

ORIGINAL ARTICLE

Authenticity in educational leadership for health and educational SMEs, through the tomorrow age theory and structural equation modeling for health

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ABSTRACT

Background: The economic record in the world has affected all industries, including the construction industry, forcing them to reduce costs while maintaining quality based on standards. Managing these challenges requires a change in the leadership and management style of construction companies. Authentic Leadership is a method in which leaders are genuine, self-aware, and transparent and emphasize profit and share price over people and ethics. In this paper, we study the authenticity in educational leadership for construction educational Small & Medium Enterprises (SMEs), through the 5th wave theory and structural equation modeling. **Methods:** In this paper, structural equation modeling with partial least squares (PLS) approach examines the presented model. The sampling method is enumeration, data is collected by questionnaire, and the collection method is field research. The target society of this section is senior managers, leaders, and owners of 42 construction educational (SMEs) and building mass production in Guilan and Mazandaran provinces (in North Iran besides the Caspian Sea) with more than 15 years of experience. **Results:** Examination of research's hypothesis shows that preconditions of authentic leadership, including organizational structure, emotional quotient (EQ), relationship-oriented organizational culture, rules and regulations and ethical reasons of the leader affects enormously authentic leadership. In addition, authentic leadership affects consequences such as staff bullying, extra-role behavior, professional ethics, burnout, job productivity, innovative product, self-control, mindfulness and optimism of the employees. **Conclusion:** This research shows that the role of authentic leader is undeniable in increasing the employees' innovation and productivity through unique mechanisms.

Key words: authenticity in educational leadership, construction educational Small & Medium Enterprises, the 5th wave theory, structural equation modeling, Small & Medium Enterprises

INTRODUCTION

Nowadays, because of an almost total downturn in all industries, constructors are trying to reduce costs and

quality accordingly, while a house is not just a shelter, but it should be an appropriate living place, in which health and life quality of people should be considered.^[1] Obviously, lack of expertise and management in the field

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of construction in determiners and constructors leads to inexperienced changes in building specifications in order to achieve more benefits, without any control.^[2,3] On the other hand, imposed penalties by the municipality cannot be used as deterrent for offending constructors. As long as building construction is the main financial resource for municipalities, defects will be disregarded by paying penalties. So the first step for respecting safety rules is to make obligatory production, distribution and use of standard materials.^[4] All of these challenges are considered as the results of lack of a homogenous structure and proper management in companies, which are going on in their traditional way. As building construction projects are so heterogeneous and their characteristics are dependent on the size, complexity and time of the project, leadership style for these types of activities is highly effective in their success.^[5] Based on this fact, Müller and Turner found out that various models of leadership should be applied to projects by considering their characteristics. Because of this, we have many articles about leaders' behavior in different situations.^[6] It's obvious that one single method of leadership cannot be convenient for all circumstances and there should be a rational relation between the situation and the leadership style. This research aims to introduce a modern and efficient leadership style for construction industry to manage its challenges, in a way that choosing the right method, based on the leader's character, team and followers would be the main factor of success.^[6]

The "Authentic Leadership" theory was proposed for the first time in 1990 in the field of sociology and education.^[7,8] This theory is highly effective for the inspiration and deployment of employees' psychological capacity,^[9] and helps the whole organization to improve the personnel's emotional security.^[10] Nowadays, Authentic leadership is a method in which leaders are genuine, self-aware, and transparent.^[11] and deployment of positive characteristics in the field of leadership.^[12] Leadership style and psychological job demands affects the situation of awareness and the willingness to take a risk.^[9,13] An authentic leader can inspire loyalty and trust in her employees by consistently displaying who she is as a person, and how she feels about her employees' performance.^[6,14] Based on definitions, the authentic leader is aware of values, knowledge, ethical principles and beliefs of him/herself and the whole team.^[15] Also, he/she is trusty, optimistic, hopeful, and moralist.^[15-18] In literature, investigate the effect of Authentic Leadership on employee behaviors and productivity.^[17-35] In this regard, we will identify the necessities and consequences of authentic leadership in construction companies to introduce a road map for modern managers.

Authentic leaders's 4 main characteristics

Self-awareness

Self-awareness is the basis of authentic leadership and wants to show the interaction of an individual with his/her world around.^[16] In authentic leaders with a high level of self-awareness, both references improve their effectiveness,^[36] but non-authentic leaders act in a way that the self-awareness of their followers are destroyed, so they are forced to accept a leader with altered values; this acceptance which is derived from ambiguity and contradiction in the behavior of leader toward their followers, will lead to hypocritical behavior within employees.^[20] One of the most basic features of an authentic leader is that believe in some valuable aims and goals for promoting which they accept the role of the leader.^[19]

Balanced processing

This means that authentic leaders process all related data before decision-making, ask for comments and challenge themselves in various situations.^[37] Authentic leaders deploy informal methods and others' comments in analyzing data and then making decisions which leads to cultivating creative ideas in the organization. This means that authentic leaders are not necessarily special people with different characteristics. They could be similar to other leaders and followers while they are committed to their values, beliefs and goals, not in a hypocritical way, but as an inner process based on their ability to analyze and experience.^[38]

Internal aspects of ethics

This point shows the behavior of the leader, conducted by his/her inner values and ethical criteria rather than external pressures. An authentic leader, as the main decision-maker of the organization, is committed to some principles which aim to get more benefits for employees, the organization and society.^[37] This feature emphasizes the fact that a leader's behavior is an internal ethical criterion and it's not affected by external factors such as colleagues, organization and society.^[16] Their role as a leader is to improve and develop models of self-consciousness, internalization of ethics, transparency in relations, psychological capacities improvement and a positive atmosphere.^[39]

