Managing the Data Resource

GROUP 5

Rohan Kadu
Jitin Dammu
Sudeep Mungara
Ar Krishnasamy
Nikitha Vippu

Introduction

- Today, corporations are placing increasing emphasis on management of data.
- Firms have adopted multiple approaches that appear to be very diverse in business objective, scope, planning and product.
- The major finding from this study is that there is no single dominant approach to improving the management of data.
- This study identifies a set of key organizational issues that should be addressed while undertaking any data management effort

Current Approaches to Data Management

- As the business need for information increased, so has the technical capability to handle information.
- Managing this data in the best way possible has become a complex problem.
- There are three main approaches in the existing data resource management.

1. Approaches with a technical focus
2. Approaches with a focus on organizational responsibilities
3. Approaches with a focus on business related planning

Research Approach

- Research approach to data management involves the everyday management of research data during the lifetime of a research project.

- It involves decisions about how data will be preserved and shared after the project is completed (for example, depositing the data in a repository for long-term archiving and access).

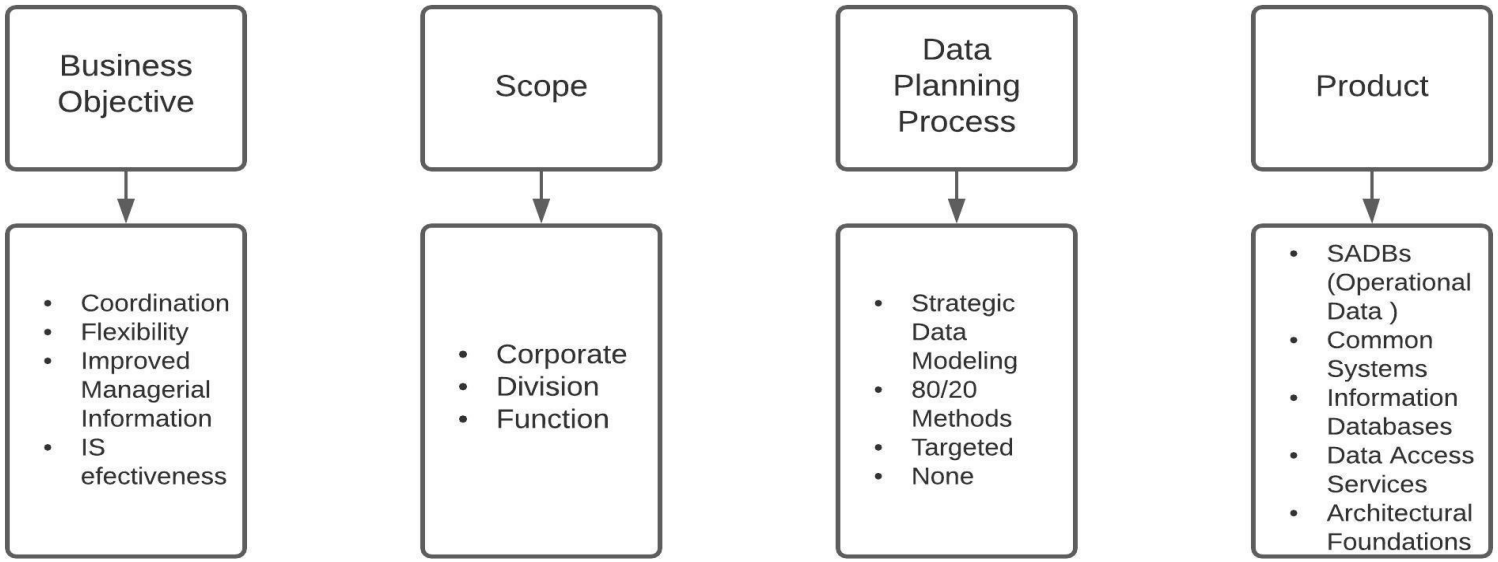
- It also involves gathering opinions regarding the most important problems and issues concerning the management and use of data.

Contingency Approach to Data Management

- The four main elements of the framework represents the key components of the data management efforts studied. These elements are:

1. The identification of the business objective
2. The Scope of the data management project
3. The data planning process
4. The Product of the data Management effort

Contingency Approach (Cont'd…)



The Figure above presents a simple framework that reflects a starting point for visualizing the contingency approach to the data management.

