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Reflections of Artificial Intelligence on C-suite

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Abstract

In this research we examined the reflections of artificial intelligence on management board (C-suite) by analyzing a dataset of 21 interviews, two conversations, two letters, and a live talk by prominent CEOs and AI experts, and we followed a discourse analysis methodology in the research process. As a result, we interpreted findings under three titles: 1) Opinions about artificial intelligence, 2) Common viewpoints, 3) Precautions and recommendations. This research is important as it provides an overview of the opinions of prominent figures in the business world on the effects of artificial intelligence. We expect that the findings of this research will give an insight into future research on effects of artificial intelligence on strategic management.

Keywords: discourse analysis; artificial intelligence; management board; technological change.

Yapay Zekanın Üst Düzey Yönetime Etkileri

Öz

Bu araştırmada, önde gelen icra kurulu başkanları ve yapay zekâ uzmanlarına ait 21 röportaj, iki söyleşi, iki mektup ve bir canlı söyleşiden oluşan veri setini analiz ederek yapay zekanın üst düzey yönetime yansımalarını inceledik ve araştırma sürecinde söylem analizi metodolojisini takip ettik. Sonuç olarak, bulguları üç başlık altında yorumladık: 1) Yapay zekâ ile ilgili görüşler, 2) Ortak görüşler, 3) Önlemler ve öneriler. Bu araştırma iş dünyasının önde gelen isimlerinin yapay zekanın etkileri üzerine görüşlerinin genel bir bakışını sunması açısından önem taşımaktadır. Bu araştırmanın bulgularının "yapay zekanın stratejik yönetim üzerine etkileri" konulu gelecek araştırmalara fikir vereceğini beklemekteyiz.

Anahtar Kelimeler: söylem analizi, yapay zekâ, yönetim kurulu, teknolojik değişim

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Introduction

In recent times artificial intelligence (AI) technology has achieved significant improvement and has played an increasing role in our lives. Humanity is experiencing a transformation process which is a way to a new age described as The Second Machine Age (Brynjolfsson & McAfee, 2014) or Age of Artificial Intelligence (Tegmark, 2017). Whatever its name, it is obvious that some concepts, established habits and traditions that we have been familiar with for a long time must change. This revolution embraces all areas of human activity and influences the business world. Management style, job roles and definitions are expected to be redefined according to the integration of AI in organizations. In this process senior management undoubtedly takes a tremendous responsibility.

In the related literature there are research studies that examine possible effects of AI on organizations (eg. Davenport, Guha, Grewal & Bressgott, 2020; Makridakis, 2017; Soni, Sharma, Singh & Kapoor) and research reports conducted by research institutes (eg. McKinsey Global Institute, 2017; SAS, 2017; PwC, 2018). We conducted this research to contribute to these efforts and aimed to provide an overview about AI in business through the views of worldwide prominent figures in business by reflecting the voice of management board. We preferred to use the term C-suite instead of management board for the reason that it is an attractive term and has been widely used in literature (eg. Groysberg, Kelly & MacDonald, 2011; Guadalupe, Li & Wulf, 2014; Fitzsimmons & Callan, 2016). The term is used to indicate the top team of organization that perform C-level jobs such as CEO, CTO, and CIO (Groysberg et al., 2011; Guadalupe et al., 2014).

We examined reflections of AI on C-Suite by utilizing a qualitative research methodology, discourse analysis. For this purpose, we analysed a dataset of 21 interviews, two conversations, two letters, and a live talk of prominent CEOs and AI experts. We gathered the data that were presented to public domain via from search engine *Google*. We examined in the data the influence of AI on business in current situations and its potential effects in the future through the opinions of CEOs and experts concerning AI, common viewpoints and recommendations in the data. And as a result, we interpreted the findings under three title: (1) Opinions about artificial intelligence, (2) Common viewpoints, (3) Precautions and recommendations.

The paper consists of four sections. In the first section, we give a literature review on artificial intelligence in business. In the methodology section we introduce research design and explain how we conducted the research. In the findings section we present and interpret findings under three categories. In the last section we discuss the findings and conclude the paper with recommendations for future research.