Transparency in relations

This aspect is actually the presentation of authenticity to others, which improves mutual trust by sharing data, expressing true thoughts and feelings and demonstrating these behaviors.^[16] Transparent relations with leaders is the sign of self-confidence and self-disclosure and show that how much is he/she going to improve their open relationship with employees in order to know their ideas, comments and challenges in the near future. This situation is a good opportunity for positive aspects such

as optimism, hope and self-confidence to be developed and grow the leader and followers at the same time.^[34]

Partial least squares (PLS) approach

Structural equation modeling with PLS approach has been used to investigate the proposed model in this paper. PLS regression generalizes and combines features from principal component analysis and multiple regression to predict or analyze a set of dependent variables from a set of independent variables or predictors. This prediction is achieved by extracting from the predictors a set of orthogonal factors called latent variables which have the best predictive power.^[40]

Regarding that a meta-analysis-based method is designed for preconditions and consequences of authentic leadership in Moallem Building Investment Co. in this section the method will be examined in the statistical society of construction companies. The analysis level in this research is organizational, senior managers and owners of construction companies are chosen as the statistical society. The target of the research is active companies in the field of mass production and villa towns in Guilan and Mazandaran province and in this regard, selected companies have more than 15 years of experience in this field. So, 42 companies are selected as the statistical society and sampling is done by headcount. Data are collected by questionnaire and the data collection tool is field research.

The validity of data collection is examined with validity of content, convergent validity and divergent validity. In the part of content validity, the data collection tool is adjusted by the comments of experts. The most common measurement used for internal consistency is Cronbach alpha and composite reliability, in which measures the reliability based on the interrelationship of the observed items variables. In PLS-SEM, the values are organized according to their indicator's individual reliability.^[41] The values range from 0 to 1, where a higher value indicates a higher reliability level. Convergent validity is the assessment to measure the level of correlation of multiple indicators of the same construct that are in agreement. To establish convergent validity, the factor loading of the indicator, composite reliability (CR) and the average variance extracted (AVE) have to be considered.^[41] The value ranges from 0 to 1. AVE value should exceed 0.50 so that it is adequate for convergent validity.^[41-43] Discriminant validity is referring to the extent to which the construct is actually differing from one another empirically. It also measures the degree of differences between the overlapping construct.^[41] The discriminant validity can be evaluated by using cross-loading of indicator, Fornell & Larcker criterion. By looking at the cross-loading, the factor loading indicators on the assigned construct have to be

higher than all loading of other constructs with condition that the cut-off value of factor loading is higher than 0.70.^[41-43]

RESULTS

Considering the research's model, hypothesis in this section is examined and analyzed in standard estimates and significance of digits situation. Before hypothesis examination, Cronbach's alpha coefficient, combined reliability coefficient, AVE (convergent validity) and Fornell-Larcker index (divergent validity) are reviewed, then research's hypothesis is going to be assessed (Table 1). Divergent Validity is one of the appropriate indexes for checking model fitness, so Fornell-Larcker index is applied. This index shows the relationship between one structure and its indicators compared to its relationship with other structures, so divergent validity of a model will be acceptable when the structure has more interaction with its own indicators compared to others (shown number in the diagonal of the matrix should be bigger than numbers in the same column as Table 2). So if the main diagonal of the matrix has bigger digits in comparison with the digits on its left or below, fitness check procedure can go on to the next steps. For hypothesis examination, model is used in standard estimates and significance of digits situation; in standard estimates situation, all coefficients are homogenous, it means that they are on the same scale and comparable. If this amount is between the latent variable and the observed one, it would be considered as the correlation coefficient or factor loading. While if it is assumed between two latent variable, they will be assessed as path coefficient or standardized regression coefficient (Beta). Factor loadings of the model in standard estimates situation describes effect of each variable in defining variance of variable scores or main factor. In standard estimates situation, comparison between observed variables who explains the latent variable is possible. Results of model examination in standard estimates situation affirms a meaningful relationship between variables in the model. Model's output in standard estimates situation is shown in Figure 1.

Model examination in significance is done with PLS approach. Model estimation in this situation is also called Student's *t*-test; this coefficient describes *t* test in significance situation which is used for relations' significance assessment. In this way, *t*-value between +1.96 and -1.96 shows insignificant coefficients, so hypothesis is rejected, while results in this interval are significant. As shown in Figure 2, all coefficients are significant, so model examination in the significance of digits situation is the basis of acceptance or reject of the hypothesis. Achieved results from examinations are summarized in Table 3.

Table 1: Convergent validity and reliability index

Research model variables	Cronbach's alpha index	Combined reliability coefficient	Mean variance extracted
Organizational structure	0.884	0.890	0.734
Emotional quotient	0.847	0.711	0.494
Relationship-oriented organizational culture	0.761	0.721	0.497
Rules and regulations	0.780	0.821	0.607
Ethical reasons of the leader	0.882	0.926	0.807
Employees' bullying	0.767	0.804	0.585
Extra-role behavior	0.757	0.752	0.506
Work ethics	0.767	0.856	0.667
Work burnout	0.798	0.833	0.630
Work productivity	0.839	0.898	0.746
Innovative products	0.885	0.929	0.813
Self-control	0.867	0.918	0.789
Mindfulness	0.707	0.809	0.591
Optimism	0.715	0.722	0.493

**Figure 1.** Conceptual model of the research in standard estimates situation.**Figure 2.** Conceptual model of the research in the significance of digits.

