (intuition as expertise and intuition as feeling) for executive decision-making To present some principles for executives how they can benefit from intuition in an effective and intelligent way
Definition(s)	Intuition is "a capacity for attaining direct knowledge or understanding without the apparent intrusion of rational thought or logical inference" (p.77).
Antecedent(s)	Expertise, feelings
Consequence(s)	Key issues are grasped quickly, instantaneous pattern recognition

Implication(s)	The use of intuition in decision-making process increases organizational performance in dynamic and complex environments. Experience and practice play an important role to uncover the intuitive knowledge and skill. Intuition (non- logical) and rationality (logical) are two inseparable systems of knowing.
SINCLAIR & ASHKANASY (2005)	
Aim(s)	To develop a model that includes both analysis and intuition in decision-making
Definition(s)	Intuition is "a non-sequential information processing mode, which comprises both cognitive and affective elements and results in direct knowing without any use of conscious reasoning" (p. 353).
Antecedent(s)	Tacit knowledge
Consequence(s)	Pattern recognition, effective decision-making
Implication(s)	Intuition is a powerful tool for managers in decision-making process when there is ambiguity and uncertainty. Intuitive decision-making depends on the context and the following four factors affect it; *features of the problem *features of the decision *personal tendency *decision-making context
MILLER & IRELAND (2005)	
Aim(s)	To critically evaluate advantages and disadvantages of intuition in terms of the goals of an organization and organization's goals
Definition(s)	Intuition is "holistic hunch in which judgement or choice is made through a subconscious process involving synthesis of diverse experiences, novel combinations of information, and strong feelings of being right" (p.23); and it is "automated expertise including the implementation of past situation-specific experiences and approaches in familiar ways" (p.23).
Antecedent(s)	Diverse experiences, knowledge stored subconsciously
Consequence(s)	Pattern recognition, effective decision-making
Implication(s)	Intuition is an effective tool in strategic decision-making.
SONENSHEIN (2007)	
Aim(s)	To discuss the limitations of rationalist approaches in ethical issues in organizations To present a theoretical model including construction, intuition and justification
Definition(s)	Intuition is "instantaneous reactions based on affect" (p.1033).
Antecedent(s)	Experience, social pressures
Consequence(s)	Unmentioned
Implication(s)	Rationalist approaches rule out the fuzziness available in organizational setting. Moral reasoning is used as "a post hoc explanation and justification of intuition" (p. 1035).

SINCLAIR, ASHKANASY & CHATTOPADHYAY (2010)	
Aim(s)	To find out if emotions and specific mood make decision makers' use of intuition effective or not
Definition(s)	Intuition is "direct knowing that results from non-conscious, holistic information processing, which draws on cognition and affect" (p. 381).
Antecedent(s)	Emotions, experience, mood
Consequence(s)	Unmentioned
Implication(s)	Emotional awareness positively relates to the use of intuition. There is a significant positive relationship of affective orientation with intuitive decision-making and intuitive self-description. There is a negative relationship between analytical decision-making and intuitive decision-making. There is a positive relationship between intuitive decision-making and positive mood. Negative mood positively affects intuitive decision-making. Women are more intuitive than men are. Intuition is influenced by the mood intensity rather than its being negative or positive.
DÖRFLER & ACKERMANN (2012)	
Aim(s)	To provide a wide understanding of intuition in creativity. To discuss the differences between intuitive judgment and intuitive insight.
Definition(s)	"Intuition is rapid, spontaneous and unconscious process (p.547).
Antecedent(s)	Personal knowledge, tacit knowledge
Consequence(s)	Creativity, pattern recognition
Implication(s)	In intuitive judgement, the types of decision are covertly completed into a whole picture to lead the way. In intuitive insight, the main parts of the domain knowledge are covertly compounded in an original way enabling us to create novel knowledge.

If it is necessary to make a general evaluation of the studies tabulated above, it is seen that the number of empirical studies on intuition is too low and needs to be increased to justify the power and importance of intuition in business life. The table also exhibits the positive relationship between intuition and decision-making, problem solving, organizational performance, and new product development (Agor, 1986; Burke and Miller, 1999; Crossan, Lane and White, 1999; Sadler-Smith and Shefy, 2004; Dutta and Thornhill, 2008; Dayan and Di Benedetto, 2011). In a consequence of these studies, the authors generally suggest that more research should be done on intuition to build a comprehensive theory. They also draw the attention to

non-conscious processes by adding that decision-makers should rely on their intuition because it allows them to make quick and outstanding decisions in organizations (Denhardt and Dugan, 1978; Agor, 1986; Rowan, 1986; Simon, 1987; Eisenhardt, 1989; Sinclair and Ashkanasy, 2005). In addition to these, some of the authors suggest that managers should organize proper education and training for men to increase their emotional awareness (Hogarth, 2001). Finally, the emphasis is put on the balance of the use of intuition and rationality. Accordingly, it is suggested that managers should use both their rationality and intuitive skills for organizational effectiveness because intuition and rational thinking are not separate but they are interrelated (Isenberg, 1984; Allinson and Hayes, 1996).

Based on the literature review of the concept of intuition the following table below was prepared to display the antecedents and consequences of intuition and provide researchers with a comprehensive understanding of the essence of it.

Table 2.2: Antecedents and Consequences of Intuition Based on the Studies in Psychology & Management and Organization Literature

Antecedents	Consequences
➢ Past experience ➢ Tacit knowledge ➢ Emotions ➢ Feelings ➢ Novel insights ➢ Factual cues ➢ Feeling cues ➢ Mood	➢ Creativity ➢ Quick pattern recognition ➢ Immediate judgement ➢ Fast/quick decision making ➢ Effective decision making ➢ Managerial productivity ➢ Effective management ➢ Innovation

As for the following figure below, it presents the main functions of intuition. Both conceptual and empirical studies show that individuals use intuition mostly while making strategic decisions, solving problems, and generating new possibilities.

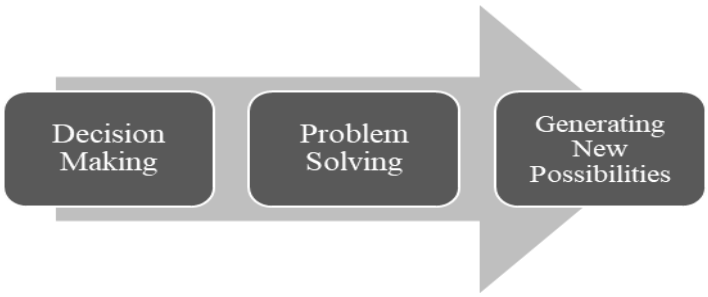


Figure 2.1: Functions of Intuition

2.1.1.2. Basic Features of Intuition

The descriptions given in the previous sections of this study manifest that there is a wide variety of perspectives on the identification and function of intuition. This is because intuition is a subjective response so "it is not easy to describe but easy to recognize" (Sadler-Smith and Shefy, 2004, p.78). Just because of this reason, there is no consensus on its exact definition especially in terms of its connection with rationality. However, the consensus on some keywords like perception, sub-conscious, non-conscious, capacity, ability, skill, hunch, gut feeling, recognition, non-awareness, non-rationality, experience, memories, unexplainable, non-logical is quite apparent (Westcott, 1968; Barnard, 1976; Mintzberg, 1976; Isaack, 1978; Vaughan, 1979; Simon, 1983/1987; Goldberg, 1983; Isenberg, 1984; Agor, 1986; Rowan, 1986; Eisenhardt, 1989; Burke and Miller, 1999; Sinclair and Ashkanasy, 2005; Miller and Ireland, 2005; Dane and Pratt, 2007; Dörfler and Ackerman, 2012).

Based on the keywords, intuition is supposed to be apart from the analytic process but when considering it deeply, it gives an impression that analysis and intuition should be regarded as an inseparable whole or mutually complementary. The main distinct point that differentiates them from each other is their usage level and usage area. In other words, when there are limited facts, limited time but more plausible alternatives and a high level of uncertainty, the use of intuition gets higher in comparison to the use of analysis since these situations preclude substantial analytic process or systematic problem solution. Conversely, when there is plenty of time but limited alternatives or low level of uncertainty, much conscious consideration or thinking is preferred (Agor, 1986). By the way, it does not mean that when one uses their intuition, they do not use their rational thinking or analytic skill. At all events, they need knowledge, cues, experience or memories to be able to solve a problem, to make a decision or to make a choice. To sum up, intuition is a non-logical process but it has still reasoning which is also emphasized by Barnard as follows:

> *"The sources of non-logical processes lie in psychological conditions or factors, or the physical and social environment, mostly impressed upon us unconsciously. They also consist of the mass of facts, patterns, concepts,*

techniques, abstractions, and generally what we call formal knowledge or beliefs which are impressed upon our minds more or less by conscious effort and study" (Agor, 1989, p.25).

By looking at the definitions presented in previous sections, it is clear that there are some basic characteristics, which draw attention. By taking the relationship between rationality and non-rationality as starting, it can be said that the mind can feel intuition but cannot explain it since casualty is needed to do this and answer the questions: Where does it come from? How does it occur? And why is it necessary? Therefore, intuition cannot be explained clearly but felt deeply. As Osho claims, it is a kind of feeling based on the idea of being unknowable. It is possible to reach an unknowable thing but impossible to explain it. It is possible to feel it but impossible to explain it (Osho, 2001). In short, intuition is not directly associated with the mind but not separate from it either. It is a leap from non-existence to existence. Therefore, our conscious mind rejects and ignores intuition as it is only concerned with known things (that are not required to be found out because they are already known) and unknown things (that are required to be found out because they are already existent and expected to be discovered and explained). On the other hand, intuition is deeply involved in "unknowable things", which is possible to reach out but impossible to explain. Think about people who can solve mathematical problems easily without any mathematical procedure or sequential processing, they see the problem and find the solution instantly. Interestingly there is somehow "a gap between evidence and conclusion" (Pretz, 2011, p.18). Because when such people are asked how they can achieve this, they cannot explain it. There is no explanation as it is supposed to be actualized thanks to intuition. That is why; being unknowable is it is basic but one of the most important characteristics (Osho, 2011).

One of the other features of intuition is that it is an inherent talent owned by all beings, not by geniuses only. That is to say; even uneducated people have and use it for their benefit as "it is a process of concluding based on little information which is normally reached based on significantly more information" (Westcott and Ranzoni, 1963, p.595). It has been also supported by some recent theorists and researchers that, it is equally accessible to all people but it differs in terms of its speed and accuracy of use (Reber, Walkenfeld and Hernstadt, 1991).

Another main feature of intuition is that it gets into the act automatically on a subconscious level (Vaughan, 1979; Agor, 1986; Khatri and Alvin, 2000; Betsch,

2008). This is realized thanks to knowledge or experience stored in the long-term memory before. This feature plays a fundamental role, especially in judgment and decision-making. Within this context, intuition is regarded as a process of thinking. While the input is provided automatically and unconsciously, the output of the process springs as a hunch or feeling that contributes one to make a quick and effective judgment or a decision (Betsch, 2008).

In brief, intuition is a process that finds an answer, a solution or an idea in a sort of way without any logical inference (Hammond, 1996), and based on "a deep understanding of the situation. It is also a complex phenomenon that draws the store of knowledge in our subconscious mind and it is rooted in experience" (Khatri and Alvin, 2000, p.62).

2.1.1.3. Types of Intuition and Their Distinctive Features

In general terms, it is quite explicable that intuition operates in an instant, unconscious, non-rational, or un-deliberate way that gets into act automatically in different types. Regarding the descriptions presented above and especially of Jung (1921), Vaughan (1979), and Agor (1989), it seems that intuition has three main dimensions that are identified as "affective", "cognitive", and "behavioural". Accordingly, this section aims to discuss each dimension at great length to gain insight into the distinctive features of these three types of intuition.

2.1.1.3.1. Cognitive Intuition (CI)

This section demonstrates specific descriptions that cover the the cognitive dimension of intuition and distinctive features of it. Before clarifying what kind of distinctive feature(s) the cognitive intuition has, it might be helpful to review the descriptions tabulated below.

Table 2.3: Definitions of Cognitive Intuition

	Definition	Author(s)
Cognitive intuition is;	"a process of reaching a conclusion on the basis of little information which is normally reached on the basis of significantly more information" (p.595).	*Westcott & Ranzoni (1963)*
	"an act of grasping the meaning, significance or structure of a problem or situation without explicit reliance on the analytic apparatus of one's craft" (p.60).	*Bruner (1977)*
	"a process that somehow produces an answer, solution or idea without the use of reasoning"(p.60).	*Hammond (1996)*
	"knowing without being able to explain how we know"(p.46).	*Shirley & Langan-Fox (1996)*
	"a cognitive conclusion based on a decision maker's previous experiences and emotional inputs" (p.92).	*Burke & Miller (1999)*
	"thoughts and preferences that come to mind quickly and without much reflection" (p.697).	*Kahneman (2003)*
	"a capacity for attaining direct knowledge or understanding without the apparent intrusion of rational thought or logical inference" (p.77).	*Sadler-Smith & Sheffy (2004)*
	"a non-sequential information processing mode, which comprises both cognitive and affective elements and results in direct knowing without any use of conscious reasoning" (p.353).	*Sinclair & Ashkanasy (2005)*
	"the power of obtaining knowledge that cannot be acquired either by inference or observation, by reason or experience" (p.3).	*Betsch (2008)*

When the descriptions above are construed, the salient terms are as follows; "quick perception, direct knowing, and non-sequential information processing mode" (Bruner, 1977; Sinclair and Ashkanasy, 2005) all of which take place without conscious and concrete reasoning (Hammond, 1996; Kahneman, 2003; Sadler-Smith and Sheffy, 2004; Betsch, 2008).

To be more precise, intuition in itself is an inherent wisdom that provides people with leaping to an effectual conclusion without using their analytic mind (Vaughan, 1979; Agor, 1986; Pretz, 2011). However, from the cognitive point of view, it can be identified as an intellectual capacity or innate talent improved unwittingly by extraneous sources like experiences or cues and works its magic with

“direct knowing”, “leaping to effectual conclusion” or “quick pattern recognition” without any rational thought or conscious reasoning (Vaughan, 1979; Isenberg, 1984; Agor, 1986; Reber, Walkenfeld and Hernstadt, 1991; Sadler-Smith and Shefy, 2004; Myers, 2002; Pretz, 2011).

Having clarified the essence of cognitive intuition, it is time to demonstrate two main distinctive features of cognitive intuition (pattern recognition and mental shortcuts) based on theoretical studies presented in previous sections. Thanks to those characteristics of cognitive intuition introduced above, one can come up with a solution to a problem easily or make a quick and effective decision with limited information and little mental effort (Westcott & Ranzoni, 1963; Westcott, 1968; Daft, 2009).

Pattern recognition is actualized with the help of some recognizable cues generated from familiar situations that attract one’s attention suddenly without knowing the exact source of it and they, in turn, enable them to recognize, interpret and act intuitively (Barnard, 1976; Vaughan, 1979; Simon, 1987; Agor, 1989; Shirley & Langan-Fox, 1996; Klein, 2005; Lunenburg, 2010). “Pattern recognition is not always visual. It may be auditory to a musician or simply a flash of understanding in which events or ideas seem to fall into place” (Vaughan, 1979, p.75). The following story told by Melvin Calvin, Nobel Laureate in Chemistry in 1961 overtly depicts the first feature of CI.

> *“One day I was waiting in my car while my wife was on an errand. I had had for some months some basic information from the laboratory, which was incompatible with everything, which, up until then. I knew about the photosynthetic process. I was waiting, sitting at the wheel, most likely parked in the red zone, when the recognition of the missing compound occurred. It occurred just like that-quite suddenly- and suddenly in a matter of seconds, the cyclic character of the path of carbon became apparent to me, not in the detail which ultimately was elucidated, but the original recognition of phosphoglyceric acid, and how it got there, and how the acceptor might be regenerated, all occurred in a matter of 30 seconds” (Vaughan, 1979, pp.75-76).*

Agor (1986) highlights the fact that intuition can be used “to bypass in-depth analysis and move rapidly to come up with a plausible solution. Used in this way, intuition is

an almost instantaneous cognitive process in which familiar patterns are recognized" (Agor, 1986, p. 98).

Mental shortcut, which is another distinctive feature of CI, enables the person to conclude by making swift connections between the unconscious past and the conscious present. People achieve this unconsciously utilizing their past experiences with familiar situations they face before and thus they can come up with a solution to a problem easily or make a quick and effective decision with limited information and little mental effort (Westcott & Ranzoni, 1963; Westcott, 1968; Daft, 2009). The following example clearly describes the second feature of CI.

> *"When you learn to drive, you learn to watch the road and understand it; you learn to maneuver a car and so on. At first, everything is complicated and you must think and use your reason to take a decision (brake, accelerate, etc.). Then your brain adapts to the driving and the "road environment": decisions are taken in your unconscious and driving becomes a reflex. This is the intelligence of unconscious for "simple" situations or more precisely for repeated situations in which you can learn from your experience and then reuse without reasoning"* (Edenberg, 2011, p.22).

2.1.1.3.2. Affective Intuition (AI)

This section demonstrates specific descriptions that cover the affective dimension of intuition and distinctive features of it. Before clarifying what kind of distinctive features the affective intuition has, it might be helpful to review the descriptions tabulated below.

Table 2.4: Definitions of Affective Intuition

	Definition	**Author(s)**
Affective intuition is;	"a product of a series of input sources including both factual and feeling cues" (p.15).	*Agor (1989)*
	"a feeling of knowing with certitude on the basis of inadequate information and without conscious awareness of rational thinking" (p.564).	*Shirley & Langan-Fox (1996)*
	"feeling right despite the inability to articulate the reason" (p.64).	*Shapiro & Spence (1997)*

	"affectively charged judgements that often involve emotions" (p.38).	*Dane and Pratt (2007)*
	"a hunch or a gut feeling made without reflection as opposed to a rational conclusion based on explicitly available evidence" (p.1249)	*Pretz and Totz (2007)*

When the descriptions above are examined, the noticeable terms are as follows; "hunches, feeling cues, gut feelings, and over sensitivity" (Agor, 1989; Pretz and Totz, 2007) which act as indicating signals in decision-making process. By considering these salient terms, affective intuition can be described as "a feeling of knowing" or "gut feeling" that appears abruptly enabling the person to anticipate what is going to happen (Westcott, 1968; Agor, 1989). It is also identified as an immediate like or dislike about someone/something without knowing or articulating the exact reason behind that feeling (Vaughan, 1979; Shirley and Langan-Fox, 1996; Shapiro and Spence,1997; Pretz and Totz, 2007).

Having clarified the basic meaning of affective intuition, it is confronted with three main distinctive features of AI (gut feelings, hunches, and emotional reactions) based on theoretical studies presented in previous sections. Thanks to those characteristics of affective intuition, one can feel right about the situation that they are in and take action accordingly. Even though the reason of the feeling of knowing cannot be unclosed, most of the people express that the decisions taken based on their hunches or gut feelings resulted in success (Vaughan, 1979; Agor, 1989; Shapiro and Spence, 1997; Crossan, Lane and White, 1999). To make the distinctive features of AI clearer, it is thought to demonstrate them by giving examples.

The following example, which explains the feature of "gut feelings", is from a true story told in one of my interviews with a project team. The team leader of the project conveyed the story by stating that:

> *"We faced five reasonable alternative ways to be applied to complete the process. Unfortunately, there was not adequate time to examine each alternative in detail since the customer was also applying serious pressure on the firm to end the project as earliest as possible. While team members were brainstorming about the appreciation of the situation, one of the team members suddenly indicated that the second alternative way should be chosen since he felt deeply that it would give better results for the progress of the*

project when compared to other alternatives. Later on, one of the other members surprisingly manifested that his inner voice was also saying the same thing. He then continued that he could not explain the underlying reason behind his deep feeling against the respective alternative but somehow he was feeling right about it. It might sound weird or non-logical but we were not amazed at what they were talking about. In short, since we were familiar with such intuitive decisions in previous projects, we relied on their hunches and adopted their decision without questioning. Ultimately, the decision taken and put into practice in a short time provided us with the expected output from the project and the demand of the customer was met on time."

As can be understood from the sample above, the synthesis of the team members' experience and their knowhow procured them to feel the right alternative way without conscious reasoning and to rely on their gut feelings since they were under time pressure and had more than one reasonable alternatives to select. This example actually confirms the claim of Agor who highlights the fact that intuition comes into play and serves the purpose "when there are more than one plausible alternative solutions to choose from; when time is limited; and when there is pressure to come up with the right decision" (Agor, 1986, p. 9). The following story of a woman is thought to be a good example of vague hunches that turn out to be true and allows changing the course of events.

"Shortly before the date set for her wedding, the woman who had planned a honeymoon trip to Tahiti dreamed of an airplane crash. She had such a strong presentiment that the plane she expected to fly on would crash that she cancelled the reservations and changed her plans. The airplane she would have taken did crash, and everyone on board was killed" (Vaughan, 1979, p.41).

The following example about the feature of "emotional reactions" was given by a woman who shared her experience in one of Vaughan's intuition workshops.

"One afternoon while having coffee with a friend, my strong feelings of apprehension seemed to be a mixture of fear and sadness to my mother. After a short time, when the feelings did not subside, I called my mother, who was in another city. I learned that my mother had suffered a heart attack at the moment when I had first been aware of my feelings and was in a critical

condition. My apprehensive feelings had been so painful that I felt relief rather than shock when I heard the news" (Vaughan, 1979, p.60).

2.1.1.3.3. Behavioural Intuition (BI)

This section demonstrates specific descriptions that cover a behavioural dimension of intuition and distinctive features of it. Before clarifying what kind of distinctive features the behavioural intuition has, it might be helpful to review the descriptions tabulated below.

Table 2.5: Definitions of Behavioural Intuition

	Definition	**Author(s)**
Behavioural intuition is;	*displaying instant physical reactions against expected or unexpected situations*	Vaughan (1979)
	"an analysis frozen into habit and the capacity for rapid response through recognition" (p.63)	Simon (1987)
	"making judgments in a non-conscious, holistic processing mode" (p.64).	Shapiro & Spence (1997)

When the descriptions above are construed, the salient terms are as follows; "physical sensations or reactions" that include instantaneous tension, stomach-ache, or heart rate variability (Vaughan, 1979).

Thanks to behavioural intuition, one can shape their decisions following instantaneous and unexpected physical symptoms or sensations like having tension, stomach ache etc. In addition to these, the person displays some specific behaviours while using his behavioural intuition. To give an example, he persists with using his intuition and does not hesitate to take initiative while making a major decision thanks to his confidence in his intuition. He also benefits from others' personal experiences, beliefs, and perspectives rather than gathering information systematically. In other words, he is open to share and exchange of new ideas and perspectives, which in turn provides with him to see future possibilities easily.

Since there is no specific definition of behavioural intuition, it will be defined with the help of some descriptions made by major authors like Jung (1921), Westcott

(1968) Vaughan (1979), Rowan (1986), Agor (1989), Sadler-Smith (2016). According to them intuitive people have some specific personal characteristics (i.e. open to share and exchange of new ideas and perspectives, risk-taking, unresponsive to understand the logic behind the choice made by means of gut feeling or inner voice, anticipating possible problems or new possibilities) which make it easy for us to understand what behavioural intuition is. In the broadest sense, "the intuitive behaviour, in essence, can be described as a form of inference behaviour, which is ultimately based on inexplicit sensory data, which are combined rapidly and inexplicitly, leading to a plausible or correct conclusion without the subject being able to specify how these conclusions were reached" (Westcott, 1968 p. 78). Similarly, Agor (1989) mentions about other behavioural characteristics worth noting about intuitive executives and says, "They like operating in environments where change is commonplace. They like the challenge of thinking on their feet" (Agor, 1989, p.122).

Finally, Vaughan (1979) states that such people are confident with the results they reached by using their intuition and do not need any proof to convince others.

