Decision Making Analysis
on
Career Technical Education

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January 20, 2016
NTID Symposium
Follow this form:

- Problem Statement
- Rationale
- Decision Analysis Framework
- Stakeholders
- Review of the Literature
- Objectives
- Alternatives
- Method of Predicting Effects
- Marginal Costs
- (NEED) Data collection, Data Analysis, trade offs/consequence table.
- Consequence Table (EXAMPLE)
Problem Statement

Which Associate Degree Programs Should NTID’s Department of Engineering Studies Offer?

A Decision-Analysis Proposal
Rationale

- **Foundation issues associated with NTID’s strategic planning**
  - Update career-focused programs and employment readiness
  - Expand articulation agreements and transferability with RIT
  - Investigate development of D/HoH-related STEM programs with RIT

- **Current issues regarding program offerings since 2002**
  - ACT scores
  - Academic readiness (or lack thereof) of prospective students
  - Limitation of program choices, specifically in AOS

- **Primary issues regarding students via program offerings:**
  - Not all D/HoH students qualify for 2+3 programs
  - Only two choices in AOS programs (CADT, CIMT)
  - If a D/HoH AOS student is not interested in CADT or CIMT, attrition becomes an issue.
Decision Analysis Framework

1. Eight Models
   A. Classical
      (Savage, 1954)
   B. Muddling Through
      (Lindblom, 1959)
   C. Mixed Scanning
      (Etzioni, 1967)
   D. Garbage Can
      (Cohen, March, & Olsen, 1972)
   E. Political
      (Lindblom, 1955)
   F. Recognize Primed
      (Klien, 1998)
   G. Satisficing
      (Simon, 1956)

Mixed Scanning Defined

Elements of both [the rationalistic and incrementalist] approach by employing two cameras: a broad-angle camera that would cover all parts of the sky but not in great detail, the second one which would zero in on those areas revealed by the first camera to require a more in-depth examination. (Etzioni, 1967, p. 389)

Similar metaphor is T-shaped theory.
Stakeholders

1. Prospective D/HoH Students
2. Existing D/HoH Students
3. Department of Engineering Studies (DES) Faculty
4. DES Chairperson
5. NTID President / NTID Dean *
6. Curriculum Committees
7. Administrative Council
8. United States Department of Education (US DoE)
9. Other RIT Colleges (College of Engineering, College of Applied Science Technology)
10. NTID Access Service
11. Employers
12. Alumni
13. Academic Senate
14. New York State Department of Education (NYS ED)
15. Academic Advisors (Counselors, professional staff, faculty)
16. NTID Admissions
17. NTID Development Office
Review of the Literature

- Current Issues within Postsecondary Education
  - Accessibility, accountability, and affordability
  - Career Technical Education / Carl D. Perkins IV
  - Labor force

- Program Offerings Development
  - Program expansion strategies
    - Clusters and pathways
    - Articulation Agreements in Postsecondary education
    - Collaboration efforts
  - Engineering education and reform
    - Engineering restructures for non-engineering students
    - STEM to STE(A)M
    - Workforce education
      - Underrepresented Students
      - Diversity the workforce
Review of the Literature .. Cont.

- Deaf epistemologies in education and workforce
  - Deaf epistemologies
  - Challenges in post-secondary education for the Deaf
  - Occupational transition status for the D/HH.

Important indicators, despite hearing-deaf employment / unemployment/ earning differences (Walter, 2010):

- College educated D/HoH employees earn 2.3 times more than non-college D/HoH employees
- College educated D/HoH employees earn 31% more than non-STEM D/Hoh employees
Objectives

1. Increase DES student enrollment (Extremely Important)
2. Improve employability of DES graduates (Extremely Important)
3. Increase DES student graduation rate (Extremely Important)
4. Increase cooperative work experience opportunities (Extremely Important)
5. Faculty support the alternative (Very Important)
6. Aligns with RIT’s strategic plans (Very Important)
7. Increase DES student retention in STEM (Very Important)
8. Improve DES graduates’ access to emerging fields (Important)
9. Increase articulation agreements with RIT colleges (Important)
10. Minimize time to degree (Important)
Alternatives

- **Alternative 1:** Maintain the status quo
  NTID and DES will continue to marketing, recruiting, and preparing students for employment.

- **Alternative 2:** Add Biomedical Equipment Repair Technician (BERT)
  Training D/HoH students in how to maintain, adjust, calibrate, and repair medical equipment such as defibrillators, heart monitors, X-rays, and ultrasound equipment.

- **Alternative 3:** Add Renewable Energy/Sustainability Technician (RE/ST)
  Training D/HoH students in how to explore various renewable and sustainable energy options and evaluate their properties with respect to sun, wind, and water via green economy (i.e. solar energy, wind power, and hydroelectric), and can stretch to LEED via construction.

- **Alternative 4:** Eliminate existing program, and add BERT

- **Alternative 5:** Eliminate existing program, and add RE/ST
Methods of Predicting Effects

- **Methodology:** Mixed Methods Paradigm
- **Methods: Collection**
  - 1 Focus Group
  - 2 Individual Interviews
  - Many Surveys (Qualitative Survey, Quantitative Survey)
  - Literature Review
  - Documents Analysis
- **Methods: Analysis**
  - Coding (In Vivo, Magnitude/Emotional)
  - Transcription Analysis
  - SPSS
Marginal Cost
(status quo = $0)

Fig. 1. BERT Expenditures Marginal Cost Summary

Fig. 2. RE/ST Expenditure Cost Analysis Summary

Fig. 3. BERT - CADT Expenditures Cost Analysis Summary

Fig. 4. REST - CADT Expenditures Cost Analysis Summary
Based on trade-offs, uncertainty, and risk tolerance of decision making; ranking alternatives’ elimination chart is necessary.

<table>
<thead>
<tr>
<th>Objective Number</th>
<th>Objective</th>
<th>Performance</th>
<th>Performance attributes</th>
<th>Objective Importance and Type</th>
<th>Data/Source Evidence</th>
<th>Scale</th>
<th>Tenured (Full, Associate)</th>
<th>Pre-Tenure (Assistant)</th>
<th>NTTF (Lecturer)</th>
<th>Adjunct</th>
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Scale: HL = Highly Likely, L = Likely, U = Unlikely, HJ = Highly Unlikely
Scale: HS = Highly Support, S = Support, U = Unlikely Support, HS = Highly Unlikely Support
Scale: Ranking 1 = Highly Likely, 2 = Likely, 3 = Unlikely, 4 = Highly Unlikely

Example: djlnet Fall 2013 DM 1
Table 6: Ranking Alternatives (REDRAWN) Elimination Chart

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<th>Combo Elimination (Uncertainty)</th>
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<td># of courses / semester</td>
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<td></td>
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<td></td>
<td># of contact hours/week per semester</td>
<td>Fund-El Workload Policy</td>
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<td># of office hours/week per course section</td>
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<td># of students minimum served / semester</td>
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<td>Grant: Bring in $ to University</td>
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<td>Research: Contribute to Community</td>
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Scale: HL - Highly Likely, L - Likely, U-Unlikely, HU-Highly Unlikely
Scale: HS- Highly Support, S- Support, U-Unlikely Support, HUS-Highly Unlikely Support
Scale Ranking: 1 - highly likely, 2- Likely, 3- Unlikely, 4-Highly Unlikely

Example: djnet Fall 2013 DM 1
Questions
Thank You
References