Artificial Intelligence in the Business World

Today humans utilize AI technology widely in their social and business life. Humans use AI similar to the purpose of using other machines; to save time and labour, and it does not imply that humans are less intelligent or dysfunctional (Buckner & Shah, 1993). Modern organizations utilise AI systems to perceive

the world and gather data; they analyse the data and understand them, make decisions according to outputs and guides, learn from experiences and adapt their functioning to learning (Bataller & Harris, 2016). Thomas, Fuchs and Silverstone (2016) identified three roles for intelligent machines in C-Suite as assistant, advisor and actor.

New technology has always been arisen challenges and concerns. Potential impact of AI is a popular issue in resent research. Many researchers handled future effects of AI in the business world. Makridakis (2017) examined the future effects of the AI revolution and introduced four profiles according to the views of prominent figures in academic environment: "The optimists" that foresee a utopian future where robots would be performing all the work and let humans do what they prefer, "the pessimists" that foresee a utopian dystopian future where machines have control over humans, "the pragmatists" foresee a future where AI technologies are controlled by regulations and "OpenAI" and machines augment human skills, and "the doubters" foresee a future where would be superior to AI. Makridakis (2017) also emphasized that upcoming AI revolution will be stronger for technology improves at great speed coupled with exponential growth of Internet. In this revolution AI plays the competitor role to human. Hence, an inevitable employment shift is strongly expected.

Autor (2015) predicted that many middle-level jobs are susceptible to automation where significant part of mid-level jobs will still require human skills such as "interpersonal interaction, flexibility, adaptability, and problem solving" (pp. 26-27). Acemoglu and Restrepo (2019) emphasized that future of work will be much better if organizations implement "right types of AI" and to adopt technologies that increase workforce and productivity.

According to One Hundred Year Study on Artificial Intelligence (AI100) (2016) research report, AI will take over human tasks rather than jobs, but also new job lines will emerge. According to Grace, Salvatier, Dafoe, Zhang and Evans (2018) findings "AI will outperform humans in many activities" by 2024 and AI have a 50% chance in "outperforming humans in all tasks in 45 years and automating all human jobs in 120 years" (p. 729).

Jarrahi (2018) attracted attention on "human-machine symbiosis". The new age requires collaboration of skills of AI and human staffs where machines handle mundane works and humans focus on creativity. "Past experience, insight, and holistic vision" will remain human skills. Jarrahi (2018) also emphasized that AI will support and augment human-work rather than replace decision making. Wilson and Daugherty (2018) handled "machine-human collaboration" as "collaborative intelligence". According to their research results human-machine collaboration has a significant effect on organization performance. Humans and machines complement and enhance each other's capabilities, where "the leadership, teamwork, creativity, and social skills" are human-specific skills and machines have a decisive advantage over human in "the speed, scalability, and quantitative capabilities".

Torresen (2018) reviewed research on potential effects of AI and robotics in the future and attracted attention on ethical issues. Torresen highlighted that ethical considerations are so crucial that ignoring them may increase the risk of a dystopian future. Hence, designers of AI systems and robotics should pay attention to the ethics, and the autonomous systems must be accountable for their actions. AI100 (2016) also reported that the more robots intervene in human life, the more ethics and privacy issues will emerge.

Literature review shows that both positive and negative outcomes are expected in terms of potential effects of AI. In this research we aimed to approach the AI phenomenon in the business world through the lens of prominent CEOs, executives, and AI experts. For this purpose, we referred to their public statements. As a result, we answered the following research questions:

RQ1: How does AI influence business in the current situation in the future?

RQ2: What are the opinions of CEOs and experts about the issue?

RQ3: Are there any common views about the issue?

RQ4: What are the recommendations?

Methodology

Research Design

We followed a discourse analysis methodology in this research. Discourse analysis is a qualitative research methodology "concerned with how language is used to construct accounts of the social world which are used intentionally in attempts at persuasion and legitimization" (Elliot, 1996, p. 65).

Considering that the data of this research consisted of interviews, letters and conversations, we decided that discourse analysis is the appropriate methodology. For getting answers to our research questions, the discourse of subjects was examined meanings were extracted and related contents were gathered under three titles by conducting the following steps:

(1) Defining the unit of analysis: We extracted interview documents and letters on web sites of companies, reviews, newspapers, events, etc. and deciphered the videos into texts. As a result, we organized 26 chapters of Word documents in total. At first, we read all parts of the texts (also the parts that were not about AI). Then we extracted the parts related to the research questions and organized them as the unit of analysis.

