Executive DBA, Université Paris Dauphine – PSL

PSL·巴黎九大高级工商管理博士学位项目

Research of Driving Mechanism between digitalization and Enterprise Business Model Innovation: Empirical analysis based on Sichuan Baijiu Enterprises

（dissertation submitted for the degree of Executive Doctorate in Business Administration）

Cohort: 2019

Candidate: CHEN Yunsong

Supervisor: QIN Rongsheng

24th April, 2023

CONFIDENTIALITY AND AUTHORISATION

There is a need to protect the confidentiality of information provided by the interviewees and their organizations. For this reason, the data and other material included in the dissertation have been presented in such a way as to protect the interests of the participants. This dissertation has been accepted as confidential, and will be handled according to the Université Paris Dauphine - PSL' confidentiality policy.

Furthermore, the writer fully understands the relevant policy of Université Paris Dauphine - PSL, regarding to the reservation and usage of the dissertation, namely that the University has the right to retain copies of the dissertation, allow the dissertation to be accessed and borrowed; The university may publish all or part of the contents of the dissertation, and can save the dissertation by photocopying, microprinting or other means.

Signature：_____Signature of Supervisor：_____Date：_____

ABSTRACT

In recent years, business model innovation has become one of the research hotspots at home and abroad, but the current research on business model and business model innovation basically belongs to object research, focusing on the definition and composition of business model, the development and definition of business model innovation, business model innovation typology, business model innovation process and the impact of business model innovation. Among these object studies, most are focused on the single factor research of business model, lacking in-depth analysis of the concept of business model innovation. More importantly, under the background of the "fourth industrial revolution" of digital industrial upgrading, there is a lack of empirical research on the business model innovation subject of traditional manufacturing enterprises represented by Baijiu. Therefore, in addition to the necessary theoretical expansion of business model innovation, this dissertation does not focus on the expansion of the concept, types and elements of business model innovation (such as what is the specific way of value creation, what is the value proposition, how to carry out value transmission and how to obtain value, etc.), but focuses on the business model innovation mechanism of digital driven manufacturing enterprises, and the intermediary variables of the mechanism are studied. Using empirical research methods, taking Baijiu liquor enterprises as samples, this paper discusses how these factors affect the innovation of business model.

Based on the theoretical literature of enterprise business model innovation in the digital era, this study explores the mechanism and path of digital driven Chinese Baijiu enterprise business model innovation, expands business model innovation into two stages: information-based business model innovation and digital business model innovation, and compares the similarities and differences between the two stages. Then, taking four Sichuang Baijiu liquor enterprises as samples, we explore the mechanism and path of digitalization driving the business model innovation of Chinese Baijiu enterprises, and try to find out through the cases of Baijiu enterprises such as Wuliangye and Luzhou Laojiao building digital systems:

① Data integration, dynamic management and intelligent optimization play a positive role in the business model innovation of manufacturing enterprises, and positively affect their creativity and application stages.

② Organizational learning (exploratory learning and utilization learning) is the internal condition for Baijiu enterprises to realize business model innovation. When enterprises have at

least one of these conditions, they can better promote business model innovation

To sum up, this dissertation combs the relevant domestic and foreign literatures from the aspects of the types, processes and influencing factors of business model innovation, as well as the impact mechanism of informatization and digitization on business model innovation of manufacturing enterprises in China, makes a brief review, puts forward relevant hypotheses, and constructs a digital business model innovation driving model; Secondly, taking four Baijiu enterprises as the research object, the driving mechanism of digital business model innovation driving factors (data integration, dynamic management and intelligent optimization) on the business model of manufacturing enterprises is systematically analyzed; Finally, by issuing questionnaires to 100 Baijiu enterprises in Sichuan Province, using SEM and bootstrap to quantitatively verify the driving mechanism of the model, as well as the role of its mediating mechanism, the "black box" between driving factors and enterprise business model innovation was revealed, which not only enriched the quantitative research on digital business model innovation, but also provided a theoretical basis for the government and enterprises to better carry out digital transformation.

