

Agile Business Leadership Methods for Industry 4.0

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EDITED BY

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List of Contents

List of Tables	<i>ix</i>
List of Figures	<i>xi</i>
List of Contributors	<i>xiii</i>
About the Authors	<i>xv</i>
Chapter 1 A Review of Modern Leadership Styles in Perspective of Industry 4.0 <i>Hasan Cinnioğlu</i>	<i>1</i>
Chapter 2 Industry 4.0 and Marketing 4.0: In Perspective of Digitalization and E-Commerce <i>Huseyin Guven</i>	<i>25</i>
Chapter 3 Agile Leadership Model in Health Care: Organizational and Individual Antecedents and Outcomes <i>Safiye Şahin and Furkan Alp</i>	<i>47</i>
Chapter 4 Industry 4.0 and International Trade: The Case of Turkey <i>Deniz Erer and Elif Erer</i>	<i>69</i>
Chapter 5 Industry 4.0 and its Role on Labour Market: A Comparative Analysis of Turkey and European Countries <i>Elif Erer and Deniz Erer</i>	<i>85</i>
Chapter 6 Digital Taylorism as an Answer to the Requirements of the New Era <i>Ayşe Günsel and Mesut Yamen</i>	<i>103</i>

Chapter 7 Leadership Styles and Female Managers in Perspective of Agile Leadership <i>Bulent Akkaya and Sema Üstgörül</i>	121
Chapter 8 The Effect of Industry 4.0 On Accounting In Terms of Business Management <i>Ece Çevik Özcan and Bulent Akkaya</i>	139
Chapter 9 Biomimicry and Agile Leadership in Industry 4.0 <i>Ayşe Meriç Yazıcı</i>	155
Chapter 10 The Role of Agile Leadership in Organisational Agility <i>Melis Attar and Aleem Abdul-Kareem</i>	171
Chapter 11 Strategic Leadership In Perspective of Industry 4.0 <i>Semra Tetik</i>	193
Chapter 12 Industry 4.0 and Agile Firms <i>Erdal Şen and Necmiye Tülin Irge</i>	209
Chapter 13 Leadership and Industry 4.0 as a Tool to Enhance Organization Performance: Direct and Indirect Role of Job Satisfaction, Competitive Advantage and Business Sustainability <i>Kittisak Jermsittiparsert</i>	233
Chapter 14 Factors of Successful Women Leadership in Asian: Moderating Role of Political Differences and Organization Culture <i>Kittisak Jermsittiparsert</i>	259
Chapter 15 Era of Industry 4.0 Technologies and Environmental Performance of Thailand's Garment Industry: Role of Lean Manufacturing and Green Supply Chain Management Practices <i>Kittisak Jermsittiparsert, Sudawan Somjai and Krisada Chienwattanasook</i>	285
Chapter 16 The Interaction among Organizational Flexibility, Competitive Strategy and Competitive Advantage: A Path Analytic Study <i>Yeşim Koçyiğit and Akif Tabak</i>	303
Index	327

List of Tables

Chapter 2

Table 1.	Differences Between Digital Marketing and Traditional Marketing.	35
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Chapter 3

Table 1.	Definitions and Sub-dimensions of Agile Leadership.	49
----------	---	----

Chapter 5

Table 1.	Stable, New and Redundant Roles.	95
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Chapter 12

Table 1.	Industry 4.0 Applications in Pilot Sectors.	216
Table 2.	Agility Capabilities.	221

Chapter 13

Table 1.	Data Screening.	246
Table 2.	Factor Loadings.	247
Table 3.	Construct Reliability and Validity.	248
Table 4.	Cross-loadings.	248
Table 5.	Direct Effect.	250
Table 6.	In-direct Effect.	250

Chapter 14

Table 1.	Construct Reliability and Validity (Thailand).	272
Table 2.	Construct Reliability and Validity (Malaysia).	272
Table 3.	AVE Square Root (Thailand).	272
Table 4.	AVE Square Root (Malaysia).	273
Table 5.	Results (Thailand).	274
Table 6.	Results (Malaysia).	275
Table A1.	Data Screening (Thailand).	281