(2) An in-depth examination of the unit of analysis: We read and reread unit of analysis in depth for several times as far as the language that subjects used arose common and distinctive meanings in our minds. We concentrated on the data and applied textual analysis, specifically linguistic analysis to the data. We examined the structure of the sentences, quotation marks, analogies, tone of voice and also, gestures and facial expressions (in videos) of subjects, and let a design of meaning emerge in the content, coded by considering similarities and differences through the data. For example, "doomsday" and

"Renaissance" are two analogies we came across in the texts several times (see. Brin, 2018; Zuckerberg, 2017). We coded these expressions as "doomsday: optimistic discourse", and "Renaissance: pessimistic discourse". Meaning through the data was emerging via these two kinds of discourse: optimist and pessimist. This divergence of discourses attracted our attention at first. Then, we categorized the subjects as optimists and pessimists, and the ones exhibiting both discourses. We interpreted analysis unit through this lens, followed an exploratory design and let a design of meaning appear. These characteristics diverges our analysis from traditional qualitative content analysis.

(3) Categorizing the findings: As a design of meaning was emerging through the data, we realized that it divided into three branches: the subjects of main two groups interpreted AI in accordance with their backgrounds, worldviews, life experiences, and expectations; we interpreted these views under the category "views about AI". The subjects also had common opinions and we categorized these views under "common viewpoints". Finally, we categorized "recommendations and precautions" that are directly related to the subjects' perceptions of AI.

(4) Reporting the findings: We interpreted findings under three titles and supported them with the quotes of subjects.

(5) Validity and reliability: We engaged in three procedures in order to fulfil validity of the research: interrater reliability, triangulation, and detailed description (Creswell, 2007, p. 207-208).

Interrater reliability. We coded the data separately several times and defined initial codes. Then, we came together and compared the codes we defined. We discussed the meanings emerged in the data and realized that our findings are mostly similar. As a result, we agreed on titles of categories and closed the analysis process.

Triangulation. We gather our data from different sources as interview documents, event videos, conversations, letters, and live talks. We also included different declarations of the subjects in different events and times where possible. Hence, we could compare the viewpoints from different sources.

Detailed description. We described backgrounds of subjects in detail and referred to quotes to support our findings.

(6) Limitations: Research data include public declarations of the subjects. Hence, we were not able to address our own questions to subjects. Hence, we adhered to the public statements. Besides, public statements of CEOs and experts are likely to reflect their companies' management styles, organization structure, and their own commercial considerations.

Sample

In discourse analysis, texts may consist of formal written records, transcripts of social interactions, individual interviews or media documents. Sample size is not usually a significant issue in discourse

analysis because the interest is in the way the language is used not the people using it, and large variations in linguistic patterning can emerge from a small number of people (Potter & Wetherall, 1987).

Therefore, in the light of our research questions, we decided to gather the views of prominent CEOs and experts on the issue "AI in management". For this purpose, we searched keywords such as "AI and management", "AI and strategic management", "management board, AI", "C-Suite, AI", "senior management, AI", "CEO, AI", "interview, CEO, AI", "interview on AI", "business, AI" in search engine *Google*. We chose the documents that reflect opinions of CEOs and experts related to AI adoption and future concerns and expectations from worldwide and did not restrict the sample to a specific region or country, but just considered the figures that were highly qualified in their positions. As a result, we defined 21 interviews, two conversations, two letters, and a live talk of the prominent CEOs and AI experts.

Content is an important component in discourse analysis, as analysers should know the content for it influences interpretation and conclusion. For this purpose, we examined backgrounds of the subjects and the data in depth before the analysis and summarized in Table 1.