Key Words: DIGITALIZATION, DATA, BUSINESS MODEL INNOVATION

ACKNOWLEDGEMENT

The successful completion of this dissertation is inseparable from the careful guidance of beloved Professor Qin Rongsheng. Professor Qin is humble and amiable, but he has extensive and profound knowledge and a rigorous academic style, especially in the context of the digital era, with a wise and open-minded approach. Professor Qin Rongsheng's training and education during my doctoral studies will have an impact on my long-term development in the future.

I would like to express my sincerest gratitude to all the teachers at Université Paris Dauphine, Tsinghua University, and Beijing National Accounting Institute. Without your help and patient guidance, the successful completion of this dissertation would not have been possible.

At the same time, I sincerely wish my classmates the selfless care and assistance they provided me during the process of completing my dissertation and working and studying.

Sincerely thank the companies and managers interviewed in this dissertation, whose management history and experience have provided sufficient data support for the topic of the dissertation, increasing its credibility and feasibility.

I would also like to express my gratitude to my leaders, colleagues, subordinates, and friends for their care during the writing process of this dissertation. At the same time, I would like to express sincere blessings to my loved ones who silently care for me.

At the same time, I also want to express my sincere gratitude and blessings to the teachers in the dissertation review and defense process. With your guidance, my dissertation can be even more colorful.

Finally, I hope everyone around me can be safe, happy, and everything goes smoothly!

Table of CONTENT

ABSTRACT I
ACKNOWLEDGEMENT III
Table of CONTENT IV
Table of TABLES VII
Table of FIGURES VIII
Chapter 1 Introduction 1
1.1 Research background and question proposal 1
1.1.1 Research background 1
1.1.2 Question proposal 4
1.2 Research purpose and significance 9
1.2.1 Research object 9
1.2.2 Research purpose 10
1.2.3 Research significance 11
1.3 Dissertation research content 12
1.4 Technical route 15
Chapter 2 Literature Review 17
2.1 Definition of relevant concepts 17
2.1.1 Information and information system 17
2.1.2 Big Data 18
2.1.3 Essential factors of data 21
2.1.4 business model 27
2.2 Research on business model innovation 31
2.2.1 classic business model innovation study 31
2.2.2 Typo-logical study of business model innovation 37
2.2.3 Research on the process of business model innovation 42
2.2.4 Influencing factors of business model innovation 49
2.3 Research review 51
2.4 Chapter conclusion 57
Chapter 3 Cases analysis 58
3.1 Case Analysis Ideas 58
3.2 Research methods and Data source 60
3.2.1 Research methods 60
3.2.2 Data source 61
3.3 Data coding and analysis 62

3.3.1 Coding analysis of driving mechanism 63
3.3.2 Coding analysis of driving Drive path 65
3.4 Research findings 71
3.4.1 The driving mechanism of digital business model innovation 71
3.4.2 The path of business model innovation driven by data 74
3.5 Chapter conclusion 78
Chapter 4 Research hypotheses and Model Construction 79
4.1 Hypotheses based on the influence mechanism of essential factors of data 79
4.1.1 Characteristics and difficulties of digitalization of manufacturing enterprises 79
4.1.2 Hypotheses on the driving mechanism of digital business model innovation 85
4.1.3 Mediating mechanism hypotheses 93
4.1.4 Summary of research hypotheses 96
4.2 Construction of driving model for digital business model innovation 97
4.2.1 Mechanism Analysis of Business Model Innovation Driven by Data 97
4.2.2 Conceptual model of mediating mechanism based on organizational learning theory 101
4.3 Research framework of driving mechanism for digital business model innovation 102
4.3.1 General theoretical framework 102
4.3.2 General research framework 102
4.4 Chapter conclusion 104
Chapter 5 Quantitative Verification 105
5.1 Research ideas 105
5.1.1 Research method 105
5.1.2 Research model 107
5.1.3 Structural equation model (SEM) 109
5.2 Questionnaire design 110
5.2.1 Measurement items design 111
5.2.2 Questionnaire modification and improvement 115
5.2.3 Pre-research analysis 116
5.3 Data collection and quality analysis 117
5.3.1 Data collection 117
5.3.2 Descriptive statistical analysis of the questionnaire 118
5.3.3 Reliability analysis of the questionnaire 119
5.3.4 Validity analysis of the questionnaire 120
5.4 Validation of driving and mediating mechanisms 122
5.4.1 Correlation analysis between variables 122
5.4.2 Test of the role and relationship of digital driving factors to business model innovation 123
5.4.3 Test of the role and relationship of digital driving factors to organizational learning 125
5.4.4 Test of the mediating effect of organizational learning 128

