# Technology Adoption Indicators Help Determine the Likelihood of Technology Adoption[1]

The Technology Adoption Indicators (TAI) methodology provides a framework for assessing whether a particular industry will adopt new technologies. Based on economic theory and empirical studies, this framework defines industry characteristics that are associated with more rapid adoption of technology.

Applied to the ATP-funded flow control machining technology, a case study using TAI concludes that the lawnmower industry is a more likely adopter than the aircraft engine industry.  Further analysis of the potential impact of the Flow Control Machining technology on the lawnmower industry using a macroeconomic simulation and forecasting model suggests substantial benefits to the U.S. economy.

The TAI framework includes:

- Market concentration, defined by the comprehensive Herfindahl Index and the 4-firm and 8-firm concentration ratios
- Number of patents and research joint ventures
- Public policy constraints, such as environmental regulations and tax law

A comparison of TAIs for the lawnmower industry and aircraft engine industry, two potential adopters of Flow Control Machining technology, showed the following:

| TAI Measure | Lawnmower Engines | Aircraft Engines |
|---|---|---|
| IndustryConcentration -Herfindahl-Hirschman Index | Optimal for adoption | Not optimal for adoption |
| Competitive environment for technology -Number of patents 1996-2000 -Number of research joint ventures | Moderate level of patenting and moderate number of research joint ventures indicate less competition and relatively greater likelihood of adoption of Flow Control Machining | High level of patenting and high number of research joint ventures indicate more competition and relatively less likelihood of adoption of Flow Control Machining |
| Regulatory environment | Major new anti-pollution regulation suggests high likelihood of adoption | --- |

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[1] Recently published ATP contractor study by Brown and Ehlen, *Technology Adoption Indicators Applied to the ATP Flow-Control Machining Project,* NISTIR 6888, May 2003.

**Highlights from ATP's Economic Studies**

**Economic Assessment Office**

There are widespread differences across U.S. industries in patents, research joint ventures, the size and distribution of firms, and in the use of new technologies. Increased understanding of the relationships among these variables will help ATP to:

- Identify promising case studies for project evaluation

- Apply a consistent methodology for conducting prospective case studies of the economic benefits of ATP projects

- Understand the industry environment addressed by the business plans in ATP proposals

- Increase awareness of ATP awardees as to which industries are more likely potential adopters of their technologies

- Assess the likelihood of adoption and the potential economic impact of proposed projects

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