2.1.1.4. Team Intuition

Having clarified intuition and its main characteristics briefly, it is time to touch upon the question of why study team intuition? Before answering why indeed, it is better to describe what team intuition means. By looking at definitions of intuition basically, team intuition, as a collective phenomenon, can be identified as a team competency in which information is processed automatically and the direct knowledge is obtained beyond the conscious mind (Dayan and Elbanna, 2011; Elbanna, 2015; Zeeshan, Yuosre, Mir, and Bilal, 2016; Zacca, Dayan, and Elbanna, 2017). Since there is a limited number of studies conducted on team intuition, it is not possible to give more definitions of it. However, it may be helpful to give our nominal definition of team intuition in terms of cognitive, affective, and behavioural dimensions in a consequence of a broad literature review on intuition.

Team-based cognitive intuition refers to the collective added value provided by more than one subconscious mind to reach the outcome through mental shortcuts developed based on experiences or tacit knowledge. It is also a collective ability cultivated with mutual ideas and cues, which come to the conscious mind spontaneously in consequence of automatic information processing, and thus enable

direct knowing without much mental effort. To make it clearer, the following example is thought to be useful. The example based on a true story was transcribed during one of my interviews with a project team. The project manager conveyed the story by stating that:

> *"For our last project, we were asked to find out a solution for manufacturing medicine and supplying them to the Syrian refugees' shelter tents in a month and bid at a reasonable price. The company needed to win that tender bid since its return was extremely high. However, there were nontrivial problems to overcome. First and foremost, it was quite impossible to import the raw material, manufacture and distribute them in due course of time. Because the import of the raw material to be used to manufacture the medicine would take a longer time than the specified period and the raw materials in our stock were about to expire. We, as a project team, held together urgently and had a meeting for proposing a solution about this issue. As a result of the brainstorming during the meeting, we were almost hopeless and we all stayed quiet on the topic. Suddenly and all at once three of the team members uttered similar sentences and told that "if the expired raw materials are reanalysed and retested, we can renew them and they can be used for the manufacturing." It was a great idea and this idea made us win the tender bid. As if, our team members had a flash of inspiration at that time because they could not explain how they got this idea. They only said they made swift connections among the things stored so far in their minds unconsciously. In short, winning this tender bid showed us the power of intuition once again."*

As for the team based affective intuition, it stands for the process, where gut feelings or hunches come to the front abruptly and direct you to the best solution without understanding the underlying reason behind the oversensitivity against the respective situation or subject. To make it clearer, the following example is thought to be useful. The example based on a true story was transcribed in one of my interviews with the software development team. The team leader conveyed the story by stating that:

> *"In our last project, we faced with five reasonable alternative ways to be applied to complete the process. Unfortunately, there was not adequate time to examine each alternative in detail since the customer was also applying serious pressure on the firm to end the project as earliest as possible. While*

team members were brainstorming about the appreciation of the situation, one of the team members suddenly indicated that the second alternative way should be chosen since he felt deeply that it would give better results for the progress of the project when compared to other alternatives. Later on, one of the other members surprisingly manifested that his inner voice was also saying the same thing. He then continued that he could not explain the underlying reason behind his deep feeling against the respective alternative but somehow he was feeling right about it. It might sound weird or non-logical but we were not amazed at what they were talking about. In short, since we were familiar with such intuitive decisions in previous projects, we relied on their hunches and adopted their decision without questioning. Ultimately, the decision taken and put into practice in a short period provided us with the expected output from the project and the demand of the customer was met on time."

As can be understood from this example, synthesis of the team members' experience and their knowhow procured them to feel the right alternative without conscious reasoning and to rely on their gut feelings since they were under time pressure and had more than one reasonable alternatives to select. This example confirms the claim of Agor who highlights the fact that intuition comes into play "when there are more than one plausible alternative solutions to choose from; when time is limited and there is pressure to come up with the right decision" (Agor, 1986, p. 9).

Finally, team-based behavioural intuition implies instantaneous physical symptoms (i.e. tension, stomach ache) or some specific personal characteristics (i.e. risk-taking, unresponsive to understand the logic behind the choice made by means of gut feeling or inner voice, anticipating possible problems or new possibilities) which make it easy for the team members to solve problems or make quick decisions. Both gut feelings and physical symptoms have a dissuasive or persuasive effect on decision-makers or problem solvers since they stand for a symbolic language or voice of their years of practice or personal knowledge. Thanks to their domain-specific expertise or rule of thumb method, team members can easily see the possible solution or make the best choice among alternatives. To make it clearer, the following example is thought to be useful. The example based on a true story was transcribed during one of my interviews with a project team. The team leader of the project conveyed the story by stating that:

"As a team, we have been developing materials by using vinyl derived polymers for different purposes for two years. Based on our experiences gained as a result of various pilot tests about this issue we have started to anticipate with high accuracy that which vinyl groups have what kind of effects in the structure of a material. In our recent study, for instance, thanks to the formula developed through our foresight to acquire effectual absorbing and swelling values while developing polyvinyl alcohol-based sponge, we have gotten approximate values for the final product on the first try. Thanks to this study, we again understood that our past experiences contributed us to sense and anticipate the right formula and intuition worked like a charm."

Starting from this point of view, the study of team intuition is critical in terms of its collective power. To go in more detail about the importance of team intuition, some representative studies are tabulated below. When looking through the table below, it is apparent that there is a limited number of studies on team intuition and it has not well researched empirically. Therefore, there is an essential need for further research on this topic.

Table 2.6: Some Representative Studies on Team Intuition

Dayan and Di Benedetto (2011)	
Aim(s)	To investigate the relationship between team intuition and team's ability. To discuss the effect of team intuition on creative ability. To find out the relationship between team intuition and turbulent conditions.
Definition(s)	No exact definition of team intuition
Antecedent(s)	Past experience
Consequence(s)	Creativity
Implication(s)	Turbulent conditions positively affect team intuition. When team members are more experienced and less stressful the relationship between team intuition and new product creativity positively increases. There is no relationship between new product creativity and team experience/team stress.
Dayan and Elbanna (2011)	
Aim(s)	To analyse the impact of transactive memory system, team empowerment, team member experience, decision motive, decision importance, and decision uncertainty on intuition in New Product Development Teams.

	To investigate the moderating role of environmental turbulence on the relationship between team and decision related antecedents with intuition.
Definition(s)	No exact definition of team intuition
Antecedent(s)	Team empowerment, team member experience, decision motive
Consequence(s)	Product creativity
Implication(s)	Team related antecedents and decision related antecedents (except for decision uncertainty) all positively relate to team intuition. Team intuition positively affects product success & speed-to market.
Elbanna (2015)	
Aim(s)	To investigate the impact of environment on intuition To find out if reflexivity has a mediator role on the relationship between intuition and project success / speed to market.
Definition(s)	No exact definition.
Antecedent(s)	Experience, trust and team empowerment
Consequence(s)	Productivity and reflexivity
Implication(s)	There is a positive relationship between competition uncertainty/ environmental complexity and intuition. Macro-economic uncertainty has no effect on intuition. Intuition has a positive impact on team reflexivity
Zeeshan, Yuosre, Mir, and Bilal (2016)	
Aim(s)	To examine the roles that an expert intuition, an expert power, and a team intuition play when applied to a particular task in the NPD team context; to measure the moderating role that environmental turbulence and expert power on team intuition
Definition(s)	No exact definition.
Antecedent(s)	Unmentioned
Consequence(s)	Unmentioned
Implication(s)	Task uncertainty has a positive and significant impact on expert intuition and team likeliness. Environmental turbulence has a moderating role on the relationship between task creativity and the team likeliness to accept expert intuition.
Zacca, Dayan and Elbanna (2017)	
Aim(s)	To examine the effect of conflict and intuition on explorative new products and performance in small and medium sized organizations.
Definition(s)	No exact definition.
Antecedent(s)	Personal conflict and objective conflict
Consequence(s)	High performance

Implication(s)	The higher market turbulence, the more positive relationship between objective conflict and intuition in decision-making process. The use of intuition negatively affects explorative new product.

When examining the studies above it is clearly seen that they dwelled on;

- examine the impact of team-related antecedents (team member experience, transactive memory system, and team empowerment) and decision-specific antecedents (decision importance, decision uncertainty and decision motive) on intuition in NPD teams
- the moderating effect of environmental turbulence on team intuition
- the impact of team empowerment on team intuition
- the relationship between team intuition and team performance
- the influence of conflict and intuition on explorative new products and performance
- the mediator role of reflexivity between intuition and project outcomes (project success and speed of completion)
- the interrelationship among team climate, team cognition, team intuition, and software quality in new software development project teams

When examined the findings of these studies, the results overall indicate that there is a significant relationship among team intuition, new product creativity, product success, and speed-to market with no matter how high or low the market turbulence is.

2.1.2. Creativity

In the complex and fast-changing environment, the main mission of organizations is to develop an innovative and creative social structure to meet both internal and external demands. Additionally, creativity and innovation play a critical role in increasing performance and providing permanent survival in a highly competitive atmosphere. Edward de Bono emphasizes this critical role by asserting the fact that the more competition steps up, the more creative thinking is requisite. Because doing similar things much better than others, being efficient, or having the ability to solve problems easily are not adequate any longer in today's world. The essential thing is to own new ways of thinking, to seek for new occasions or

possibilities, and to develop novel ideas (Shalley and Zhou, 2008). That is why; it is inevitable for the organizations to be the victim of changes unless they consider those emerged realities and take necessary precautions.

Taking a different approach to the world brings about different knowledge; and acquiring different knowledge brings about different perspectives that in turn provide a connection between concepts and theories. Since the concept of creativity is abstract and treated by different perspectives, it is difficult to find a specific definition. Because in what aspects one perceives the world will also change their way of identifying something. To give an example, while for the ones, who think in a traditional perspective, “creativity is something done by only creative people”; as for the others, who think in more modern perspective, “it is something that all humans with normal capacities are able to produce” (Amabile, 1997, p.42). In a sense, creativity is not specific-to-specific people as Albert Einstein says; “creativity is contagious, pass it on.”

In a discussion of what creativity means, it is possible to find a great deal of conceptual and empirical studies. However, it would be enough to present only common definitions put forward by the authors and researchers who left their mark on this subject. However, considering the fact that there are differences in terms of the field or approach that the concept is taken into account, it shouldn’t be ignored that creativity is treated by the majority of those authors and researchers as either an “outcome” or a “process” or “both an outcome and a process”. Before presenting them, let us go back to the origin of the concept of “creativity”. Creativity stems from the Latin word “creare” which means the ability to create, to generate, to give birth or to innovate (Baryniene and Dauknyte, 2015, p.9). As can be inferred from the root of the word, it gives a sense of the presence of new things. Based on this idea, creativity is a new, novel and valuable idea, product or action (Mumford and Gustafson, 1988; Oldham and Cummings, 1996) which results from the personal and social interaction. In other words, as Sternberg and Csikszentmihalyi emphasize, creativity is “any act, idea or product which alters an existing domain" or which turns it into a different one (Sternberg, 1999; Csikszentmihalyi, 2007). Some researchers define creativity as a tendency to produce or distinguish ideas and/or probabilities, which can serve to find a solution to problems or to interact with others. (Franken, 2001). Differently, it is defined by Thompson as “the shuffling of ideas into new

combinations, the changing of existing linkages, and forming new associations of words, meanings, and events" (Jalan and Kleiner, 1995, p.21).

The ones who discuss creativity as an outcome define it in terms of some characteristics like fluency (quantity of ideas bounced off) and originality (novelty and quality of ideas) etc.; as for the others who take this term as a process describe it by focusing on a number of stages (Kanter, 1988; West and Farr, 1989; Shalley and Zhou, 2008). These stages are presented in the following table concisely to comprehend the content of the suggested creative processes.

Table 2.7: The Stage Models of Creativity

Theorist	Stages of the Creative Process	Source
Hermann Helmholtz (1898)	It consists of **three stages;** ➢ *saturation* ➢ *incubation,* ➢ *illumination* *Helmholtz was the first who identified the stages of creative process.	*(Stein, 1974)*
Graham Wallas (1926)	It consists of **four stages;** ➢ *preparation* ➢ *incubation* ➢ *illumination* ➢ *verification* *This model is considered as classic and mostly preferred one in the related domain.	*(Truman, 2011)*
Morris I. Stein (1967)	It consists of **three stages;** ➢ *hypothesis* ➢ *formulation* ➢ *testing and communication*	*(Stein, 1974)*
Robin M. Hogarth (1980)	It consists of **four stages:** ➢ *preparation* ➢ *production* ➢ *evaluation* ➢ *implementation*	*(Amabile, 1983)*
Teresa M. Amabile (1983)	It consists of **five stages;** ➢ *problem or task presentation* ➢ *preparation* ➢ *response or idea generation* ➢ *response or idea validation* ➢ *outcome*	*(Amabile, 1983)*

Arthur J. Cropley (1997)	It consists of **<u>six stages</u>;** ➢ *preparation* ➢ *incubation* ➢ *illumination* ➢ *verification* ➢ *validation* ➢ *Communication*	*(Cropley, 2001)*

In each stage, the effects of intrapersonal and interpersonal factors draw attention. "All these factors reflect the fact that creativity occurs in a social context and it is a function of transactional relationships between the individual and his environment—the creative individual is both affected by and affects his environment" (Stein, 1974, p.1).

If it is necessary to go over the other definitions put forward by major researchers, Torrance is one of them who defines creativity "as a process of being sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies" (Runco and Pritzker, 1999, p.599). It is also characterized as a cognitive process consisting of new ideas or notions, or new connotations between available ideas or notions (Radu and Cole, 2008). In brief, creativity is a social or cognitive process resulting in an outcome like an idea, product, service or action. In this context, it is seen as both an outcome and a process, and thus to reach the creative outcome, some steps should be followed accordingly. In the process the first step starts with "*finding a problem"*; the next step continues with "*solving the problem in a unique approach"* by linking ideas obtained from various sources, and the final step ends with "*implementing a new solution or solutions"* in an appropriate way. Shalley and Zhou (2008), for instance, sees creativity as a recursive process which contains "reflection and action, seeking feedback, experimenting, and discussing new ways to do things in contrast to just relying on habit or automatic behaviour" (Shalley and Zhou, 2008, p.4).

As it is understood from the descriptions of the creative processes above, they almost have similar phases with only tiny changes. In general, all involves coming up with a problem; collecting relevant information to solve it; checking any idea for the relevancy; and finally choosing the optimal solution. To say it more clearly they all include "identifying a problem or opportunity, gathering information, generating ideas, and finally evaluating ideas" (Shalley and Zou, 2008, p.9).

2.1.2.1. Theories of Creativity

Despite pointing out the same general ideas, each theory of creativity offers a distinctive insight and a new way of looking or thinking about specific factors that serve to appreciate the nature of creativity with its all aspects. Starting from this point of view, theories having wide coverage in literature were reviewed to see the big picture of creativity. But before leading in the theories, the six P's of creativity, which was used by theorists to develop theories of creativity, will be mentioned briefly to be able to interpret and understand the content of those theories.

In the first instance, Rhodes (1961) formed the framework of creativity that consists of "four Ps". Brief descriptions of "Four Ps" are as follows:

- The first P of creativity stands for the *person* that is the most fundamental subject for creating something or making any kind of creative contribution. This study area centers on the personal characteristics, knowledge, expertise or skills necessary for the creative work. This area tries to find an answer to the question; what kind of traits or abilities should be possessed to be creative or make a creative contribution?
- The second P of creativity refers to *a product* which is the acquired outcome as a result of the person's creative thinking or actions. For a product to be creative, it has to include novelty, originality, appropriateness, and usefulness. This area searches for an answer to the question: Does the product obtained have the quality of creativity or not?
- The third P of creativity represents the *process* that consists of some stages through which the person can reach a creative product. This area seeks out an answer to the question: what tools, techniques, or models should be used to be creative or make a creative contribution?
- The fourth P of creativity characterizes *place (or press)* where or in which atmosphere creative ideas, products or actions take place. This area tries to find an answer to the questions: What kind of environment stimulates or hinders creativity? And, what can be done to increase the level of creativity in an environment? (Rhodes, 1961).

Along with further studies, the framework of creativity was extended and two important areas were added to the list. The first of them is *persuasion* by which the creative person convinces others to accept his ideas, products or actions as valuable

and original. As for the last P of creativity, it stands for *potential* that focuses on the creativity of ordinary life (Kozbelt, Beghetto, and Runco, 2010). Just after having a general overview of the framework, it is time to refer to the historical development of the major theories based on creativity.

2.1.2.1.1. The Evolutionary Theory of Creativity

The evolutionary theory of creativity proposed first by Campbell (1960) mainly focuses on the idea that creativity is not a mystery or a puzzle; it contains a variety of ideas. The second point elaborated in this theory is selective retention. Thanks to individuals' background and knowledge, they can generate multiple solutions for difficult problems. In addition to the "variation" which promotes the idea novelty and the "selective retention" which contributes to idea usefulness, the additional aspect put forward by Simonton in 1999 was the inclusion of four P's of creativity to this theory (Simonton, 2011).

2.1.2.1.2. The Componential Theory of Creativity

The componential theory of creativity proposed by Amabile (1983) is considered as "a comprehensive model" which is not only designed to include psychological and social components of creativity but also organizational ones. In general, this theory characterizes creativity as a process and it centers upon its influences on the creative outputs. The components, which are building blocks of this theory, include four components: "domain-relevant skills, creativity-relevant skills, task motivation, and social environment" (Amabile, 1983). To understand the fundamental assumptions of this theory, each component is going to be described briefly based on the studies of Amabile (1983; 1996; 2012).

Domain-relevant skills encompass required knowledge, expertise or skills for a specific domain to work problems out or complete given tasks. In other words; to be able to generate novel and relevant ideas, products, etc. the skills, knowledge or expertise an individual possesses should be directly associated with the field he is involved in.

Creativity-relevant skills comprise of cognitive style and personality characteristics to generate novel and relevant ideas or products. In a broader sense,

an individual is required to have "the ability to use wide, flexible categories for synthesizing information and the ability to break out of perceptual and performance scripts. As for the personality processes, the individual is expected to be self-disciplined and tolerant for the ambiguity" (Bilal, Majid, and Shahid, 2014, p.153).

Task motivation is considered as the key component of this theory. The underlying reason behind it is the number of researches done concerning primary factors affecting creativity. They show that individuals produce more creative works, engage in the tasks more effectively and solve problems easily when they have the self-desire to fulfil those actions. As intrinsic motivation has a self-sustaining effect on individuals, the result of the creative process can be more satisfying.

The social environment mainly deals with the organizational components of the theory. It involves environmental factors that can have both negative and positive effects on the creative process. These factors can be categorized as an incentive such as "a sense of positive challenge, collaborative work teams, and diversity of skills, high-risk attitude, and freedom in carrying out the work, creativity encouraging vision, and mechanism for developing new ideas." Moreover, they are categorized as disincentive like "norms of harshly criticizing new ideas; an emphasis on the status quo; a conservative and low-risk attitude; an excessive time pressure" (Amabile, 2012, p.3).

The salient point of the components described above is that they are all interrelated. In other saying, the entity or nonentity of any of these components affects the level of creativity. To give an example, if one has a high level of knowledge, experience or talent for the relevant domain, and is intrinsically motivated to generate creative works, to solve problems or to engage in the given task with self-discipline in creativity encouraging environment, the level of creativity will be inevitably high. On the other hand, if one of the components is missing in the creative process, the outcome's level of creativity will be lower. The following figure includes the function of the four components.

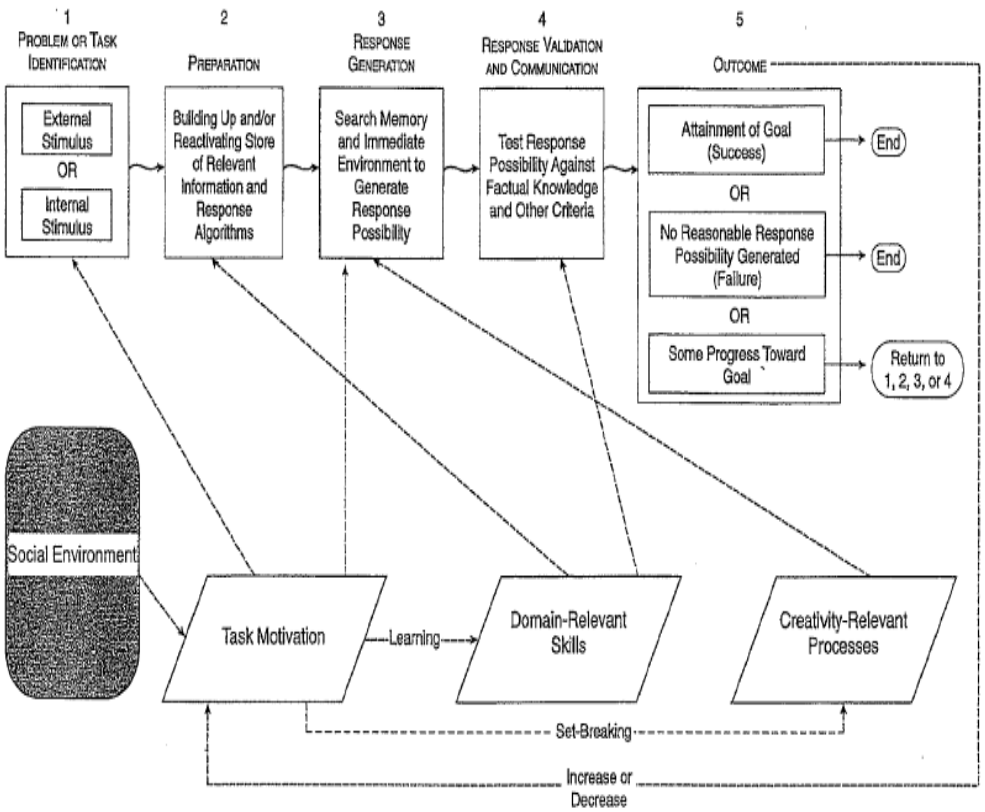


Figure 2.2: The Componential Model of Creativity

"Broken lines indicate the influence of particular factors on others. Wavy lines indicate the steps in the process. Only direct and primary influences are depicted" (Amabile, 1996, p.113).

Another point that catches the attention from the figure above is the integration of the main stages of the creative process into the components. In the figure, Amabile depicts that to solve a problem, the exact nature of the problem should be analyzed and articulated, the necessary information should be collected, and the required skills should be improved. Additionally, required preparations should be made, new ideas should be generated, the chosen solution should be tested or validated, and finally the solution should be communicated to others (Amabile, 2012).

2.1.2.1.3. The Systems Theory of Creativity

According to this theory, "creativity is a process which can be observed only at the intersection where individuals, domains, and fields interact" (Csikszentmihalyi, 1999, p.3). In other words, it focuses on the interaction of the individual and his

environment as in the systems approach. The environment is thought to have two explicit aspects: the domain and the field. According to this approach, an individual uses information from a domain, which can be cultural or symbolic, and transforms or extends it through his personality, cognitive processes and motivation. As for the field that refers to the social aspect, it evaluates and chooses the new ideas presented. To describe the systems theory of creativity more clearly, the following model is presented since it covers all bases of the theory (Csikszentmihalyi, 1999, p.4).