Negative digits related to employees' bullying and burnout affirms that the stronger is an authentic leader, the less will be employees' bullying and burnout. Effects of all preconditions on authentic leadership is positive, significant and directly related, within which, ethical reasons of the leader are the most effective (0.331)

factor on the authentic leadership. On the other hand, leader's effectiveness is proven on all consequences, within which self-control (0.627) and employees' optimism (0.555) are the most affected ones.

DISCUSSION

The 5th wave/tomorrow age theory or theory of comprehensive everything: (Invented, introduced, and developed by Hamid Doost Mohammadian since 2010). After passing the four waves (ages) until 1970 various businesses could affect and improve educational technologies, and information technology (IT) but since we reached the 1970s the Internet of Things (IoT)-education technologies became able to change and improve the various businesses, and even impact our lives. Besides this, they can change the global policy from traditional methods to sustainable modern innovative digital productive methods. IoT based educational economy (business) make this learning business procedure faster, safer with higher productivity even possible. Edu 5.0 concept changes the educational paradigm from traditional to modern with huge productivities in different aspects of life to get prepared for the future concern. The 5th wave/tomorrow age theory is illustrated in Figure 3, also, the histomap of 5th wave/tomorrow age theory or theory of comprehensive everything is shown in Figure 4.

These technologies would create smart education. however, barriers cause challenges to apply these technologies and create modern areas like e-learning and Massive Open Online Courses (MOOCs). It is required to indicate these barriers and find out solutions to apply them and change humans' life to maintain the world. Based on the 5th wave theory and related theories, models and concepts, today's challenges and tomorrow's

Table 2: Divergent validity indicators with Fornell & Larcker method

	Work ethics	Work productivity	Self-control	Optimism	Ethical reasons of the leader	Mindfulness	Extra-role behavior	Authentic leadership	Organizational	Burnout	Organizational culture	Employees' bullying	Rules and regulations	Innovative product	Emotional quotient
Work ethics	0.817	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Work productivity	0.545	0.864	-	-	-	-	-	-	-	-	-	-	-	-	-
Self-control	-0.179	-0.048	0.888	-	-	-	-	-	-	-	-	-	-	-	-
Optimism	0.022	0.130	0.661	0.702	-	-	-	-	-	-	-	-	-	-	-
Ethical reasons of the leader	0.344	0.324	-0.063	0.003	0.898	-	-	-	-	-	-	-	-	-	-
Mindfulness	0.003	0.048	0.305	0.530	0.080	0.769	-	-	-	-	-	-	-	-	-
Extra-role behavior	0.617	0.410	-0.044	0.118	0.231	0.022	0.711	-	-	-	-	-	-	-	-
Authentic leadership	0.173	0.295	0.627	0.555	0.085	0.230	0.197	0.598	-	-	-	-	-	-	-
Organizational structure	0.201	0.263	-0.038	-0.032	0.630	0.128	0.071	0.081	0.857	-	-	-	-	-	-
Work burnout	0.601	0.809	-0.076	0.150	0.426	0.077	0.460	0.243	0.305	0.794	-	-	-	-	-
Organizational culture	0.119	0.081	0.165	0.147	0.074	0.033	0.184	0.262	-0.085	0.105	0.444	-	-	-	-
Employees' bullying	0.520	0.470	-0.007	0.073	0.344	0.020	0.565	0.141	0.221	0.467	0.121	0.765	-	-	-
Rules and Regulations	0.326	0.304	0.031	0.073	0.348	0.046	0.406	0.161	0.085	0.322	0.228	0.416	0.779	-	-
Innovative product	-0.129	-0.076	0.848	0.688	-0.031	0.341	-0.021	0.735	-0.005	-0.051	0.139	-0.019	0.061	0.902	-
Emotional quotient	0.168	0.116	-0.009	0.055	0.528	0.100	0.251	0.065	0.398	0.204	0.041	0.225	0.296	0.069	0.627

crises have been discussed that in our world of that technology development and rapid growing made ever-quicken change, the human mind is threatened by shattering (Figures 5 and 6). Proper solutions and policies could make people to deal with new challenges for the future education. Prof. Doost as theoretician of

the 5th wave theory believes that sustainability has four more pillars than the three from United Nations (UN). He contends that seven pillars are required to develop sustainability: environment, economic, social, educational, cultural, technical, and political aspects form educational sustainability. These aspects make a puzzle

Table 3: Results of hypothesis examination

No.	Hypothesis	Standard estimates coefficient	Significance of digits coefficient	Result
1	Organizational structure has a meaningful effect on authentic leadership of construction companies.	0.126	2.364	confirmed
2	Emotional quotient has a meaningful effect on authentic leadership of construction companies.	0.321	2.847	confirmed
3	Organizational culture has a meaningful effect on authentic leadership of construction companies.	0.251	3.005	confirmed
4	Rules and regulations has a meaningful effect on authentic leadership of construction companies.	0.112	2.915	confirmed
5	Ethical reasons of the leader has a meaningful effect on the authentic leadership of construction companies.	0.331	3.621	confirmed
6	Authentic leadership has a meaningful effect on employees' bullying in construction companies.	-0.141	2.006	confirmed
7	Authentic leadership has a meaningful effect on employees' extra-role behavior in construction companies.	0.197	3.164	confirmed
8	Authentic leadership has a meaningful effect on employees' work ethics in construction companies.	0.173	4.652	confirmed
9	Authentic leadership has a meaningful effect on employees' burnout in construction companies.	-0.243	2.654	confirmed
10	Authentic leadership has a meaningful effect on employees' work productivity in construction companies.	0.295	2.987	confirmed
11	Authentic leadership has a meaningful effect on product innovation in construction companies.	0.735	2.303	confirmed
12	Authentic leadership has a meaningful effect on employees' self-control in construction companies.	0.627	2.173	confirmed
13	Authentic leadership has a meaningful effect on employees' mindfulness in construction companies.	0.230	2.177	confirmed
14	Authentic leadership has a meaningful effect on employees' optimism in construction companies.	0.555	4.394	confirmed