5.5 Analysis of empirical results 134
5.6 Chapter conclusion 136
Chapter 6 Conclusion 138
6.1 Research conclusion 138
6.2 Innovation of this dissertation 140
6.3 Research prospects 141
APPENDIX 143
BIBLIOGRAPHY 146
DECLARATION 163
RESUME 164

Table of TABLES

Table 2.1 ： Summary of business model definitions 28
Table 3.1 ： Descriptive statistics of interview data 62
Table 3.2 ： Typical examples from case enterprise of business model innovation driven by data 63
Table 3.3 ： Typical examples of business model innovation path driven by data integration 66
Table 3.4 ： Typical examples of business model innovation path driven by dynamic management 66
Table 3.5 ： Typical examples of business model innovation path driven by intelligent optimization 67
Table 4.1 ： Summary of research hypotheses 97
Table 5.1 : Hypotheses for driving and mediating effects 108
Table 5.2 : Measurement items of enterprise business model innovation 112
Table 5.3 : Measurement items of digital driving factors 113
Table 5.4 : Measurement items of organizational learning 114
Table 5.5 : Classification criteria for control variables 114
Table 5.6 : Analysis results of scale pre-research 116
Table 5.7 : Questionnaire issuance records 118
Table 5.8 : Descriptive statistical analysis of the questionnaire 118
Table 5.9 : Reliability analysis of variables 119
Table 5.10 : Results of KMO and Bartlett's test of sphericity for enterprise business model innovation 120
Table 5.11 : Load matrix of enterprise business model innovation 121
Table 5.12 : Load matrix of digital driving factors 121
Table 5.13 : Load matrix of organizational learning 122
Table 5.14 : Correlations between variables 123
Table 5.15 : Test results of the effect of digital driving factors on enterprise business model innovation 124
Table 5.16 : Test results of the effect of digital driving factors on organizational learning 125
Table 5.17 : Test results of the mediating effect of organizational learning 132
Table 5.18 : Summary of test results for driving and mediating effects 134
Table 6.1 : Summary of hypothesis testing 139

Table of FIGURES

Figure 1.1 : Trend chart of enterprise digital transformation based on big data 4
Figure 1.2 : Technical route 16
Figure 2.1 : Business Model Canvas by Pisano 32
Figure 2.2 : Classification of innovation 38
Figure 2.3 : Business model change model proposed by Linder & Cantrell (2000) 43
Figure 2.4 : General two-stage competitive process framework proposed by Casadesus-Masanell & Ricar (2010) 44
Figure 2.5 : Business model change diagram proposed by Cavalcante, Kesting & Ulhøi (2011) 44
Figure 2.6 :Process Stage Model for Business Model Innovation 54
Figure 2.7 : The continuation of the information system to the business model innovation process of enterprises 56
Figure 3.1 : Data Structure 70
Figure 3.2 : Two paths for digital business model innovation 75
Figure 4.1 : Analysis process of driving factors 85
Figure 4.2 : Conceptual model of business innovation process driven by data 98
Figure 4.3 : Relationship model of driving factors by data 100
Figure 4.4 : Conceptual model of mediating mechanism driven by data 101
Figure 4.5 : Conceptual model of driving mechanism of digital business model innovation 102
Figure 4.6 : Research framework of digital business model innovation driving mechanism 103
Figure 5.1 : Analysis on mediating mechanism 107
Figure 5.2 : Mediating mechanism model of digital business model innovation driving mechanism 108
Figure 5.3 : An basic model of the structural equation 110
Figure 5.4 : Review of three mechanisms for business model innovation driven by data 113
Figure 5.5 : Structural Equation Model results of the digital driving factors in improving business model innovation 123
Figure 5.6 : Structural Equation Model results of the digital driving factors in improving organizational learning 127
Figure 5.7 : Mediating effect model of organizational learning 129
Figure 5.8 Results of Structural Equation Model showing mediation effects of organizational learning 130
Figure 5.9 : Test procedure for mediating effects 131
Figure 5.10 : Revised mediating mechanism model of digital business model innovation driving mechanism 136