Chapter 16
Influence of Industry 4.0 on Motives and Cultures in the Post-COVID-19 Era

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ABSTRACT

As the challenge of big data impacts how we understand cultural differences, a motive-integrated model of culture is becoming an effective strategy to search for convergence by the fourth industrial revolution called Industry 4.0. This study examines the integration approach of Industry 4.0 in merging motives and cultures to efficiently produce COVID-19 vaccines. Structure equation modelling has been conducted on the data in 38 countries during the period of 2006-2021. Findings indicate that Industry 4.0 has merged achievement motive in reactive culture, power motive in multi-linear active culture, and affiliation motive in linear active culture. The three pairs of motive-cultures have enabled people to successfully produce COVID-19 vaccines 10 times faster than previous approaches for vaccines. To implement Industry 4.0, the reactive countries and multilinear active countries would enhance the achievement and power motives, but the linear active countries would decrease the affiliation motive.

INTRODUCTION

Failure to examine the effects of industrial revolutions on motives and cultures creates critical issues in maintaining and developing cultures in the world. Arguably, World War 1 and 2 could be attributed in part to the negative impacts of the first two industrial revolutions on human motives and cultures. Motives are concerns over starting, maintaining, and directing (1) evaluated performance of human activities (achievement motive), (2) the means of influencing a person (power motive), and (3) positive affective relationships with another person (affiliation motive) (McClelland, 1985). In this study, motives are specific implicit behavior, so they are different from needs and traits. Needs generate response tendency and traits are the surface of motives (McClelland, 1951). Cultures are the growth of national personality

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traits (Lynn, 1991). Traits are the motives' channels (Winter, John, Stewart, Klohnen, and Duncan, 1998), so cultures are the channels of motives. Culture or national character is "relatively enduring personality characteristics and patterns that are modal among adult members of the society" (Inkeles & Levinson, 1954,1969). In sum, how cultures and motives that are consistent variables over time to be merged in accordance with the integration approach of Industry 4.0 will be studied in the paper.

To thoroughly analyze the strengths of Industry 4.0, the study will examine how the preceding three industrial revolutions affected motives and cultures. The first industrial revolution in 1784 changed agriculture to industry based on the discovery of coal. The sedentary human society became diverged into urban and country society. The human motive of power in agriculture was enhanced in urban cities. Cultures are mostly the polychronic culture in which people pursue multiple goals simultaneously and let one project influence another. They solicit first-hand information from people and use body language. The second industrial revolution in 1867 transformed industry from mechanic to electricity based on the discovery of gas. Every high-power country is searching for rich natural resources to enhance power resulting in the two World Wars in 1914-1918 and 1939-1945. The third industrial revolution transformed industry from electricity to nuclear based on the discovery of uranium. The polychronic culture has been changed to a monochronic culture in which people just do one thing at one time. Thus, the affiliation motive focusing on the institution rules and avoiding human critics is very important. Then international trades among countries were based on the competitive advantage or excellent performance. The achievement motive is the key in each country. The two world superpowers US and Russia competed in technology in the Cold War 1947-1991 by the three implicit motives: achievement, power, and affiliation (McClelland & Winter, 1969, 1971). In sum, the first three industrial revolutions focused on discovering, controlling, and distributing natural resources for the country.

The fourth industrial revolution called Industry 4.0 has transformed industry from physical to virtual based on the Internet of things and automation with renewable resources. The most significant uniqueness of Industry 4.0 compared with preceding industrial revolutions is the integration approach to combine information technology (IT) into organizational technology (OT). This IT-OT approach of convergence has made people efficiently produce vaccines for corona virus within 12-18 months compared with 10 years for other vaccines. The integration approach has been used in this study to merge motive and culture into a model of motive-culture.

Implicit motives of people or countries including achievement, power and affiliation will operate human behaviors through the three channels called linear active, multi-linear active and reactive cultures under the impacts of COVID-19 vaccines. For example, Vietnam, China, and Japan representing the reactive culture should create environments for people to perform their excellent services during the post of COVID-19 era. Vietnam was ranked as the second top country in the world to control COVID-19 cases. China was ranked as the frontier in producing COVID-19 vaccines. Japan was ranked as the top achievement of economics under the control of COVID-19.

In sum, the fact that the IT-OT integration approach of Industry 4.0 has motivated people discover COVID-19 vaccines efficiently in a certain culture has significantly affect human society in the economy, but little research has focused on an IT-OT integration of motives and cultures across countries, especially Asia. This paper is thus to examine the effects of the fourth industrial revolution with COVID-19 vaccines on the changes of motives and cultures in 38 worldwide countries and then on Asian countries.

The remaining sections of the present paper are organized as follows. Section 2 provides the history of Industry 4.0 affecting cultures, motives, and Asia. Section 3 examines Structure Equation Modelling to find coefficients of three motives and three cultural dimensions with the mediation of Industry 4.0.