Variations in the Impact of Institutional Research Offices in Data-Driven Management: Buffering, Enabling and Assessing the Technical Core

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Roundtable SAIR 2005
Our purpose is to discuss the structural conditions and processes by which IR can enable a “data-driven” perspective given its location within a college or university.

While data accuracy is paramount to credibility, examination of which data streams have elevated importance tell IR researchers much about their organizations.

Moreover, every data system and the reports that emanate from them have hidden and unquestioned assumptions and policy emphasis built into their design.

What we measure has major effects on how we sense the environment. Which data streams an institution elevates in importance for making choices over time is a neglected but an extremely important area for researchers interested in organizational decision-making and institutional research.
Data Driven Management is:

• Participation in the framing of the question;

• Defining relevant methodologies;

• Preparation of analyses and scenarios;

• Active participation in the decision-making process;

• Formative and summative evaluations of implementation and impact.

An Example of what Data Driven Management is not:

IR data is used a “decision support.” I.e. the decision has already been made; IR is to provide the legitimizing data, to delimit the data to fit the decision as opposed to influence the process by which the decision is made.
Caveat!

Every data system and the reports that emanate from them have hidden and unquestioned assumptions and policy emphasis built into their design.

1. Transactional data systems. Designed to impose structure on a well-defined process — such as registration, or graduation. Even though these applications are source specific and detailed-oriented, they have within them programming decisions (embedded policy) that impact data storage, calculations and output.

2. Input-Output “snapshot" reporting systems which generate descriptive statistics. (E.g., THECB reports) Attempts to institute Operational Data Stores, etc… are efforts to reduce the “age” of the data.

TRADITIONAL CONCEPTION AND DAY-TO-DAY ROUTINES

Data Capture → Data Cleansing → Information Creation → Finished Output

Mainframe Base Systems: SIS HRS; FRS
Middleware FOCUS & SAS
PC (Access, Excel, & PC SAS)

Architecture Issues
System Navigation Issues
Data Representation Issues
Security & Access Issues
Cleansing
Filtering
System Knowledge
Initial Output & Packaging
Final Packaging
Presentation
Easy, widely used format
Buffering the Technical Core

Institutional Research

Univ. Environment

Research

Instruction

Service

DOE
IPEDS
NSF
NIH

THECB
LBB
SAO
TX Leg. Gov.

LOCAL MEDIA

SACS
AACSB
ABET
APPAM

US NEWS
BARRONS
S&P

SYSTEM
REGENTS
COMPONENTS
Assessing the Technical Core

Institutional Research

Research
Instruction
Service

Univ. Environment

Facilities analyses
Space utilization
Renovation tracking
Master plan

Faculty:
R&D Achievements
Funding Trends
Publications
Workload

Student satisfaction
Retention Analyses
Teaching Assessment
Completions Analyses
Course Scheduling &
Course Sequencing
Demand Analyses

Facilities analyses
Space utilization
Renovation tracking
Master plan
Enabling The Technical Core: Example 1

WORK-PROCESS IMPROVEMENT AND PROGRAM SERVICES OSPA PROVIDES TO OTHER DEPARTMENTS

- **OSPA**
  - OSPA-developed FOCUS programs
- **UTD DATABASES**
  - (SIS+, FRS, HRS, LTS)
  - Report Exported in E-print or Text File
- **DEPARTMENTAL USE (EXCEL, ACCESS)**

Departments currently served by OSPA developed programs:

- Admissions Office (Admissions Data)
- Provost Office (Distance Education Courses)
- Enrollment Services (Admissions Data)
- International Student Services (Student Data)
- Registrar's Office (Student, Course, Distance Education and Facility Data)

- Library (Enrollment per Course)
- Financial Aid (Student Financial Aid)
- BBS (Student Psychology Exam Credits)
- ECS (Enrollment Data for ECS Advisors)
Enabling The Technical Core: Example 2

Adaptive intelligence and targeting.