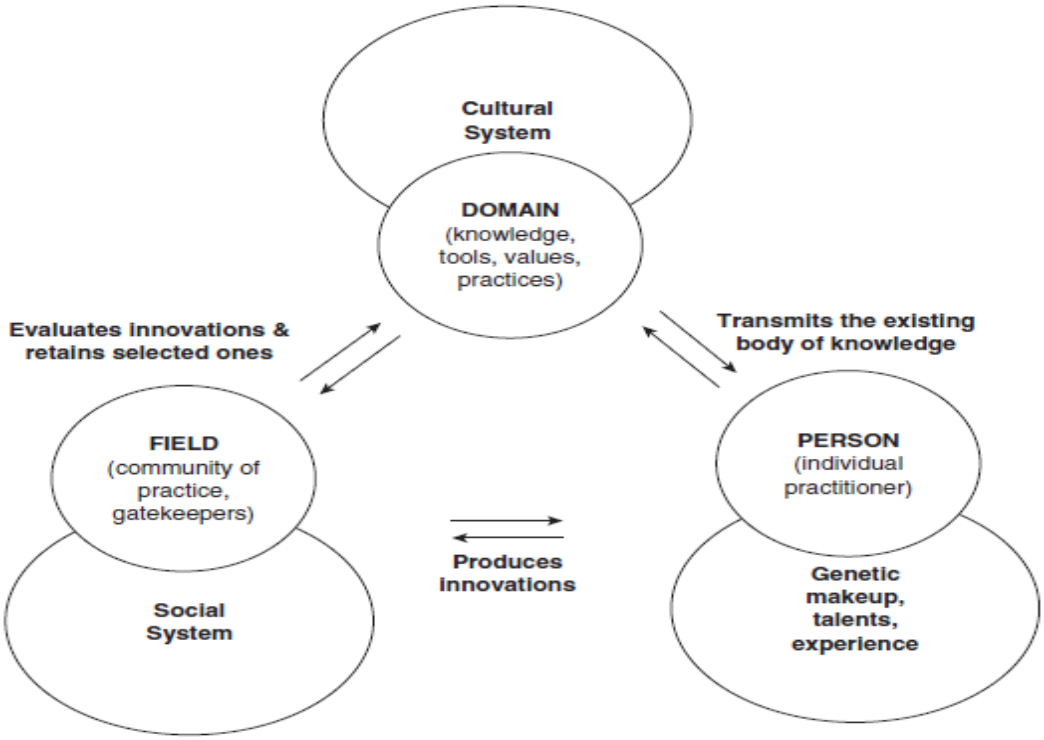


Figure 2.3: The Systems Model of Creativity

From the figure above, it is understood that the product resulted from creativity does not only belong to individuals but also cultural and social systems that have an impact on the products created by those individuals (Csikszentmihalyi, 2006). In other words, creativity is something that takes place in a system, which consists of three core components: a culture in which there are symbolic principles; a person thanks to whom novelty steps forward; an area of expertise where experts identify and enable the innovation (Csikszentmihalyi, 2007).

2.1.2.1.4. The Investment Theory of Creativity

The investment theory of creativity proposed by Robert J. Sternberg in 1991 focuses on six resources available for creativity: "intellectual skills, knowledge, thinking style, personality, motivation, and environmental context." It is believed that creative thinkers' new ideas are rejected initially due to some inhibiting factors. Thus, their ideas are stocked for a while and when they convince others that their ideas are valuable and novel, they sell them high and they go on generating newer ideas. From the investment perspective, "creativity is in large part a decision" (Sternberg, 2006, p.90), and those six unique but interrelated resources are of primary importance in the creativity and decision-making process. To get an idea for the aspects of the investment theory, the following table based on Sternberg's study (2006) is prepared.

Table 2.8: The Six Resources of Creativity

Resource	Type (s) / Content
Intellectual skills	**Synthetic skill:** It enables one a new way of looking to solve problems using a non-traditional way of thinking. **Analytic skill:** It enables one to understand which ideas proposed by others are valuable or useless. **Practical-contextual skill:** It enables one to convince others to buy their ideas**.**
Knowledge	**Advantage:** It enables one to move their ideas forward since they have enough knowledge about the field. **Disadvantage:** It causes one not to move his ideas forward due to his past knowledge. Status quo is dominant.
Thinking style	Thanks to thinking style that an individual opts for, he can use his skills effectively or not.
Personality	Some personality characteristics such as; • eagerness to get over a problem • eagerness to take a risk • eagerness to excuse uncertainty • self-competency are essential parts of bringing out creative outcomes.
Motivation	**Intrinsic motivation:** It enables one to focus on the work and rejoice in it. As a result, the more one is motivated the more creative contribution occurs. **Task motivation:** If the task draws one's attention and they engage in it, the outcome will be more creative.

Environmental context	**Supportive environment:** It enables one to feel positively and motivated, and thus they can take a sensible risk, overcome any obstacles easily, and create novel and valuable outcomes. **Rewarding environment:** Rewards are key stimulants for almost everyone so the rewarding environment enables one to focus their whole attention on the work, which thus increases the possibility of making creative contribution.

Regarding the six resources of this theory, one should not ignore the fact that each resource has unique significance on the level of creativity.

2.1.2.1.5. The Propulsion Theory of Creativity

The propulsion theory of creativity proposed by Robert J. Sternberg (1999) focuses on eight types of creative contributions; *"replication, redefinition, forward incrementation, advance forward incrementation, redirection, reconstruction or redirection, reinitiation, and integration"* which take place in any domain. Sternberg identifies those types of creative contributions by categorizing them as; "*creative contributions that accept current paradigms*", "*creative contributions that reject current paradigms*", and "*creative contributions that synthesize current paradigms*" (Sternberg, 2006, p.96). The subject matter of this theory is that creative contributions have the potential of moving a field forward in a new direction or keeping it wherever it is by the creator's own preference. The following table sketches the creative contributions under the category they are supposed to belong.

Table 2.9: Types of Creative Contributions

Creative contributions that accept current paradigms
Replication: Replication, which can be considered as the lowest level of creative contribution, is an approach to indicate that there is no need to move the field forward but to keep it where it is. **Redefinition:** Redefinition is an approach to keep the field where it is, rather than moving it forward. However, at the same time the field is identified or defined in a different way. **Forward incrementation:** Forward incrementation is an approach to move the field forward in the direction it is already going. However, the level of forward

motion is not high as expected by others. **Advance forward incrementation:** Advance forward incrementation is close to the forward incrementation approach but the only difference is that the level of forward motion is higher than the expected by others.
Creative contributions that reject current paradigms
Redirection: Redirection is an approach to "redirect the field from where it is toward a different direction" (Sternberg, 2006, p.96). **Reconstruction/Redirection:** Reconstruction/Redirection is an approach to "move the field back to where it once was (a reconstruction of the past) so that it may move onward from that point, but in a direction different from the one it took from that point onward" (Sternberg, 2006, p.96). **Reinitiation:** Reinitiation is an approach to move the field back to the initial point, and then move it from that point to a different and unattained one.
Creative contributions that synthesize current paradigms
Integration: Integration is an approach to combine two different ways of thinking about a concept or something else into a single way of thinking.

2.1.2.2. Types of Creativity

Having dwelled on the historical development of creativity, generally accepted definitions under three categories are presented for comprehensiveness about what creativity is and where creativity comes from.

Table 2.10: Creativity Types and Their Definitions.

Author	**Affective creativity is;**
Runco and Pritzker (1999)	*"a process of being sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies" (p.599)*
Author	**Behavioural creativity is;**
Franken (2001)	*"an inclination to generate, to create, or to recognize ideas or possibilities that may be useful in terms of solving problems or communicating with others" (p.394)*

Sternberg (2012)	*"a habit of ordinary life, not merely as something one can do at extraordinary times" (p.3)*
Author	**Cognitive creativity is;**
Eisenberger, Haskins, and Gambleton (1999	"*the generation of novel behaviour that meets a standard of quality or utility" (p.308)*
Piirto (2004)	*"a mental competency to create, to generate, to give birth or to innovate new ideas, products or actions" (p.6)*
Radu and Cole (2008)	*"a mental process that involves the generation of new ideas or concepts, or new associations between existing ideas or concepts*" *(p.1)*
Shalley and Zou (2008)	*"an iterative process which includes reflection and action, seeking feedback, experimenting and discussing new ways to do things in contrast to just relying on habit or automatic behaviour" (p.4)*
Wang (2009)	*"a process that realizes in the cognitive level that discovers a new relation between objects, attributes, concepts, phenomena, and events which is original, proven true, and useful" (p.2)*
Nisula (2013)	*"an intellectual ability of an individual to demonstrate originality and novelty in her or his knowledgeable actions" (p.26)*

In spite of having a complex structure and being difficult to be defined precisely, the consensus on creativity based on the studies above highlights the fact that it should include those components; *newness, novelty, valuableness, usefulness, effectiveness, and originality.* On this basis, before passing on to the aspect of team creativity, mentioning the significance of individual creativity, in general, is critical, as individuals are the main capital for the organizations in essence; and they put all operations into practice. Additionally, since the ability of creating or generating is peculiar to human beings and creativity is an individual feature, to start with characterizing what individual creativity is sounds reasonable.

As mentioned earlier, creativity is discussed from very different points of view in different disciplines, and the studies mostly within the psychology field have centered upon individual creativity. Individual creativity is a mental capacity of an individual that provides him to generate original and novel ideas, actions or products (Nisula, 2013). Since creativity is, something owned only by a person, there is no specific definition for the individual creativity. For that reason, definitions presented above can be adapted and redefined by adding the word "individual" to the descriptions. In short, the formation or creation of new, original, suitable and at the same time practical ideas, actions or products by an individual is identified as an individual creativity (Amabile, 1977; Brennan and Dooley, 2005; DiLiello and Houghton, 2006). It is affected by an individual's characteristics and desires including personality factors and cognitive skills like intelligence, convergent or divergent thinking, etc. (Barron and Harrington, 1981).

2.1.2.3. Team Creativity

"Many ideas grow better when transplanted into another mind than in the one where they sprang up" (Adair, 2007, p.85).

To underscore the concept of team creativity, it would be fitting to start with a quotation above by Oliver Wendell Holmes. Even though there have been a considerable number of studies on the nature and implications of creativity, the number of studies on team creativity, in which creative ideas are produced by a group of people, is limited. Whereas teamwork "conceptualized as a global unitary construct consisting of different facets or clusters of behaviours such as communication, coordination, performance monitoring, and team-building" (Eby, Deena, Michael, and Charles, 1999, p.386) can help organizations turn possible threats into opportunities. As known, a team is described as a group of people where "talent, energy, and this collective capacity to innovate become greater than the sum of individual contributions" (Barczak, Lassk and Mulki, 2010, p.332). That is why; it is expected from a team to share their experiences, knowledge or values and to produce new things to solve problems more effectively than a single person does. Therefore, bringing creative people together has become even more important in today's competitive global marketplace. Thomas John Watson, the chairperson and

CEO of International Business Machines, also accentuated the significance of bringing creative people together.

> *"I believe the real difference between success and failure in a corporation can very often be traced to the question of how well the organization brings out the great energies and talents of its people" (Camilleri, 2011, p.75).*

Similarly, Boon, Vangrieken, and Dochy also indicate the importance of team creativity. According to them, "teams are a commonly used work format to enhance the emergence of creativity in organisations, because the collective body of knowledge, experiences, perspectives, and ideas of a team is assumed to be larger and richer than that of an individual worker" (Boon, Vangrieken, and Dochy, 2016, p.67). As stated before, even if the source of creativity in either micro-level or macro level is individuals, the interaction among them plays the most critical role in developing creative ideas. The main reason of this is that team creativity is thought to come out due to collaborative works or interaction in a social process where individuals create or share their knowledge, develop a different point of view, and present their talents to the other team members (Yeh, 2012). Starting from this point of view, team creativity is defined as "the production of novel and useful ideas concerning products, services, processes, and procedures by a team of individuals working together" (Tsai, Chi, Grandey, and Fung, 2012, p.638). In other words, team creativity ensues with the inclusion of more than one individual, and it is essentially necessary to enhance the quality and/or originality of the developed products or ideas (Adair, 2007).

All the things mentioned above imply the fact that team creativity results from the collaboration and contribution of a group of individuals, and this contribution comes from knowledge, skills, experiences, perspectives and spiritual support of team members. In other words, anything valuable, novel or useful that stands for creativity bloom thanks to the diversity and synergy factor. When examining the scope of team creativity in literature, it is observed that there is an extensive number of studies in different disciplines with different points of view. Nevertheless, since this study focuses on the creativity in project teams, the following table is prepared accordingly.

Table 2.11: Some Representative Studies on Team Creativity

Author(s)	Aim(s) of the study	The measure used
Kurtzberg and Amabile, (2001)	To analyse the impact of group processes and dynamics on team level creative production To provide a framework and find out the effects of diversity and different types of conflicts in groups on the creative process (p.285)	Conceptual paper-no scale.
Pirola-Merlo, and Mann. (2004)	To analyse the relationship between individual creativity and team creativity in research and development project teams To examine the impact of climate on the workplace of individual and team creativity	Self-rated measurement was used to measure the creativity of teams.
Chen (2006)	To examine the impact of conflict on the process of creativity in project teams	A 6-item scale was used to measure the creativity of teams (Amabile et al., 1996; Rickards et al.,2001).
Chen, Chang, and Hung (2008)	To analyse the impact of social capital on creativity of research and development project teams.	A 6-item scale was used to measure the creativity of teams (Amabile et al. 1996; Rickards et al., 2001).
Tu (2009)	To find out if organizational support and control has a moderating effect in the relationship between team affective tone and team creativity.	Adapted and revised scales were used to measure the creativity of teams (Scott and Bruce, 1994 and Zhou and George, 2001).
Farh and Lee (2010)	To develop a contingency model for team creativity. To test the relationship between task conflict and team creativity in information technology project teams	An adapted scale was used to measure the creativity of teams (Oldham and Cummings 1996).
Im and Workman (2013)	To develop and empirically test a model for creativity in product innovation teams. To analyse the effects of internal and external team dynamics on new product and marketing program creativity. To examine the effect of NP and MP creativity on product competitive advantage as a strategic innovation outcome.	An 8-item Likert-type scale was used to measure the creativity of teams (Im and Workman, 2004).

The representative studies above reflect the fact that most of the researchers dwelled on;

- the impact of team creativity on new product development or innovation;
- the impact of organizational climate on team creativity
- the impact of group dynamics on team creativity
- the impact of social capital on team creativity
- the relationship between task conflict and team creativity

2.1.3. Learning

Since individuals are dynamic and changeable beings due to their nature, the evolution in consequence of their adaptation to the environment is indispensable. The more they are adapted to the environment, the more they regenerate (De Houwer, Barnes, and Moors, 2013). Based on this reality, individuals are required to learn and develop during their lifetime but especially in their business life, which constitutes their major period. Thanks to learning, individuals can produce and share knowledge among group members they belong to or with others outside the group, which promotes organizational effectiveness and/or performance. Besides producing and sharing knowledge, interacting with the environment has also paramount importance for the adaptation to changing situations (Kayes and Burnett, 2006). By considering this thought and looking from a broader perspective, learning is essential for the economic development and sustainable competition since it increases the level of skills and intellectuality of a society. Unless the society has a sense of lifelong learning in such a fast-changing and harsh competitive atmosphere, it makes their failure or loss unavoidable. Just because of this reason, organizations are obliged to reflect the importance of learning to the whole organization and do their best to encourage everyone to access it.

Due to its profound effect on every sphere of life, the indispensability of learning as an indicator of evolution is an explicit fact accepted by everyone. People as living creatures need to interact with others around and have a continuous exchange of information with them. Thanks to that interaction and exchange of information, people show different reactions to different situations. This reaction is shown through their behaviours, emotions, or thoughts. No matter what the reaction

is, the interaction and exchange of information already create differentiation on people in terms of their way of thinking, feeling, and/or behaving. Since learning is considered as a matter of life and death for the development of people, the change of people by learning has been a prominent issue from time immemorial. Correspondingly, several theories have been generated as a result of extensive researches and studies to explore how people learn.

2.1.3.1. Learning Theories

In an effort not to stray from the point, it will be touched upon the subject of learning theories (behavioural learning theory, cognitive learning theory, and affective learning theory) briefly without descending to their particulars. For further information about learning theories, you can read the books "*Theories of Human Learning-What the Old Man Said*" by Guy R. Lefrancois (1999), "*Learning Theories, An Educational Perspective"* by Dale H. Schunk (1991*) and "Ways of Learning" by* Alan Pritchard (2009).

2.1.3.1.1. Behavioural, Cognitive, and Affective Learning Theory

Behaviourism, of which root dates back to the late 19th and early 20th centuries, "is a school of psychology that focuses on the role of experience in governing behaviour" (Mowrer and Klein, 2001, p.3). As for the main point of behavioural learning theory, it emphasizes "the changes in either the form or frequency of observable performance" (Ertmer and Newby, 1993, p.48). It is proven that when one acts in a certain situation more than once, they often show similar behaviours in similar situations. To do this, one does not need to have any cognitive ability or show any mental effort. When considered from this aspect, learning is not only peculiar to human beings but also animals.

Pavlov (1849-1936) is the pioneer of behaviourism. He came up with classical conditioning theory, considered as the basis for many learning theories, by observing a dog and its reactions to the specific neutral and conditioned stimulus. In his experiment, the bell was used as a neutral stimulus, and its effect on the dog's salivation response was observed accordingly (Myers, 2014). Pavlov's classical conditioning experiment consists of three phases. In the first phase, the dog sees the

food and it unconditionally slavers for it (unconditioned response is produced). Then the bell is rung without any food and the dog does not show any reflex (no salvation response is produced). In the second phase, the bell is rung again and the dog is provided with the food right after the neutral stimulus, as a result of the dog slavers for the food unconditionally (unconditioned response is produced). This procedure is repeated more than once and then it is demonstrated that the dog produces salvation again even if the food is not provided. In other words, the bell, which is used as a neutral stimulus at first, becomes a conditioned stimulus later on. Pavlov's experiment thus presents the idea that animals like human beings can learn through experiences and new behaviours are developed through conditioning. The only thing needed is a stimulus provided by the environment. When the stimulus is responded, it is inevitable to observe the change in behaviours and make the learning possible (Myers, 2014, p.241).

Edward L. Thorndike (1874–1949), who was another advocator of behavioural learning theory, provided an inconvertible contribution to behavioural psychology and theorized operant conditioning, which hinged upon the experiments on animals. Experience and practice play fundamental roles in the relationship between stimulus and response in Thorndike's theory. According to him, when one has a positive and satisfying experience, the power of "stimulus-response connection" increases accordingly and it thus promotes learning (Pritchard, 2009, p.14). He also viewed learning as problem-solving and advocated that when one faced with any problems they could find solutions by trial and error behaviours (Schunk, 1991).

Following Pavlov's and Thorndike's experiments, Watson (1878-1958) another leading name in the learning theory, supported Pavlov's findings with different experiments and deduced that backwash conditioning was built on a foundation of the relationship between the stimulus and the conditioned response.

Regarding Thorndike's experiments, Skinner (1904-1990) characterized behaviours of an organism as deliberate ones rather than automatic responses against stimuli and he argued that rewards and punishments have a strong effect on human behaviours that refers to the concept of reinforcement in operant conditioning. According to Skinner, reinforcement increases the possibility of a particular behaviour to occur again or end (Schunk, 2012).

Cognitive learning theorists advocate that learning is a cognitive process and learning is "a relatively permanent change in mental associations as a result of experience" (Pritchard, 2009, p.32). Since the changes occur intrinsically on a mental level, it is not that easy to observe them. Piaget and Bruner, the representatives of this theory, mainly dwelled on internal processes and individual factors. They were against the idea that only observed behaviours could be considered as learning. On the contrary, they maintained that it was not always necessary for the behaviours to be observed (Schunk, 2012).

As for the theory of affective learning, it centers upon the learners' emotions, feelings, values or perceptions (Bloom, Engelhart, Furst, Hill, and Krathwohl, 1956; Krathwohl, Bloom, and Masia, 1964). In other words, effective learning deals with how learners feel during the learning process and how learning experiences are internalized so that they can manage their ideas, attitudes, and behaviours in the next period (Krathwohl et al., 1964; Smith and Ragan, 1999).

2.1.3.2. Team Learning

Team learning has a crucial effect on all kinds of performance especially of organizations and projects since team members do the work together, rather than by an individual alone. Senge highlights this as well. He asserts the fact that team learning has great importance because it is a basic learning unit in modern organizations (Senge, 2010).

Before going into details about team learning, defining what learning is indeed essential to comprehend the scope of it. As known, learning has been identified in different ways in terms of its functionality or mechanicalness. For instance, while the functionality of learning emphasizes the changes in behaviours that emanate from experience; the mechanicalness of learning focuses on the changes in the organism (De Houwer et al., 2013). Similarly, learning is described as a perpetual development in the competency or change in behaviour as a consequence of practice or any kind of experience (Shuell 1986; Schunk 1991).

In this sense, team learning can be described as "a critical process in developing new product and services quickly and effectively; and a relatively permanent change in the team's collective level of knowledge and skill produced by the shared experience of the team members" (Akgün, Lynn, Keskin, and Doğan,

2014, p.38). To put it differently, team learning can be considered as a process of working by team members in a collective way to reach the intended goal. This is realized through "acquiring knowledge, disseminating knowledge and finally implementing knowledge" in the learning organization context (Akgün, Lynn, and Yılmaz, 2006). It is, of course, possible to witness a variety of definitions when reviewing the literature based on team learning. To give an example, Edmondson is the leading one who described it more broadly and clearly. According to her, team learning is "an ongoing process of reflection and action, characterized by asking questions, seeking feedback, experimenting, reflecting on results, and discussing errors or unexpected outcomes of actions" (Edmondson, 1999, p. 353). Other researchers who also regard team learning as a process define it as "a process through which a group creates knowledge for its members, for itself as a system, and for others" (Kasl, Marsick, and Dechant, 1997, p. 229). As for others like Ellis, Hollenbeck, Ilgen, Porter, and Moon, team learning is "a relatively permanent change in the team's collective level of knowledge and skill produced by the shared experience of the team members" (Ellis, Hollenbeck, Ilgen, Porter, and Moon, 2003, p.822). Team learning is also considered as an outcome of communication and coordination that builds shared knowledge among team members about their team, task, resources, and context" (Savelsbergh, van der Heijden, and Poell 2009, p.581).

As a whole, it can be identified that team learning is a kind of collective learning in which more than one's implicit and explicit knowledge, their experience, their ability, and even their failures are synthesized continuously through mutual interaction that in turn enables permanent change/s in their behaviours. Having described the concept of team learning based on the literature it is thought to be helpful to prepare the following table, which includes some representative studies applied in the field of management and organization to have a general sense of team learning and its outcomes.

Table 2.12: Some Representative Studies on Team Learning

Akgün, Lynn and Reilly (2002)	
Aim(s)	To build a multidimensional model of team learning on the basis of socio-cognitive constructs To test the multidimensionality of team learning
Implication(s)	Team learning consists of nine socio-cognitive constructs including information acquisition, information dissemination, information implementation, sense-making, memory, and

	unlearning, thinking, intelligence improvisation. Team learning with its all dimensions has a positive effect on the success of new product development.
Measure	A new questionnaire developed on the basis of previous studies by Moorman (1995), Moorman and Miner, (1998), Lynn et al., (2000).
Akgün, Lynn and Yılmaz (2006)	
Aim(s)	To build a team learning process model. To test the impacts of team learning process on the performance of teams.
Implication(s)	There is positive relation between team intelligence and the components of team information-processing. Information-processing plays a facilitator role on the success of new product development.
Measure	The questionnaire developed by Akgün, Lynn, and Reilly (2002)
Ortega, Sánchez-Manzanares, Gil and Rico. (2013)	
Aim(s)	To analyse the relationship between team learning and team performance To see the effect of beliefs in the relationship of team learning and team performance
Implication(s)	Team learning is positively related to the performance of the team. Beliefs positively affect the relationship between team learning and team performance
Measure	The questionnaire developed by Edmondson (1999)
Ortega, Van den Bossche, Sánchez-Manzanares, Rico and Gil (2013)	
Aim(s)	To examine the impact of change-oriented leadership in team learning process and its outcomes. To examine the impact of psychological safety on team learning.
Implication(s)	There is a positive relationship between change-oriented leadership and team performance. There is a negative correlation between team size and team learning.
Measure	The questionnaire developed by Edmondson (1999)
Akgün, Lynn, Keskin and Dogan (2014)	
Aim(s)	To explore the antecedents and consequences of team learning which is composed of "information acquisition, dissemination, and implementation" To examine the effect of team learning process on the outcomes of project. To find out which team behaviour characteristics and enablers can be strengthened to enhance team learning. To analyse the moderating effect of team anxiety on team learning and the outcomes of project
Implication(s)	Information acquisition and information dissemination positively affect the project outcomes. Team behaviour and enabler variables have a positive impact on team learning.