Table 1. The Data

Name	**Occupation**	**Experience**	**Source of Data**	**Sort of Data**	**Date**
Jeffrey Minfang Lu	CEO and Executive Director of China Mengniu Dairy Company Limited	Since September 15, 2016	McKinsey Quarterly	Interview	March 2018
Erik Brynjolfsson	Professor at MIT Sloan School of Management, Author and Speaker	Since September, 1999	McKinsey Quarterely	Interview	September 2014
	Co-author of *The Second Machine Age*	Since 1995			
Andrew McAfee	Principal research scientist at MIT Co-author of *The Second Machine Age*	July, 2009			
Anthony Goldbloom	Co-founder and CEO of Kaggle	Since July 2009			
Jeremy Howard	Founder and researcher of fast.ai Young Global Leader at World Economic Forum	Since May, 2016			
	Distinguished Scholar in Deep AI	Since August, 2016			
	Faculty Member at Singularity University	June, 2012			
	CSO of doc.ai	Since June, 2017			

	Young Global Leader at World Economic Forum	Since 2015			
Virginia Rometty	Chairman of IBM	Since October 1, 2012	Harvard Business Review	Interview	July-August 2017 Issue
	President, and CEO of IBM	Since January 1, 2012			

Continuing from the previous page

Name	Occupation	Experience	Source of Data	Sort of Data	Date
Jeffrey Joerres	Non-Executive Chairman of The Western Union Company	Since May 11, 2017	Harvard Business Review	Interview	October 2016 Issue
	Independent Director at The Western Union Co.	Since May 15, 2015			
	Former CEO of Manpowergroup Inc.	Since April 1999 until May 2014			
Ian Siegel	Co-founder and CEO of ZipRecruiter	Since January, 2011	Forbes	Interview	October 31, 2017
Kelvin Lee	Director of Social Media Marketing (Global) at Thomson Reuters	Since January, 2015	The Business Storm	Interview	May 11, 2017.
Bill Gates	Co-founder of Microsoft	Since 1975	Fox Business interview at Davos 2018	Interview (video)	January 25, 2018
	Co-chair of the Bill & Melinda Gates Foundation	Since 2000			
Paul Sallomi	Vice Chairman at Deloitte Global Technology, Media, and Telecommunications Industry Leader	Since October, 2014	BBC News Radio	Interview	August 13, 2015
Andrew Hanff	Partner at Roland Berger	Since September, 2016	Roland Berger	Interview	Feb 27, 2018
Jack Ma	Co-founder and executive chairman of Alibaba Group	Founded Alibaba Group on 1999 Executive chairman since May, 2013	CNBCE	Interview	21 June 2017
			You Tube video on Gateway 17 event in Detroit, 2017	Interview (video)	September 25, 2017
			World Economic Forum web site (weforum)	Interview	January 24, 2018
Elon Musk	Founder, CEO, and CTO of SpaceX	Since June, 2002	Code conference, 2016 You Tube Video	Interview (video)	June 6, 2016
	Co-founder, CEO, and product architect of Tesla, Inc	Since February, 2004			
	Co-founder and CEO of Neuralink	Since July 2016	Rolling Stone Magazine	7 days interview	November 15, 2017
	Cofounder and chairman of OpenAI (nonprofit)	Since 2015	National Governors Association Conference-2017 Summer	Interview (video)	July 15, 2017

			Meeting		
			World Government Summit, 2017	Interview	Feb 13, 2017
Sundar Pichai	CEO of Google	Since 2015	Bloomberg Businessweek	Interview	October 19, 2017

Continuing from the previous page

Name	Occupation	Experience	Source of Data	Sort of Data	Date
Mark Zuckerberg	CEO and co-founder of Facebook	Since 2004	Zuckerberg's Facebook Live-Talk	Live Talk	July, 2017
			Y Combinator an interview to "How to Build the Future"	Interview	August, 2016
Jeff Bezos	Founder and CEO of Amazon.com, Inc.	Since 1995	A You Tube video on his interview at Internet Association Gala 2017	Interview (video)	2017
			Bezos' 2017 letter to Amazon shareholders	Letter	2017
Kai Fu	Founder and CEO of Sinovation Ventures	Since September, 2009	Edge.org	Interview	March 26, 2018
Larry Page	Co-founder and former CEO of Google	2001-July 2015	Financial Times	Interview	October 31, 2014
	CEO of Alphabet Inc.	Since 2015			
Sergey Brin	President of Alphabet	Since April 1, 2018	Alphabet	Letter	April, 2018
	Co-founder of Google	1998			
Tuğba İslam	SAS- Principle Analytics Solutions Manager – North California Area	Since January, 2018	SAS Analitic Cafe	Interview	December 11, 2017
	SAS-Principle Analytics Solutions Manager -UK	Since January, 2016			

Findings: Reflection of AI on C-suite

In this section we present the findings of discourse analysis under three titles: (1) Opinions about AI, (2) Common viewpoints, and (3) Precautions and recommendations.