in which all the segments are directly or indirectly related to each other. Figure 7 presents seven pillars of sustainability model (7PS model) and its classification. This model is focusing on 7PS model as below: Fundamentally, we are settling in edge of future that confronts future shocks including tomorrow's educational challenges, new businesses' barriers, modern training style risks, and human competencies challenges and so on. The below figure presents the point that we are perched on: As in previous section was declared, solutions are required to deal with ubiquitous and digitalization challenges to be able to apply them in different educational businesses and services towards creating modern areas.^[44-46] The 5th wave/tomorrow age theory or theory of comprehensive everything could be a comprehensive strategy to find out solutions to deal with such challenges, even to tackle future shocks for mapping the future education.

These days, the world confronts global challenges as well as future shocks, which threaten human beings and the future of the world for living. So, it is vital to deal with them to maintain the nature and humanity. Figure 2 shows the 5th wave/tomorrow age theory or theory of comprehensive everything, illustrates the ages, revolutions, societies, industries, and SMEs (from SME

3.0 to SME 5.0) that we had passed and the point that we are on which has been invented, introduced, and developed by Prof. Doost.^[47-55] The 5th wave theory is about proceeding of future of Industry 4.0 which called Industry 5.0 as a symbol of western culture by Germany and future of Society 5.0 which called Society 6.0 as symbol of non-west culture evaluated by Japan Government and edge of tomorrow which is mentioned from 2020 to 2030 has invented, introduced, and developed by Prof. Doost for the first time in 2010 and improved between 2017-2019. Based on this theory, modern educational SMEs that are not only concerned on business and marketing, but also social responsibility like corporate social responsibility (CSR) strategies, being environmentally friendly, improving quality of livability and life. Generally, the 5th theory is a tool to achieve Blue-Green sustainability and required to deal with future challenges, even to maintain the world for future. This education 5.0 is a concept though the 5th wave theory which is a kind of sustainability with seven pillars including economic, environmental, social, cultural, technical, education and political sustainability based on being to make the word as a better place for living.^[52,56] The Figure 7 presents the evaluation of 5th wave. Prof. Doost believes that sustainability has more pillars than the three abovementioned ones. He

