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研究課題名（和文）The digitalization of corporate innovation process: A comparison study of Japanese and Chinese companies  
研究課題名（英文）The digitalization of corporate innovation process: A comparison study of Japanese and Chinese companies  
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研究成果の概要（和文）：この研究は、企業のイノベーションと経営管理におけるAI技術の影響をよりよく理解するための一連の研究成果を完成させた。具体的には、(1)文献レビュー記事の草稿を完成させました。(2)企業のイノベーションのデジタル化に関する書籍のアウトラインを作成しました。この書籍の目的は、マネージャーや経営者がデジタル技術をよりよく活用して企業のイノベーションを促進するのを支援することです。(3)日本の企業における新製品開発におけるAI技術の利用に関する予備的なケーススタディを作成しました。(4)中国企業におけるAI技術のビジネス利用に関するケーススタディを作成しました。

#### 研究成果の学術的意義や社会的意義

My research will help managers better understand the applications of digital technologies to their businesses and also help general public to understand how digital technologies have been used in business sectors.

研究成果の概要（英文）：The research has completed a set of research outputs to better understand the impacts of AI technologies in company's innovation and business management. Specifically, the research (1) completed a draft of a literature review article. (2) developed an outline for a book on Digitalization of Corporate Innovation. The purpose of the book is to help managers and executives better utilize digital technologies to enhance corporation innovation. (3) developed cases on the use of AI technologies in new product development in Japanese firms. (4) developed cases on the use of AI technologies in Chinese companies.

研究分野：innovation

キーワード：innovation

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## 1. 研究開始当初の背景

The huge proliferation of digital technologies in business operations and management has called scholars to emphasize the need of studies on digital innovation management. Although there are a lot of anecdotal evidence and business magazine reports on digital innovation and its managerial challenges, this research issue remains unexplored. Companies need to change their organization systems and take managerial actions in order to successfully implement digital innovation and transformation, but little has been studied. This research is designed to fill these gaps.

## 2. 研究の目的

This research examines the role of digital technologies (e.g., AI, Big Data, IoT, etc.) in the innovation process of companies and further identifies managerial actions at both the organizational and process levels that are needed to successfully utilize digital technologies in managing innovations. The purpose is to make theoretical contributions to the literatures of innovation management and digital technologies, and to contribute to Japanese companies' digital transformation practices.

## 3. 研究の方法

This research uses a combination of multiple research methods. The main research method is comparative case study (Yin, 2009). In addition to the case study method, I have replied on literature to help the conceptual model development. For the empirical data collection, in addition to the case study interviews, I have also used expert interview and second-hand data collection to collect complementary data and information.

## 4. 研究成果

- (1) The research shows that in order to maintain advantage in global competitions, both Chinese and Japanese companies have increasingly explored and emphasized on the use of digital technologies in accelerating and improving their innovation practices and management. All the Chinese and Japanese companies of my study have put efforts and developed impressive plans to apply digital technologies in their new product and technology development, and new business creation process. In particular, big data and AI (machine learning) have been increasingly used in various stages of new product development process, such as the stage of customer need identification and customer feedback for product improvement.
- (2) My study has identified three areas in which digital technologies have the most potential impacts on corporate innovation process and output:
  - ① New idea generation process: with big data and AI technologies, the companies of my study have increasingly used digital technologies to guide their new product creation directions an idea generation.
  - ② New product/service design: the companies of my study have increasingly adopt the digital components in their design of new products and services. One example is Mitsui Chemicals' new product development in the area of car parts. They have been increasingly replied on AI-based simulation technologies in designing the new part products and in the prototyping process.
  - ③ Project management and internal team collaboration: the companies of my studies have increasingly adopt digital tools to improve their internal collaboration and the efficiency of project management. For example, in the Chinese home appliance company, Haier, digital communication apps have come the key tool for new product development team's internal communication and external coordination with other departments and supply chain partner companies. The use of digital tools have significantly improved the efficiency and effectiveness of new product development process.
- (3) My study has further identified three main challenges that Japanese companies are facing in implementing the digital innovation plans. In order to effectively implement their plans and realize the desired benefits of digital innovation strategies, companies have to address these challenges.
  - ① Challenge-1: lack of employee capabilities and abilities in digital technologies  
While many Japanese companies of my study have developed a well-crafted digital transformation strategy, the first barrier comes from their existing employees' lack of skills

and capabilities in digital technologies. Many companies have put a lot of budget in developing the basic skills & capabilities for their existing employees, but the challenge of attracting, recruiting and retaining top talents in certain strategies areas is still big. Especially, talents in big data analytics and AI are the most needed and most difficult to have.

② Challenge-2: resistance from existing culture.

The second biggest challenge is how to develop a new corporate culture that embrace digital culture in the traditional ones. In many of the Japanese companies of my study, there exist strong traditional culture which is more focusing on planning and accuracy. One of the important characteristics of digital business is so call “software culture,” which more emphasizes on fast iterative process and trial & error. Furthermore, digital technology talents such as software engineers have their unique professional culture which is quite different from those traditional Japanese companies’ culture. What is the right culture that can successfully combine both traditional and digital cultures? How to develop the new culture? These are the questions facing all the Japanese companies that are undergoing digital transformations.

③ Challenge-3: barriers due to rigid organization structure and processes.

Besides the culture challenges (the soft side of an organization), there are also barriers due to traditional organization structure and processes, which are often very rigid. To effectively implement digital strategy, Japanese companies need to develop a new form of organization that can accommodate the unique needs of software development processes.

(4) Importance of the findings of this study: this study contributes to both the academic literature and more importantly to the practices, especially to those Japanese companies that are undergoing the digital transformation.

(5) Future prospect of this study: This study is an explorative one. It has identified many areas for further investigation. For example, how to effectively change the skill sets of employees, and how to adopt software culture into the traditional maker culture. I will continue this stream of research to further examine all the potential research areas and topics.

Reference:

Yin. R., 2009. Case study research. Fourth edition. SAGE Publications.

5. 主な発表論文等

〔雑誌論文〕 計2件（うち査読付論文 0件/うち国際共著 0件/うちオープンアクセス 1件）

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2. 論文標題 Ajinomoto Foundation: Improving Child Nutrition through Social Business	5. 発行年 2023年
3. 雑誌名 Hitotsubashi Business Review	6. 最初と最後の頁 170-183
掲載論文のDOI（デジタルオブジェクト識別子） なし	査読の有無 無
オープンアクセス オープンアクセスではない、又はオープンアクセスが困難	国際共著 -

1. 著者名 内田大輔/孫 康勇（SUN Kangyong）	4. 巻 67
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〔学会発表〕 計0件

〔図書〕 計0件

〔産業財産権〕

〔その他〕

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6. 研究組織

氏名 （ローマ字氏名） （研究者番号）	所属研究機関・部局・職 （機関番号）	備考
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7. 科研費を使用して開催した国際研究集会

〔国際研究集会〕 計0件

8. 本研究に関連して実施した国際共同研究の実施状況

共同研究相手国	相手方研究機関
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