Opinions about AI

We found that subjects approached AI as an issue that influences all humanity besides its effects on the business world. We defined two kinds of discourses about the new age and transformation process in the data. The first one is "optimistic discourse", emphasizes optimizing and facilitating features of "narrow AI." In optimistic discourse, the words "value", "competition", "facilitator" "advantage" come to the

forefront. The features of AI as optimizing work, providing more returns, processing big data that cannot be achieved by human capabilities, and providing competitive advantage have a great impact on optimistic discourse. However, exponential developments in AI bring out various problems. Adapting to this transformation process and ability of utilizing AI technologies efficiently are the challenges organizations confront. These challenges are also mentioned in optimistic discourse but not considered as unachievable.

In "pessimistic discourse", we found that subjects centred on the problems that may arise in the future related to AI; "superintelligence", "challenge", "disruptive", "threat", "concern", "uncertainty" were frequently repeated words. The prominent concern is that AI may take over human jobs and serious workforce problems may appear in the future. Pessimistic discourse goes so far as to say that improvements in AI may trigger World War III (WW3) and the Powers that will control AI may dominate over human beings or even destroy humankind.

The most striking disaster discourse belongs to Elon Musk -Tesla, SpaceX and Neuralink CEO. Some of Musk's word on disaster are as follows:

> Until people see, like, robots going down the street killing people, they don't know how to react, because it seems so ethereal.
>
> (National Governors Association, 2017)

> One of the most troubling questions is artificial intelligence. I don't mean narrow A.I-deep artificial intelligence, where you can have A.I. which is much smarter than the smartest human on earth. This is a dangerous situation.
>
> (National Governors Association 2017)

> Competition for AI superiority at national level most likely cause of WW3 imo.
>
> (Musk, 2017)

Co-founder of Alibaba, Jack Ma, is also on the pessimistic side. As he did not adopt a tough discourse as, in an interview he gave to CNBC on June 21, he mentioned that AI may give rise to WW3:

> The first technology revolution caused World War I, the second technology revolution caused World War II. This is the third technology revolution. With machine learning and artificial intelligence eliminating jobs, the third technology revolution may cause the Third World War.
>
> (Balakrishnan, 2017)

Founder of Microsoft, Bill Gates, also supported Musk's concerns about superintelligence in a Reddit question-and-answer session:

> I am in the camp that is concerned about superintelligence. First the machines will do a lot of jobs for us and not be super intelligent. That should be positive if we manage it well. A few decades after that though, the intelligence is strong enough to be a concern. I agree with Elon Musk and some others on this and don't understand why some people are not concerned.
>
> (Clifford, 2017)

Contrary to pessimistic discourse in the business world, Facebook CEO Zuckerberg exhibited totally optimistic behaviour and objected to Musk's views. Moreover, there has been an ongoing debate about

future of AI between the two CEOs. Zuckerberg responded to disaster warnings on a live talk on his personal Facebook account and blamed Musk for being irresponsible:

> AI is going to make our lives better in the future, and doomsday scenarios are pretty irresponsible.
>
> (Zuckerberg, 2017)

Another optimist, Amazon's CEO Jeff Bezos mentioned his opinions about AI through an excited discourse with an analogy of renaissance at Internet Association Gala 2017:

> It is a renaissance; it is a golden age. We are now solving problems with machine learning and artificial intelligence that were… in the realm of science fiction for the last several decades. And natural language understanding, machine vision problems, it really is an amazing renaissance.
>
> (Internet Association, 2017)

And Sergey Brin, co-founder of Google, and president of Alphabet expressed his conflicted thoughts on AI -an intersection of optimist and pessimist discourses- by starting with a quote from Charles Dickens in Alphabet's annual letter:

> It was the best of times,
> it was the worst of times,
> it was the age of wisdom,
> it was the age of foolishness,
> it was the epoch of belief,
> it was the epoch of incredulity,
> it was the season of Light,
> it was the season of Darkness,
> it was the spring of hope,
> it was the winter of despair ...
> So begins Dickens' "A Tale of Two Cities" and what a great articulation it is of the transformative time we live in…
>
> (Brin, 2018)

As a result, the age AI technology will dominate is a "renaissance" to some, and a "doomsday" to some others. The prominent CEOs of business world consider AI as a universal problem. Then, what are the common viewpoints?