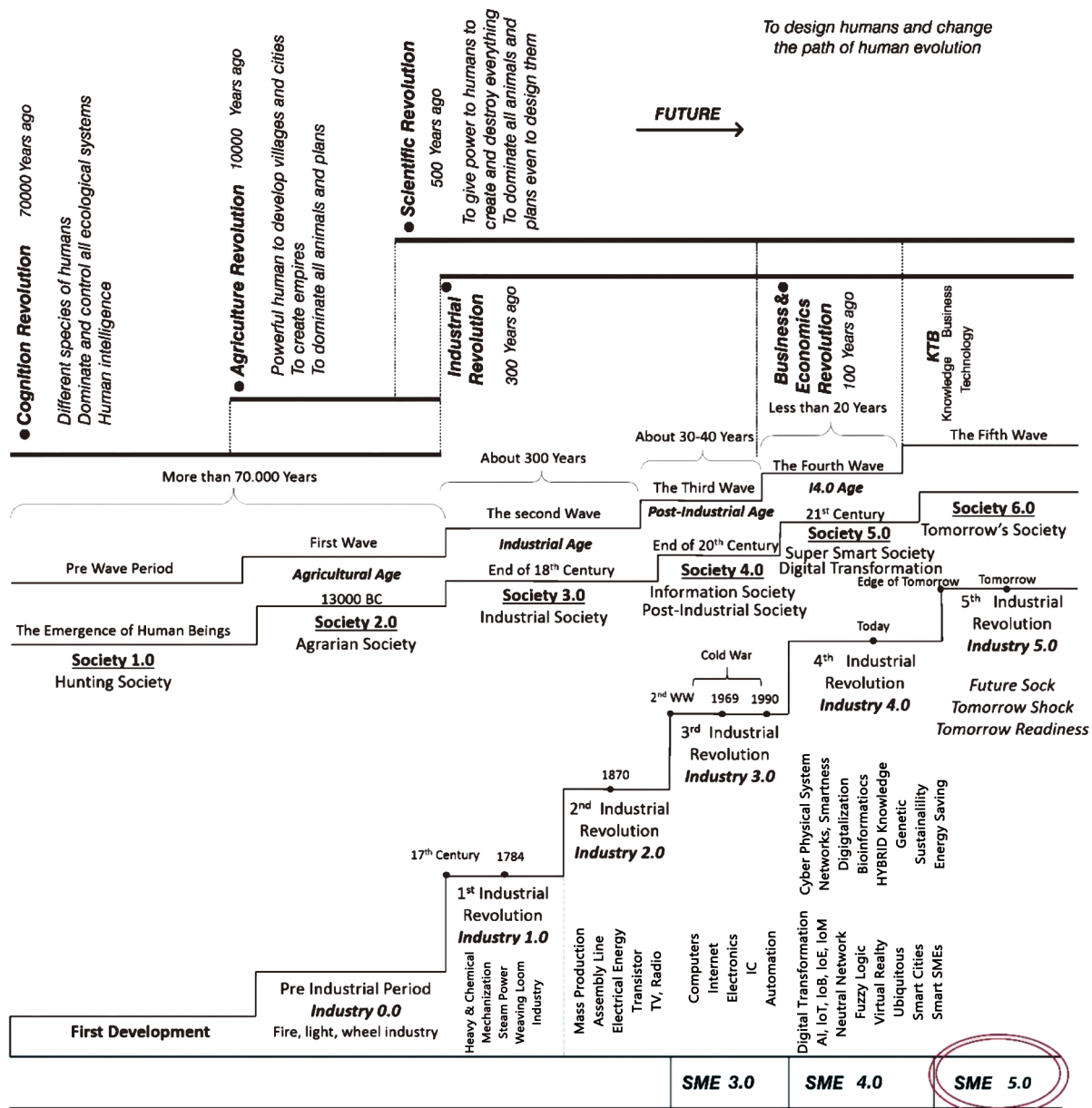


Figure 3. The 5th wave/tomorrow age theory. IC: information communication; AI: artificial intelligence; IoT: Internet of Things; IoB: Internet of Behaviors; IoE: Internet of Everything; IoM: Internet of Manufacturing; SMEs: Small & Medium Enterprises. Reproduced with permission from references [48,50–55,62].

contends that seven pillars are required to develop sustainability: environmental, economic, social, educational, cultural, technical, and political aspects form sustainability. These aspects make a puzzle in which all of the segments are directly or indirectly related to each other. Figure 7 presents 7PS model and its classification. This model is focusing on 7PS model as (1) economy, (2) social, (3) environmental, (4) political, (5) cultural, (6) educational which is our focus in this paper, and (7) technical.

To achieve sustainability all these seven parameters should improve approximately equally. With this model, we can calculate the sustainability of each company, business, city, or area. Sustainability has occurred when the figure is more regular. In addition, the ratio could influence the achievement of sustainability. Generally, the blue shape is more sustainable than the red one. Not only is the blue one's ratio higher but also the blue one's regularity is more proper than the red one. These two reasons make the blue shape which is an SME before the coronavirus disease 2019 (COVID-19) more

SME	Society	Industry	Waves/Ages	Revolutions			Year
	Hunting Society Society 1.0		Pre wave period	-)Cognition Revolution -)To Dominate and Control all ecological System -) Human Intelligence	The Emergence of Human Beings	-)First Development -)Different Spices of Human	70000 Years ago
	Society 2.0 Agrarian Society	-) Pre Industrial Period -) Industry 0.0 -) Fire, Light, Wheel Industry	-)The First Wave -)Agricultural Age	-)Agriculture Revolution -) Powerful Human to Develop Urban Areas -) To Create Emprises To Dominate All Animals, Plans and planets			13000 Years ago
				-) Scientific Revolution -)To Give Power to Humans to Create and Destroy Everything In the Planet -) Just one Human Specie			500 Years ago
	Industrial Society Society 3.0	-)1 st Industrial Revolution -) Industry 1.0	The Second Wave Industrial Age	Industrial Revolution			17 th Centaury
		-) Heavy and Chemical Industry -) Mechanization -) Steam Power -) Wearing Loom					1784
		-)2 nd Industrial Revolution -) Industry 2.0 -)Mass Production -)Assembly Line -) Electrical Energy -) Transistor, TV, Radio					1870
SME 3.0	-) Society 4.0 -) Information Society -) Post Industrial Society	Industry 3.0 • Computers • Internet • Electronics • IC • Automation	-) The 3 rd Wave -) Post Industrial Age	-)Business and Economics Revolution1 ↓ Future	To Design Humans and Change the Path of Human Evolution		2 nd WW 1969 1990 2000
SME 4.0 Smart SME	-)Society 5.0 -) Smart Citizen	The 4 th Industrial Wave • AI, IoT, IoB, IoE • IoM, Neutral Network • Fuzzy Logic • Ubiquitous • Networks	-) 4 th Industrial Wave -) Digitalization Age -) Digital Transformation -) Virtual Reality -) Cyber Physical Systems -) Smartness -) Digitalization	-)Business and Economic Revolution 2 -)Hybrid Organization -)Cloud HR -)Greenhouse Gases Reduction -)Energy Saving -) CSR	Bioinformatics Hybrid Knowledge Genetics Sustainability		2006 2011 Today
SME 5.0 SMEs for Tomorrows' Shocks	Society 6.0	Industry 5.0	-) The 5 th Industrial Wave -) Tomorrow Age		KTM Model Future Shocks Tomorrow Shocks	Edge of Tomorrow	Tomorrow

Figure 4. Histomap of 5th wave/tomorrow age theory. IC: information communication; AI: artificial intelligence; IoT: Internet of Things; IoB: Internet of Behaviors; IoE: Internet of Everything; IoM: Internet of Manufacturing; SMEs: Small & Medium Enterprises; CSR: corporate social responsibility. Reproduced with permission from references [48,50–55,62].