	Team anxiety has a moderating effect on the relationship between team learning and project outcomes
Measure	Modified version of team learning questionnaire items developed by Akgün, Lynn, and Yılmaz (2006)
Savelsbergh, Poell and Van der Heijden (2014)	
Aim(s)	To examine the effect of leadership on team learning behaviour
Implication(s)	There is a positive relation between person-oriented and task-oriented leadership behaviours with team learning. Team stability positively affects team learning.
Measure	The questionnaire items developed by Savelsbergh, Heijden, and Poell (2009)

The representative studies above depicture the fact that most of the researchers dwelled on the relationship between;

- team learning and team performance;
- the effect of leadership on team learning process and its outcomes
- the effect of psychological safety on team learning

When examined the findings of these studies, the results indicate that there is a positive and significant relationship between team learning and team performance. Namely, the more team members learn, the more team performance increases. As for the results of the analysis regarding the influence of leadership on team learning or team learning behaviours, it is found out that leadership behaviours are directly and positively related to team learning.

3. THEORETICAL BACKGROUND AND HYPOTHESES

This study examines the relationship between intuition, creativity, and learning in project teams. Besides that, the moderator role of complexity on the relationship (a) between team intuition and team creativity and; (b) between team creativity and team learning is analysed. Based on the research problem, this section precisely presents a theoretical and empirical background for the relationship among the variables, and thus enables readers to see the big picture of the key concepts.

3.1. The Relationship between Intuition and Creativity

> *"Machines and computers cannot be creative in themselves, because creativity requires something more than the processing of existing information. It requires human thought, spontaneous intuition and a lot of courage."*
>
> Akio Morita, Co-founder of Sony *(*Sadler-Smith, 2008, p.62)

The quotation above overtly describes the close relationship between intuition and creativity in practice, which has been already underscored in theory for decades. Intuition which practices on subconscious mental processes and embodies experiences gained over the years to bring on new insights may connect "seemingly unrelated facts in the subconscious mind and come up with innovative approaches for addressing problems that conscious mind had not solved" (Vaughan, 1979, p. 120). It is quite clear that intuition has a strong influence on creativity, and "the Eureka factor or aha experience" which, stands for sudden or illuminating flash, has been treated as a key element in discovery process by various researchers (Vaughan, 1979; Isenberg, 1984; Rowan, 1986; Frantz, 2003; Fleck and Kounios, 2009). As already highlighted in the previous sections, intuition emanates from experience and/or tacit knowledge, which is one of the entailments for creativity as well (Agor, 1984; Rowan, 1986). Similarly, it is also pointed out that tacit knowledge positively affects the way of generating new ideas (Pagano,1979; Policastro, 1995) and it "gives rise to intuitive behaviour" (Eubanks, Murphy and Mumford, 2010).

Vaughan who is one of the leading names contributing to the conceptualizing of intuition infers that "intuition can open up new possibilities, sometimes by

allowing you to see alternatives you have overlooked, sometimes by offering a fresh, creative solution to a situation in which you feel stuck" (Vaughan, 1979, p.43). She is right about her assumption because intuitive people have the talent of bridging the gap between the unconscious past and the conscious present by way of mental shortcuts or pattern recognition that enable them to "perform better on creative tasks" (Raidl and Lubart, 2000). It is also because "using intuition is not something following a consciously deductive path and is, therefore, more likely to be original since it does not build on something that is already known" (Gallate and Keen, 2011, p.686). As a matter of fact that, creativity itself stands for novelty and originality what intuition already has in it due to its main feature of being unknowable (Osho, 2011). On the other hand, it is also implied that "the creative alternatives are more likely to be the result of intuitive judgments because intuition allows people to think outside the box and make the association of new combinations of means and ends" (Dayan and Di Benedetto 2011, p.279).

H1a: *The use of cognitive intuition positively relates to team creativity.*

Some authors also moot that intuition and creativity have collective features; and intuitive feeling is a primary and essential stage of creativity (Burke and Miller, 1999). It is also acknowledged that "a creator relying on hunches or gut feelings about unknown or new directions can generate more surprising solutions" (Pétervári, Osman and Bhattacharya, 2016, p.4) and affect plays a crucial role in creativity and decision-making, and its use as a shortcut in reasoning is known as the 'affect heuristic" (Sadler-Smith, 2008, pp. 221). Intuition by its very nature allows us to "sense the right moment to make our move" (Rowan, 1986, p. 129). Vaughan also notes this significant feature of affective intuition and says it paves the way for creativity by helping him or her feelings when it is right to make innovation (Vaughan, 1979, p.152). In other respects, "intuition serves for creativity in a sense that it tells you what book to buy for your project. It is the hunch that a certain painting should be done in gray and that another should be done in purple. And finally, it is the sense that an idea which has never been tried before might work" (Zukav, 1999, p.27). Policastro also refers to some authors like Arnheim, (1980); Gardner and Nemirovsky, (1991); Piaget, (1974/1981) in his study and emphasizes the fact that creative people have an intuitive sense or feeling about what their final product will be like at all. In addition to these, by looking at the definition of creativity that is described by Torrance as a process starting with "sensing

difficulties, problems, gaps in information, and missing elements…" (Torrance, 1993, p. 233), it can be said in plain terms that thanks to "sensing" which is one of the characteristics of intuition, it becomes quicker and easier for the intuitive person to find out the problem and solve it. In other words, this is because "they have foresight, the perceptiveness to identify the real questions, and the ability to flexibly allocate resources to cultivate and capitalize on emerging opportunities" (Agor, 1989, p.114). As for Rowan (186), he mentions the relationship between affective intuition and creativity by asking the question "so where does the first glimmer of a new concept, new product, new market, or new solution to a problem come from? He then continues and says;

> *"Elusive as it is, we do know certain characteristics of this inner impression or hunch. It concerns the relationship, involves the simultaneous perception of a whole system, and can draw a conclusion without proceeding through logical intermediary steps. That's why intuition comes with that queasy feeling of almost but not quite knowing"* (Rowan, 1986, p.12).

Rowan also adds, "Scientific breakthroughs do not seem to evolve slowly from a sequence of deductions. They spring finally from hunches that cannot completely explain" (Rowan, 1986, p.4). By considering these theoretical bases and connections, the following hypothesis was formulated.

H1b: *The use of affective intuition positively relates to team creativity.*

Agor also touches upon the link between behavioural intuition and creativity by signifying that intuitive managers have the talent of creating innovative and unique solutions to old problems as "they have a sense of vision of the future and thus are better equipped to move their organization in response to it" (Agor, 1986, p.6). In his another comprehensive study, it is emphasized that intuitive executives own "different perspectives and tend to be more perceptive of organizational situations. Thus, they come with dramatically different, usually revolutionary ways to address the problems and opportunities that exist in times of change and complexity" (Agor, 1989, p.114). They can achieve this thanks to their years of learning and experiences that allow them to come up with original solutions before anyone else is even aware of the problems. In addition to these, as intuitive people are "great synthesizers so they can easily see the big picture and opportunities" (Lovecky, 2004, p.159) and they can sense what the real implications will be that others cannot see because they

are “too close to the present” (Westcott, 1968; Rowan, 1986). By considering these theoretical bases and connections, the following hypothesis was formulated.

H1c: *The use of behavioural intuition positively relates to team creativity.*

In conclusion, the review of literature ascertains that intuition paves the way for generating new ideas and seeing new possibilities; the creative outcomes result from intuitive thinking; and intuition plays a major role in increasing creative potential (Glaser, 1995; Andersen, 2000). This aspect is also present in some great thinkers like Bergson, Maritain, and Koestler who mentioned about the promising effect of intuition on creativity (Isaack, 1978).

3.2. The Relationship between Intuition and Learning

Even though there are not a great number of studies addressing the relationship between intuition and learning, it is somehow obvious that intuition plays a central role in the enhancement of learning. According to Crossan, Lane, and White (1999), intuition is the beginning of new learning. It is true in a sense that when one senses something they may need to justify it to others to convince them. To be able to do this, they can take steps in the direction of searching the source of the intuitive outcome which in turn allows learning or in other words to enhance their knowledge (Sadler-Smith, 2007). Botkin (1982) has accentuated this view as well. According to him, “intuition plays an important role in innovative learning, to the extent that they encourage techniques and attitudes appropriate for anticipatory learning” (Botkin, 1982, p.26). Vaughan (1979) also depicts the impact of intuition on learning and claims that cognitive intuition promotes learning since “intuition extends our ability to use our computational capacities and memory, extends the boundary of our ability for rational behaviour, and hence enhances our ability for procedural rationality” (Frantz, 2003, p.275). By considering these theoretical bases and connections, the following hypotheses were formulated.

H2a: *The use of **c**ognitive intuition positively relates to team learning.*

H2b: *The use of affective intuition positively relates to team learning.*

H2c: *The use of behavioural intuition positively relates to team learning.*

3.3. The Relationship between Team Creativity and Team Learning

Creativity is "indeed a basic source for learning and living" (Janesick, 2001, p.534). Janesick's description alludes to the facticity of curiosity, which is one of the characteristics of creative individuals and one of the leading factors for everyone to learn. Csikszentmihalyi (2007) who shares a similar view with Janesick acknowledges that creative individuals' core characteristics (i.e. being curious, open-minded and interested in various fields not limited only to their expertise) push them into the learning behaviour, and fosters their knowledge store. In other words, people collectively learn through exchanging creative ideas even though learning independently itself offers individuals an opportunity to create new ideas and knowledge when sharing them. Kayes and Burnett (2006) support this by pointing out that "organizations rely on team learning to solve complex problems, create new knowledge and to improve the performance of ad-hoc or task-specific project teams" (Kayes and Burnett, 2006, p.2). That is why; even if creativity is thought to be the propulsive force for the learning, it is also clear that learning serves the same purpose.

To this respect, there is a reciprocatory relationship between team learning and team creativity, and team learning is both a precursor to and an outcome of team creativity. However, since the research model of this study seeks for the impact of team creativity on team learning, the following hypothesis was formulated accordingly.

H3: *Team creativity positively relates to team learning.*

3.4. The Relationship between Team Learning and Project Success

When examining the studies in relation to team learning, even though most of them focus on the effect of team learning on organizational effectiveness (Argyris and Schon, 1978; Senge, 1990), there has been a recent increase in the number of the research which examine the relationship between team learning and project success/performance (Edmondson, 1999; Druskat and Kayes, 2000; Zellmer-Bruhn

and Gibson, 2006). It is well known that to complete a project, there must be a team, which at least must consist of two members endowed with personal knowledge, skills, expertise, cooperative characteristics, and even feelings. As for managing the project process efficiently and labeling the project as successful, the outcomes of the project should be effective which is possible thanks to team performance (Shenhar, Dvir, Levy and Maltz, 2001).

Team performance, which is simply defined as "meeting or exceeding the performance standards of the people who receive and/or review the team's output" (Hackman, 1987, p. 323), is found to be upgraded by the learning. That is to say, it is crucial to state that learning plays a facilitator role in assuring the effectiveness of teamwork and increasing team performance (Druskat and Kayes, 2000). Edmondson, whose contribution to the team learning literature is non-negligible, found out that team learning influences project team performance positively in the long term since individuals can learn more and more from each other's experiences, personal knowledge, and insight when working on a task together (Edmondson, 1999). Overall, it can be said that team learning enhances project teams' performance especially in turbulent conditions that the teams operate in, and their need of adapting to changes affects the organizational effectiveness in a positive sense (Lutz, 1994; West 1999; Brueller and Carmeli 2011).

In consequence of literature review, it is obvious that collective learning provides a better understanding of the respective situation and helps the team members adapt to the changes easily which overall improves the project performance and provides both customer satisfaction and meeting the planning goals on time (Edmondson, 1999; Druskat and Kayes, 2000). In addition to this, project performance increases when team members who "work interdependently on a common task or objective have permanent interaction amongst each other during the work process and gather, share, process and act on knowledge which in turn exposes actors to new paradigms and enables the cross-fertilization of ideas (Kayes and Burnett, 2006, p.7). In brief, by using the findings and assumptions based on the literature of team learning and performance/success, the following hypothesis was formulated.

H4: *Team learning positively relates to project success.*

3.5. The Moderating Effect of Project Complexity on the Relationship between Team Intuition and Team Creativity

Individuals have to make a decision about a variety of situations and solve problems throughout their life. As the situations or problems can be simplex, they can be complex as well owing to the impact of several factors like uncertainty or instability (Rue and Byars, 2003). Complexity is in every part of our life. Continuous improvements in all fields from science to technology provide conveniences, innovation, and new opportunities with us, and make our life more complex and challenging (Liu and Li, 2012). Under these circumstances and today's dynamic context, individuals are not adequate alone with limited resources and knowledge to deal with complexity or uncertainty in organizations. Therefore, teams especially project-based ones have started to become the key component of organizations to produce creative ideas and change these novel ideas into serviceable technology, products, or services (Chen, Chang, and Hung, 2008; Savelsbergh, Gevers, Poell and van der Heijden, 2012). Projects, in any event, involve a high level of complexity by their nature and they need collective power referring to team members' "cognitive, affective, and physical effort" (Campbell, 1988; Bettman, Johnson, and Payne, 1990; Li and Wieringa, 2000). Integration of all their skills, knowledge, experiences, even lessons they learn from their failures increases the ability to cope with complexity especially under unstable environment. Santos and his colleagues also mention about the importance of team members' collective power in dynamic contexts by indicating that "teams can behave adaptively and achieve high levels of performance as they adapt the way they work, use new ideas to deal with problems, and think about alternative solutions in short periods of time" (Santos, Passos, and Uitdewilligen, 2015, p.4) and they can easily meet the needs and requests of customers, renew products and processes, improve the quality, and finally respond to the competitors' actions as quick as possible (Ettlie and Reza, 1992; Wu, 2013; Rosenzweig, Roth, Dean, 2003).

The talent of producing and developing novel ideas for new products or services in response to changing market and customer needs is a must to the success of an organization in recent conditions. However, generating those creative ideas requires the key trigger, which is "intuition". Diehl and Stroebe (1991) who mention

the impact of intuition on creativity and the importance of intuition in the decision-making process that includes complex conditions claim that unstructured conditions compel team members to use their spontaneous intuitive judgments that in turn prompt creativity. In addition to Diehl and Stroebe, Daft (2009) emphasizes creativity in the decision-making process and puts forward that decision-makers appeal more to intuitive judgments including their knowledge and experiences, and they produce creative approaches accordingly while making up alternatives when there is a high level of complexity and ambiguity. Because intuition plays a critical role in decision-making in non-structured situations where cognitive judgments and analytical approaches usually do not work for generating creative solutions. When examining the definitions of intuition in detail, it is seen that intuition refers to the quick apprehension of a decision based upon experience or tacit knowledge without any conscious thought (Agor, 1986). However, it should not be misperceived that intuitive decision-making is irrational or futile. On the contrary, it helps decision-makers choose the best alternative in a turbulent environment as quickly as possible thanks to their years of practice and personal experience (Miller and Ireland, 2005). This is highlighted in most of the studies, which indicate that experience conduces to creativity in organizations (Moorman and Miner, 1997; Dreyfus and Dreyfus, 2000; Dayan and Di Benedetto, 2011).

In short, in such inconsistent conditions, rationality cannot be efficacious and it forces team members to tend to use their intuition. Sonenshein also shares this view and implies the fact that intuition is regarded as an effective approach in a turbulent environment in which decision-makers are required to make quick and unexpected decisions (Sadler-Smith and Shefy, 2004; Sonenshein, 2007). Making effective and quick decisions by using intuition is thought to be realized through decision-makers' continuous perception and information processing that operates in the subconscious level of mind (Agor, 1986). In other words, the tacit knowledge and experience that decision-makers own enable them to make decisions rapidly without mental effort (Vaughan, 1979). In a similar vein, Daft expresses that decision-makers "with a depth of experience and knowledge in a specific area, often make the right decision quickly and effortlessly by recognizing the required information that has been largely forgotten by the conscious mind" (Daft, 2009, p. 219). In conclusion, under extreme time pressure and uncertainty, decision-makers bank more on intuition than on rational analysis and it works well when it is used in the right circumstances (Miller

and Ireland, 2005). Liu and Li also address Payne who touched upon this issue from a holistic point of view and point out that, "task complexity is a key determinant of decision process strategy. When faced with a low-complexity task, the decision-makers employ a compensatory decision process, whereas, in a high-complexity task, they employ a non-compensatory process and focus on selective information" (Liu and Li, 2012, p.553). Payne's study results emphasize the endpoint of the decision process and show the importance of the task characteristic and the task performer's approach to the task's requirement. Moreover, a complexity that requires more information processing may result in cognitive simplifications and a high level of cognitive intuition (Elbanna, 2015). As it is also highlighted, "it is probably only the intuitive leap that will let us generate novel solutions to problems in the complex world" (Peters and Waterman 2006, p.63). The main reason for it is that intuitive people have "the ability to size up the situation, integrate and synthesize large amounts of data or deal with incomplete information" (Agor, 1989, p.223). By using the findings and assumptions based on the literature, the following hypotheses were formulated.

H5a: *The higher the task complexity, the higher the positive relationship between (i) cognitive intuition, (ii) affective intuition, and (iii) behavioural intuition and team creativity on project teams.*

Besides task complexity, the technical complexity also serves for increasing the level of creative actions (Baccarini, 1996). Technical complexity refers to the "technical or design problems associated with novel or bespoke products which have not produced before and have no precedence of proven or tested techniques" (Azim, 2010, p. 53). To be able to cope with this, the ones who confront such problems need to be explored. Because they may have the latest technology, but they will also need to rely on their feelings for the situation to guide them as they steer their firms through uncharted waters. By using the findings and assumptions based on the literature, the following hypotheses were formulated.

H5b: *The higher the technical complexity, the higher the positive relationship between (i) affective intuition, (ii) cognitive intuition, and (iii) behavioural intuition and team creativity on project teams.*

Weiss (1982), whose experimental study aimed to investigate how decision complexity affects the quality of decision and what kind of characteristics it has, found that the number of alternatives affects the decision maker's feelings about the

decision they take based on their experience. In another saying, the more the decision-makers are experienced, the more confident and accurate they feel for their decisions. Because, decision-makers' knowledge and experience make them feel right about the alternative they choose. Unlike the number of alternatives, the information load was found to have a positive effect on the quality of decision and information processing. More precisely, when the decision-makers have sufficient information or high information load, they apt to use more analysis and thus they try to give concrete evidence to argue for their decisions. However, when they have insufficient information or low information load, they use their intuitive mind and make their decision quickly without using concrete reasoning (Weiss, 1982; Dijksterhuis et al., 2006). In parallel with the complexity in the decision and the necessity of using intuition, decision-makers "perform better on creative tasks" (Raidl and Lubart, 2000). As mentioned earlier, it is because "using intuition is not something following a consciously deductive path and is, therefore, more likely to be original since it does not build on something that is already known" (Gallate and Keen, 2011, p.686). In other words, when the level of decision complexity and the ambiguity increases, intuition becomes part of a decision making process and such challenging factors like time pressure, uncertainty and more plausible alternatives make intuitive decision-making tools more favourable than rational ones (Agor, 1986; Dean and Sharfman, 1993; Miller and Ireland, 2005). It is also highlighted that not only perceived complexity in the decision but also uncertainty in the process makes decision-makers more prone to use their mental shortcuts to select the best alternative (Nutt, 1998). Finally, with the original unconscious thought experiments, Dijksterhuis et al. (2006) found that unconscious thought is more feasible than conscious thought while making complex decisions and "it is best to encode all of the necessary information and then stop consciously thinking about the alternatives and let the unconscious arrive at a creative decision" (Calvillo and Penaloza, 2009, p.509).

In short, when limited time is allocated to the decision-makers especially when there is a high number of alternatives, it makes the decision making process more complex and forces the decision-makers to make the intuitive judgment that in turn provides with creative outcomes. On the other hand, time pressure utilizes the decision-making process since it provides concentration with the brain and thus it facilitates to eliminate the least important or inessential alternatives and lead to novel

options to occur. By using the findings and assumptions based on the literature, the following hypotheses were formulated.

H5c: *The higher the decision complexity, the higher the positive relationship between (i) affective intuition, (ii) cognitive intuition, and (iii) behavioural intuition and team creativity on project teams.*

3.6. The Moderating Effect of Project Complexity on the Relationship Between Team Creativity and Team Learning

Campbell provides a deeper insight and defines task complexity as "related directly to the task attributes which increase information load, diversity, or rate of change" (Campbell, 1988, p. 43). In this case, it is not rocket science to guess that the more a task is complex the more information is needed. As for reaching that more information, it is requisite to search more and more or share the obtained knowledge/information with others. In this sense, the existence of creative teams who have unique visions, inquisitive characteristics, and are open to new experiences play a key role in team learning. Overall, if the task given to the team members during the project is not complex and the environment is not dynamic, most probably, they will not need extra information or detailed inner vision to make a decision. However, in the exact opposite situation, they will certainly need a variety of information, perspectives, abilities, and experience which in turn facilitates the existence of creative outcomes by increasing the level of learning at the same time (Botkin, 1982). By starting from this point of view, it can be inferred that when the level of task complexity increases, the team members will perceive the task more difficult and thus they will have to show much more effort to complete the given task.

As a matter of fact, most of empirical and theoretical investigations, predicate that if there is sufficient time, task complexity makes team members tend towards proactive approaches and implications and it affects the performance positively because they become more eager to take risk and use leading strategies in decision-making process (Milliken, 1987; Buvik and Grounhaug, 2000; Fynes, Buirca, and Marshall, 2004). Thus, it becomes inevitable to produce innovative and creative outputs in high-velocity environments thanks to the variety of skills, knowledge, and

experiences provided by team members. As highlighted before, the environment where team members make their decisions has a crucial influence on the decision-making process and it is one of the major factors affecting the cognitive functions of the team members (Duncan, 1972; Peter, 2001). As you will guess, managing the decision-making process in a stable environment is easier with the implication of right analytical approaches and techniques as the level of uncertainty and complexity is hardly ever or too low. Whereas it is extremely challenging to manage the process in a dynamic environment, in which the level of uncertainty and complexity is too high. That is why, in order to reduce the uncertainty and to cope with complexity, decision-makers are required to have sufficient and relevant information about the respective situation; predict the customers' and users' requests and needs; and finally follow the technology that is rapidly changing (Jaworski and Kohli, 1993; Moorman and Miner, 1997; Wong, Boon-itt, and Wong, 2011).

As mentioned earlier, the decisions that we are required to make are not always routine and simple by their structure. In some cases, they involve high risk and complexity, which forces us to use different techniques or approaches to be able to select the best alternative among others. It is of course not that easy especially when we do not have sufficient knowledge about the situation or we have not experienced such a decision before.

Based on those ideas, it can be said that the type of decision determines the structure. To name a decision complex it must be non-programmed or strategic one which is non-routine and non-recurring (Simon, 1987).) It is also stated that "such decisions are complex and requires the use of creativity to solve them since there is no established method for handling them" (Weiss, Brevis, and Cant, 2008, p.45). It is either because of its uniqueness in terms of its manner or its extreme importance or complexity (McCarthya and Menicou, 2002). It is also depicted by Mintzberg, Raisinghani, and Theoret that strategic decisions are "characterized by novelty and complexity" (1976, p. 250).