Discussion of the Elements in the Framework

Product

- Any successful data management effort results in a product or deliverable such as new system, service, or policy.
- The “product” most common in the existing data resource management literature is a set of subject area databases used by multiple operational systems.
- Two other product types like subject area databases are common systems and information databases which require a systems development effort
- The final two product types which do not involve new systems or data bases were named data access services and architectural foundation.

Subject Area Databases for Operational Systems

- Subject area databases (SADBs) contain data that is organized around important business entities or subject areas such as customer and product.
- Many different operational applications may share data from a single set of SADBs.
- In most of the cases the product can best be described as SADBs for operational data.

Common Systems

- A second type of data management product which is the set of operational data files or databases that are developed for common systems .
- Common systems are applications developed by a single , most often a central organization to be used by multiple organizational units .
- Common systems have often been developed not for data management purposes but rather to ensure common procedures or to lower IS costs .
- Common systems cannot be developed , however , without surfacing and resolving data definitional issues , since old systems will be discontinued .

Information databases

- A third new systems product is an information database , which can be defined as a subject area database intended for use by staff analysts and line management.
- Information databases are “secondary” databases , which periodically draw their contents from operational databases and sometimes external resources, and often store data in aggregated forms.
- Significantly , information databases can provide data without requiring major rewrites of current systems . Instead , “bridges “ are built from the existing operational systems to provide the approximate data to the new database .

Data access services

- The first three “products” discussed emphasize developing new databases or files with pertinent, accurate, and consistent data whereas Data access services provide small cadre of personnel, whose goal is better understanding of what data is available in current systems and to put place mechanisms to deliver this data.
- These mechanisms include locating appropriate data, extracting data from production files or training users in fourth generation languages.
- Data access services are expected to be more helpful in companies where the existing data is of reasonable quality.

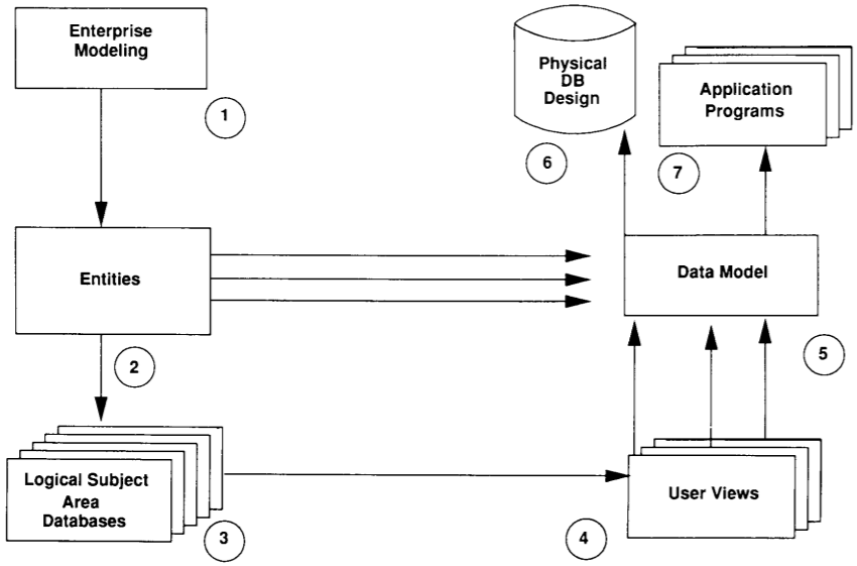
Architectural Foundations for the Future

- In most of the firms, managers focus on a limited set of data serving a portion of the corporation and that is clearly a danger while approaching data management function by function, business unit by business unit or subject area by subject area.
- To avoid future incompatibility problems, some organizations focused on developing “architectural foundations” which are policies and standards that force systems development efforts to conform a well structured, overall data plan.
- One type of architectural foundation is a corporate-wide strategic data model designed to serve as an underlying blueprint for all future systems development.
- A second, more limited approach to data architecture is the standardization of data definitions and codes.

Range of Data Planning Processes

- This section focuses on the planning processes organizations use to identify the target for data management action, and to choose the action to pursue.
- For most of the people, planning for data resource management is synonymous with a large scale strategic data planning and modelling effort. However, there are less comprehensive approaches that can be extremely effective.
- Planning processes are categorized into four types: Strategic data planning; “80/20” approaches; “targeting” and no explicit planning.