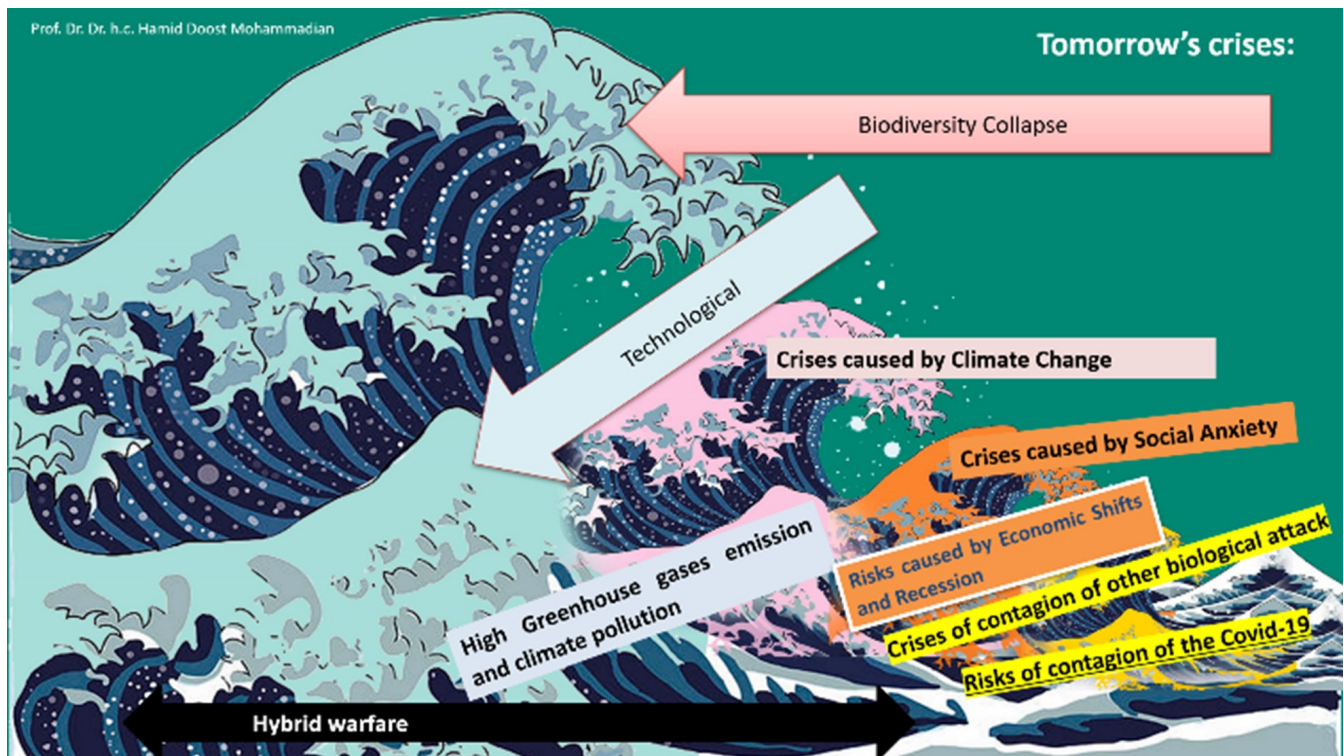


Figure 5. Tomorrow's crises at the edge of tomorrow. Reproduced with permission from references [63–65].

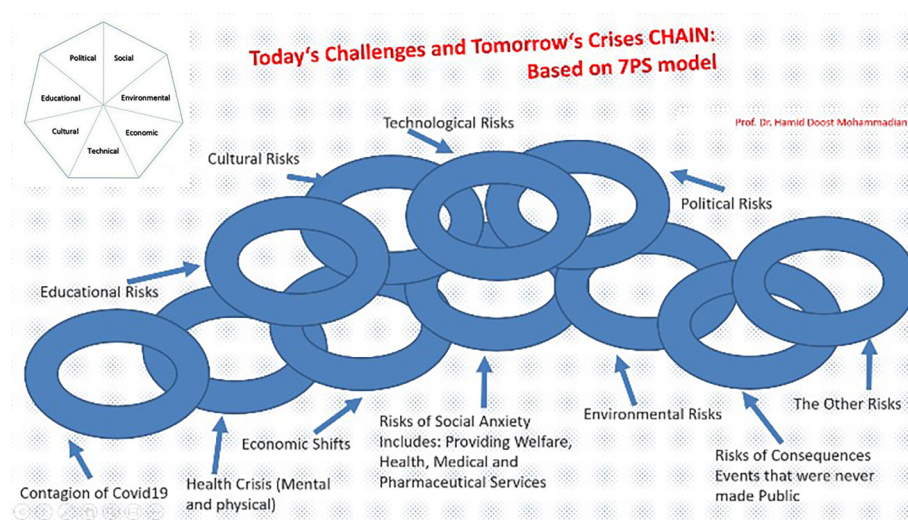


Figure 6. Tomorrow's crises chain at the edge of tomorrow. 7PS: seven pillars of sustainability; Covid19: coronavirus disease 2019. Reproduced with permission from references [63–65].

sustainable than the red one which is the same SME after COVID-19. In other words, approaching a high ratio of sustainability and developing approximate equability are required to achieve sustainability and sustainable development.

i-Sustainability Plus theory

i-Sustainability Plus theory has been invented, introduced, and developed by Prof. Doost in 2010-2019

and has been evaluated. Figure 8 are presented the 3D Socio-Eco-Environment SMEs model: an improved between 2017-2019, which is made of the trinity (1) open innovation, (2) sustainability and (3) future of 4.0 smart high technologies *e.g.* digitization and smartness. This construct which is including the idea of sustainable smart education is probed as a new idea of academic society and innovative ecosystem in tomorrow's schools, universities, and societies. The idea of *i-Sustainability*

