

Dynamics of Competition on Openness Strategies and Software Maintenance

What are the optimal software openness strategies firms should adopt under varying market conditions considering competition, open source community effort, pricing, and maintenance costs?

This article by Subodha Kumar and colleagues studies how software firms choose between fully open, partially open, or fully proprietary software strategies while competing on price and quality. Firms face a trade-off when opening their software. Openness allows firms to leverage the effort of the open source community to improve software quality and reduce maintenance costs. However, it can also increase collaboration costs and raise risks related to intellectual property and security. The authors model two competing firms that simultaneously decide their openness strategy, effort levels toward quality improvement, and pricing in a four-stage game.

The model captures how baseline demand changes with openness, how the open source community's engagement affects quality, and how customers' sensitivity to security risks influences demand. Two main scenarios emerge. In the first, when demand increases with greater openness, firms optimally choose either fully open or fully closed strategies, and partial openness is not preferred. In the second scenario, when customers are sensitive to security and intellectual property risks, partially open strategies may be optimal depending on the balance of demand loss versus efficiency gain from openness.

The authors also provide empirical evidence showing that vulnerabilities in open source software are fixed faster than in proprietary software. The study offers practical insights for managers in planning openness strategies and lays a foundation for future research on the topic of partial openness in software markets.

MAJOR TAKEAWAYS:

- Software firms balance openness, quality, and pricing in competitive markets influenced by open source community efforts.
- Full openness or proprietary strategies dominate when openness boosts demand; partial openness suits security-sensitive markets.
- Open source software vulnerabilities are resolved faster, highlighting benefits of openness despite collaboration costs.

WHO NEEDS TO KNOW:

- Software Managers
- Open Source Developers
- Business Strategists

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- Dynamics of Competition on Openness Strategies and Software Maintenance
- Journal: MIS Quarterly
- DOI:

<https://doi.org/10.25300/MISQ/2023/17063>