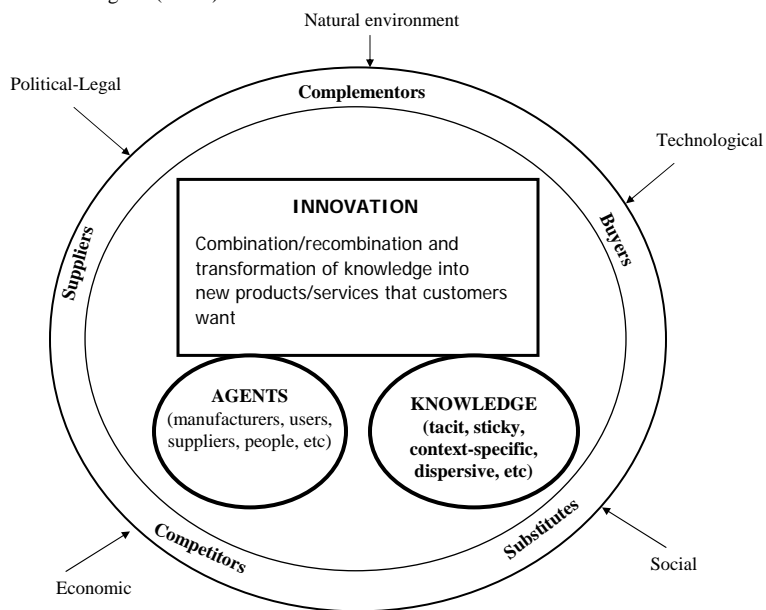


USER INNOVATION TECHNOLOGY LIFE CYCLE

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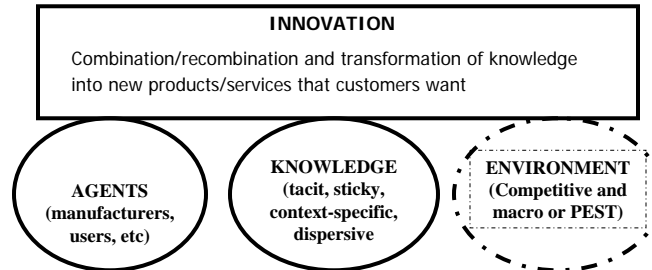
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Role of the environment during Innovation: of the Political, Economic, Social and Technological (PEST) environments



2

Role of the environment in User Innovation research



- E.g., Users (*agents*) are more likely to innovate when user *knowledge* is more sticky than manufacturer technical solution knowledge (Ogawa, 1998).
- User innovation: e.g., Von Hippel (2005), Franke, N. & S. Shah (2003); Jeppesen, L. B. & L. Frederiksen (2004); Lakhani, K. R. & E. von Hippel (2003); Lüthje, C., C. Herstatt & E. von Hippel (2005); Shah, S. K. (2006)

3

Motivation for exploring user innovation life cycle

- Innovation does not take place in a vacuum. Therefore neglecting the role of the environment gives us an incomplete picture
- Moreover, since strategy is about matching internal strengths and weaknesses to environmental opportunities and threats to win, strategy scholars cannot afford to leave out half the picture
- Could “Customer co-creation” and user innovation gospel have gone too far?
 - Users did not invent the transistor, microchip, or the Internet
 - Most patients cannot invent the drugs that they need
- I focus on the technological part of PEST (political, economic, social, and technological environment)
- Rate of change of technology can influence competitive conditions and therefore ability of firms to innovate

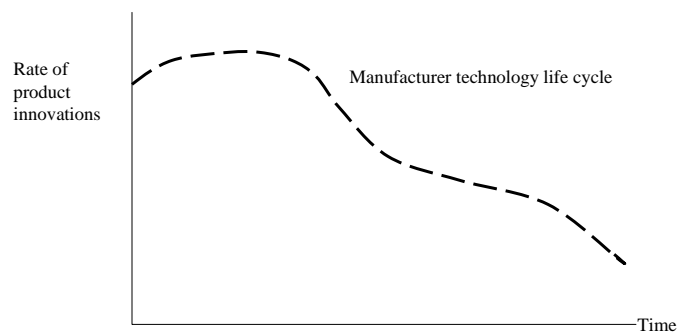
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Assumptions