Common Viewpoints

Optimizing AI

Business world meet on a common ground that "narrow AI" provides benefit to organizations. Subjects mentioned that AI is an efficient technology especially in works where human capability is limited, such as big data processing, predicting and forecasting.

Competitive Advantage

The other common view is that organizations that do not adapt to AI Technologies will fall behind in competition. For instance, big data is a crucial issue in today's world. Processing and managing big data exceed human capability. AI improves exponentially and organizations utilize that technology will improve in an exponential way. Founder of fast.ai, Jeremy Howard emphasized the importance of this issue on an interview he gave to Rik Kirkland, senior managing editor of McKinsey:

> There is no organization that shouldn't be thinking about leveraging these approaches, because either you do—in which case you'll probably surpass the competition—or somebody else will. And by the time the competition has learned to leverage data really effectively, it's probably going to be too late for you to try to catch up. Your competitors will be on the exponential path, and you'll still be on that linear path.
>
> (Kirkland, 2014)

Redefining management

As the industrial revolution led to new management styles, the new era also requires defining a new management concept. Subjects agree that redefining management is crucial and have common viewpoints on how it should be. The organizations that are agile, learning, trend follower, adaptable, innovative, cooperative, effective in utilizing AI technologies, investing on talented people on AI, making decisions based on scientific method will survive in the transformation process. Andrew McAfee emphasized the importance of experimenting and scientific method in the new age in an interview he gave to Rik Kirkland:

> In the Second Machine Age, there are going to be equally big changes to the art of running an organization… When you look at what truly innovative companies are doing, they're asking, "How do I falsify my hypothesis? How do I bang on this idea really hard and actually see if it's any good?" When you look at a lot of the brilliant web companies, they do hundreds or thousands of experiments a day. It's easy because they've got this test platform called the website. And they can do subtle changes and watch them add up over time.
>
> (Kirkland, 2014)

Kelvin Lee, director of social media marketing at Thomson Reuter that is passing through an AI integration process mentioned the positive effect of an innovative and collaborative organization culture on making efficient decisions in an interview he gave to Business Storm:

> I am proud and fortunate to work at Thomson Reuters - an environment where a collaborative and innovative culture is encouraged and recognized. It helps me to get things done.
>
> (Dechev, 2017)

On the other hand, IBM CEO Rometty emphasized the importance of ability to change in her interview to Harvard Business Review:

> I really believe the company has in its DNA the ability to change. We've done it over and over again.
>
> (Ignatius, 2017)

Management will require a more radical change for AI technology improves exponentially. And in that condition, senior manager's job definitions and skills will change inevitably.

CEOs

The CEOs that were included in this research distinguish with their different features. Jack Ma distinguishes with philanthropy, Bill Gates with ability to predict future and charity, Elon Musk with brave decisions and caring for social welfare, and Sundar Pichai with empathy and humility. Moreover,

Zuckerberg, founded his company at the age of 19, credits the talent where Jeff Bezos emphasizes the importance of experience. As today's prominent CEOs have different opinions on this crucial transformation process some characteristics of CEOs such as creative thinking, leading, motivating are the common features. Moreover, these characteristics are the ones that still distinguish a human CEO from AI. And, when conditions exceed human capability, a CEO should be able to decide appropriately where to stop and where to interfere, as MacAfee stated on an interview to Rik Kirkland from McKinsey:

> I don't think this means that everything those leaders do right now become irrelevant. I've still never seen a piece of technology that could negotiate effectively. Or motivate and lead a team. Or figure out what's going on in a rich social situation or what motivates people and how you get them to move in the direction you want… So the role of a senior manager in a deeply data-driven world is going to shift. I think the job is going to be to figure out, "Where do I actually add value and where should I get out of the way and go where the data take me?" That's going to mean a very deep rethinking of the idea of the managerial "gut," or intuition"
>
> (Kirkland, 2014)

Besides these features that make human CEOs superior in today's world, in the future it is more likely that an AI will become a CEO.