Table A2.	Data Screening (Malaysia).	282
Table A3.	Cross-loadings (Thailand).	283
Table A4.	Cross-loadings (Malaysia).	284

Chapter 15

Table 1.	Number of Production Factories, Trading Companies and Retailers.	287
Table 2.	Descriptive Statistics.	294
Table 3.	Factor Loading and Convergent Validity.	295
Table 4.	Discriminant Validity.	296
Table 5.	Confirmatory Factors Analysis and KMO.	296
Table 6.	Structural Equation Modeling.	296

Chapter 16

Table 1.	Factor Analysis for Organizational Flexibility Dimension.	310
Table 2.	Compliance Indicators of Organizational Flexibility Model.	311
Table 3.	Factor Analysis for Competition Strategies.	312
Table 4.	Coincident Indicators of Factor Model Used in Competitive Strategies.	315
Table 5.	Factor Analysis for Perceived Competitive Advantage.	316
Table 6.	Coincident Indicators of Perceived Competitive Advantage Factor Model.	317
Table 7.	The Descriptive Statistics Related to Variables.	318
Table 8.	Impact Way Coincident Indicators of Organizational Flexibility on Perceived Competitive Advantages.	320
Table 9.	Regression Weights for the First Model.	321
Table 10.	Regression Weights Related to Significant Relations.	322
Table 11.	The Consequences of Goodness of Fit of Significant Relationship Model.	323

List of Figures

Chapter 3

- Fig. 1. Agile Leadership Model in Health Care Services. 54

Chapter 4

- Fig. 1. Total Export and Export in Manufacturing Sector (Thousand US Dollar). 71
- Fig. 2. Export of Manufacturing Products in Terms of Technology Density (Thousand US Dollar). 72

Chapter 5

- Fig. 1. Jobs at Risk Automation in Turkey and European Countries. 95
- Fig. 2. Unemployment Rate, Aged 15 and Over, in Turkey and European Countries. 97
- Fig. 3. Population by Educational Attainment Level, From 15 to 64 years, %, for Turkey and European Countries. 98

Chapter 12

- Fig. 1. The Conceptual Model for Implementing Agility. 219
- Fig. 2. Agile Wheel Reference Model (AWRM). 222
- Fig. 3. Analyzing the Need of a Company to be Agile. 225

Chapter 13

- Fig. 1. Contribution of Thai SMEs. 234
- Fig. 2. Issues in Thai SMEs. 235
- Fig. 3. Theoretical Framework of the Study Showing the Relationship Between Leadership Style, Industry 4.0, Job Satisfaction, Competitive Advantage, Business Sustainability and Organization Performance. 236
- Fig. 4. Leadership Styles. 237
- Fig. 5. Emergence of Industry 4.0. 242
- Fig. 6. Structural Model. 245
- Fig. 7. Measurement Model. 249

Chapter 14

Fig. 1. Theoretical Framework of the Study Showing the Relationship Between Learning Autonomy, Emotional Intelligence, Political Differences, OC and Successful Women Leadership.	261
Fig. 2. Measurement Model (Thailand).	271
Fig. 3. Measurement Model (Malaysia).	271
Fig. 4. Structural Model (Thailand).	273
Fig. 5. Structural Model (Malaysia).	274
Fig. 6. Moderation Effect of OC Strengthen the Positive Relationship Between Emotional Intelligence and Successful Women Leadership (Thailand).	276
Fig. 7. Moderation Effect of Political Differences Weaken the Positive Relationship Between Emotional Intelligence and Successful Women Leadership (Malaysia).	276

Chapter 15

Fig. 1. Apparel Industry Retail Value in Thailand.	286
Fig. 2. Research Model.	292
Fig. 3. CFA.	297
Fig. 4. SEM.	297