H6a: *The higher the task complexity, the higher the positive relationship between team creativity and team learning on project teams.*

H6b: *The higher the technical complexity, the higher the positive relationship between team creativity and team learning on project teams.*

H6c: *The higher the decision complexity, the higher the positive relationship between team creativity and team learning on project teams.*

To sum up, traditional research demonstrates that teams can effectively cope with complex tasks, techniques and decisions since they are nonhomogeneous by their nature with a variety of skills, expertise, approaches, information, and knowledge. Kurtzberg (2005), by referring to some researchers like Hambrick, Cho, and Chen, (1996); Paulus, Brown, and Ortega (1999) in his study, mentions the importance of variety. He states, "having variety in terms of functional background, education, company tenure, and knowledge are known to have some positive effects on group decision performance (Kurtzberg, 2005, p. 53). In short, when team members are exposed to the complexity, they focus on learning which at the same time increases the probability of choosing the best option among alternatives and brings about a higher level of performance (Winters and Latham, 1996). Based on the theoretical background, it is expected that team creativity gets stronger because of the influence of complexity, which in turn increases the level of team learning.

4. METHODOLOGY AND IMPLEMENTATION

4.1. Measures

After having covered the literature review entirely and formulated hypotheses of the study in a theoretical base, questionnaire items were prepared accordingly (For the items, please see the Appendix A) to test the hypotheses in relation to our research model. In order to measure the variables, we developed, adopted and/or modified scales benefitting from prior related studies. While measuring the variables of "team intuition, team creativity, team learning, and project success" we applied 5-point likert scales ranging from ''strongly disagree'' (1) to ''strongly agree'' (5) and to assess the variables of "project complexity" we applied 5-point likert scales ranging from ''extremely low" (1) to ''extremely high" (5). As control variables, we assessed project team size and project duration questions with a ratio scale. A summary of the measures is as in the following.

In order to measure team intuition, a multidimensional scale was created based on specific studies that have made a major contribution to the intuition literature (Jung, 1921; Vaughan, 1979; Agor, 1986). In addition, we had interviews with some project managers or leaders in order to internalize the meaning behind the concept in a team level and noted down their stories in relation to their intuitive experiences. As mentioned in the introduction part of the study, it is clear that team intuition has been measured by a unidimensional scale so far developed by Dayan and Di Benedetto (2011) and then has been adopted or used directly without any contribution by other authors like Dayan and Elbanna, (2011); Zeeshan, Yuosre, Mir, and Bilal, (2016); Zacca, Dayan, and Elbanna, (2017). However, after having a depth analysis and a closer inspection of the definitions of the construct and the compounds of its items, it gives an impression that the construct is multidimensional comprised of (a) cognitive (i.e., reaching the plausible solution(s) by means of mental shortcuts developed on the basis of experiences or tacit knowledge provided by more than one subconscious mind (Raidl and Lubart, 2000), (b) affective (i.e., gut feelings or hunches that come to the front abruptly and direct them to the best solution without understanding the underlying reason behind the oversensitivity against the respective situation or subject (Vaughan, 1979), (c) behavioural (i.e., a form of inference behaviour, which

is ultimately based on inexplicit sensory data, which are combined rapidly and inexplicitly, leading to a plausible or correct conclusion without the subject being able to specify how these conclusions were reached" (Westcott, 1968 p. 78).

To measure team creativity, I adopted the questionnaire items from the specific studies conducted by Farmer, Tierney, and Kung-Mcintyre (2003); and Leenders, van Engelen, and Kratzer (2003).

For team learning, I adopted the questionnaire items from the studies conducted by Akgün et al. (2002), Akgün et al. (2006).

Project complexity was measured through three dimensions; task complexity, technical complexity, and decision complexity. In order to measure task complexity, I adopted the questionnaire items from the study conducted by Scott and Tiessen (1999). In order to measure technical complexity, I adopted the questionnaire items from the specific studies conducted by Barki, Rivard and Talbot (1993) and Wallace, Keil and Rai (2004). As for the decision complexity, we both developed and modified the questionnaire items based on the comprehensive literature review on decision related concepts and complexity (Weiss, 1982; Bonner, 1994; Nutt, 1998). In this context, it can be regarded as a new scale since decision complexity was only measured experimentally before.

With respect to project success which has three sub-dimensions (meeting planning goals, end-user benefits, and speed to market), we adopted the questionnaire items from the specific study conducted by Cooper and Kleinschmidt (1987) and Kesler and Chakrabarti (1996).

4.2. Sampling

The sample consists of 162 project teams operating in the firms located in different regions of Turkey. The questionnaire was distributed and collected back through different channels (e-mail, visit of firms, and collaboration with my friends from those firms). To obtain effective and efficient results, we used the procedure developed by Kumar, Stern and Anderson (1993) and put emphasis on the selection of experienced team members who had a good command of operations, processes, the structure of the organization and at least a manager position if possible. Besides, we also expected that minimum three members would respond the questionnaire

from each project team so that we could get reliable and valid results for our research model.

Before carrying out the questionnaire on project teams, new developed question items were first translated into Turkish and then translated into English again by another professional person using the parallel translation method. Finally, it was translated into Turkish once more again since the survey would be applied to Turkish team members. After the translators made a compromise on all items, a draft version of the questionnaire was formed. Then all items were evaluated and revised in discussions with respectable academicians in their field. For the comprehensibleness of the Turkish version of the questionnaire, it was also pre-tested by three project managers, four assistant managers, and fifteen project team members from different firms. After parallel translation procedure, a pilot scheme was applied in order to have an idea about internal consistency, to check the explicity and clarity of items. The opinions of respondents taken during that plot period provided us with excellent feedback to revise our questionnaire items. Accordingly, unclear and/or double-barrelled items were extracted from the questionnaire. After ensuring the content validity and confirming the questionnaire items, the questionnaires were distributed to the target sample.

During the distribution period, all respondents were informed about the aim of the study and the confidentiality of the responds they would give. Gaining their trust was the most crucial part of collecting data since respondents might have felt nervous about the confidentiality. Thus, reducing their concerns would in turn increase the level of voluntary respondency with high cooperation (Podsakoff, MacKenzie, Lee and Podsakoff, 2003). About three months later, most of the questionnaires were collected. Then we classified and enumerated them to avoid confusion when entering the data into SPSS programme. During that period, we continued to call and visit the firms to reach all respondents until we attained the target sample size. Before the entrance of the data to the SPSS, we eliminated inappropriate questionnaires such as missing marking or double marking etc., and had 449 questionnaires from 162 project teams with an average of three respondents from each one and lasting about three months period.

The segment of the firms involving consumer products, consumer services, industrial products, industrial services, public products and public services contribute the variety and quality of data. In the sample, the output of the project teams consists of product (36,7%), service (22,7%), process (16,7%), software (20,0%), and other (3,8%). As for the position of the respondents, it involves department managers/assistant managers (9,1%), product/project managers (22,9%), analyst or designers (10,7%), senior engineers/chief technical officers (4,7%), engineers/technicians (27,8%), programmers (5,3%), test/quality managers (6,5%), and others (12,9%).

Before starting the statistical analyses, non-response bias was also tested by comparing the first 30 respondents (thought to be voluntarily involved) with the last 30 respondents (thought to be involuntarily involved) to be able to see if there was a statistically difference or not (Armstrong & Overton, 1977). As a result, no statistical differences were found between those respondents.

4.3. Measure Validity and Reliability

Having gathered the data, the reliability and validity of measures were assessed by carrying out a purification process which refers to the elimination of items from multi-item scales (Wieland, Durach, Kembro and Treiblmaier, 2017). To obtain effective results, an exploratory factor analysis (EFA) was conducted to team intuition variables and decision complexity since they include new items. The method of principal components was used with a varimax rotation and an eigenvalue of 1 as the cut-off point. As for the absolute value, it was selected equal to .60 and above. While the Kaiser– Meyer–Olkin (KMO) measure of sampling adequacy was .89 for the variable of team intuition and .71 for the variable of decision complexity, the Bartlett Test of Sphericity was significant at $p < .01$ for each variable indicating that the data is appropriate for factor analytic procedures.

After the EFA, team intuition having 24 items in total decreased to 16 items with dispersion to four sub-dimensions as affective intuition (5 items), behavioural intuition (5 items), mental shortcuts (4 items) and pattern recognition (3 items) representing cognitive intuition. As for the decision complexity that had eight items

in total decreased to three items after eliminating the low factor loaded or cross-loaded items.

Before performing Conformity Factor Analysis (CFA), one-dimensionality was tested via Analysis of Moment Structure program (AMOS) with four subsets; a) team intuition and team creativity; b) team intuition and team learning; c) team learning and project success and d) project complexity (task complexity, technical complexity, and decision complexity) to ensure that the scale was compatible with both theoretical background and the sample size limit. The results of the test showed that the subsets adequately fit the data and the research model.

Table 4.1: Results of One Dimensionality Test

Subsets	**Results**
Team Intuition –Team Creativity	$\chi2$ (160) = 332.321, CFI = .949; RMSEA = .049
Team Intuition-Team Learning	$\chi2$ (413) = 942.894 CFI = .907; RMSEA = .054
Team Learning-Projects Success	$\chi2$ (260) = 737.765, CFI = .907; RMSEA = .064
Project Complexity	$\chi2$ (24) = 64.053, CFI = .961; RMSEA = .061

After conducting the one-dimensionality test, a series of two factor model test proposed by Bagozzi, Yi, and Philips (1991) was also applied to assess the discriminant validity by using the Fornell-Larcker (1981) criterion. According to this criterion "the √ of the average variance extracted (AVE) should be compared with the correlation of latent constructs and the √ of each construct's AVE should have a greater value than the correlations with other latent constructs" (Hamid, Sami, and Sidek, 2017, p.3). Correspondingly, 105 models and 210-paired comparisons were developed and calculated by using AMOS. As a result of the test, $\Delta\chi2$ was found statistically significant in each model ($\Delta\chi2>3.84$) which suggests that all variables demonstrate the discriminant validity.

Having ensured that each variable had a discriminant validity, a confirmatory factor analysis (CFA) was performed to 49 items with 14 variables at once using AMOS. As known, the CFA provides us with the conformity of the factor structure extracted in the EFA and presents us with the analysis of goodness of fit indices (Fornell and Larcker, 1981; Anderson and Gerbing, 1988). In order to analyse the

conformity of the research model with the data, the values of Comparative Fit Index (CFI), Incremental Fit Index (IFI), Tucker-Lewis Index (TLI), The Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Chi-Square Index and Degrees of Freedom (df) were considered. Among these, it is recommended that the cut-off value of CFI, TLI and IFI should be .90 to be able to say that the respected research model has an adequate fit with the data and is an optimal one (Bagozzi et al., 1991; Byrne, 1994). On the other hand, while the accepted interval for the values of RMSEA and SRMR is 0-0.05 (Byrne, 1994; Schermelleh-Engel et al., 2003) the $\chi 2$ /df is expected to be below .5 that shows the consistency of the model and data (Jöreskog and Sörbom, 1993). When considering those widely accepted values, the results of CFA presented below concerning our research model indicate that it adequately meets all criteria mentioned above.

Table 4.2: CFA Results

χ 2 (939)	CFI	IFI	TLI	$\chi 2$ /df	SRMR	RMSEA
1583.757	.926	.927	.915	1.687,	.053	.037

Besides these indices, Parsimony Normed Fit Index (PNFI) was calculated as .728 which is higher than the cut off value .70.

All items were significantly gathered under the related variable (the lowest t value was found as 2.50) which demonstrated the convergent validity. In a consequence of the CFA, the standardized estimate values of each item about the measures are shown in Table 4.3.

Table 4.3: Factor Loadings of the Items

Factor Number	Variables	Factor Loadings
	TEAM INTUITION	
F1	**Cognitive Intuition (Mental Shortcuts)**	
	TIMS1	.789
	TIMS2	.698
	TIMS3	.688
	TIMS4	.648
F2	**Cognitive Intuition (Pattern Recognition)**	
	CIPR10	.726
	CIPR9	.685
F3	**Affective Intuition (Gut Feelings)**	

	TIAI2	.789
	TIAI3	.769
	TIAI6	.731
	TIAI5	.678
	TIAI4	.629
F4	**Behavioural Intuition (Anticipation)**	
	TIBI7	.796
	TIBI4	.771
	TIBI8	.746
	TIBI6	.699
	TIBI5	.690
F5	**TEAM CREATIVITY**	
	TC2	.806
	TC5	.705
	TC1	.601
	TEAM LEARNING	
F6	**Information Acquisition**	
	TLIA2	.838
	TLIA1	.733
	TLIA3	.697
F7	**Information Dissemination**	
	TLID6	.755
	TLID7	.751
	TLID5	.692
	TLID4	.667
	TLID2	.654
F8	**Information Implementation**	
	TLII5	.795
	TLII4	.732
	TLII3	.680
	PROJECT SUCCESS	
F9	**PS-(Meeting Planning Goals)**	
	PSMPG3	.862
	PSMPG4	.837
	PSMPG2	.767
	PSMPG5	.714
F10	**PS-(End-User Benefits)**	
	PSEUB12	.811
	PSEUB11	.762
	PSEUB13	.715
	PSEUB14	.686
F11	**PS-(Speed-to-Market)**	
	PSSTM16	.753
	PSSTM17	.753
	PSSTM18	.677
	PROJECT COMPLEXITY	
F12	**PC (Task Complexity)**	

	PCTC6	.736
	PCTC7	.707
	PCTC5	.646
F13	**PC (Technical Complexity)**	
	PCTEC1	.847
	PCTEC2	.751
	PCTEC3	.725
F14	**PC (Decision Complexity)**	
	PCDC7	.815
	PCDC6	.795

In addition to the analyses above, reliability and correlation coefficients of the variables, descriptive statistics, the Cronbach's α, Average Variance Extracted (AVE) and AMOS based Composite Reliability (CR) values were presented in Table 4.4. It is clearly seen that Cronbach α values indicate that items compose the scales (Urbina, 2014), CR values are higher than the cut off value (.70) proposed by Nunnally (1978) and by Fornell and Larcker (1981) and the √ of each construct's AVE values are greater than the correlations with other latent constructs as asserted by Fornell and Larcker (1981). In short, the results strongly show that the measures are unidimensional and relatively reliable.

Table 4.4: Correlations and Descriptive Statistics

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.MS	(.71)															
2.PR	.39**	(.71)														
3.AI	.20**	.39**	(.72)													
4.BI	.18**	.36**	.50**	(.74)												
5.TC	.20**	.07	.12*	.02	(.71)											
6.IA	.09	.08	.21**	.05	.51**	(.76)										
7.ID	.12**	-.01*	-.01	-.06	.46**	.37**	(.71)									
8. II	.14**	-.02	.12*	.05	.43**	.49**	.45**	(.74)								
9.MPG	.01	.12**	.14**	.10*	.09*	.26**	.08	.19**	(.80)							
1.EUB	.08	.15**	.07	.06	.09*	.15**	.11*	.15**	.57**	(.75)						
11.STM	.11*	.19**	.05	.08	.06	.16**	.18*	.18**	.41**	.49**	(.73)					
12.TCKF	.09	-.09*	-.02	-.20**	-.05	.06	.06	.05	-.05	-.12*	-.08	(.71)				
13.TC	-.07	.06	-.07*	-.03	-.20**	-.19**	-.21**	-.16**	-.14**	-.15*	-.06	-.18	(.78)			
14.DC	-.06	.03	-.10*	-.05	-.11*	-.09	-.06	-.12*	.02	.06	-.02	-.18	.37**	(.81)		
15.PS	-.06	-.03	-.01	-.08	-.07*	-.08	.07	-.01	-.12*	-.08	-.09	.09	-.06	-.13*		
16.PD	-.01	-.07	-.03	-.11*	.02	.02	.08	.03	-.09	.03	-.16**	.10	-.17*	-.14*	.26**	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Mean	3.91	3.49	3.56	3.71	4.23	4.08	4.17	4.05	3.83	3.96	3.83	3.08	2.8	2.92	NA	NA
Std. Deviation	.63	.72	.71	.74	.55	.61	.56	.6	.68	.64	.66	.73	.98	.96	NA	NA
AVE	.50	.50	.52	.55	.50	.57	.50	.54	.64	.56	.53	.50	.62	.65	NA	NA
CR	.80	.66	.84	.86	.75	.80	.83	.78	.87	.83	.77	.74	.83	.79	NA	NA
Cronbach's α	.79	.66	.83	.86	.74	.80	.83	.78	.87	.85	.75	.73	.81	.78	NA	NA

Diagonals show the square root of AVEs.

(* p<.1 , ** p<.05 , ***p<.01)

4.4. Hypothesis Tests

To test hypotheses about the relationship among observed and latent variables shown in Figure 1, the Structural Equation Modelling (SEM) was applied as "a comprehensive statistical approach" (Bollen, 1989; Hoyle, 1995). Except for the main variables, project size and project duration as control variables were also included in the model to be able to find out if those variables had any effect on project success or not. Before using SEM, a second-order CFA was conducted to depict team learning with 11 observable items and project success with 11 observable items. Both models provided acceptable fit indexes as in the following,

Table 4.5: Fit Indexes for Team Learning and Project Success

Fit Indexes for Team Learning: $\chi 2(32)=57.712$, CFI=.98, $\chi 2/df=1.80$, RMSEA=.04
Fit Indexes for Project Success: $\chi 2(41)=150.814$, CFI=.95, $\chi 2/df=3.67$,RMSEA=.07

Both first-order and second-order factor loadings showed that each variable is a multidimensional construct composed of three sub-dimensions.

The SEM results concerning the first four hypotheses acquired by using the AMOS program were shown in Table 4.6. When considering the modification indices, they indicated a good fit of the model to the data ($\chi 2$ (250)= 445.889, CFI=.94, IFI=.94, TLI=93 $\chi 2/df=1.78$, PNFI=.73, RMSEA=.0 4).

Table 4.6: The SEM Results of Hypotheses

Hypothesis	Path (Relationship)	Path Value	Result	
H1	Mental Shortcuts → Team Creativity	.32***	Supported	Partially Supported
	Pattern Recognition → Team Creativity	-.14	Not Supported	
	Affective Intuition → Team Creativity	.16**	Supported	
	Behavioural Intuition → Team Creativity	-.07	Not Supported	
H2	Mental Shortcuts → Team Learning	.01	Not Supported	Partially Supported
	Pattern Recognition → Team Learning	-.08	Not Supported	
	Affective Intuition → Team Learning	.18**	Supported	
	Behavioural Intuition → Team Learning	-.08	Not Supported	
H3	Team Creativity → Team Learning	.77***	Supported	Supported
H4	Team Learning → Project Success	.26***	Supported	Supported
Control Variables	Project Size → Project Success	-.10*		
	Project Duration → Project Success	.02		

$\chi2$ (250)= 445.889, CFI=.94, IFI=.94, TLI=93 $\chi2$/df=1.78, PNFI=.73, RMSEA=.0 4

Note: Path coefficients are standardized. *p<.1 , ** p<.05 , ***p<.01

As shown in Table 4.6, the results illustrate that (a) mental shortcut (β = .32, p < .01) is positively associated with team creativity (b) affective intuition (β = .16, p < .05) is positively associated with team creativity (c) whereas pattern recognition (β = -.14, p > .1) and (d) behavioural intuition (β = -.07, p > .1) are not related to team creativity, partially supporting H1.

About H2, the results show that team creativity (β = .32, p < .01) is positively related to team learning, supporting H2.

Regarding H3, it is found that only affective intuition (β = .16, p < .05) is positively associated with team learning. However, we could not find any statistically significant relationship between (1) mental shortcut (β = .01, p > .1) and team learning, (2) pattern recognition (β = -.08, p > .1) and team learning, (3) behavioural intuition (β = -.08, p > .1) and team learning, partially supporting H3.

Finally, for H4, we found a statistically significant relationship between team learning (β = .26, p < .01) and project success, supporting H4.

Regarding the moderating hypotheses (H5, H6), a hierarchical regression analysis was employed (Irwin and McClelland, 2001) by estimating two separate models; (1) a model with the main effects and (2) a model with project complexity

(task complexity, technical complexity and decision complexity) and interaction effects.

Table 4.7 presents the results of moderating analysis on H5. The results indicate that task complexity negatively moderated (a) the relationship between mental shortcuts and team creativity ($\beta = -.19$ $p < .1$); and (b) the relationship between affective intuition and team creativity ($\beta = -.12$ $p < .1$) while not have any moderating effect on the relationship between (c) pattern recognition and team creativity; (d) behavioural intuition and team creativity. We also found that technical complexity negatively moderated the relationship between affective intuition and team creativity ($\beta = -.09$ $p < .1$). However we could not find any moderating effect of technical complexity on the relationship between cognitive and behavioural intuition. As for the moderating effect of decision complexity on the relationship between team intuition variables and team creativity, it is odd that decision complexity does not play a moderating role on that relationship. Thus, H5 is partially supported.

Table 4.7: The Moderating Analysis Results on H5.