- Users and manufacturers are boundedly rational and satisfying (not rational and profit maximizing.)
- Knowledge can be explicit, tacit, context-specific, dispersive and available in large quantities
- Innovation is defined as improvements in a product and therefore include inventions
- There are many product life cycles in a technology life cycle
 - e.g., video game console technology encompasses many generations of video game consoles(products)
- The technology life cycle starts following a radical technological change

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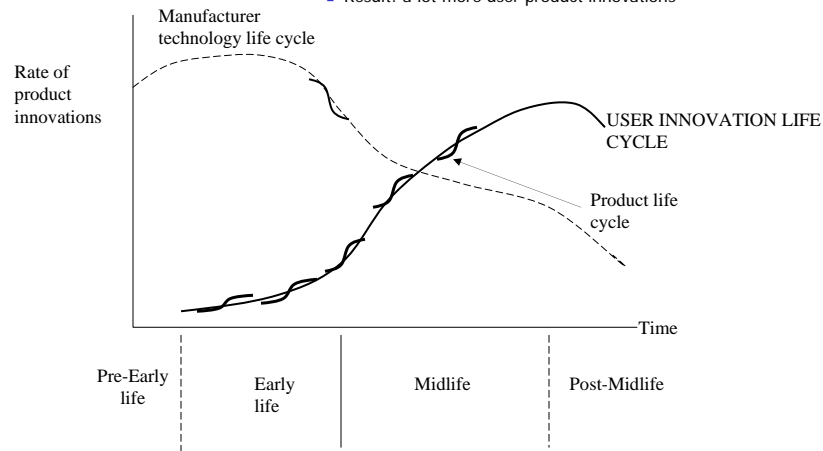
Utterback and Abernathy technology life cycle



6

User innovation life cycle

- In Pre-Early stage, users know little or nothing and cannot innovate. (How many of today's Internet users knew what they wanted in the Internet early in the life of the technology?)
- Number of customer increases as more and more customers also discover their latent needs
- Manufacturers locked into dominant design or standard, AND complementary assets
- Dominant design and standard increases number of customers but also limits choice and uniqueness of applications
- Result: a lot more user product innovations



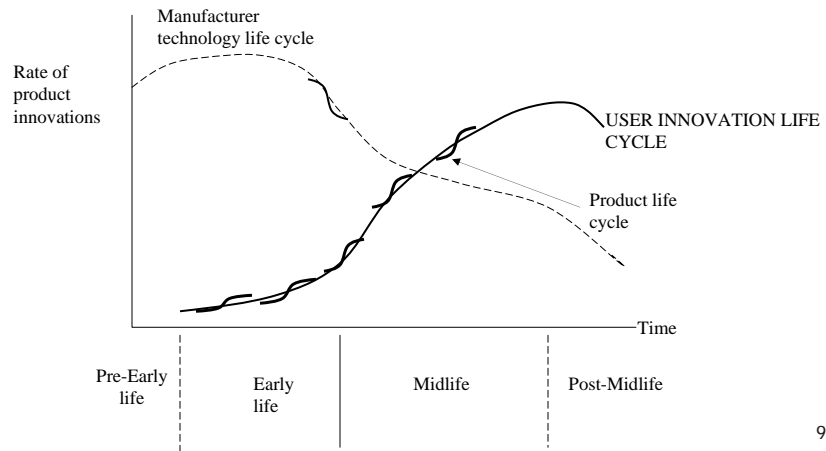
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Implications and Conclusions

- Firms with complementary assets should outsource design innovations to users in the Post-Midlife stage of a technology life cycle
- The number of suppliers and complementors who can innovate should also go up over the technology life cycle
- *Crowdsourcing* may hold more promise than most people think

8

User innovation life cycle



Role of PEST (Political, Economic, Social and Technological) environments in User Innovation research