Workforce reduction

Workforce reduction in the future is one of the worrying issues stated by subjects. As robots will take over the routine and repetitive job, it is expected that people perform these jobs will become unemployed. Transfer of jobs from human to robots is a common expectation among the subjects but there are two opposing views about the results of this process. The first view is that workforce decrease will lead to social problems and social problems will trigger WW3. Especially, Jack Ma and Elon Musk's discourses support this view. The second view is that workforce decrease will foster new jobs, people will have more leisure time, and they will produce more value for themselves and for society.

SAS Analytic Expert Tuğba İslam is one of the optimists about the issue:

> With the improvements on AI job definitions will also improve and change. And it will be important for us in adapting these changes. Various roles of jobs will emerge. It has started to emerge. For instance, according to recently released news, in 2020 many robot operators will be employed in China.
>
> (SAS Analytics Café, 2017)

Bill Gates, is on the pessimist side about superintelligence, presented an optimistic view about the future of the workforce on an interview he gave to Fox Business:

> With the use of AI, production will likely increase two-fold which means the use of less labor. But that doesn't necessarily mean there will be fewer jobs for people. Increasing levels of production may have several effects: Longer vacations for employees, and a redirecting of positions to re-focus on helping the elderly, working with children with special needs and reducing the class divide.
>
> (Fox Business, 2018)

And, Sinovation Ventures CEO Kai Fu stated especially the next 10-15 years will be critical:

> We're all going to face a very challenging next fifteen or twenty years, when half of the jobs are going to be replaced by machines. Humans have never seen this scale of massive job decimation… The people who are inventing these AI algorithms, building AI companies, they will become the haves. The people whose jobs are replaced will be the have nots. And the gap between them, whether it's in wealth or power, will be dramatic, and will be perhaps the largest that mankind has ever experienced.
>
> (Edge.org., 2018)

Besides his pessimist discourse on job decimation, Kai Fu stated that as robots take over the routine and repetitive jobs, people will experience the pleasure of adding more value to society:

> We can then elevate ourselves to be thinking, inventing, creating, socializing, having fun, and getting hobbies. It would be an amazing life.
>
> (Edge.org, 2018)

Consequently, CEOs and experts agreed on robots will take over some jobs, especially routine and repetitive ones, but they did not meet on common ground as to whether this will lead to disaster or welfare. It is obvious that some precautions are required.

Precautions and Recommendations

Subjects mentioned that precautions should be taken and recommended solutions for some disturbing outcomes of AI may emerge in the future. Elon Musk warned about the necessity of government regulations, the urgency of new job definitions, necessity of universal basic income, and democratic distribution of power at National Governors Association Conference (2017) Summer Meeting. According to Musk, the centralization of power is dangerous and will result in the enslavement of humankind. Competition will push organizations into going further and further, and in such a competitive environment government regulation is mandatory for social welfare. Organizations should wait until the regulators control the action and decide on how safe it is. Musk expressed his opinions via two political terms "dictatorship" and "democracy", and he cited his non-profit organization OpenAI as a good example for democratic AI power on an interview at Code Conference 2016:

> Open AI is to democratize AI power… Freedom consists of distribution of the power and despotation is the concentration… The goal of Open AI is really just to set of actions that are most likely to improve positive futures.
>
> (Recode, 2016)

Once again, we want to emphasize that this discourse of Musk is not related to narrow AI but to superintelligence. Musk defines superintelligence as "alien". And Zuckerberg, always optimistic and sympathetic about AI, mentioned the necessity of acting watchfully on a live talk on his personal Facebook account:

> Whenever I hear people saying AI is going to hurt people in the future, I think yeah, you know, technology can generally always be used for good and bad, and you need to be careful about how you build it and you need to be careful about what you build and how it is going to be used.
>
> (Zuckerberg, 2017)

Recently, proving the importance of his view, Zuckerberg was accused of leaking huge amounts of Facebook users' data to Cambridge Analytica, a political analytics company, which is accused of manipulating the last U.S. election results. Zuckerberg stated that the data was leaked accidentally, and he assumed full responsibility as the CEO of Facebook. This incident is important as it demonstrates that whether Zuckerberg or someone else is a successful executive, it is possible to lose control over the issues surrounding AI.