	Moderator Task Complexity		Moderator Technical Complexity		Moderator Decision Complexity	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Main Effects						
Mental Shortcuts → Team Creativity	.21***	.22***	.18***	.19***	.20***	.20
Pattern Recognition→ Team Creativity	-.05	-.45	-.01	-.01	-.03	-.03
Affective Intuition → Team Creativity	.13**	.13**	.10*	.11**	.11**	.11*
Behavioural Intuition→ Team Creativity	-.08	-.09	-.06	-.05	-.06	-.06
Moderator → Team Creativity	-.07	-.09*	-.18***	-18***	-.09**	-.10**
Interactions						
Mental Shortcuts. * moderator→ Team Creativity		-.19*		.03		.04
Pattern Recognition* moderator→ Team Creativity		-.10		.00		-.01
Affective Intuition* moderator→ Team Creativity		-.12*		-.09*		-.13
Behavioural Intuition * moderator→Team Creativity		-.02		-.05		-.03
R^2	.058	.069	.087	.105	.062	.067
R^2_{adj}	.048	.050	.077	.086	.052	.048
ΔR^2	0.58	.011	.087	.018	.062	.005
F	5.50***	3.62***	8.42***	5.69***	5.90***	3.51***

Note: Regression coefficients are standardized. (*p<.1, ** p<.05, ***p<.01)

Figure 4.1: The Moderation Effect of Task Complexity on the Relationship between Mental Shortcuts and Team Creativity

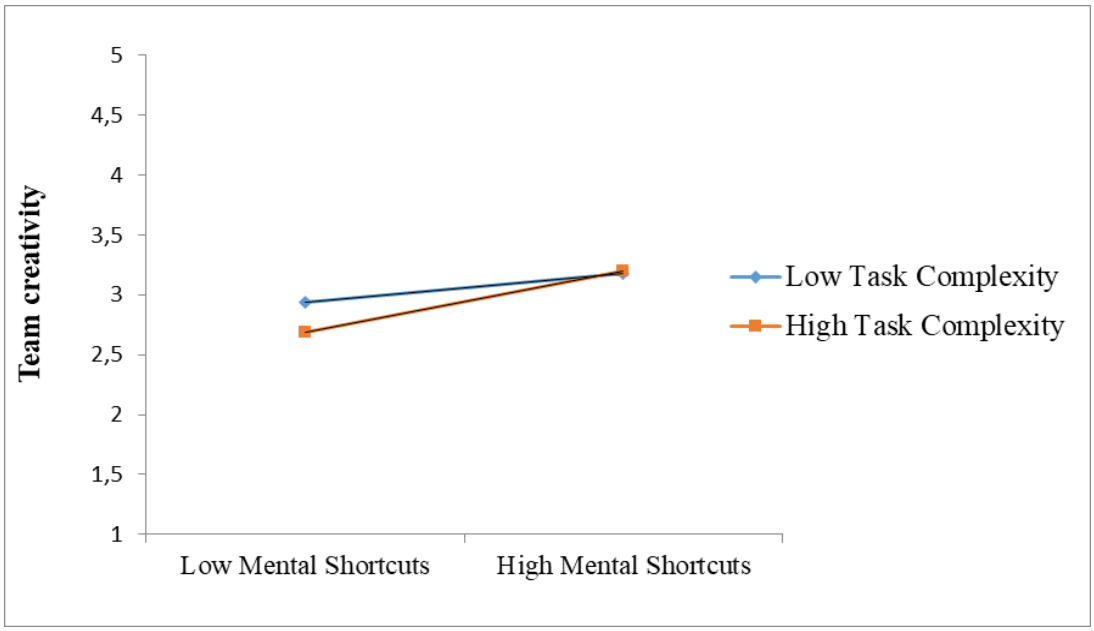


Figure 4.2: The Moderation Effect of Task Complexity on the Relationship Affective Intuition and Team Creativity

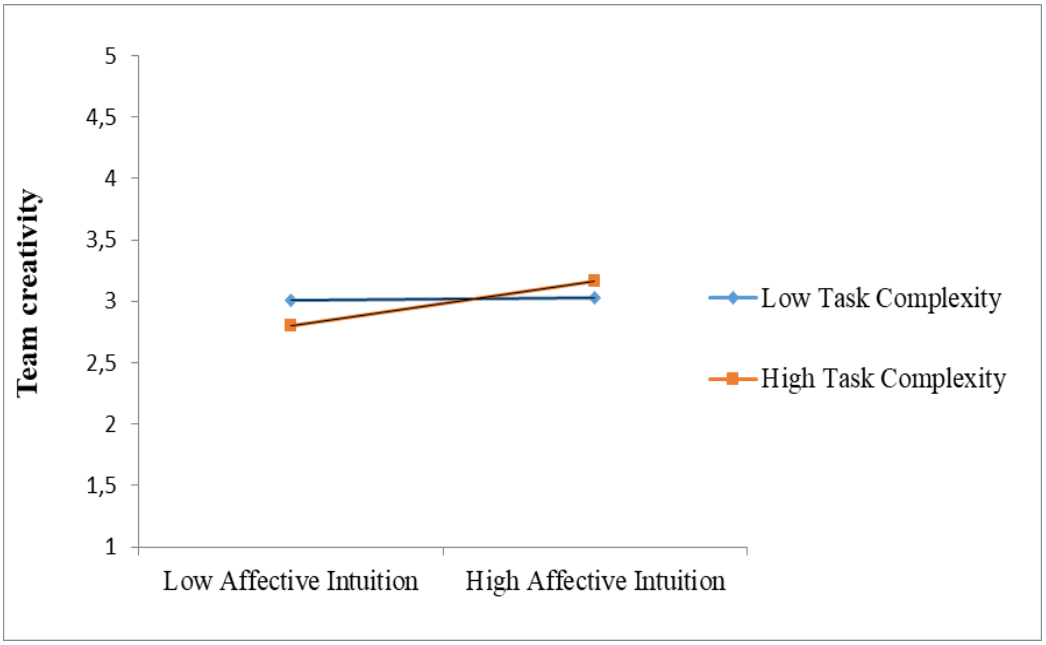
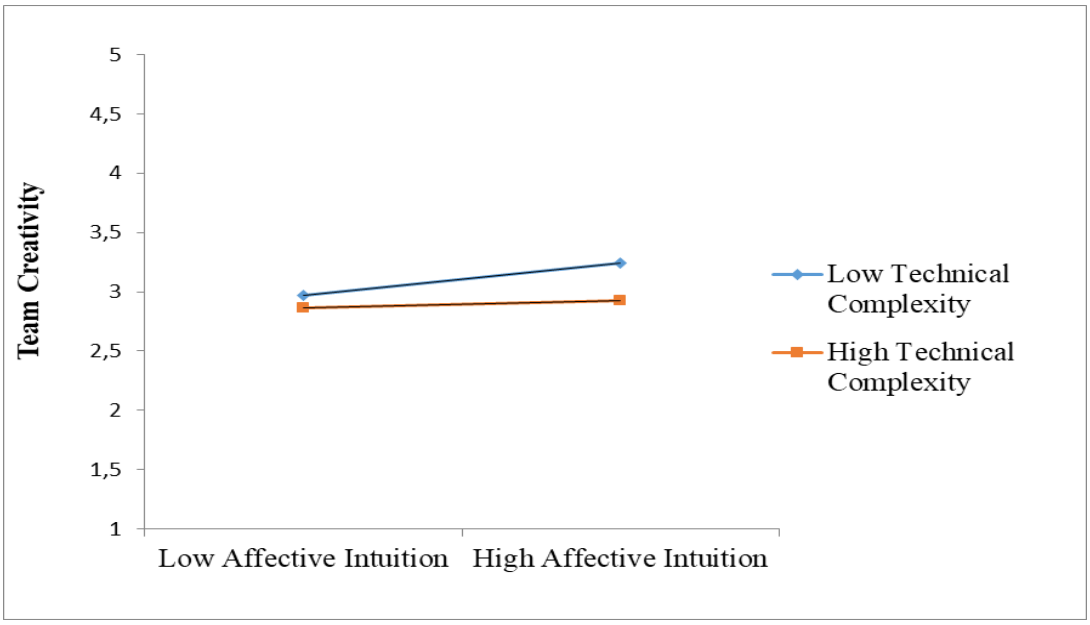


Figure 4.3: The Moderation Effect of Technical Complexity on the Relationship between Affective Intuition and Team Creativity



As for the Table 4.8, it contains the results of moderating analysis on H6. Results depict that (i) task complexity negatively moderated the relationship between team creativity and team learning (β = -.16, p<.01); (ii) decision complexity negatively moderated the relationship between team creativity and team learning (β = -.09 p < .05). However, we did not find any moderating effect of technical complexity on the relationship between team creativity and team learning. Thus, H6 is partially supported.

Table 4.8: The Moderating Analysis Results on H6

	Moderator Task Complexity		Moderator Technical Complexity		Moderator Decision Complexity	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Main Effects						
Team Creativity → Team Learning	.61***	.61***	.58***	.59***	.60***	.60***
Moderator → Team Learning	.03	.03	-.10**	-.09**	-.02	-.03
Interactions						
Team Creativity*moderator→Team Learning		-.16***		-.04		-.09**
R^2	.37	.40	.37	.38	.37	.38
R^2_{adj}	.37	.39	.37	.37	.36	.37
ΔR^2	.37	.3	.380	.1	.37	.1
F	132.17***	97.52***	136.66***	91.53***	131.91***	91.07***

Note: Regression coefficients are standardized.
(*p<.1, ** p<.05, ***p<.01)

Figure 4.4: The Moderation Effect of Task Complexity on the Relationship between Team Creativity and Team Learning

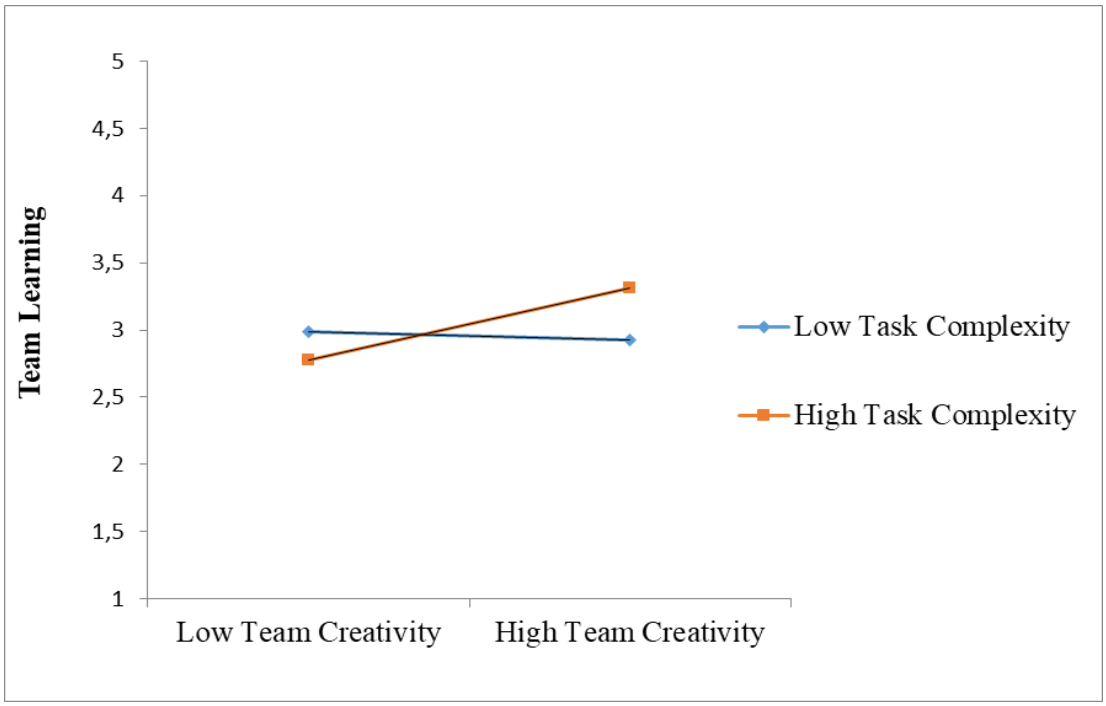
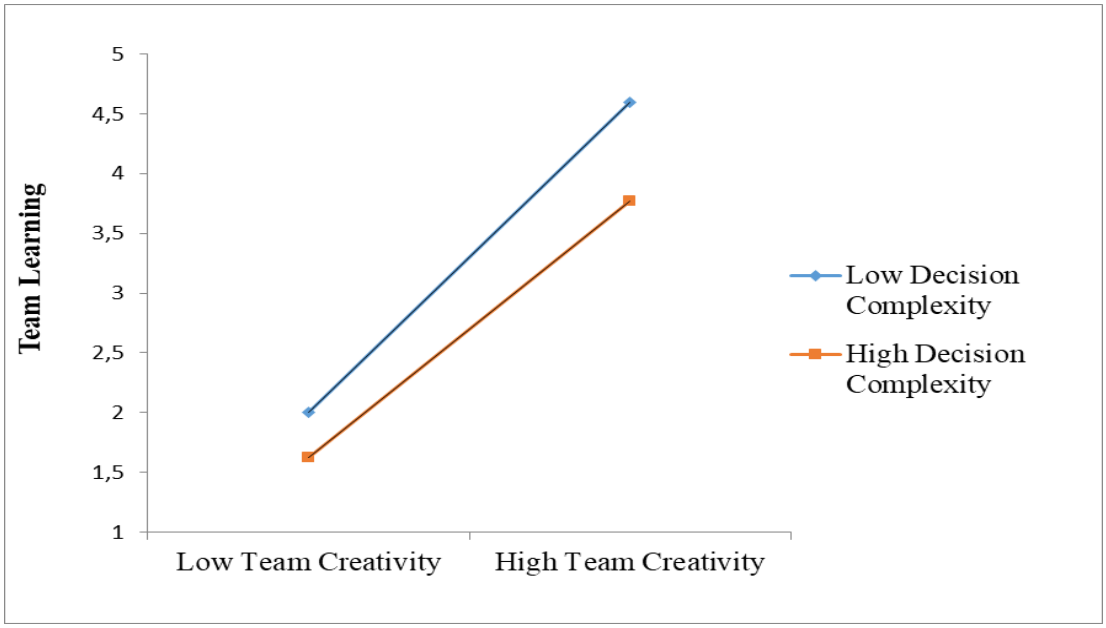


Figure 4.5: The Moderation Effect of Decision Complexity on the Relationship between Team Creativity and Team Learning



5. DISCUSSION AND RESULTS

In this section, the main contributions of this study are discussed both academically and practically with quantitative findings at first, and then managerial implications are presented. Finally, suggestion for future studies are noted down and it is concluded with limitations of the study.

5.1. Discussion and Comments

This study contributes to project management literature with a research model of the relationship among intuition, creativity and learning in project teams. Moreover, this study mainly offers much more grounding information for the multi-faceted conceptualization of the team intuition process since intuition has been widely discussed as a unidimensional variable and mostly focused on the use of gut feelings and hunches (Dane and Pratt, 2007; Dayan and Elbanna, 2011; Elbanna, 2015; Feurer, Schuhmacher and Kuester, 2018). In spite of the fact that a number of studies at the individual level of analysis have sustained that intuition has a variety of aspects (Pretz, Brookings, Carlson, Humbert, Roy, Jones and Memmert, 2014; Carter, Kaufmann and Wagner, 2017), the concept of team intuition has not been deconstructed fully yet. In this respect, not only important clues for the deconstruction of team intuition have been presented with this study but also the scope of intuition has been enlarged and analyzed at a team level providing a more theoretical and practical contribution to the related literature.

On the other hand, this study provides an empirical investigation on the relationship between different dimensions of team intuition and team related variables that ensure high team performance and project success (Winters and Latham, 1996; Kurtzberg, 2005; Weiss, Hoegl, and Gibbert, 2011). Overall, this study offers a line of vision for collective intuitive decision-making or problem solving using the creative mind with the help of collective learning which in turn makes project's success unavoidable. When examining the results of the analyses, some specific contributions of this study to the project management literature are as follows.

Firstly, this study empirically validates the positive role of intuition on creativity. While a variety of previous studies have shown that intuition is positively related to creativity (Diehl and Stroebe, 1991; Moorman and Miner, 1997; Dreyfus and Dreyfus, 2000; Hodgkinson et al., 2008), they do not enounce that which aspect of intuition is more related. With this study, we found that there is a significant and positive relationship between mental shortcuts (a sub-dimension of cognitive intuition) and team creativity. As mentioned earlier, it seems that since intuition, which practices on subconscious mental processes and embodies experiences gained over the years to bring on new insights, may connect "seemingly unrelated facts in the subconscious mind and come up with innovative approaches for addressing problems that conscious mind had not solved" (Vaughan, 1979, p. 120). In other words, the talent of using mental shortcuts may help team members to perform better on creative tasks (Raidl and Lubart, 2000) since "using intuition is not something following a consciously deductive path and is, therefore, more likely to be original since it does not build on something that is already known" (Gallate and Keen, 2011, p.686).

This study also affirms that gut feelings as main antecedents of affective intuition are positively related to team creativity. This finding proves that affective intuition stimulates creative solutions. Indeed, affective intuition is expressed as feelings of knowing and/or feelings of rightness and wrongness, thereby showing a kind of subjective closeness to the creative solution of a given task (Reber et al., 2007). Briefly stated, this significant feature of intuition leads the way for creativity that helps team members to feel the right decision or solution on the right time (Vaughan, 1979). However, it is interesting that pattern recognition is not significantly related to team creativity. The combination of complicated cues into patterns with past experiences of team members may be the main reason behind this result. That is to say, the preference of the use of analytical mind during this process can impede the creation of novel ideas (Sinclair and Ashkanasy, 2005). In addition to these, we did not find any significant relationship between behavioural intuition and team creativity, even though it is emphasized in certain studies that intuitive people can easily generate creative ideas or solutions since they have a sense of vision of the future (Agor, 1986; Rowan, 1986; Carter, Kaufmann, and Wagner, 2017). It maybe because, their years of learning and experiences may force team members to stick to

their current situation based on a narrow point of view, and thus, they may not come up with original solutions.

As for the relationship between team creativity and team learning, it is found that team creativity has a positive effect on team learning. This finding confirms the idea that team members who collectively learn through exchanging creative ideas (Janesick, 2001; Kayes and Burnett, 2006; Csikszentmihalyi, 2007) they can easily solve complex problems and create new knowledge which in turn fosters their learning (Kayes and Burnett, 2006).

The results of the analyses on the relationship between the aspects of team intuition and team learning demonstrated that there is a positive relationship only between affective intuition and team learning. However, we did not find any relationship between other aspects of team intuition and team learning. It is clear that feelings are much more important than other dimensions of team intuition. It is true in a sense that when one senses something they may need to justify it to others to convince them. To be able to do this, they can take steps in the direction of searching the source of the intuitive outcome which in turn allows learning or in other words to enhance their knowledge (Botkin, 1982; Sadler-Smith, 2007).

This study also validates the positive relationship between team learning and project success. As mentioned earlier, collective learning provides a better understanding of the respective situation and also helps the team members adapt to the changes easily which overall improves the project performance and provides both customer satisfaction and meeting the planning goals on time (Edmondson, 1999; Druskat and Kayes, 2000). The more team members learn, the more effective they become during the project thanks to the continuous interaction among each other by gathering and sharing knowledge which in turn provides them with new paradigms and ideas.

In spite of the fact that previous studies have examined mostly environmental uncertainty or environmental turbulence as a moderator on the relationship between team intuition and team related variables (Dayan and Elbanna, 2011), the number of the studies about the moderating effect of project complexity on that relationship is too limited and still necessitates to be validated empirically (Jehn, Northcraft and Neale, 1999; Dane and Pratt, 2007). Correspondingly, this study investigated the moderating role of project complexity on the relationship between (i) team intuition and team creativity, (ii) team creativity and team learning. Regarding the moderator

role of task complexity, we found that it negatively moderates (i) the relationship between mental shortcuts and team creativity; (ii) the relationship between affective intuition and team creativity. In respect to this, we can say that when the knowledge framework of team members is restricted or the task is non-routine, the relationship between the use of cognitive intuition / affective intuition and team creativity is getting stronger. It can be inferred that when the level of task complexity increases, the team members may perceive the task more difficult and thus they may show much more effort to use their mental shortcuts developed on the basis of their experiences and tacit knowledge (Raidl and Lubart, 2000) or to rely on their gut feelings and hunches that come to the front abruptly and direct them to the best solution without understanding the underlying reason. As Raidl and Lubart (2000) also state, in parallel with the complexity and use of intuitive mind, team members perform better on creative tasks. To put it simply, when there is a high level of complex body of knowledge and low level of routines in relation to the given tasks during the project process, team members tend to rely on their intuitive mind, in turn, it inspires novel ideas for new products or services in response to changing market and customer needs. As it is also highlighted by Peters and Waterman (2006) "it is probably only the intuitive leap that will let us generate novel solutions to problems in the complex world (p.63).

As for the other findings in relation to the moderating effect of technical complexity on the relationship between affective intuition and team creativity, it is apparent that when team members' technical knowledge and competency of adaptation to the rapidly changing technology is lower, they employ a non-compensatory process and act according to their inner voice to work it out. Technical complexity which refers to the "technical or design problems associated with novel or bespoke products which have not produced before and have no precedence of proven or tested techniques" (Azim, 2010, p. 53) already entails the creativity. Besides these results, we did not find any significant statistical relationship between the interaction effect of (c) decision complexity on the relationship between team intuition variables and team creativity.

Finally, while we expected that project complexity (i.e. task complexity, technical complexity, and decision complexity) moderates the relationship between team creativity and team learning, we only found that task complexity had a moderating effect on that relationship. This finding confirms the fact that team

members, under highly non-routine work conditions with insufficient knowledge, certainly need a variety of information, perspectives, abilities, and experience which in turn facilitates the existence of creative outcomes by increasing the level of learning at the same time (Botkin, 1982).

To sum up, as projects incorporate a high level of complexity and uncertainty by their nature, the talents of team members have an immense importance for the project success and performance (Li and Wieringa, 2000). It is also important to highlight that when team members aggregate their intuitive skills, creative knowledge and previous experiences, they can easily handle complexity. In addition to these, thanks to team members' collective power in dynamic contexts they can show high performance due to their talent of adapting, using new ideas to deal with problems, and thinking about alternative solutions in short periods of time (Santos, Passos, and Uitdewilligen, 2015). Thus, they can easily meet the needs and requests of customers, renew products and processes, improve the quality, and finally respond to the competitors' actions as quick as possible (Ettlie and Reza, 1992; Wu, 2013; Rosenzweig, Roth, Dean, 2003).

5.2. Managerial Implications

With regard to our findings, offering certain suggestions for managers of project teams become more of an issue. First, it is important for managers to know that team intuition is not a unidimensional phenomenon but it is multifaceted. Knowing this fact may facilitate team members to use and benefit their intuition from various aspects rather than only sticking on their gut feelings. Thus, the managers and team members should be aware of the fact that gut feelings do not work alone for sensing problems and/or finding effective solutions in relation to project related issues. They should also fall back upon their cognitive intuition since it can enable them to make quick connections between the unconscious past and the conscious present, which in turn offers a magic solution without mental effort.

When thinking of the role of intuition on decision-making process, the importance of it in terms of taking the right decision and its virtual power on the success of effective and quick decisions is indisputable. From this point of view, it would be beneficial to organize proper education, training or seminars for the team members to grasp the very meaning of what intuition really is; what kind of

advantages it has; and how to use it in decision-making or problem solving process. To sum up, managers should know the fact that team intuition can be enhanced by self-awareness and training. We can also suggest that managers should create a free work environment for the team members to be able to use both their analytical and intuitive skills for the project effectiveness since "intuition and rational thinking are not separate but they are interrelated" (Isenberg, 1984; Allinson and Hayes, 1996).

Based on the interviews with team leaders or managers made for this study, we perceived that team members hesitate to follow their intuitive signals during project process since they consider it risky and useless. That is why, team members should be encouraged to make more effective use of intuition and accept that intuition really works especially in a high level of uncertainty and complexity. Additionally, managers should lead the way for team members to improve their creative and intuitive abilities by providing them a positive work climate and environment especially when the complexity level of the project is high.

5.3. Suggestions for Future Studies

When reviewing the studies on intuition, it is a stubborn fact that intuition plays a critical role in strategic decision-making and creative problem solving process. However, most of the studies are conceptual and the number of empirical researches is limited. Accordingly, it is essential to increase the number of empirical studies for acquiring statistical findings to comprehend the concept of intuition completely and to confirm that it is an outstanding managerial tool. Moreover, it may be interesting to examine the relationship between leadership styles and aspects of intuition that could offer different perspectives and contribution to management literature.

In addition to these, as indicated in the analysis results section of this study, cognitive intuition is multidimensional in its own and has two sub-dimensions as pattern recognition and mental shortcuts. Like cognitive intuition, both affective and behavioural intuition may also have sub-dimensions that should be investigated specifically. Furthermore, mostly the positive side of intuition was emphasized in this study and also in most of the studies. However, focusing on both positive and negative sides of intuition within teams may ensure a wide range of understanding of the concept of intuition. Although the linear relationship between team intuition and

project success variables was analysed, the non-linear relationship between team intuition and other project outcome variables could also be examined.

Additionally mood, inadequate information, and other uncertain alternatives like decision or time uncertainty can be treated as a moderator variable on the relationship between team intuition and team creativity. Besides, team intuition can be analysed as a mediating variable between team creativity and team learning that provides an important contribution for future studies.

Finally, the impact of team creativity in project outcomes or project efficiency can be investigated emprically since most of the studies consider attitudes, feelings and behaviours, which are effective in increasing creativity within teams.

5.4. Limitations of the Study

This study has some methodological limitations like most of the studies do. The common method bias is one of the first limitations since items related to both dependent and independent variables are gathered into the same questionnaire and filled in by the same respondents. This problem was tested through Harman's single-factor test proposed by Podsakoff and Organ (1986) and the results of unrotated principal component analysis indicated that there was no problem about common method variance (CMV). Even so, additional measures and archival data for some variables can be provided to avoid this problem.

As for the second and the most important limitation is the use of the questionnaire technique in a cross-sectional manner. Even though the survey study is frequently used and an ever-developing area, it may not provide objective results. To get rid of this problem, a longitudinal study can be performed.

Another limitation is the sample of this study, which consists of only Turkish people. It causes a generalization problem because, the use of intuition is especially universal and it is affected by the culture and personality of a particular person. That is why; in future studies researchers should take this issue into consideration and be careful indeed when generalizing the results to different cultural contexts. It may be more serviceable if empirical studies on intuition could be conducted in various countries at the same time to see the full potentials of intuition.

