The Wealth of Crowds and Innovation in the Digital Age

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OECD Workshop

20 June 2018

Value of Crowdsourcing

❖ Crowdsourced Digital Goods are playing an increasingly important role in the economy

- Knowledge repositories
- User review sites
- Open source software (OSS)

• Digital goods that are non-pecuniary (free) and effectively limitless

- Important inputs into production
- Systematically undercounted in productivity measures (scale without mass)
- Examples: OSS, YouTube, digitized 3D blueprints, etc.

Innovating Without Information Constraints

- Exponential technological progress means information costs are approaching zero

- Leads firms to increasingly engage with external communities

- Has a decentralizing effect on the firm and the locus of innovation
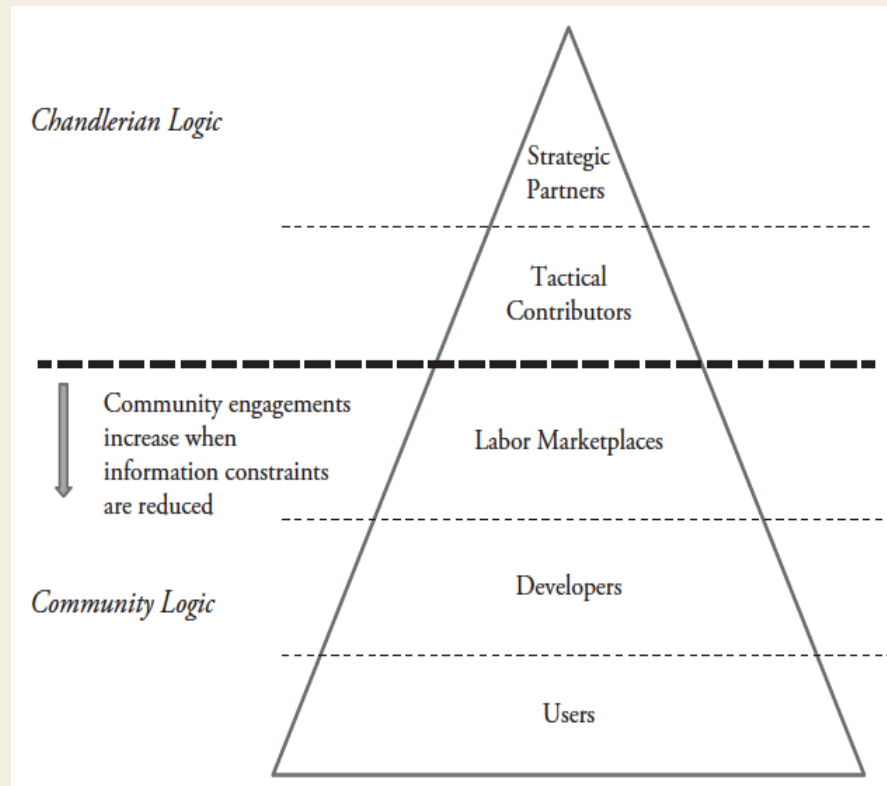
Typology of Communities

The Role of Government in Crowdsourcing

❖ Possible levers for government:

- Direct sponsorship of crowdsourcing programs
- Tax incentives for firms and individuals who contribute
- Favoring crowdsourcing in government procurement

❖ To whom do the benefits accrue?

- Crowdsourcing contributions may improve global social welfare
- Are their local/domestic effects as well?

Measuring Digital Dark Matter

- Scanned 1% of the 1.5 billion IPv4 addresses in the US
    - Found ~200,000 web servers, 23% were running Apache (Open Source Software)
    - This leads to an estimate of ~4 million Apache servers in the US
- Impute value using the price of a similar good, Microsoft IIS
    - Value of Apache is between **$2 billion** and **$12 billion**
    - Represents a 17% to 19% rate of return, if Apache was the *only* good to come out of all of the US government's NSF investment in super-computing centers from 1985-1995

France Policy Study

❖ France implemented procurement policy changes favoring OSS to save money

❖ Find policy changes lead to

- Substantial increase in OSS contributions
- Increase in percent of firms using OSS
- Large increase in IT employment
- Increase in the number of IT related startups
- Decrease in number of IT related patents

User Data and Innovation

❖ Survey: Successful companies are collecting and using customer data, but securing it

  ▪ Security investments can provide a company a competitive advantage

❖ Customers care about how you use their data

  ▪ Transparency is important

  ▪ GDPR makes this required

❖ But, research has shown stricter regulation on use of customer data makes innovation more difficult

Summary

❖ Regulatory policy/action can encourage crowd participation and openness (data, technology, etc.)

- Helps ensure more widespread opportunities
- But must be balanced with privacy/security concerns