Chapter 16

Fig. 1. Research Hypotheses.	307
Fig. 2. Confirmatory Factor Model for Organizational Flexibility.	311
Fig. 3. First Level Confirmatory Factor Model for Competitive Strategies Used.	313
Fig. 4. Second Level Confirmatory Factor Model for Competitive Strategies Used.	314
Fig. 5. Confirmatory Factor Model for Perceived Competitive Advantage.	317
Fig. 6. Model of Impact on Perceived Competitive Advantages of Organizational Flexibility.	319
Fig. 7. Relations Between Variables in the Detailed Model.	320
Fig. 8. Model Showing Significant Relations.	322

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Chapter 1

A Review of Modern Leadership Styles in Perspective of Industry 4.0¹

Hasan Cinnioğlu

Abstract

The current Industry 4.0 era is considered not only as a process that dominates technological developments but also as a process that influences the leadership styles. Management 4.0 is essential for businesses to find and apply the appropriate technologies in the age of Industry 4.0. The leadership styles that business managers will adopt in order to be successful in this process and to survive in an intensely competitive environment can play an important role. At this point, a significant problem arises: identifying leadership styles that will bring success. In this context, the primary purpose of this chapter is to explain the modern leadership styles that business managers can adopt or follow in the age of Industry 4.0. In line with this purpose, the chapter first describes the historical development of leadership, leadership theories and modern leadership styles, such as transactional, transformational, technological, strategic, visionary and agile leadership, and all these concepts are discussed based on the Industry 4.0 perspective.

Keywords: Industry 4.0; transactional/transformational leadership; technological leadership; strategic leadership; visionary leadership; agile leadership

¹The parts of this chapter were produced from doctoral thesis (Cinnioğlu, H. (2018). *The relationship between transactional leadership, transformational leadership, servant leadership, job satisfaction and leaving the job intention: A research on food and beverage enterprises*. Doctoral thesis, Canakkale Onsekiz Mart University, Advisor Associate Professor Lutfi Atay).

Introduction

Globalization, changes and developments in information and communication technologies, increasing competition and the fact that the human element stands out in many areas have resulted in a profound change in the environment, in which businesses operate. Such an environment has forced businesses wishing to achieve their goals to give up their classical management approach and to use modern management techniques. As a result of these developments, the effectiveness of the classical management approach has decreased, which considers businesses as mechanical organizational structures, instead gives importance to effectiveness and efficiency and ignores the working human element or evaluates them as just a cost factor. For this reason, business executives must first create a common mission and vision. Then they must be able to guide or motivate their employees that can be qualified as viewers, for these purposes. In other words, business executives should be leaders rather than managers. Today, the concept of leadership emerges as an issue that has started to become much more critical than before. Because, human resource, which constitutes one of the essential elements of the businesses that desire to achieve a competitive advantage, plays a vital role in the Industry 4.0 era. The creation and sustainability of such a human resource are directly related to leadership (Yüksel & Genç, 2018). Industry 4.0 has brought along several opportunities and threats for businesses at the same time. Leaders should take the best advantage of these opportunities and take measures against threats. In other words, in order to benefit from the advantages of the fourth industrial revolution, business leaders should put this concept at the top of their agenda (Davutoğlu, 2018, p. 4041). The new era called Industry 4.0 is not only a result of the development of new technologies but also a result of a new entrepreneurial mindset (Strev, 2017, p. 99). Creating a digital culture and acquiring the appropriate skills are as crucial as finding or implementing appropriate technologies in the age of Industry 4.0. For this reason, a leadership culture based on Industry 4.0 needs to be developed in enterprises (Oberer & Erkollar, 2018, p. 5). This new mindset and technological developments have inevitably affected leadership theories. The main aim of this study is to examine modern leadership types within the scope of Industry 4.0. In this context, firstly, the concept of leadership, its characteristics and behavioral and contingency leadership theories are explained, and finally, modern leadership styles are discussed.