Strategic Data Planning



- Involves top-down planning approach focused on understanding and modelling the data of business functions
- Left side shows the top-down planning approach
- Through business knowledge is required
- Logical data model is designed before designing overall application program

Other Planning Reality

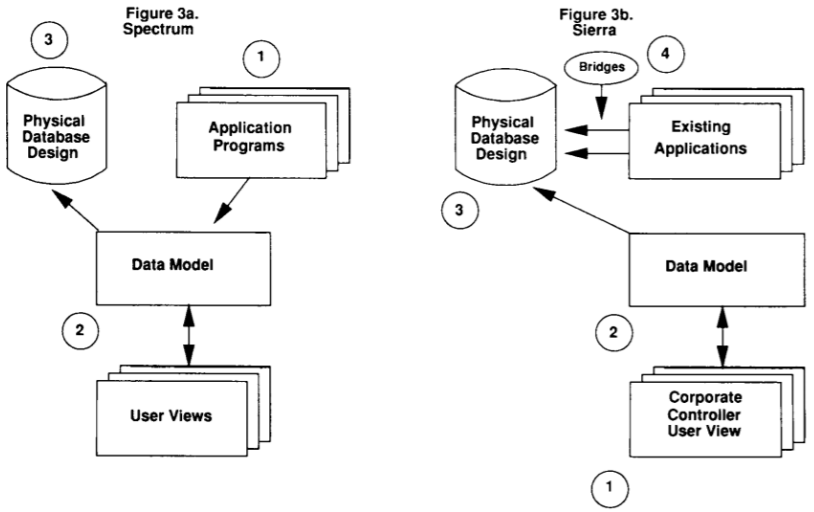


Figure 3. The Planning Reality

- In most case studies planning and implementation process dis not follow standard data planning methodologies
- The diagram shows various other planning methodologies followed based on the base methodology
- Most firms skipped the top down approaches and followed their own alternate approach

Targeting High Impact Area

- The predominant section of firms which skips top down approach have in place an alternate planning process to be implemented
- The most common practice is to “targeting” of particular function or business area
- Some companies' problem areas are evident without extensive analysis
- In those scenarios targeting those particular target area is most focused to implement a planning methodology
- In some cases visualizing the benefits of quality data is appreciated

80/20 Planning Methods

- The aim is to zero in quickly on key products to be implemented on bottom up approach process whereas reducing the efforts spend on steps involving top-down approach
- Hence, after the adage that for many undertakings, 80 percent of benefits can be achieved with 20 percent of total work
- The drawback of targeted approach may include the inconsistency arising from multiple targeted projects and most important target ,may not be evident
- No planning process: there are also data management action that can be taken without any data-oriented planning

Bounded Scope

- Major factor in success of data management effort is that the scope be carefully selected
- Scope was bounded to either manager who visualize the result of data management effort or the corporate who are planning the effort
- In addition to function and division, sun organization like groups, geo-districts, product lines exists
- Some corporation may choose one or another of these locus for data management

Business Objectives

- Some propose processes change while data is relatively stable, and it should therefore be a key element in IS planning
- Other propose that the global management is essential because one needs a global plan before developing the individual pieces
- But successful data management processes aimed at solving a clear and specific problem
- Is department should have to take effort in education every level of employees on importance of data and management