Another solution related to adverse outcomes of AI in the future came from Kai Fu, in accordance with his philosophic discourse, "to love":

> I don't have the solutions, but if we want to come back to the question of why we exist, we at this point can say we certainly don't exist to do routine work. We perhaps exist to create. We perhaps exist to love. And if we want to create, let's create new types of jobs that people can be employed in. Let's create new ways in which countries can work together. If we think we exist to love, let's first think how we can love the people who will be disadvantaged.
>
> (Edge.org., 2018)

And Jack Ma, as a philanthropist, emphasized the importance of human education for the future on World Economic Forum 2018:

> Education is a big challenge now - if we do not change the way we teach thirty years later we will be in trouble… We cannot teach our kids to compete with the machines who are smarter - we have to teach our kids something unique. In this way, 30 years later, kids will have a chance
>
> (World Economic Forum, 2018)

An as a result, a summary of the findings that we have related above are presented in Table 2.

Table 2. A Summary of Findings

	Optimist Discourse	**Pessimist Discourse**
1. Opinions about AI	• Optimizing and facilitating features of "narrow AI" as optimizing work, providing more returns, processing and managing big data, etc.	• AI will take over human jobs. • AI may trigger WW3 • Centralized AI power may dominate, and even destroy humankind.
2. Common Viewpoints	• Optimizing AI • Competitive advantage • Redefining management • CEO features • Workforce decrease	
	Precautions	**Recommendations**
3. Precautions and Recommendations	• Superintelligence may dominate human beings, even may destroy humankind. • Workforce decrease may trigger WW3	• Government regulations on AI, • Being careful in building and using AI, • Unique education that promotes features specific for human. • Creating new jobs and loving each other. • Decentralization of AI power. • Universal basic income.

Conclusion

Recent improvements in AI technology affect the business world seriously and management literature needs more research on this issue. For this purpose, in this research we examined reflections of AI on C-suite by following a discourse analysis methodology based on 21 interviews, two conversations, two letters, and a live talk of prominent CEOs and AI experts. As a result, we introduced findings under three titles:

(1) Opinions about AI, 2) Common viewpoint, and (3) Precautions and recommendations.

"Opinions about AI" were expressed mainly throughout optimistic and pessimistic discourses and centred on commonly optimizing facilitator features of AI and possible adverse outcomes as AI may take over human jobs, trigger WW3, centralized AI power may dominate and even destroy humankind. None of the subjects denies the optimizing benefits of narrow AI but it is clear that there are serious concerns about superintelligence in long term, and substantial work force decrease in short term. These findings are parallel with Makridakis' (2017) scenarios on future of AI "the optimists" and "the pessimists", "the pragmatics", and "the doubters".

Workforce reduction is highly expected in the near future. But not all subjects think it may lead chaos. The optimist side believes that new job definitions and roles will arise, and people will be more free and able to allocate time for social welfare. And on the other side, the pessimists suggest that the workforce level will end up with WW3 as every revolution in human civilization ended up with chaos. And there are serious concerns about superintelligence in distant feature. Especially Elon Musk alarms that superintelligence may dominate human beings and even may destroy humankind. He recommends decentralization of AI power, government regulations, and universal basic income for welfare of humanity in the future. The most optimistic CEO, Zuckerberg, also mentions that technology should be built and used carefully. And Jack Ma emphasizes the importance of unique education that brightens human-specific features.

Consequently, CEOs and experts agree on narrow AI optimizes and facilitates human job and provides competitive advantage for organizations, a job decrease will happen in near future, management requires redefinition, and the required CEO features.

This research provides a perspective on reflections of AI on C-Suite through the viewpoints of prominent figures. We presented views of prominent figures on AI, common viewpoints on potential effects of AI, defined that both optimistic and pessimistic views exist in the business world and presented precautions and recommendations. We hope that findings will shed light on future strategic management research. More empirical research, especially exploratory qualitative research, is needed in the research field. Each category we presented in this research can be handled in detail. We recommend the following topics for future researches:

(1) Redefining strategic management in transformation process,

(2) New roles of senior management,

(3) The required features of CEOs in the new era

(4) Precautions for adverse outcomes of AI

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