REFERENCES

Adair, J., (2007), “Leadership for Innovation: How to Organize Team Creativity and Harvest Ideas”, Kogan Page Limited, 1-134.

Agor, W.H., (1986), “The Logic of Intuition: How Top Executives Make Important Decisions, Organizational Dynamics”, 14(3), 5–18.

Agor, W.H., (1989), “Introduction, in W. H. Agor, ed., Intuition in Organizations: Leading and managing productively”, Newbury Park, CA: Sage Publications.

Akgün, A.E., Lynn, G.S., Reilly, R., (2002), “Multi-Dimensionality of Learning in New Product Development Teams”, European Journal of Innovation Management, 5, 57-72.

Akgün, A., Lynn, G., Yilmaz, C., (2006), “Learning Process in New Product Development Teams and Effects on Product Success: A Socio-Cognitive Perspective, Industrial Marketing Management”, 35(2), 210-224.

Akgün, A. E., Lynn, G. S., Keskin, H., Doğan, D., (2014), “Team learning in IT Implementation Projects: Antecedents and Consequences”, International Journal of Information Management, 34(1), 37-47.

Allinson, C., Hayes, J., (1996), “The Cognitive Style Index: A Measure of Intuition-Analysis for Organizational Research”, Journal of Management Studies, 33, 119-135.

Amabile, T. M., (1977), “Effects of Extrinsic Constraint on Creativity,” Department of Psychology, Stanford University.

Amabile, T. M., (1983), “The Social Psychology of Creativity, in R. F. Kidd, ed., Springer Series in Social Psychology”, Springer-Veriag, New York, Berlin Heidelberg, Tokyo.

Amabile, T. M., (1996), “Creativity in Context: Update to the Social Psychology of Creativity”, Boulder, CO: Westview Press.

Amabile, T.M., (1997), “Motivating Creativity in Organizations: On Doing What You Love and Loving What You Do”, California Management Review, 40(1), 39-58.

Amabile, T. M., (2012), “Componential Theory of Creativity”, Entrepreneurial Management, Full Working Paper Text, 12/096, 1-10- Retrieved from the website: 1st June, 2015; http://www.hbs.edu/faculty/Publication%20Files/12-096.pdf

Anderson J. C., Gerbing D. W., (1988), "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach”, Psychological Bulletin, 103(3), 411-423.

Andersen, J. A., (2000), “Intuition in Managers: Are Intuitive Managers More Effective?”, Journal of Managerial Psychology, 15(1), 46-63.

Argyris., C., Schon, D., (1978), “Organizational Learning”, London, Addison-Wesley.

Armstrong J. S., Overton T. S., (1977), "Estimating Nonresponse Bias in Mail Surveys", Journal of Marketing Research, 14(3), 396-402.

Azim, S. W., (2010), “Understanding and Managing Project Complexity, A Thesis Submitted to The University of Manchester for the Degree of Doctor of Philosophy in the Faculty of Engineering and Physical Sciences”, The University of Manchester Retrieved from the website: 25th December, 2016; https://www.escholar.manchester.ac.uk/api/datastream?publicationPid=uk-ac-man-scw:121030&datastreamId=FULL-TEXT.PDF

Baccarini, D., (1996), “The Concept of Project Complexity- A Review”, International Journal of Project Management, 14, 201-204.

Baer, M., Oldham, G., Jacobsohn, G., Hollingshead, A., (2008), “The Personality Composition of Tearns and Creativity: The Moderating Role of Team Creative Confidence”, Journal of Creative Behaviour, 42, 255-282.

Bagozzi, R. P., Yi, Y., Phillips, L. W. (1991). Assessing Construct Validity in Organizational Research. Administrative Science Quarterly, 36 (3), 421-458.

Barczak G., Lassk F., Mulki J., (2010), “Antecedents of Team Creativity: An Examination of Team Emotional Intelligence, Team Trust and Collaborative Culture,” Creativity and Innovation Management, 19(4), 332-345.

Barki, H., Rivard, S., Talbot, T., (1993), “Toward an Assessment of Software Development Risk”, Journal of Management Information Systems, 17(4), 203– 223.

Barnard, C.I., (1976), “The Functions of the Executive”, Cambridge: Harvard University Press.

Barron. F., Harrington, D. M., (1981), “Creativity, Intelligence, and Personality”, Annual Review of Psychology, 32, 439-476.

Baryniene, J., Dauknyte, B., (2015), “Creativity as the Main Factor for Organizations’ Success: Theoretical Approach”, European Integration Studies, 9(1), 235-243.

Behling, O., Eckel, N. L., (1991), “Making Sense Out of Intuition”, Academy of Management Executive, 5(1), 46–54.

Betsch, T., (2008), “The Nature of Intuition and Its Neglect in Research on Judgment and Decision-making, in Plessner, H., Betsch, C., Betsch, T. eds., Intuition in Decision-Making”, Taylor & Francis Group, New York, London, 3-22.

Bettman, J.R., Johnson, E.J., Payne, J.W., (1990), “A Componential Analysis of Cognitive Effort in Choice”, Organizational Behaviour and Human Decision Processes, 45(1), 111-139.

Bilal, A., Majid, F., Shahid, M., (2014), “The Impact of Intrinsic Motivation on Creative Expressions: Does Pro-Social Culture Makes Any Difference?”, European Journal of Business and Management, 6(34), 152-158.

Bloom, B. S,. Engelhart, M.D., Furst, E. J., Hill, W. H., Krathwohl, D. R., (Eds.) (1956), “Taxonomy of Educational Objectives : The Classification of Educational Goals”, Handbook I: The Cognitive Domain. New York: David McKay Co Inc.

Bollen, K.A., (1989), “Structural Equations with Latent Variables”, New York: John Wiley and Sons.

Boon, A., Vangrieken, K., Dochy, F., (2016), “Team Creativity versus Team Learning: Transcending Conceptual Boundaries to Inspire Future Framework Building”, Human Resource Development International, 19(1), 67-90.

Bonner, S.E., (1994), “A Model of the Effects of Audit Task Complexity”, Accounting, Organizations and Society, 19(3), 213-234.

Botkin, J. W., (1982), “Innovative Learning, Microelectronics and Intuition”, Prospects-Quarterly Review of Education, 12(4), 19-27.

Brennan, A., Dooley, L., (2005), “Networked Creativity: A Structured Management Framework for Stimulating Innovation”, Technovation, 25(12), 1388-1399.

Brueller, D., Carmeli, A., (2011), “Linking Capacities of High-Quality Relationships to Team Learning and Performance in Service Organizations”, Human Resource Management, 50(4), 455–477.

Bruner, J., (1977), “The Process of Education”, Cambridge, MA: Harvard University Press.

Burke, L. A., Miller, M. K., (1999), “Taking the Mystery Out of Intuitive Decision-making”, Academy of Management Executive, 13(4), 91–99.

Buvik, A., Gronhaug, K., (2000), “Inter-firm Dependence, Environmental Uncertainty and Vertical Co-ordination in Industrial Buyer-Seller Relationships. Omega”, the International Journal of Management Science, 28(4), 445-454.

Byrne B., (1994), "Structural Equation Modelling with EQS and EQS/Windows", CA: Sage Publications.

Calvillo, D. P., Penaloza, A., (2009), “Are Complex Decisions Better Left to the Unconscious? Further Failed Replications of the Deliberation-Without-Attention Effect”, Judgment and Decision Making, 4, 509–517.

Camilleri, E., (2011), “Project Success: Critical Factors and Behaviours”, Gower Publishing Ltd., Surrey.

Campbell, D.J., (1988), “Task Complexity: A Review and Analysis”, the Academy of Management Review, 13(1), 40-52.

Carter, C. R., Kaufmann, L., Wagner, C. M. (2017). Reconceptualising Intuition in Supply Chain Management. Journal of Business Logistics, 38(2), 80-95.

Certo, S., Certo, T., (2011), “Modern Management Concepts and Skills”, New York: Prentice Hall.

Chen, M. H., (2006), “Understanding the Benefits and Detriments of Conflict on Team Creativity Process”, Creativity and Innovation Management, 15(1), 105-116.

Chen, M. H., (2009), “Guanxi Networks and Creativity in Taiwanese Project Teams”, Creativity and Innovation Management, 18(4), 269–277.

Chen, M. H., Chang, Y. C., Hung, S. C., (2008), “Social Capital and Creativity in R&D Project Teams”, R&D Management Review, 38(1), 21-34.

Cooper, R. G., Kleinschmidt, E., (1987), “Success Factors in Product Innovation”, Industrial Marketing Management, 16, 215– 223.

Cropley, A. J., (2001), “Creativity in Education and Learning: A Guide for Teachers and Educators”, London: Kogan Page.

Crossan, M. M., Lane, H. W., White, R. E., (1999), “An Organizational Learning Framework: From Intuition to Institution”, the Academy of Management Review, 24(3), 522-537.

Csikszentmihalyi, M., (2007), “Creativity: Flow and the Psychology of Discovery and Invention”, New York: Harper Collins.

Csikszentmihalyi, M., (1999), “A Systems Perspective on Creativity, in R. J. Sternberg, ed., Handbook of creativity”, New York, NY: Cambridge University Press, 313-335.

Daft, R. L., (2009), “Management”, Ninth Edition, Vanderbilt University, Southwestern, Cengage Learning.

Dane, E., Pratt, M. G., (2007), “Exploring Intuition and Its Role in Managerial Decision-making”, Academy of Management Review, 32(1), 33–54.

Dane, E., Pratt, M. G., (2009), “Conceptualizing and Measuring Intuition: A Review of Recent trends”, in G. P. Hodgkinson, J. K., Ford, eds., International Review of Industrial and Organizational Psychology, Wiley-Blackwell, A John Wiley & Sons, Ltd, Publication 24 (1), 1–40.

Dayan, M., Elbanna, S., (2011), “Antecedents of Team Intuition and Its Impact on the Success of New Product Development Projects”, Journal of Product Innovation Management, 28(1), 159–174.

Dayan, M., Di Benedetto, A., (2011), “Team Intuition as a Continuum Construct and New Product Creativity: The Role of Environmental Turbulence, Team Experience, and Stress”, Research Policy, 40(2), 276–286.

De Houwer, J., Barnes, H. D., Moors, A., (2013), “What is Learning? On the Nature and Merits of a Functional Definition of Learning”, Psychonomic Bulletin & Review, 20(4), 631-642.

Dean, J. W., Sharfman, M. P., (1993), “Procedural Rationality in the Strategic Decision-making Process”, Journal of Management Studies, 30(4), 587–610.

Denhardt, R.B., Dugan, H.S., (1978), “Managerial Intuition, Lessons from Jung and Barnard”, Business and Society, 19(1), 26-30.

Diehl, M., Stroebe, W., (1991), “Productivity Loss in Idea Generating Groups: Tracking Down the Blocking Effect”, Journal of Personality and Social Psychology, 61, 392–403.

Dijksterhuis, A., Bos, M. W., Nordgren, L. F., van Baaren, R. B., (2006), “On making the right choice: The deliberation-without attention effect”, Science, 311.

DiLiello, T. C., Houghton, J. D., (2006), “Maximizing Organizational Leadership Capacity for the Future: Toward a Model of Self-leadership, Innovation and Creativity”, Journal of Managerial Psychology, 21(4), 319-337.

Dörfler, V., Ackermann, F., (2012), “Understanding Intuition: The Case for Two Forms of Intuition”, Management Learning, 43(5), 545-564.

Dreyfus, H., Dreyfus, S., (2000), “Mind Over Machine: The Power of Human Intuition and Expertise in the Era of the Computer”, Free Press, New York.

Druskat, V.U., Kayes, D.C., (2000), “Learning versus Performance in Short-term Teams”, Small Group Research, 31(3), 328-353.

Dutta, D. K., Thornhill, S., (2008), “The Evolution of Growth Intentions: Towards a Cognition-based Model”, Journal of Business Venturing, 23(3), 307-332.

Duncan, R.B., (1972), “Characteristics of Organizational Environments and Perceived Environmental Uncertainty”, Administrative Science Quarterly 17, 313–327.

Eby, L. T., Freeman, D. M., Michael, C. R., Lance, C. E., (1999), “Motivational Bases of Affective Organizational Commitment: A Partial Test of an Integrative Theoretical Model,” Journal of Occupational and Organizational Psychology, 72(4), 463–8.

Edenberg, J., (2011), Brain, Mind, and Cognition Gut Feelings by Gerd Gigerenzer Essay Retrieved from the following web site: http://www.ldv.ei.tum.de/fileadmin/w00bfa/www/Vorlesungen/Brain_Mind_Cognition/Gut_Feelings_Group_A_2011.pdf- Retrieved on 07.03.2017

Edmondson, A. C., (1999), "Psychological Safety and Learning Behaviour in Work Teams", Administrative Science Quarterly, 44, 350-383.

Eisenberger, R., Haskins, F., Gambleton, P., (1999), "Promised Reward and Creativity: Effects of Prior Experience", Journal of Experimental Social Psychology, 35, 308–325.

Eisenhardt, K. M. (1989), Making Fast Strategic Decisions in High-velocity Environments. Academy of Management Journal, 32, pp. 543–576.

Elbanna, S., (2015), "Intuition in Project Management and Missing Links: Analysing the Predicating Effects of Environment and the Mediating Role of Reflexivity", International Journal of Project Management, 33(2015), 1236–1248.

Ellis, A. P. J., Hollenbeck, J. R., Ilgen, D. R., Porter, C. O. L. H., Moon, H., (2003), "Team Learning: Collectively Connecting the Dots", Journal of Applied Psychology, 88(5), 821-835.

Eroğlu, A., (2012), "Henri Bergson'da Bilinç-Sezgi İlişkisi", SDÜ Fen Edebiyat Fakültesi, Sosyal Bilimler Dergisi, Aralık 2012, 27, 81-102.

Ertmer, P. A., Newby, T. J., (1993), "Behaviourism, Cognitivism, Constructivism: Comparing Critical Features from an Instructional Design Perspective", Performance Improvement Quarterly, 6(4), 50-72.

Ettlie, J.E., Reza, E., (1992), "Organizational Integration and Process Innovation", Academy of Management Journal, 34, 795–827.

Eubanks, D. L., Murphy, S. T. Mumford, M. D., (2010), "Intuition as an Influence on Creative Problem-Solving: The Effects of Intuition, Positive Affect, and Training, Creativity", Research Journal, 22(2), 170-184.

Farh, J. L., Lee, C., (2010), "Task Conflict and Team Creativity: A Question of How Much and When", Journal of Applied Psychology, 95(6), 1173-1180.

Farmer, S. M., Tierney, P., Kung-Mcintyre, K., (2003), "Employee Creativity in Taiwan: An Application of Role Identity Theory", Academy of Management Journal, 46, 618–630.

Farrar, D. E., Glauber, R. R., (1967), "Multicollinearity in Regression Analysis: The Problem Revisited," Review of Economics and Statistics, 49, 92–107.

Feurer, S., Schuhmacher, M. C., Kuester, S. (2018). How Pricing Teams Develop Effective Pricing Strategies for New Products. Journal of Product Innovation Management, in press.

Fields, A. F., (2001), “A Study of Intuition in Decision-Making Using Organizational Engineering Methodology”, A Dissertation Submitted to Wayne Huizenga Graduate School of Business and Entrepreneurship of Nova South-eastern University.

Fleck, J. I., Kounios, J., (2009), “Intuition, Creativity, and Unconscious Aspects of Problem Solving”, Encyclopaedia of Consciousness, 1 (1), 431-446.

Forester-Miller, H., Davis, T. E., (2016), Practitioner’s Guide to Ethical Decision Making (Rev. ed.), Retrieved from http://www.counseling.org/docs/default-source/ethics/practioner’s-guide-toethical-decision-making.pdf

Fornell C., Larcker D. F., (1981), "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error", Journal of Marketing Research, 39-51.

Franken, R. E., (2001), “Human Motivation”, Wadsworth Publishing, Belmont, CA.

Frantz, R., (2003), “Herbert Simon: Artificial Intelligence as a Framework for Understanding Intuition”, Journal of Economic Psychology, 32, 265–77.

Fynes, B., Buirca, S., Marshall, D., (2004), “Environmental Uncertainty, Supply Chain Relationship Quality and Performance”, Journal of Purchasing & Supply Management, 4(5), 179–190.

Gallate, J., Keen, S., (2011), “Intuition” in Encyclopedia of Creativity, eds S. R. Pritzker and M. A. Runco (San Diego, CA: Academic Press/Elsevier), 683–688.

Glaser, M., (1995), “Measuring Intuition. Research Technology Management”, 38, 43-46.

Goldberg, P., (1983), “The intuitive edge: Understanding and developing intuition”, Los Angeless, J. Tarcher.

Hackman, J. R., (1987), “The Design of Work Teams”, In J. Lorsch, ed., Handbook of Organizational Behaviour. New York: Prentice Hall, 315-342.

Hammond, K. R., (1996), “Human Judgment and Social Policy”, New York: Oxford, University Press.

Hana, U., (2013), “Competitive Advantage Achievement through Innovation and Knowledge”, Journal of Competitiveness, 5(1), 82-96.

Harrison, E. F., (1987), “The Managerial Decision-Making Process”, (3rd Edition), Boston: Houghton Mifflin.

Harris, P. R., Harris, K. G. (1996). Managing Effectively through Teams. Team Performance Management: An International Journal, 2(3), 23-36.

Hipel, K.W., K.J. Radford, Fang, L., (1993), “Multiple Participant-Multiple Criteria Decision Making,”, IEEE Transactions on Systems, Man, and Cybernetics 23(4), 1184–1189.

Hodgkinson, G. P., Clarke, I., (2007), “Exploring the Cognitive Significance of Organizational Strategizing: A Dual-process Framework and Research Agenda”, Human Relations, 60(1), 243-255.

Hodgkinson GP, Langan-Fox J, Sadler-Smith E. 2008. Intuition: A Fundamental Bridging Construct in the Behavioural Sciences. Br. J. Psychol. 99:1–27

Hogarth, R. M., (2001), “Educating intuition”, Chicago: University of Chicago Press.

Hoyle, R., (1995), “Structural Equation Modeling: Concepts, Issues, and Applications”, Thousand Oaks, CA: Sage Publications.

Iansiti, M., West, J., (1997), “Technology Integration: Turning Great Research into Great Products”, Harvard Business Review, 75(3), 69–78.

Im, S., Montoya, M. M., Workman, Jr, J. P. W., (2013), “Antecedents and Consequences of Creativity in Product Innovation Teams”, Journal of Product Innovation Management, 30(1), 170-185.

Isaack T. S., (1978), “Intuition: An Ignored Dimension of Management”, Academy of Management Review, 3(4), 917–922

Isenberg, D. J., (1984), “How Senior Managers Think”, Harvard Business Review, 62(6), 81-90.

Jalan, A., Kleiner, B. H., (1995), “New Developments in Developing Creativity”, Journal of Managerial Psychology, 10(8), 20-23.

Janesick, V. J., (2001), “Intuition and Creativity: A Pas de Deux for Qualitative Researchers”, Qualitative Inquiry, 7(5), 531-540.

Jaworski, B. J., Kohli, A. K., (1993), “Market-orientation: Antecedents and Consequences”, Journal of Marketing, 57 (3), 53-70.

Jöreskog K. G., Sörbom D., (1993), "LISREL 8: Structural Equation Modeling with the SIMPLIS Command Language", Scientific Software International.

Jung, H. G., (1921), “Psychological Types”, translated by H. Godwyn Baynes, Bollingen Series, Princeton U.P.

Kahneman, D., (2003), “Maps of Bounded Rationality: Psychology for Behavioural Economics”, the American Economic Review, 93/5, 1449-1475.

Kanter, R., (1988), “When a Thousand Flowers Bloom: Structural, Collective, and Social Conditions for Innovation in Organizations” in B. M. Staw, L. L. Cummings, eds., Research in Organizational Behaviour, Greenwich, CT: JAI Press., 169-211.

Kasl, E., Dechant, K., Marsick, V. J., (1997), “Teams as Learners: A research-based Model of Team Learning”, Journal of Applied Behaviour Science, 33(2), 227–246

Kayes, D. C., Burnett, G., (2006), “Team Learning in Organizations: A Review and Integration,” Submitted to OLKC 2006 Conference at the University of Warwick, Coventry on 20th - 22nd March 2006- Retrieved from the web site below on 6th June, 2015:
http://www2.warwick.ac.uk/fac/soc/wbs/conf/olkc/archive/olkc1/papers/177_kayes.pdf

Kessler, E. H., Chakrabarti, A. K. (1996). Innovation Speed: A Conceptual Model of Context, Antecedents, and Outcomes. Academy of Management Review, 21 (4), 1143-1191

Khatri, N., Alvin, H.N., (2000), “The Role of Intuition in Strategic Decision-Making”, Human Relations, 53(1), 57-86.

Kozbelt, A., Beghetto, R. A., Runco, M. A., (2010), “Theories of Creativity,” in J. C. Kaufman, & R. J. Sternberg, eds., the Cambridge Handbook of Creativity, Cambridge: University Press, 20-47.

Kozlowski, S. W. J., Bell, B. S., (2008), “Team Learning, Development, and Adaptation”, In V. I. Sessa & M. London (Eds.), Work Group Learning-Understanding, Improving & Assessing How Groups Learn In Organizations (15-44), Mahwah, NJ: LEA.

Köz, İ., (2004), “Sezgi’nin Bilgideki Yeri ve Önemi”, Felsefe Dünyası Dergisi, 2(40), Ankara.

Krathwohl, D. R., Bloom, B. S., Masia, B. B., (1964), “Taxonomy of Educational Objectives, the Classification of Educational Goals”, Handbook II: Affective domain. New York: David McKay Co, Inc.

Kumar N., Stern L. W., Anderson J. C., (1993), "Conducting Interorganizational Research Using Key Informants", Academy of Management Journal, 36(6), 1633-1651.

Kurtzberg,T. R., (2005), “Feeling Creative, Being Creative: An Empirical Study of Diversity and Creativity in Teams”, Creativity Research Journal, 17(1), 51-65.

Kurtzberg, T. R., Amabile, T. M., (2001), “From Guilford to Creative Synergy: Opening the Black Box of Team-Level Creativity,” Creativity Research Journal, 13(3-4), 285-294.

Leenders, R. T. A. J., Engelen, J. M. L. V., Kratzer, J., (2003), “Virtuality, Communication, and New Product Team Creativity: A Social Network Perspective. Journal of Engineering and Technology Management, 20, pp. 69–92.

Lefrancois, G. R., (1999), “Theories of Human Learning: What the Old Man Said”, Fourth Edition, Wadsworth/Thomson Learning.

Li, K., Wieringa, P. A., (2000), “Understanding Perceived Complexity in Human Supervisory Control”, Cognition, Technology & Work, 2(2), 75-88.

Liu, P., Li, Z., (2012), “Task Complexity: A Review and Conceptualization Framework”, International Journal of Industrial Ergonomics 42(2012), 553-568

Loewenberger, P., (2013), “The Role of HRD in Stimulating, Supporting, and Sustaining Creativity and Innovation”, Human Resource Development Review, 12(4), 422-455.

Lovecky, D. V., (2004), “Different Minds: Gifted Children with AD/HD, Asperger Syndrome, and Other Learning Deficits”, London: Jessica Kingsley

Lutz, R. A., (1994), “Implementing Technological Change with Cross-functional Teams”, Research Technology Management, 37, 14-18.

McCarthy, I. P., Menicou, M., (2002), “A Classification Schema of Manufacturing Decisions for the GRAI Enterprise Modelling Technique”, Computers in Industry 47(3):339-355

Matthews, R., McLees, J., (2015), “Building Effective Projects Teams and Teamwork”, Journal of Information Technology and Economic Development, 6(2), 20-30.

Mendibil K., Macbrayde J., (2005), “Designing Effective Team-Based Performance Measurement Systems: An Integrated Approach”, Publication, 16(2), 208-225.

