

論文 / 著書情報
Article / Book Information

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Title(English)	A Study on Productization and Servitization of Machine Tool Trading Company in Service System Science Perspective
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種別(和文)	論文要旨
Type(English)	Summary

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論文要旨

THESIS SUMMARY

専攻 : Department of	価値システム	専攻	申請学位 (専攻分野) : Academic Degree Requested	博士 (工学) Doctor of Engineering
学生氏名 : Student's Name	合田和彦		指導教員 (主) : Academic Advisor(main)	木嶋恭一
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要旨 (英文 800 語程度)

Thesis Summary (approx.800 English Words)

This thesis is titled “A Study on Productization and Servitization of Machine Tool Trading Company in Service Systems Science Perspective” and consists of 6 chapters. The purpose of this thesis is (1) to develop frameworks for analyzing and describing machine tool trading (MTT) companies from service systems science perspective and (2) to propose some unified servitization and productization strategies for them to become one of the crucial players contributing to Japanese manufacturing revival, based on the frameworks and the author’s business experiences. This thesis simply defines servitization as “the provision of services through value co-creation”, while by productization it means the productizing of services by service industries.

Chapter 1, Introduction, discusses the current state of Japanese manufacturing (monozukuri) which is considered a source of Japan’s national strength, and the importance of machine tool facilities. MTT companies play a major role in enhancing the competitiveness of domestic factories. Devising strategies and prescriptions for servitization of MTT companies may be expected to contribute to Japanese manufacturing revival. In addition, since MTT companies perform four roles, analysis of those roles may be effective in generalization of servitization.

Chapter 2, Literature Survey, examines design information transmission theory, the Panarchy adaptive cycle, and the Cynefin framework.

Chapter 3 “Productization of Machine Tool Trading (MTT) Companies” argues specifically servitization by means of a service industry productization strategy. Production technology is treated from the perspective of the design information transmission theory “architecture of design information”. The value orchestration platform model is introduced as a reference framework. Strategies and prescriptions are derived through an approach involving four-phase value co-creation and three strategies. Seven quality control (QC) tools are invoked as a means of transmitting production technology to machine tools with attached peripheral equipment. MTT companies enable the emergence of production technology as producers of new manufacturing site industrial clusters. This is transmission of service design information to a tangible and durable medium. MTT companies perform the role of typical manufacturing industry providers.

Chapter 4 “Servitization of Machine Tool Trading (MTT) Companies” discusses servitization by means of a service industry servitization strategy. Based on the design information transmission theory “open manufacturing” and Hierarchical Model of Service Ecosystems Innovation (HMSEI) are introduced, and then adaptive transition and phase transition are discussed. A prescription is derived from the Cynefin framework and a response to phase transition by means of the co-design strategy is discussed. Since the medium is intangible and ephemeral, face-to-face selling is classified as a typical service industry activity, and since MTT companies engage in face-to-face selling, they are classified as typical service industries. The medium is unstable, and so design information instantaneously decays and perishes. Countering this perishing through repetition of transmission is rational. According to SD logic, feedback exchanged simultaneously and equivalently with transmission exists. This is called “service exchange”. Also, networking and resource integration exist behind service exchange. Face-to-face selling cycles and repeats these three activities. The productization strategy considered in Chapter 3 is a strategy that places emphasis on networking and resource integration, whereas Chapter 4 considers a strategy that focuses attention on service exchange face-to-face with customers.

Chapter 5 “Discussion” attempts an approach to management in general based on service science. The three-dimensional approach of the translational systems science is shown to be effective.

Finally, in Chapter 6 we summarize the research findings and points out further research topics. Some of main contributions of the thesis are as follows; (1) To realize integral skills by modular customizing production technologies for revitalizing Japanese manufacturing (monozukuri), we point out that a machine tool trading (MTT) company can play an essential role as a platform where such production technologies interact and some synergy emerges. (2) We develop a value co-creation process model and a value orchestration platform model of a MTT company and then derive from the models specific prescriptions to implement three strategies. (3) In particular, a MTT should play a role of a customer, provider as well as a facilitator as the orchestrator of the platform to promote co-elevation phase of the value co-creation process. A MTT company should also take responsibility for co-development phase by integrating or coordinating people and their products, services and activities. That is, a MTT company is required to take both productization and servitization in a broad sense. (4) When a MTT company develop its productization and servitization strategies, Hierarchical Model of Service Ecosystems Innovation (HMSEI) is useful to identify its position and ways to go in a comprehensive manner.

備考 : 論文要旨は、和文 2000 字と英文 300 語を 1 部ずつ提出するか、もしくは英文 800 語を 1 部提出してください。

Note : Thesis Summary should be submitted in either a copy of 2000 Japanese Characters and 300 Words (English) or 1copy of 800 Words (English).

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