Noisy Data to Smoothed Trend lines
This figure shows the prediction lines for 5 student classifications at their individual “take-off” points and their “convergence” points.

The data drives and organizes work activities to achieve Enrollment targets.
Cumulative Junior Applications For Fall Semesters 2001, 2002, 2003 and F04 Target
DATA FLOW AT TYPICAL UNIVERSITY

- **Primary** (President/Provost)
- **Secondary** (Vice Presidents/Associate Provosts)
- **Tertiary** (Departmental Directors)

**Data Flow**:
- Data Input and Management
- Requests/Feedback
- Reports
- Dissemination
INSTITUTIONAL RESEARCH OFFICE – PASSIVE/ SUPPORTIVE MODEL
Responds Primarily to Needs of Immediate Supervisor
INSTITUTIONAL RESEARCH OFFICE – INTERACTIVE MODEL
Most Common Model: “Statistics Factory” for University
INSTITUTIONAL RESEARCH OFFICE – PROACTIVE MODEL
University’s “Think Tank”

REQUESTS
DISSEMINATION

PRIMARY
(PRESIDENT/ PROVOST)

SECONDARY
(VICE PRESIDENTS/ ASSOCIATE PROVOSTS)

TERTIARY
(DEPARTMENTAL DIRECTORS)

REPORTS
REQUESTS/FEEBACK

DATA
ANALYSES
ANALYSES
ANALYSES

IR

ROOT DATA

DATA INPUT AND MANAGEMENT
INSTITUTIONAL RESEARCH OFFICE
Strategy Driven Independence

- PRESIDENT
- PRIMARY (PROVOST)
- SECONDARY (VICE PRESIDENTS/ ASSOCIATE PROVOSTS)
- TERTIARY (DEPARTMENTAL DIRECTORS)

DATA INPUT AND MANAGEMENT
ROOT DATA

REQUESTS/FEEDBACK
REPORTS
ANALYSES
DATA
Organizational Variables Influencing IR “Institutional Power”

• **Communications flows** from IR upward and outward, to whom DII flows, and what these **clients** do with the information are important organizational conditions enhancing or limiting the impact of the office and its output.

• Conditioning the **placement** of IR in the organizational hierarchy, and the **bundles of functions** performed are **institutional characteristics** such as size, public-private, and age.

• The higher up in the **administrative hierarchy** the office is attached the greater the power

• The more **data flows** (e.g., student, faculty, financial, R&D) **aggregated by IR**, the greater the power

• The greater the **access to multiple data sets** the greater the power (research functions)

• The more **integrative** the office is in **providing intelligence** as opposed to data the greater the power.

• The more **exclusivity** of IR to data the greater the power. Conversely, **the more data providers** there are to senior management, the lesser the power of IR.
Organizational Variables Influencing IR “Institutional Power”

• The more transparent and distributed the data and information are, the greater the power of IR. Conversely, the fewer the number of faculty/staff with access the less the power of IR.

• The greater the power of the faculty in running the institution the lower the power of IR.

• The more the loci of organizational power is distributed to academic units, the more decoupled the technical cores are from the central administration, the lower the power of IR.

• Conversely, the greater the power lodged in the managerial and administrative culture the more likely that IR will have more power.

• The greater the perceived technical competence of IR staff, the greater the power.

• The higher the demand for accountability by external stakeholders, the great the power of IR.

• Collaterally, the closer the institution is to important accreditation, the higher the power of IR.
REPORTING STRUCTURE AND RESPONSIBILITIES OF VARIOUS INSTITUTIONAL RESEARCH OFFICES

Primary Access

Secondary Access

Tertiary Access

Passive Supportive Interactive Proactive

PRIMARY FUNCTION(S)

