

## 基于两区域市场的可替代产品扩散模型及其稳定性

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### Substitute products diffusion model and stability in two regional markets

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- 摘要
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**摘要** 针对可替代性产品的市场扩散过程, 研究多区域市场情形下产品扩散的机制与规律, 对于企业营销战略的制定和资源调配具有重要的指导意义. 首先, 分析了两区域市场情形下的可替代性产品扩散规律, 建立了具有普遍意义的基于抽象接受函数的可替代性产品扩散模型; 然后, 分别讨论了所有产品均有正广告效用和产品有非负广告效用时, 模型正平衡点和非负平衡点局部渐近稳定的条件, 分析了区际间人口流动率对不同条件下广告效用和口碑效应的影响, 获得了没有广告宣传的产品占有市场或被淘汰的阈值; 最后, 通过数值模拟验证了研究结论的有效性, 揭示了人口流动率、口碑效应、广告效用等因素对产品扩散的影响.

**关键词:** 可替代性产品 两区域市场 产品扩散 稳定性

**Abstract:** It is of great guiding significance to make a study on the mechanism and laws of products diffusion in multiple markets in terms of substitute products diffusion for marketing strategy establishment and resource allocation. Firstly, we analyzed the diffusion rule of substitute products in two regional markets and constructed a diffusion model based on an abstract acceptance function in a universal way. Then, focusing on the advertisement effect, we discussed the conditions for locally asymptotical stability of the positive equilibrium and the nonnegative equilibrium. Whilst, we analyzed the influence of mobility rate on the advertisement effect and the public praise, obtaining the threshold for determining the survival or elimination of products without advertisement. The numerical simulation shows the validity of research results and reveals the impact of mobility rate, the public praise and the advertisement effect on products diffusion.

**Key words:** substitute products two regional markets products diffusion stability

收稿日期: 2011-07-11;

基金资助: 教育部人文社会科学研究计划项目(09YJC630217); 江苏省社会科学基金(11EYC019)

引用本文:

王德鲁, 刘芸, 宋学锋. 基于两区域市场的可替代产品扩散模型及其稳定性[J]. 系统工程理论实践, 2012, (8): 1692-1703.

WANG De-lu, LIU Yun, SONG Xue-feng. Substitute products diffusion model and stability in two regional markets[J]. Systems Engineering - Theor Practice, 2012, (8): 1692-1703.

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