Operational Co-ordination

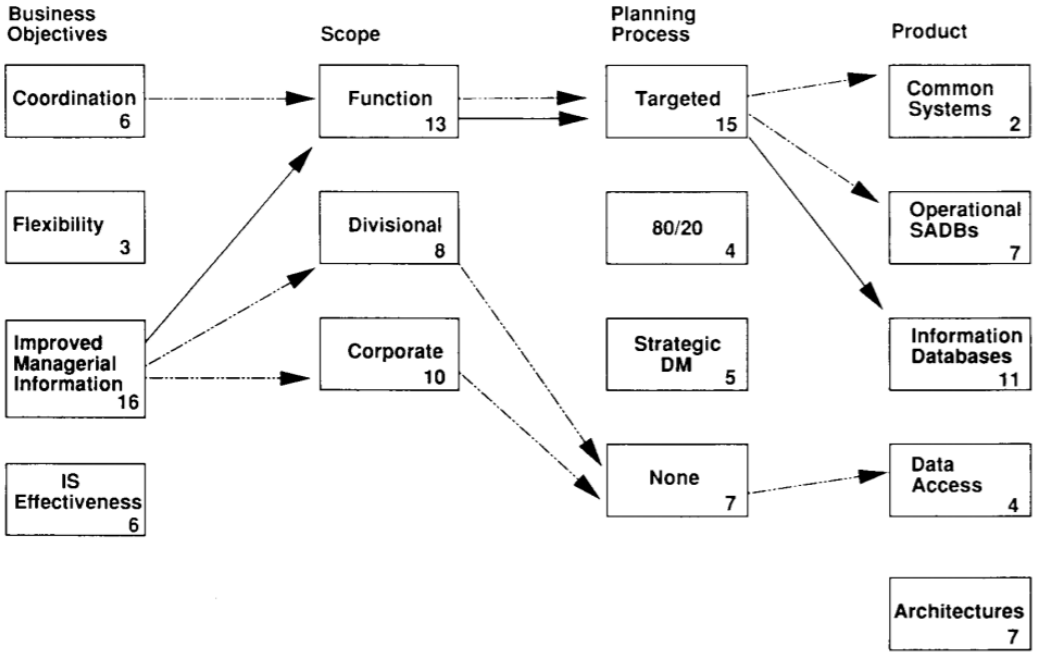
- A major objective of data management action is to better coordinate operational activities either within a specific functional unit of business or across the overall business
- Majorly dependent on pressure from competition to focus on cost reduction
- The process requires good communication among individual units of business operation
- This can be achieved by effectively sharing data

Organizational Flexibility

- Great organizational flexibility is needed to allow either an internal restructuring of organization or refocusing of organization due to changes in environment
- Changing the strategic focus requires better data management methodologies
- Competition plays a major pressure to change from product focus to market or customer focus
- The organizational flexibility is hindered by data structures

Information System effectiveness

- Great organizational flexibility is needed to allow either an internal restructuring of organization or refocusing of organization due to changes in environment
- Changing the strategic focus requires better data management methodologies
- Competition plays a major pressure to change from product focus to market or customer focus
- The organizational flexibility is hindered by data structures



Note: The numbers show how many data management efforts fell into each category.

Figure 4. Major Patterns in the Framework

Major Pattern in Cases

Organisational Issues affecting Data Management Efforts

Issue 1: Short term and long-term trade-offs in resource allocation

- Managers need to consider how to allocate resources that produces immediate benefits and takes less effort to payback
- The data management can be directed towards 3 aspects
  - Infrastructure
  - Content
  - Delivery
- Infrastructure forces system development to be coherent which benefits in long term.
- Content refers to choice of data and policies to address the accuracy which are expensive and tend to benefit in middle term.
- Delivery refers to make existing data available to managers which is less expensive but results in short term benefits.

Issue 2: The centralizing tendency of data management

- Underlying any effort toward more effective data management is the reality that improved data management which lead to centralization of decision making.
- Increased standardization of data facilitates increased central control.
- For example, standard data definitions may be established as common systems are developed.
- If the resulting data is made accessible to senior executives, they will have an enhanced ability to compare operational details of business units under their jurisdiction.

Issue 3: Impact on the IS culture

- Data administration challenges the basic process-oriented approach that has been employed during the last 20 years.
- Problem is not only teaching the information system professionals new skills. There must be changes in organizational processes and managerial policies to support the move towards data-oriented design.

Issue 4: New responsibilities for user management

- In two firms study user organizations assume almost responsibility for data management.
- Other firms focused on increasing user involvement in the process of managing data.

Issue 5: The process of effectively introducing innovations into the organization

- The implementation of initial data management efforts can be usefully viewed as the process of effectively introducing innovations.
- Five characteristics of innovations
  - The relative advantage of the innovation over its alternatives
  - The observability of the results
  - The compatibility of the innovation with existing values, past experience and perceived needs
  - The complexity of the innovation
  - Trial ability.
- The relative advantage of most data management actions compared to current practice is not known.

Conclusion

These exploratory case studies in 20 organizations suggest that there is no single clear-cut approach to improve management of data resource. Despite this variety in approaches, there are seven important conclusions that can be drawn

- Business benefits can result from improvements in data management.
- Lack of data standardization is a key managerial problem today.
- Total standardization is not the goal.
- 80/20 processes are growing in importance in data planning.
- Information databases will remain the dominant product for the foreseeable future.
- Resource allocation must balance long-term and short-term considerations.
- Several difficult organizational issues must be addressed.