WORK FLOW IMPROVEMENT

Mandatory Reporting

Assessment

Enrollment Forecasting

Strategic Planning Decision Analysis

Process Analysis

Data Warehouse

Fact Books

User-driven ad hoc requests

DATA AUDITING

Process

Ad Hoc Requests

Interactive Supportive Passive

Strategic Planning

Decision Analysis

User-driven ad hoc requests

Interactive Supportive Passive

Strategic Planning

Decision Analysis

User-driven ad hoc requests
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<th>Collegial</th>
<th>Managerial</th>
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<tr>
<td><strong>Undergraduate students</strong></td>
<td>Learners</td>
<td>Customers; credit hour generators</td>
</tr>
<tr>
<td><strong>Graduate students</strong></td>
<td>Apprentices</td>
<td>Employees</td>
</tr>
<tr>
<td></td>
<td>Learners</td>
<td>“Employees who provide service for other customers (undergraduates)”</td>
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<tr>
<td><strong>Faculty</strong></td>
<td>Researchers and teachers</td>
<td>“Revenue maximizers and value creators”— production employees</td>
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<td>Tenured and on-track</td>
<td>“Contingent” jobbers, itinerants</td>
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<td><strong>Universities</strong></td>
<td>Publicly supported good</td>
<td>Privatized “capitalized” business</td>
</tr>
<tr>
<td></td>
<td>Learning centers</td>
<td>Managed professionals</td>
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COLLEGIAL INSTITUTIONS: Idealized Type

1. Rely on tradition, precedent and informal power structures.

2. Faculty Driven Policies.

3. Emphasize equality of faculty standing, thoroughness of deliberation, consensus building, lengthy time frame for decision-making.

4. President “first among equals” who relies on expertise and relationships as opposed to coercion and rewards to bring about incremental change.

5. The external environment is sealed off from the internal, which tends toward being a closed system.

6. Relatively small in size and unlikely to have professional schools.

7. IR’s role: Buffer the Technical Core from the Outside
BUREAUCRATIC INSTITUTIONS: Idealized Type

1. Likely to of mid-size, community college or state university.

2. Emphasis on job descriptions, reporting lines.


4. Rational planning, equity, fairness, competency-based rewards are examples of idealized goals in such a system.

5. Friction between bureaucratic administrative controls and professional (faculty) governance.

6. Role of IR: buffering + measuring efficiencies, effectiveness, outcomes as defined by location in organization.

Bureaucratic control may be more effective at institutions where fewer faculty have doctorates, have weak professional ties, and low expectations of involvement in decision-making (Birnbaum, 1988: 127).
From a managerial point of view IR should gather data to answer questions like:

• Do educational outcomes suffer when faculty teach a three course load versus a two course load?
• Do students exposed to a tenured faculty member learn more than a student exposed to a non-tenured member and/or a part-time lecturer?
• Do educational outcomes suffer from instruction delivered by online, on demand courses as opposed to classroom instruction?

From a faculty point of view, while such questions may be interesting, they challenge fundamental values of the academy.
FOR DATA TO HAVE ANY IMPACT IT MUST BE WIDELY AND ACTIVELY DISSEMINATED ACROSS ALL STAKEHOLDERS.

1. What data and information will most effectively support the stated objectives of the institution given the technical system and the characteristics of the environment?

2. How best to achieve the widest possible dissemination, accountability and actionable consequences?
Effects on Traditional Structures

• Data-driven management is an acid—cutting across traditional organizational lines and prerogatives.
• As information becomes more distributed and outcomes more transparent, hierarchical and divisional barriers often become stressed.
• When data as opposed to tradition, policy or politics is used to drive decisions, there often ensues a need for rethinking taken-for-granted areas of university life.
Effects on Institutional Research

1. Data auditing, cleansing, passive reporting will continue to be the foci because these routines are essential to buffering the Technical core--the #1 function of IR.

2. Structural variables influence the degree to which an IR office can have any impact on the technical core of the university. IR is seen as an arm of the managerial culture unless IR actively involves faculty constituencies.

3. Even so, internal impact is more likely in areas not threatening to the collegial value/behavior system (e.g., facilities management, admissions workflow improvements).

4. Much of the most important information produced by IR will never make its way to the “Fact Book.”