1. Concept of Leadership

Man is a social being, and people live together as a society. As a result, leadership is a concept that emerges from the need to guide the groups that make up the society (Ercan & Sıgri, 2015, p. 96; İbicioğlu, Özmen, & Taş, 2009, p. 2). The concept of leadership has become even more important with the changes occurring in information and communication technologies, the increase in competition and the human element gaining importance for businesses. Leadership is one of the most important concepts within the scope of management and behavioral sciences, and it is one of the topics that have been researched a lot in

parallel with the changes and developments started in the twenty-first century (Telli, Ünsar, & Oğuzhan, 2012, p. 135). Leadership is a process related to the activities of the leader. When the literature is examined, it is possible to see that leadership is the subject of many pieces of research (Shin, Heath, & Lee, 2011, p. 169). It is also worth noting that researchers define leadership in different ways (Yukl, 2010, p. 20)

Leadership is the power to influence the actions and thoughts of others (Abraham, 1992, p. 2), the ability to motivate and influence group members to contribute to the objectives and effectiveness of the enterprise (House, 1971, pp. 323–324) and the ability to build and develop a team that can outcompete in a competitive environment (Hogan & Robert, 2005). Leadership is defined as enabling one's followers to make emotional and physical efforts or influence and motivate followers to achieve the goals and objectives of the organization (Koçel, 2014, p. 668; Winston & Patterson, 2006, p. 7).

In general, the leader is the person who has the capacity to solve different problems in an organization or between people (Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000, p. 14; Zaccaro, Mumford, Connelly, Marks, & Gilbert, 2000, p. 38), who creates, manages and sometimes changes the organizational culture (Schein, 2004, p. 223), brings people together for a purpose, and has an influence on people thanks to his/her motivation and personal characteristics (Dinçer & Bitirim, 2007, p. 61).

2. Theories of Leadership

It is seen in the literature that many leadership theories have been developed to date. When the historical development of leadership theories is examined, we encounter four main periods: trait theory, behavioral theories, contingency theories and modern theories (Acar, 2013, p. 8). In this chapter, trait, behavioral, situational and modern theories developed based on the above characteristics will be explained.

2.1. Trait Theory

According to the trait theory, the most critical factor that determines the effectiveness of the leadership process is the traits of the leader (Koçel, 2014, p. 676). Researches on the subject between 1930 and 1950 examined different leaders in terms of success and tried to determine which traits of leaders are essential on the way to success. Not only the physical properties of the leaders but also their psychological characteristics were examined (Şahin, 2012, p. 145). According to the trait theory, leadership is not an acquired feature, but an innate feature of the person. These inherent traits of leaders distinguish them from other people. Therefore, the only way to define the phenomenon of leadership is to determine the qualities of this type of person in detail (Pazarbaş, 2012, p. 23). In the trait theory, the physical characteristics of the leader, such as gender, age and height are discussed as well as his characteristics such as his sense of independence and self-confidence, and his inherent creativity and intelligence (Demir, Yılmaz, & Çevirgen, 2010, p. 132).

The most significant criticism of this theory is that sometimes individuals among group members have better characteristics than the leader, but these individuals do not appear as leaders. This is a situation that does not comply with the trait theory. This has made it necessary to focus on different variables in addition to the features mentioned above to understand the leadership phenomenon fully. Another problem with this theory was the difficulty of measuring the characteristics of the leader and the understanding of some particular features different than they are (Koçel, 2014, p. 678).

2.2. Behavioral Theories

Behavioral leadership theory is based on the approach that the main factor that makes the leader effective is the behaviors he/she exhibits in the leadership process, rather than his/her characteristics. The behaviors of the leader (such as his communication with his audience, the delegation of authority, planning and control and determining the goals) are important factors that determine the effectiveness of the leader (Bakan & Büyükbeşe, 2010, p. 74).

