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学位論文名	Modeling And Analyzing The Relationships Among Innovation Diffusion Patterns （イノベーション普及パタンのモデル化と分析）
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論文内容の要旨

With the success of the Bass Model (1969), innovation diffusion has been received extensive considerations by management and marketing science researchers. Attempts have been made to reexamine the structural and conceptual assumptions and estimation issues underlying the innovation diffusion models. From 1990s, the literature has extended its scope to describe the multi-market and cross-country diffusion problems.

The underlying philosophy of innovation diffusion is communication theory, that is, innovations are accepted by the members in a social system through external influences (mass media) and internal influences (word-of-mouth or inter-personal communication). According to this, Bass proposed a sinple analytical structure and used the parameters of external and internal influence to describe the innovation diffusion patterns. It has been confirmed that over a large number of innovations the Bass model fits the empirical adoption curve very well. However, some problems yet remain unclear. For example, how and in what extent do the diffusion patterns differ among countries or regions ? How to model the difference of diffusion patterns among competitive brands in one product category ? With the globalization of the world economy, more and more companies in the United States and Japan have entered or planed to enter into the new markets such as China, Vietnam, and India. Predicting and comparing the diffusion patterns of the new markets with those of the lead markets is important for both the researchers and managers. This dissertation is an attempt to investigate and discuss these problems.

Chapter 1 introduces the basic concepts underlying the innovation diffusion, the analytical structure of the Bass model, and the estimation problems of the innovation diffusion models.

Chapter 2 reviews the development of innovation diffusion literature, including the models with marketing-mix variables, the models investigating multi-product interaction effects, and the models considering multi-market or cross-country innovation diffusion problems.

Chapter 3 proposes a method for re-parameterization the Bass model and provides its parameters with clear

meanings in describing the patterns of new product diffusion. Normalization of the original Bass model with respect to market ceiling and time scale decomposes the rate of diffusion into two parameters : the market start-up condition and the diffusion (adoption) speed, and thus enables one to compare and evaluate various diffusion patterns in terms of these two factors separately. Two cases of new product diffusions are investigated to demonstrate the benefit of the method and discuss the effects of introduction point of time and market specific factors on market start-up condition as well as market ceiliung.

Chapter 4 proposes a method for modeling the variation of diffusion speed among innovations. Using diffusion data of a number of innovations in some lead markets such as the United States and Japan, the relationship between diffusion speed and introduction time, product category and price are investigated. The results suggest that innovation diffusion speed be affected by introduction time and product characteristics greatly. Applying the method to six consumer durables in China, the results show that the proposed method is much more efficient for forecasting when compared to some other methods.

Chapter 5 models the brand-level competitive innovation diffusion process. For a particular brand, diffusion process is assumed to be influenced by three forces : the external influence through mass media, the internal influence by the communication of the brand, and the influence of the growth of category market. Through the assumption that the internal influence of each brand in a product category has the identical structure, the proposed brand-level model can be summarized to the category Bass model and can be solved with a closed-form expression. Applying the model to the diffusion of ADSL in Japan, the empirical results reveal that the proposed model describes the brand-level diffusion pattern very well.

論文審査の結果の要旨

新製品普及に関しては過去に膨大な研究成果があるが、そのほとんどは単一製品・市場に関するものであった。それに対し、本論文は、個々の普及パタンを相互に比較するための枠組みを提示し、製品や市場条件・導入時期の異なる普及パタンについて比較や予測を可能とした点に特徴がある。この枠組みでは、普及の進行が市場の初期条件と時間軸上の普及速度とに理論的に分解されるが、米国・日本・中国での普及に関する３つの実証研究を通して、その有用性が明らかにされている。本論文は、条件の異なる普及パタンを比較するための土台を提供しただけではなく、他市場での普及データや市場条件の違いを利用した新製品普及予測の改善といった国際マーケティングの実務に対する貢献の面からも高く評価される。以上のことにより、本論文は博士（経済学）の学位に値するものと認める。