Miller, C. C., Ireland, R. D., (2005), “Intuition in Strategic Decision-making: Friend or Foe in the Fast-paced 21st century”, Academy of Management Executive, 19(1), 19-30.

Mintzberg, H., (1976), “Planning on the Left Side and Managing on the Right”, Harvard Business Review, 54, 49-58.

Mintzberg, H., Raisinghani, D., Théorêt, A., (1976), “The Structure of "Unstructured" Decision Processes”, Administrative Science Quarterly, 21, 246 - 275.

Milliken, F. J., (1987), “Three Types of Perceived Uncertainty about the Environment: State, Effect, and Response Uncertainty”, Academy of Management Review, 12(1), 133–143.

Moorman, C., Miner, A.S., (1997), “The Impact of Organizational Memory on New Product Performance and Creativity”, Journal of Marketing Research 34, 91-106.

Mowrer, R. R., Klein, S. B., (2001), “The Transitive Nature of C Contemporary Learning Theory,” in R. R. Mowrer and S. B. Klein, eds., Handbook of Contemporary Learning Theories. Lawrence Erlbaum Associates, Mahwah, New Jersey.

Mumford, M., Gustafson, S., (1988), “Creativity Syndrome: Integration, Application, and Innovation”, Psychological Bulletin, 103(1), 27–43.

Myers, D. G., (2002), “Intuition: Its Powers and Perils”, New Haven, CT: Yale University Press.

Myers, D. G., (2014), “Exploring Psychology”, Ninth Edition, Worth Publishers, Macmillan Higher Education, New York.

Nisula, A. M., (2013), “Building Organizational Creativity – A Multi Theory and Multilevel Approach for Understanding and Stimulating Organizational Creativity,” Thesis for the Degree of Doctor of Science (Economics and Business Administration) at Lappeenranta University of Technology.

Nunnally J., (1978), "Psychometric Theory", McGraw-Hill, New York.

Nutt, P. C., (1998), “How Decision Makers Evaluate Alternatives and the Influence of Complexity”, Management Science, 44(8), 1148-1166.

Ocloo, C. E., Akaba, S., Worwui-Brown, D. K., (2014), “Globalization and Competitiveness: Challenges of Small and Medium Enterprises (SMEs) in Accra, Ghana”, International Journal of Business and Social Science, 5(4).

Oldham G., Cummings, A., (1996), “Employee Creativity: Personal and Contextual Factors at Work”, Academy of Management Journal, 39(3), 607–634.

Ortega, A., Sánchez-Manzanares, M., Gil, F., Rico, R., (2013), “Enhancing Team Learning in Nursing Teams Through Beliefs About Interpersonal Context,” Journal of Advanced Nursing, 6(1), 102–111.

Ortega, A., Van den Bossche, P., Sánchez-Manzanares, M., Rico, R., Gil, F., (2014), “The Influence of Change-oriented Leadership and Psychological Safety on Team Learning in Healthcare Teams,” Journal of Business and Psychology, 29(2), 311-321.

Osho (2001), “Intuition, Knowing Beyond Logic”, St.Martin's Griffin.

Öktem, U., (2000), “Descartes, Kant, Bergson ve Husserl’de Sezgi”, 40(1), 159-188.

Özdemir, O., (2012), “Psikiyatride Tanıya Yardımcı Bir Araç: Sezgi”, Düşünen Adam Psikiyatri ve Nörolojik Bilimler Dergisi, 25(3), 283-284.

Pagano, A. L., (1979), “Learning and Creativity”, the Journal of Creative Behaviour, 13 (2), 127-138.

Pétervári, J., Osman, M., Bhattacharya, J., (2016), “The Role of Intuition in the Generation and Evaluation Stages of Creativity. Frontiers in Psychology”, 7. http://dx.doi.org/10. 3389/fpsyg.2016.01420

Piirto, J. A., (2004), “Understanding Creativity”, Scottsdale, AZ: Great Potential Press.

Pirola-Merlo, A., Mann, L., (2004), “The Relationship between Individual Creativity and Team Creativity: Aggregating Across People and Time”, Journal of Organizational Behaviour, 25(2), 235-257.

Podsakoff, P. M., Organ, D. W. (1986). Self-reports in Organizational Research: Problems and Prospects. Journal of Management, 12(4), 531-544.

Podsakoff,, P. M., MacKenzie, S. B., Lee, J. Y., Podsakoff, N. P. (2003). Common Method Biases in Behavioural Research: A Critical Review of the Literature and Recommended Remedies. Journal of Applied Psychology, 88, 879-903.

Policastro, E., (1995), “Creative Intuition: An Integrative Review”, Creativity Research Journal, 8, 99–113.

Pretz, J. E., (2011), “Types of Intuition: Inferential and Holistic” in M. Sinclair, ed., Handbook of Intuition Research. Cheltenham, UK: Edward Elgar.

Pretz, J.E., Totz, K.S., (2007), “Measuring Individual Differences in Affective, Heuristic, and Holistic Intuition”, Personality and Individual Differences, 43(5),1247-1257.

Pretz, J. E., Brookings, J. B., Carlson, L. A., Humbert, T. K., Roy, M., Jones, M., Memmert, D., (2014), “Development and Validation of a New Measure of Intuition: The Types of Intuition Scale”, Journal of Behavioural Decision Making, 27(5), 454-467.

Pritchard, A. (2009), “Ways of Learning: Learning Theories and Learning Styles in the Classroom”, 2nd Edition, Routledge, Taylor and Francis Group, London and New York.

Radu, M. E., Cole, C., (2008), “Enabling Creative Thinking in Digital Design Education,” The Annual Conference for the European Society for Engineering Education, (SEFI), Aalborg, Denmark- Retrieved from the web site below on 20th October, 2015: http://www.sefi.be/wp-content/abstracts/1013.pdf

Raidl, M., Lubart, T.I., (2000), “An Empirical Study of Intuition and Creativity”, Imagination, Cognition, and Personality, 20(3), 217-230.

Reber, A. S., Walkenfeld, F. F., Hernstadt, R., (1991), “Implicit and Explicit Learning: Individual Differences and IQ”, Journal of Experimental Psychology: Learning, Memory and Cognition, 17, 888–896.

Rehg, W., McBurney, P., Parsons, S., (2005), “Computer Decision-support Systems for Public Argumentation: Assessing Deliberative Legitimacy”, AI Soc. 19(3), 203–228.

Rhodes, M., (1961), “An Analysis of Creativity”, the Phi Delta Kappan, 42(7), 305-310.

Rowan, R., (1986), “The Intuitive Manager”, Boston, Little, Brown & Co.

Runco, M. A., Pritzker, S., (1999), “Encyclopaedia of Creativity”, San Diego: Academic Press.

Rosenzweig, E.D., Roth, A.V., Dean Jr., J.W., (2003), “The Influence of an Integration Strategy on Competitive Capabilities and Business Performance: An Exploratory Study of Consumer Products Manufacturers”, Journal of Operations Management 21, 437–456.

Rue, L.W., Byars, L., (2003), “Management, Skills and Application”, 10th Edition, McGraw-Hill/Irwin, New York.

Sadler-Smith, E., (1999), “Intuition-analysis Cognitive Style and Learning Preferences of Business and Management Students”, Journal of Managerial Psychology, 14(1), 26-39.

Sadler-Smith, E., (2008), “Inside Intuition”, Abingdon: Routledge.

Sadler-Smith, E., Shefy, E., (2004), “The Intuitive Executive: Understanding and Applying ‘Gut Feel’ in Decision-Making”, Academy of Management Executive, 18(4), 76–91.

Sadler-Smith, E., (2016), “What Happens When You Intuit?” Understanding Human Resource Practitioners’ Subjective Experience of Through a Novel Linguistic Method”, Sage Publications Ltd. Human Relations, 69(5), 1069-1093.

Santos, C. A., Passos, A. M., Uitdewilligen, S., (2015), “When Shared Cognition Leads to Closed Minds: Temporal Mental Models, Team Learning, Adaptation and Performance”, European Management Journal, 1-11.

Savelsbergh, C., Van der Heijden, B., Poell, R., (2009), “The Development and Empirical Validation of a Multi-Dimensional Measurement Instrument for Team Learning Behaviours”, Small Group Research, 40, 578–607.

Savelsbergh, C., Gevers, J., Poell, R., Van der Heijden, B., (2012), “Team Role Stress: Relationships with Team Learning and Performance in Project Teams”, Group Organization Management, 37, 62–95.

Savelsbergh, C. M. J. H., Poell, R. F., Van der Heijden, B. I. J. M., (2014), “Does Team Stability Mediate the Relationship Between Leadership and Team Learning? An Empirical Study among Dutch Project Teams”, International Journal of Project Management, 33(1), 406–418.

Schermelleh-Engel K., Moosbrugger H., (2003), "Evaluating the Fit of Structural Equation Models: Tests of Significance and Descriptive Goodness of-fit Measures”, Methods of Psychological Research Online, 8(2), 23-74.

Schunk, D.H., (1991), “Learning Theories: An Educational Perspective”, New York: Macmillan.

Scott, T. W., & Tiessen, P. (1999), Performance Measurement and Managerial Teams. Accounting, Organizations and Society, 24, 263–285.

Senge, P.M., (2010), “The Fifth Discipline: The Art and Practice of the Learning Organization”, Crown Publishing Group, 1-464.

Shalley, C. E., Zhou, J., (2008), “Organizational Creativity Research: A Historical Overview,” in J. Zhou, & C. E. Shalley, eds., Handbook of Organizational Creativity, New York: Lawrence Erlbaum Associates, 3-31.

Shapiro, S., Spence, M.T., (1997), “Managerial Intuition: A Conceptual and Operational Framework”, Business Horizons, 40(1), 63–68.

Shenhar, A. J., Dvir, D., Levy, O. Maltz, A. C., (2001), “Project Success: A Multidimensional Strategic Concept”, Long Range Planning, 34(2), 699-725.

Shirley, D., Fox, J. L., (1996), “Intuition: A Review of the Literature”, Psychological Reports, 79(2), 563–584.

Shuell, T.J., (1986), “Cognitive Conceptions of Learning”, Review of Educational Research, 56, 411-436.

Simon, H., (1983), “Reason in Human Affairs”, Stanford, CA: Stanford University Press.

Simon, H. A., (1987), “Making Management Decisions: The Role of Intuition and Emotion,” Academy of Management Executive, 1(1), 57–64.

Simonton, D. K., (2011), “Creativity and Discovery as Blind Variation: Campbell’s (1960) BVSR Model after the Half-Century Mark”, Review of General Psychology, 15(2), 158–174.

Sinclair, A., Ashkanasy, N. M., (2005), “Intuition Myth or a Decision-making Tool?”, Management Learning, 36(3), 353-370.

Sinclair, M., Ashkanasy, N. M., Chattopadhyay, P., (2010), “Affective Antecedents of Intuitive Decision-Making”, Journal of Management & Organization, 16(3), 382–398.

Smith, P. L. and Ragan, T. J., (1999), “Instructional Design”, New York: John Wiley & Sons, Inc.

Sonenshein, S., (2007), “The Role of Construction, Intuition, and Justification in Responding to Ethical Issues at Work: The Sense Making-Intuition Model”, Academy of Management Review, 32(4), 1022-40.

Stein, M. I., (1974), “Stimulating Creativity”, New York: Academic Press.

Sternberg, R. J., (1999), “Handbook of Creativity”, New York, NY: Cambridge University Press.

Sternberg, R. J., (2006), “The Nature of Creativity”, Creativity Research Journal, 18(1), 87–98.

Sternberg, R. J., (2012), “The Assessment of Creativity: An Investment-Based Approach”, Creativity Research Journal, 24(1), 3-12.

Taggart, W. M., Robey, D., (1981), “Minds and Managers: On the Dual Nature of Human Information Processing and Management”, Academy of Management Review, 6(2), 187-95.

Tesluk, P. E., Farr, J. L, Klein, S. A., (1997), “Influences of Organizational Culture and Climate on Individual Creativity”, Journal of Creative Behaviour, 31(1), 27-41.

Torrance, E. P., (1993), “Understanding Creativity: Where to Start?”, Psychological Inquiry, 4, 232-234.

Trevor, A. C., James, G. S., (2002), “Model-Dependent Variance Inflation Factor Cut-off Values”, Quality Engineering, 14(3), 391-403.

Truman, S., (2011), “A Generative Framework for Creative Learning: A Tool for Planning Creative-Collaborative Tasks in the Classroom”, Border Crossing Transnational Working Papers, 2011(1101), 1-14.

Tsai, W. C., Chi, N. W., Grandey, A. A., Fung, S. C., (2012), “Exploring Boundary Conditions of the Relationship Between Positive Group Affective Tone and Team Creativity: Negative Group Affective Tone and Team Trust as Moderators”, Journal of Organizational Behaviour, 33, 638-656.

Tu, C., (2009), “A Multilevel Investigation of Factors Influencing Creativity in NPD Teams”, Industrial Marketing Management, 38(1), 119-126.

Urbina, S., (2014), “Essentials of Psychological Testing”, Second Edition, John Wiley & Sons, Inc., Hoboken, New Jersey.

Vaughan, F. E., (1979), “Awakening Intuition”, Garden City, N. Y.: Anchor Press, Doubleday, Anchor Books.

Wallace, L., Keil, M., Rai, A., (2004), “Understanding Software Project Risk: A Cluster Analysis”, Information and Management 42(1), 115–125.

Wang, Y. (2009), “On Cognitive Foundations of Creativity and the Cognitive Process of Creation”, International Journal of Cognitive Informatics and Natural Intelligence, 3(4), 1-18.

Web 1 (2015), http://theatricalintelligence.com/tag/albert-einstein/- Retrieved on 16.04.2015.

Weiss, J. A., (1982), “Coping with Complexity: An Experimental Study of Public Policy Decision-Making”, Journal of Policy Analysis and Management, 2(1), 66.

Weiss, M., Hoegl, M., Gibbert, M., (2011), “Making Virtue of Necessity: The Role of Team Climate for Innovation in Resource-Constrained Innovation Projects”, Journal of Product Innovation Management, 28, 196-207.

Weiss, H. B., Brevis, T., Cant, M., (2008), “Business Management: A Contemporary Approach”, Juta & Co.

West M.A., (1999), “Communication and Team Working in Healthcare”, Nursing Times Research, 40, 8–17.

West, M. A., Farr, J. L., (1989), “Innovation at Work: Psychological Perspectives”, Social Behaviour, 4(1), 15-30.

Westcott, M. R., Ranzoni, J. H., (1963), “Correlates of Intuitive Thinking”, Psychological Reports, 12, 595-613.

Westcott, M. R., (1968), “Toward a Contemporary Psychology of Intuition: A Historical, Theoretical and Empirical Inquiry”, New York: Holt, Rinehart and Winston.

West, M. A., Richter, A., (2008), “Climates and Cultures for Innovation and Creativity at Work”, In J. Zhou & C. E. Shalley (Eds.), Handbook of organizational creativity, 211–236. New York: Erlbaum.

Wieland, A., Durach, C. F., Kembro, J., Treiblmaier, H., (2017), “Statistical and Judgmental Criteria for Scale Purification”, In: Supply Chain Management, 22(4), 2017, 321-328.

Winters, D., & Latham, G., (1996), “The Effect of Learning versus Outcome Goals on a Simple versus a Complex Task”, Group and Organization Management, 21, 236–250.

Wong, C.Y., Boon-itt, S., Wong, C.W.Y., (2011), “The Contingency Effects of Environmental Uncertainty on the Relationship between Supply Chain Integration and Operational Performance”, Journal of Operations Management, 29, 604-615.

Wu, G.G., (2013), “The Influence of Green Supply Chain Integration and Environmental Uncertainty on Green Innovation in Taiwan’s IT industry”, Supply Chain Management: An International Journal, 18(5), 539–552.

Yeh, Y.C., (2012), “The Effects of Contextual Characteristics on Team Creativity: Positive, Negative, or Still Undecided?”, Centre for East and South-East Asian Studies Lund University, Sweden, Working Paper/38.

Zacca, R., Dayan, M., Elbanna, S., (2017), “The influence of Conflict and Intuition on Explorative New Products and Performance in SMEs”, Journal of Small Business and Enterprise Development, 24/4, pp. 950-970, https://doi.org/10.1108/JSBED-02-2017-0034.

Zeeshan, A., Yuosre, B. D., Mir, D., Bilal, A., (2016), “The Dynamics of Expert and Team Intuition in NPD Projects: The Role of Environmental Turbulence and Expert Power”, the Journal of High Technology Management Research, Volume 27, Issue 1, pp. 10-20.

Zellmer-Bruhn, M., Gibson, C., (2006), “Multinational Organization Context: Implications for Team Learning and Performance”, Academy of Management Journal, 49, 501–518.

Zukav, G., (1999), “The Seat of the Soul”, New York: Fireside

BIOGRAPHY

Nazife ORHAN ŞİMŞEK, who was born on October, 20th, 1984 in Gebze, graduated from Neşet Yalçın Super High School in 2002. She got her B.S. degree in 2006 from Beykent University, English Language and Literature / International Relations (Double-Major). Right after her university graduation, she got her pedagogical formation in ELT (English Language Teaching) at Marmara University in 2007 and also acquired the ICELT (In-service Certificate in English Language Teaching) from the University of Cambridge in 2009.

She started her Master of Science in Institute of Social Sciences, Business Administration Department, at Beykent University in 2010, and graduated from there in 2012. She has started her PhD studies in the Institute of Social Sciences, Business Administration Department, at Gebze Technical University in 2013.

Besides her continuous education, she took the first step into her academic career in the School of Foreign Languages at Beykent University, in 2008. After working in this department for seven years as an English Lecturer, she was assigned as a Vice Director there. Having worked there as a Vice Director for about a year, she was transferred to the Vocational School of the same institution and has been currently working there as a Vice Director.

APPENDIX

APPENDIX A-QUESTIONNAIRE ITEMS

Team Intuition/ Cognitive Dimension

As team members, when we needed to make a decision about any subject or situation during the project WE…

- used our mental shortcuts developed on the basis of our experiences.
- hearkened to our inner voice to make the best choice among alternatives.
- made the best choice among alternatives thanks to some ideas that we come up with suddenly.
- used our tacit knowledge (intrinsic knowledge based on our past experience e.g. know-how).
- reached the expected final outcome abruptly when we stopped ruminating on the respective situation and cleared our mind of messy thoughts.
- we used a rule of thumb method developed on the basis of our common sense knowledge.
- we used inductive reasoning rather than deductive reasoning to make the best choice among alternatives.
- we used some important cues that attracted our attention or came to our mind suddenly without knowing the exact source of it.
- we didn't show much mental effort (such as reviewing all alternatives and their possible results carefully and rationally or reflecting upon them).
- we made the best choice among alternatives with limited information in a short span of time.

Team Intuition/ Affective Dimension

As team members, when we needed to make a decision about any subject or situation during the project;

- we foreboded which of the alternatives was going to be the best one.
- we made the best choice among alternatives according to positive or negative feelings we had unintentionally for the respective subject/situation without understanding the underlying reason behind it.

- we mostly took notice of our gut feelings to make the best choice among the alternatives.
- the sudden emotional reactions (excitement, uneasiness, etc.) we showed against the respective subject/situation directed us (having a dissuasive or a persuasive impact) to make the best choice among alternatives.
- we followed our gut feelings to make the best choice among the alternatives without concrete reasoning.
- the over sensitivity or receptivity to the respective situation/subject directed us (having a dissuasive or persuasive impact) to make the best choice among alternatives.

Team Intuition/ Behavioural Dimension

As team members, when we needed to make a decision about any subject or situation during the project WE…

- shaped our decisions (insisting on the respective alternative or changed our mind) in accordance with the instantaneous and unexpected physical symptoms and/or sensations (tension, stomach ache etc.) we showed.
- persisted with using our intuition.
- didn't hesitate to take initiative while making a major decision thanks to our confidence in our intuition.
- benefitted from each other's personal experiences, beliefs and/ or perspectives rather than gathering information systematically to make the best choice among alternatives.
- didn't refrain from taking any risk thanks to our confidence in our inner voice rather than using common rational decision-making methods.
- remained unresponsive to understand the logic behind the choice we made by means of our gut feeling or inner voice.
- generalized by looking at our experiences rather than scrutinizing all alternatives one by one to make the best choice among alternatives.
- we anticipated possible problem(s) thanks to our intuition and we made the best choice among alternatives accordingly.

Team Creativity

During the project, as team members WE…

- sought new ideas and ways to solve problems.
- generated ground-breaking ideas related to the field.
- tried new ideas or methods first developed by team members to solve problems.
- were a good role model for each other about creativity.
- generated new applications to complete the project effectively.

Team Learning

Information Acquisition: During the project the team …

- did an outstanding job discovering technical shortcomings of this process.
- did an outstanding job discovering implementation shortcomings.
- did an outstanding job discovering user shortcomings.

Information Dissemination: During the project….

- team members developed a common vocabulary when discussing the project.
- team members conducted frequent informal communications at water cooler/coffee maker with fellow project team members.
- team members conducted frequent informal communications at lunch or after work with fellow project team members.
- team members conducted frequent formal communications through team meetings with fellow project team members.
- team members conducted frequent formal communications through memos with fellow project team members
- information captured on users' needs and wants was shared throughout the team.
- when a new alternative process was identified, the team was informed of it.

Information Implementation:

- Post implementation, this process had fewer technical problems than our typical processes.
- Overall, users perceived this process had fewer problems than what was considered normal in the company.
- Most of the lessons learned pre-implementation were incorporated into the process for full-scale implementation.
- Overall, the team did an outstanding job uncovering problem areas with which users were dissatisfied.

- Overall, the team did an outstanding job correcting problem areas with which users were dissatisfied.

Project Complexity

Task Complexity: During the project…

- how routine was your work?
- to what extent did your co-workers do about the same job in the same way most of the time?
- to what extent were your duties repetitious?
- to what extent was there a clearly defined way and methods to do the major types of work you normally encounter?
- to what extent was there a clearly defined body of knowledge of subject matter which can guide you in doing your work?
- to what extent was there an understandable sequence of steps that can be followed in doing your work?
- to do your work, to what extent could you actually rely on established procedures and practices?

Technical Complexity:

- To what extent did the project involve the use of new technology?
- To what extent did the project have high level of technical complexity?
- To what extent did the project involve the use of technology that was not used in prior projects?

Decision Complexity:

- How many alternatives did you have for the subject or situation you needed to make decision on during the project?
- How much information did you have for the evaluation of the alternatives about the subject or situation you needed to make decision on during the project?
- How many decision makers were there in the decision-making process?
- How much time was allocated to you for making the best choice among the alternatives?
- How many non-routine or non-recurrent decisions, like strategic ones, were there during the project?
- How risky was your decision for the individuals and units that would be affected from it in the future?

- How difficult was it to decide on which alternative would be the best in order to reach the aims and objectives of the project?

Project Success/Performance

- The project met or exceeded the implication expectations.
- The project met or exceeded the first year production/commercialization/ implication expectations.
- The project met or exceeded sales expectations.
- The project met or exceeded profit expectations.
- The project met or exceeded return on investments expectations.
- The project met or exceeded our senior executives' expectations.
- The project was launched to the market/implementation within or below the budget boundary.
- The cost of design/development of the project was realized on or below expected level.
- The cost implementation of the project was realized on or below the expected level.
- The project met or exceeded market share expectations.
- The project met or exceeded customer/user expectations.
- The project met or exceeded technical performance expectations.
- The project provided market/implication infrastructure for future opportunities.
- The project provided technical infrastructure for future opportunities.
- The project was launched to the market/implementation faster than our archrival's project was.
- The project was completed in less time than what was considered normal and customary for our industry.
- The project was launched on or ahead of the original schedule developed at initial project go-ahead.
- Top management was pleased with the time from the design to the application.