Case Study of Wind Turbine Sourcing: Manufacturer Selection Criteria

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The University of Oulu is an international research and innovation university engaged in multidisciplinary basic research and academic education.

* Faculty of Humanities
* Faculty of Education
* Faculty of Science
* Faculty of Medicine
* Oulu Business School
* Faculty of Technology
Raahe Unit

• Raahe unit organizes academic research and development activities in Raahe region.

• Our business idea is to promote the region's business and public service tasks by implementing research and development projects.
Locations

Raahe Unit, Case region

University of Oulu

Finland

44 miles
About the Case Region

• Raahe has declared itself to become the Wind Power Capital of Finland

• 20 % of Finland’s wind power capacity

• Around 20 planned wind farms (10 operators)
Research

• Motivation:
  – Turbine manufacturers => Customer needs
  – Wind power companies => General criteria of the business

• Method: Semi-structured interviews

• Target Group: Technical experts and decision makers of the wind energy companies

• Sampling: 70% (7 out of 10 operators)

• Answers classified to themes
Results
Results

• Theme Reliability (36%)
  – Suppliers reputation as a company
    • Credibility
    • Recognition
    • Background factors
    • Financial situation
    • Practices and services overall
  – Suppliers location and warranty issues
  – Production statistics and track record, suitability to arctic conditions
Results

• Theme Production volume (23%)
  – Tower heights and blade lengths
  – Performance (kWh or MWh price)
  – (gearless options)
Results

• Theme Cost factors (17%)
  – The total cost (incl. Infrastructure works)
    • Various limitations of total cost
  – Turbine’s price, cost of grid technology integration
  – (the cost of the operation and maintenance)
Results

• Theme Availability factors (13%)
  – Availability of desired type of turbine
  – Availability of spare parts
  – Power plant delivery time
Results

• Theme Maintenance (8 %)
  – The speed of the maintenance when needed

• Theme Others (4 %)
  – R&D cooperation between the firms
  – Noise and safety (!)
    • Only one interviewee mentioned
    • Blade heating
Conclusions

- Reliability of supplier is more important than the reliability of product.
- Total cost of a wind farm is more important than the cost of the single turbine.
- The sourcing of wind turbine is in line with the "general" sourcing criteria:
  - Quality (and reliability) is more important than price.
Thank you!