The behavioral approach refers to the behaviors that the leader shows while leading in certain situations. Among the studies that have contributed significantly to the development of behavioral leadership theory are the leadership studies conducted at Ohio State University. Within the scope of these studies, leadership behaviors were tried to be determined by conducting many pieces of research about leadership (Koçel, 2014, p. 679). Ohio State University leadership studies have demonstrated two basic leadership behaviors: behaviors that prioritize the individual and behaviors that focus on business. Leaders who prioritize individuals' exhibit behaviors such as taking care of people, caring about their feelings, and taking into account their needs and wishes. On the other hand, leaders who focus on the business display behaviors toward achieving the given task or the specified goal. Performance, procedures or standards are more critical for such leaders than human relations (Yukl, 2010, p. 104).

Other studies that have contributed significantly to the development of behavioral leadership theory are leadership research at the University of Michigan. As a result of leadership studies in many industries, Michigan leadership studies have concluded that similar to studies at Ohio State University, leaders often display behavior that prioritizes individuals or businesses (Bojadjiev, Kostovski, & Buldioska, 2015, p. 213). According to the studies of the University of Michigan, the business-oriented leader regularly supervises the employees in the working environment, uses the punishment as a motivating element and uses its status-based authority. On the other hand, leaders who prioritize individuals do not hesitate to delegate authority and try to improve the working conditions and personal qualities of employees (Koçel, 2014, p. 681).

Based on these two leadership behaviors, Robert Blake and Jane Mouton prepared a matrix called the Managerial Grid. In a Managerial Grid, the behaviors of leaders are grouped in two different dimensions: Concern for Production and Concern for People (Koçel, 2014, p. 682).

Another behavioral leadership theory is the X and Y theory developed by Douglas McGregor. According to McGregor's theory, employees are composed of two different classes with opposite behaviors. Employees in the X group are people who do not like to work, need to be checked continuously and escape responsibility. The employees in-group Y are people who enjoy working, do not need to be controlled and do not escape responsibility. According to this theory, if the leader thinks that the employees have the characteristics of the group X, he/she will be autocratic, and if he/she believes that they have the characteristics of the group Y, he/she will be more democratic (Kozak, 2008, p. 494).

In the model, he developed as a continuation of the studies of the University of Michigan, Rensis Likert has brought the behaviors of leaders under four groups. The leadership variable was handled as trust in the subordinates, the degree of participation of the subordinates, and taking the opinions of the subordinates. According to this model, exploitative/authoritative and benevolent/authoritative leaders generally exhibit business-oriented behavior, while participative and consultative leaders exhibit people-oriented behavior (Sinha, 2008, p. 271).

2.3. Contingency Theories-Situational

The general assumption of the contingency theories is that different situations require different leadership styles. According to this approach, there is no single leadership behavior that can be effective anywhere and anytime (Kılınc, 1995, p. 60). According to this theory, the most appropriate leadership behavior will vary depending on the situation. According to this theory, the most significant deficiency of behavioral theories is that they define business-oriented or people-oriented leadership, but they do not specify in which cases people- or business-oriented leadership will be productive. However, according to the contingency theory, both types of behaviors can be equally effective under certain circumstances (Koçel, 2014, p. 687). There are many different theories within the context of contingency approaches. Some of these can be listed as Fiedler's contingency approach, path-goal approach, Hersey and Blanchard's contingency model, Reddin's three-dimensional leadership model and Vroom-Yetton leadership model (Peretomode, 2012, p. 14).

According to **Fiedler's Contingency Approach**, three different variables determine the effectiveness of leaders: leader-member relations, task structure and the positional power of the leader (Fiedler, 1972, p. 7; Justis, 1975, p. 160). These variables can reveal three different situations for the leader. Among these situations, *very favorable situation* refers to a situation where all three variables are very high; *moderately favorable situation* refers to a situation where one variable is low and other variables are high; and *unfavorable situation* refers to a situation where all three variables are very low (Peretomode, 2012, p. 16). According to Fiedler, who states that there are two different types of leadership for these environments such as task- and relationship-oriented, and there is no single effective leadership style for all conditions (Utech & Heider, 1976, p. 607).