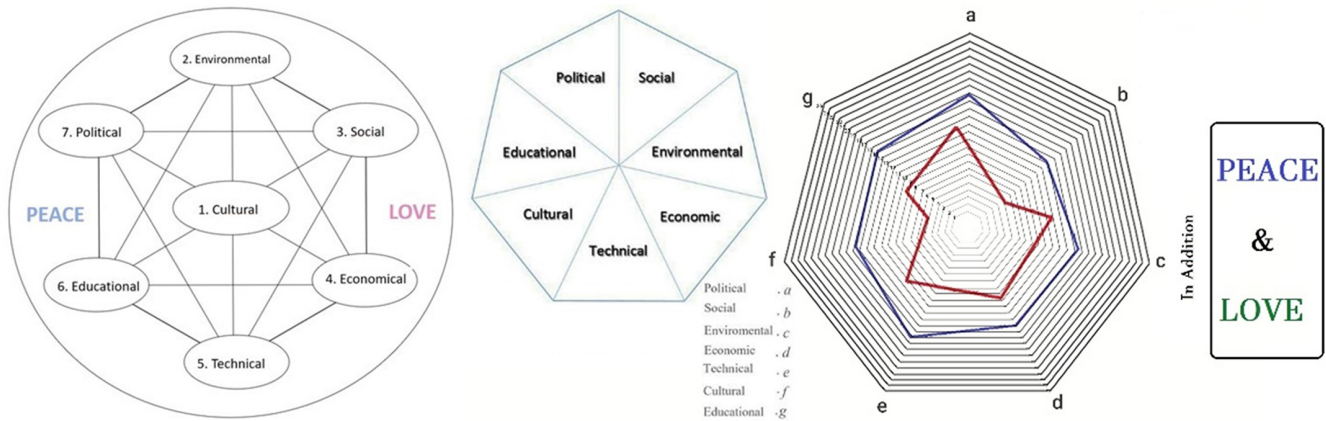


Figure 7. Seven pillars of sustainability model with priority and connections (7PS model). Reproduced with permission from reference [66,67].

Plus theory is derived from the combination of real life, high technology, and virtual reality for which again digitization is a prerequisite. In recent decades, digitization, smartness, innovation and sustainability are remarkable drivers of sustainable development.^[57–59]

development drivers, to reach a higher quality of life. These aspects make a puzzle that all of the segments directly or indirectly are related to each other.

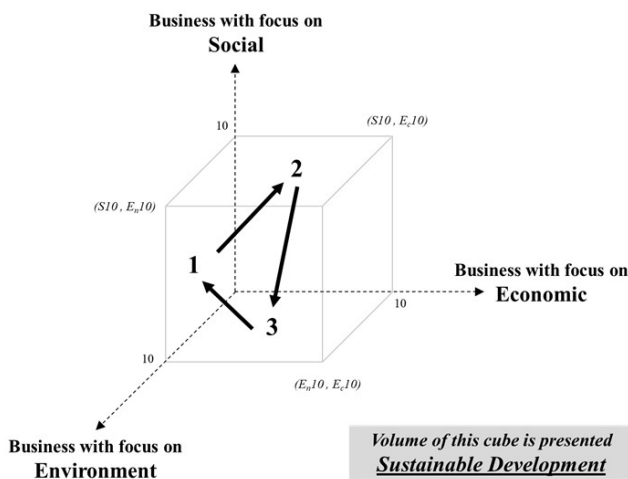


Figure 8. 3D Socio-Eco-Environment SMEs indexes model. Reproduced with permission from references [48,50–55,62].

Figure 9 is presented the 7PS model and i-Sustainability Plus theory, which is made of the trinity of open innovation, 7PS model and the future of the 4.0 smart high technologies such as IoT-business. Based on the traditional model for sustainability, sustainability has three pillars (environment, social and economy) but Prof. Doost believes that sustainability has more pillars than these three ones. Seven pillars are required to develop sustainability. Environment, economic, social, educational, cultural, technical, and political aspects are formed sustainability. This construct explores ideas derived from the combination of real life, high technology, and virtual reality, remarkable sustainable

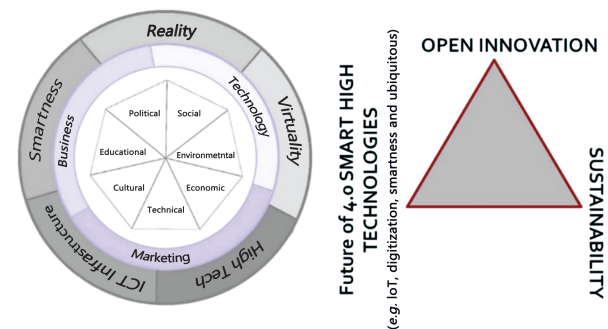


Figure 9. i-Sustainability Plus theory. ICT: information communication technology; IoT: internet of things. Reproduced with permission from references [68–71].

Figure 7 is presented 7PS model and its' classification. To achieve educational sustainability all these seven parameters should improve approximately equable. Sustainability has occurred when the figure is more regular. Generally, high quality of livability and life, health, and prosperity with social justice, being environmentally friendly and preserving the earth's capacity to support future life are the main aims of the sustainable development. Sustainable development is one the most important and controversial phenomena of recent decades. It is concerned with strategies, policies and efforts utilized to improve human well-being and to maintain the world for future generations through the management of human environmental systems. Sustainable development, based on three indicators social, economic, and environmental sustainability is a solution to provide basic human needs, create environmental development and protection, achieve equality, ensure social self-determination and cultural diversity, and preserve ecological integrity to improve the quality

of human life (Figure 8). Regarding mapping and having a sustainable future, the 5th wave and i-Sustainability theories make us able for forecasting, prevent and facing.

To the Post Sustainability Impact of global crises like the contagion of COVID-19 on education, today's educational challenges and tomorrow's educational shocks with using open innovation, implementation, development and applying these technologies to provide a Blue-Green sustainability and Digital readiness and recovery strategies with CSR approach. (e.g. for the SME 5.0 in Industry 5.0 and the super intelligent society entitled Society 6.0^[51,52,60,61]) for mapping our future sustainability.

