

Re-engineering New Zealand tertiary education

Dirk Pons and John Kenneth Raine

Presented to The Association For Engineering Education In Southeast And East Asia And The Pacific Mid-Term Conference 2004, Auckland, New Zealand,

1 Introduction

- New Zealand (NZ) adopted a competitive market-driven funding model (1989).
- Continuing high level of perturbation throughout the system.

2 Problem definition

- Education systems have complex behaviour.
- Changes harm desirable functions and introduce new unwanted behaviours.
- Decision-makers fail to anticipate these effects.
- Difficult to anticipate the behaviour of a complex system such as a tertiary education system

Hypothesis

- The hypothesis in this paper was that a system model could be developed to qualitatively explain the observed behaviour of the NZ tertiary education system.

3 Method

- Used dynamic process analysis (DPA).
- Based on integration definition (IDEF0).
- Is a diagramming tool to assist comprehension of the interactions of various processes within a larger system.
- It is not a mathematical simulation system

4 Results

- Set of diagrams.
- Hierarchy, from overview to detail.
- Notation: activities in boxes, and objects as arrows.
- Inputs on the left, outputs on the right, constraints above and mechanisms (tools) below the box.

Undergo learning {Edu-3}

- Provides the overview of this model.
- Please observe the notation.

International student selects a destination country (Edu-3-1}

- NZ tertiary education is critically dependent on foreign enrolments for its present financial viability
- Postulates a decision process based on: local opportunities, prospects, perceptions.

Select institution at which to study *{Edu-3-2}*

- Perceptions (e.g. esteem of institution, research ratings) appear to be more important factors than quality of teaching.

Study at tertiary education institution {Edu-3-4}

- Students only see the teaching component.
- Behind the scenes there is a large amount of organisation.
- This is further detailed next.

Manage teaching section

{Edu-3-4-2}

- Processes at Head of dept level.
- Two key outcomes: teaching quality and research quality.
- Note the risks (hollow arrow heads).

Set financial budget {Edu-3-4-3}

- NZ education is competitive and financial survival is not automatic.
- Estimating income from enrolments is difficult.
- NZ may not be able to support her current portfolio of programmes if risk events occur. Diversity and redundancy may decline.

Senior management sets and implements strategies {Edu-3-4-4}

- Financial perspective dominates the decision process.
- Perceive their financial survival as tenuous.
- Detriment: programme proliferation and dilution of enrolments on existing programmes.
- Emphasis on facilities.

Market programmes to public {Edu-3-4-5}

- Marketing objectives (RHS)
- Try to change perceptions about the institution.
- Try to provide knowledge about the programmes offered.
- Engineering enrolments at risk.
- Negative perceptions about engineering careers.
- Needs different marketing approach.

Establish and deploy marketing plan for subunit (dept or programme) {Edu-3-4-5-5}

■ Outreach model.

■ Seeks to awaken interest in Engineering.

5 Discussion

- The NZ education system works well in most respects.
- The dominant failures are the destructive competition and the financial insecurity of the organisations.
- These are consequences of the competitive funding model.

Characteristics

- Falling per student capita state funding.
- Domestic enrolments are a depleted resource.
- Institutions have to actively recruit outside their own regions.
- Mergers.
- Opportunistic projects, inducements to enrol.

Social planning

- As Simon [1981] observed, 'the members of an organization or society for whom plans are made are not passive instruments, but are themselves designers who are seeking to use the system to further their own goals' (p177). The process is like a game: 'the planners ... implement their design, and those who are affected by it then alter their own behavior to achieve their goals in the changed environment' (p177-178).

Challenges for the state

- Achieve the national good concurrently with providing quality education, in a way that simultaneously secures the financial viability of the participating institutions.
- State needs to find ways not simply to ban organisations operating in a particular (undesirable) way, but incentives for them to change to a different mode.

Limitations of this model

- Subjective, personal construct.
- Risk of spurious causality.
- Successful if it helps others better understand and respond to their environment.

6 Conclusions

- Have shown that a system model could be developed to qualitatively explain the observed behaviour of the NZ tertiary education system.
- Have identified the constraints and activities within the system.
- The results hopefully help other tertiary education organisations better understand and respond to their dynamic environment.

End

Thank you for your attention.

Address for correspondence: dirk@pons.ws