Path-Goal theory is based on the expectancy theory of Vroom, one of the motivation theories. According to this theory, people's behavior is generally influenced

by two factors: the *expectancy* for a particular output to be achieved as a result of a particular behavior, and the *valence* that expresses the individual's benefit or satisfaction (House, 1971, p. 322). Leaders can motivate their employees by influencing their expectancies and valences (Greene, 1979, p. 23; House, 1996, p. 325). In the path-goal theory, leaders generally show four different leadership behaviors (Malik, Aziz, & Hassan, 2014, p. 171): Directive leader, supportive leader, participative leader and achievement-oriented leader.

Hersey and Blanchard's contingency model focuses on two issues related to leadership behavior: task behavior and relationship behavior. Within the scope of task behavior, the leader determines the duties of individuals and how and by which method these tasks should be performed. In relational behavior, the leader continually communicates with individuals, listens to them, encourages them, clarifies their opinions and supports them (Paksoy, 1993, p. 19).

The main point in *Reddin's 3-D leadership model* is managerial effectiveness. Reddin based his theory of 3-D on this basis. Reddin added effectiveness to Blake and Mouton and Ohio State studies and stated that leadership behavior varies on these three pillars. In other words, he added the effectiveness dimension of leadership to the relationship and task dimension. The effectiveness mentioned here is the degree to fulfill the tasks required by the position of a leader. It suggests that the effectiveness of the leader should be measured not by what he does but by what he has achieved or whether he is successful (Ömürgönülşen & Sevim, 2005, pp. 92–93).

The last model we will consider within the context of situational leadership theories is the *Vroom Yetton leadership model*. According to this model, there is no single leadership style that can apply in all situations. A leadership style can only be determined as a result of the information obtained as a result of the analysis (Reber, Auer, & Maly, 2004, p. 416). Vroom and Yetton have suggested decision making and leadership processes that can be applied in different situations. This is a model that suggests the leader's relationship with his subordinates in the decision-making process or the degree of participation of the subordinates (Vroom & Jago, 2007, p. 20).

3. Modern Leadership Theories

Rapid changes in the world order due to globalization have brought many innovations into our lives. In this context, leaders in businesses have started to gain more importance, and a change in the understanding of leadership has emerged and became notable for businesses (Değirmenci, 2012, p. 26). Traditional leadership theories, which are insufficient to explain the concepts of leadership and their behaviors, have been replaced by new leadership theories (Ceylan, Keskin, & Eren, 2005, p. 33). It is seen in the literature that there are many modern leadership styles. However, Industry 4.0, which is based on a superior creative ability, requires participative management, organizational flexibility, a form of leadership that is based on the wishes and needs of individuals, supporting individuals, emphasizing merit and ethical behavior, continually increasing knowledge and putting science into practice. For this reason, modern leadership styles will be

discussed that include such features, while modern leadership types are explained (Yüksel & Genç, 2018).

3.1. Transactional Leader

This leadership theory was introduced by J. M. Burns in the late 1970s and was later developed by different researchers led by B. M. Bass. The basis of this theory is to establish a business-related relationship between the leader and group members and the behaviors that the leader will exhibit while performing the task (Koçel, 2014, p. 695). Bass (1985, pp. 27–28) defines the transactional leadership as:

a leadership style where the leader informs his followers quite clearly about his expectations and also explains what reward they can receive in return for their expected performance and effort.

Antonakis, Avolio, & Sivasubramaniam (2003, p. 265) describe transactional leadership as a process of change based on fulfilling contractual obligations, and generally setting goals, controlling and monitoring the results. In transactional leadership, the duties and powers of the employees, the performance expected from them, the obedience to their leaders, and the awards they will receive as a result of achieving the tasks are clearly stated. In other words, transactional leadership is based on the exchange between the leader and his followers (Eren & Titizoğlu, 2014, p. 279). Generally, different behaviors can arise between the leader and group members who come together to do a specific job in this type of leadership. According to Bass (1999), these behaviors can take place in four different dimensions: contingent reward, active management by exception, passive management by exception, and laissez-faire leadership (Antonakis et al., 2003, p. 265; Bass, 1999, p. 11).