Doost cultural theory (DCT)

As we know based on the 5th wave theory, education and culture have important roles like a backbone that is why theory says the combination of Industry 5.0 and Society 6.0. This theory is to help people deal with cultural differences and achieve cultural adaptation. From Figure 10, DCT theory consists of three quadrants: Knowledge, cultural adaptation, and cultural differences. The first quadrant of knowledge includes visible culture and invisible culture, for example, language and food belong to visible culture, while religion and psychology are invisible culture. When it comes to cultural differences, there are four most famous models from scholars like listed in Figure 10, they are Hofstede, Victor, Trompenaars and Hall, and the Globe. The last quadrant refers to cultural adaptation, all factors from 7PS model are included. In addition to the 7PS factors, competencies like communication, digital transformation, legal issues, and intercultural transformation should also be considered. Together those three quadrants form a cubic, the data analysis will be conducted by using multiple regressions and a unilneal calculation is done on a 3D level based on DCT theory.^[62–71]

CONCLUSION

Researches confirm that authenticity has both personal and situational aspects. Regarding that authentic leadership can meaningfully reduce problems such as a decrease in employees' innovation, values' ignorance, failure justification, etc. through unique mechanisms, it plays an essential role in the organization's development. In addition, strong authentic leaders increase the effectiveness of senior managers and consequently their employees, so their role in personal excellence is undeniable.

Investigating the selected companies in the construction industry reveals that facilitating access to information at

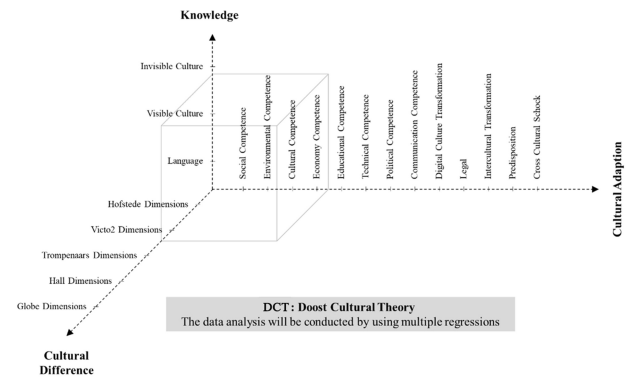


Figure 10. Doost cultural theory (DCT). Reproduced with permission from references [68–71]

work and removing the unnecessary barriers in organizational communication between employees and leaders, provides opportunities to communicate based on clear and exact information as much as possible. Therefore, authentic leadership can grow and develop individual and organizational capacities and create a positive and inspiring work environment that improves organizational culture, reduce organizational destructive factors, and empower employees. Empowerment of human resources is considered a tool by which leaders will be able to effectively manage today's organizations, reducing the distance between employees and managers and reducing organizational affiliation. In this regard, the leaders of the studied companies would be able to balance between the policies, goals and organizational measures and provide more facilities for the employees.

One of the most important points of authentic leadership is to integrate thoughts and emotions in order to achieve an excellent goal. These approaches, improve organizational interactions which leads to sustainable growth and development of the organization. On the other hand, the leader should do their best to create a positive atmosphere in which employees are optimistic, hopeful, flexible and effective.

Encouraging the employees to talk about work conditions and atmosphere, matching between the words and actions of the leaders, strengthening the spirit of criticism in the company especially among senior managers, encouraging employees to strengthen positive values and beliefs in themselves and making organizational decisions based on values and standards of the company's code of ethics, focusing on continuous improvement of the organizational structure and creating an atmosphere of visibility and dynamism are principles that authentic leader should follow.

In turn, these principles can reduce organizational

pessimism and ignore rumors and establish meritocracy in the company, strengthen performance by flourishing the talent of the employees and creating a sense of pride in them which would lead to reduced employee bullying and burnout. Also, creating a sense of competence in doing work, making resources available and empowering employees, creating collaborative and team management culture, defining challenging tasks and giving positive and constructive feedback, can cause enthusiasm for the work among employees.

Finally, practical suggestions to implement authentic leadership in the construction industry based on the studied companies in this paper: (1) Leaders should clearly express their expectations including functional, behavioral, or strategic ones, such as market share of the construction industry, the number of construction projects, the turnover of construction projects, etc. (2) Leaders should stick to what they say in practice. (3) Leaders should give clear feedback about their employees' performance. (4) In order to recognize their strengths and weaknesses, leaders should pay attention to the feedback provided by their followers and peers and be open to criticism. (5) Leaders should always adhere to ethical standards in their behavior and speech and give peace and love to their employees. (6) Leaders should increase their self-confidence as well as patience and follow a rational approach to facing opposing views. (7) Leaders should ask employees to express their opinions and feelings about the quality of their workplace. (8) Leaders should accept their mistakes without hesitation to be recognized as an idol by employees. (9) Leaders should express their opinions clearly and unambiguously to the employees. (10) Leaders should try to study the construction market and the latest changes in variables and indicators of it including economical, social, cultural, political, educational, environmental, technical and technological, and hold professional workshops, while always keeping up to date and sharing the latest specialized achievements related to the construction industry with the employees. (11) In their judgments about various issues, managers should pay attention to multiple aspects and dimensions and avoid a one-dimensional approach. (12) The information systems of the organization should be updated according to the needs of the employees with different roles from different units to access required information within/outside the organization, such as the latest data of the construction market, sales statistics, the latest laws and regulations of the construction industry and so on.

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Conflicts of interest

Hamid Doost Mohammadian is the Editor-in-Chief of the journal, and Omid Alijani is an Editorial Board Member of the journal. The article was subject to the journal's standard procedures, with peer review handled independently of this editor and his research groups.

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