In the rewarding dimension, the leader rewards the employees as a result of their performance. These awards can have material or moral dimensions. Therefore, employees believe that they will be rewarded if they fulfill the expected goals (Avolio & Bass, 2002, p. 2; Bass, 1990, p. 22; Kareem, 2016, p. 10; Ravazadeh & Ravazadeh, 2013, p. 166; Yavuz & Tokmak, 2009, p. 19). According to Bass (1985, p. 34), if transactional leaders want to gain efficiency from their followers, they can reward in two different ways: praising a job well done and increasing wages or promotions. Management by exception, which is generally less useful than other practices, may be necessary in some cases. Management by exception is usually applied when the expected performance is not realized. Management by exception is divided into two as active and passive. In the active management by exception, the leader monitors the performance of the employees and makes corrective decisions by making interventions when necessary (Avolio & Bass, 2002, p. 3; Kareem, 2016, p. 10; Koçel, 2014, p. 695). It is important that the information should be distributed to employees by leaders with an accurate perception of knowledge for corrective decisions (Akkaya & Üstgörül, 2020, p. 53). The leader focuses his attention on irregularities, errors and deviations from standards, complaints and failures (Bass, 1985, pp. 33–36; Karip, 1998, p. 449).

In the case of passive management by exception, the leader waits for the problems to arise in the business and does not take any measures to prevent the problems. He/she only receives solution suggestions from employees (Bass, 1990, p. 22; Bass, 1999, p. 11; Yavuz & Tokmak, 2009, p. 19). In passive management by exception, the leader does not interfere with problems until they become severe and believes that the problem must become chronic before attempting to solve the problem and advocates the belief of “if it ain’t broke, don’t fix it” (Bass, 1985, pp. 33–36; Karip, 1998, p. 449).

In Laissez-Faire leadership, which is the most passive form of leadership styles, the leader generally frees the employees about goals and performance standards and does not interfere in any way. The leader avoids interfering or making decisions when there are essential issues in the business. He/she usually does not appear when he/she is needed (Avolio & Bass, 2002, p. 4; Bass, 1990, p. 22; Koçel, 2014, p. 695; Ravazadeh & Ravazadeh, 2013, p. 166). Transactional leaders can successfully carry out many activities such as improving the effectiveness of the organization, avoiding unnecessary risks, achieving the goals and objectives and increasing the motivation of the employees (McCleskey, 2014, p. 122).

3.2. Transformational Leader

The transformational leadership concept, first introduced in Dawston’s (1973) Rebel Leadership, was later developed by James McGregor Burns in 1978 (Eraslan, 2004, p. 4). According to Burns, transformational leadership is a leadership style for motivating the followers using economic, political or similar forces and values to achieve the goals they form independently or mutually (Morçin & Çarıkçı, 2016, p. 99). Unlike other leadership styles that focus on logical processes, transformational leadership focuses on emotions and values (Akbar, Sadegh, & Chehrizi, 2015, p. 3490).

The transformational leader is the person who brings the organization to superior performance by performing change and innovation in an organization. To achieve this, he must have a leading vision and ensure that his followers adopt this vision (Koçel, 2014, p. 696). The transformational leader provides innovation, improves performance, creates mission and vision and ensures the personal development of his followers (Bass, 1985, p. 33). Yukl (1999) defines transformational leadership as:

a process of creating a commitment to realize the mission and goals of the organization by making some changes in the attitudes and behaviors of the members of the organization. (Kent & Packianathan, 2001, p. 136)

Defining transformational leadership as a type of leadership that delegates authority and determines organizational goals with its followers, Bass (1990, p. 21) states that transformational leadership emerges when a leader expands and raises the interests of the employees, raises the group’s awareness of goals and mission and creates a sense that he/she keeps the organization’s interests in