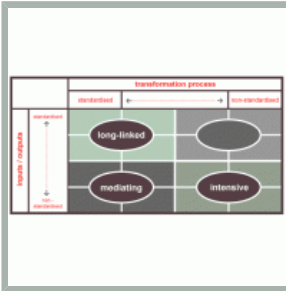


technology typology



characteristics

author:	Thompson, James David
country:	United States
period:	1967
type:	model
role:	consultant and manager
activity:	analyse and reflect
topic:	org. design & development and technology & operations
abstr. level:	environment
perspective:	living
status:	final
module:	classics I
comments:	1

description:

By the late 1960's, the American academic, James Thompson, overcame a major limitation of Woodward's earlier technology typology by including both manufacturing and service organisations. Technology, an important factor in contingency theory, assumed that the type of technology determined an organisation's most effective internal structure. Thompson based his typology on a 2 by 2 matrix by comparing the level of standardisation of inputs and outputs against the level of standardisation in transformation processes. The analysis takes place at the organisation's unit level. The typology included three categories:

1. Long-linked technologies

a production process consisting of a fixed sequence of steps to transform standardised inputs into standardised outputs. Both Woodward's mass and flow production technologies fell under this category. Examples are steel and chemical plants.

2. Mediating technologies

characterised by a standardised transformation process and unique inputs and outputs. Service providers deliver unique services to unique clients based on a pre-defined delivery process. These technologies often link partners in an exchange that helps them locate appropriate parties to conduct their transactions. Examples are mediators such as banks, brokerage firms, insurance companies and social security organisations.

3. Intensive technologies

combined a non-standard transformation process with unique inputs and outputs. This technology focused on the coordination of experts and pooling their expertise to create a unique outcome. Examples are hospital emergency rooms, R&D laboratories and project organisations.

Thompson left empty the fourth quadrant in which non-standardised transformation processes and non-standardised inputs/outputs exist. He reasoned that such a system would be too inefficient to survive. Thompson continued his research into the type of coordination mechanisms required to link multiple units and found that different mechanisms were required when units used different technology types.

1. Pooled task interdependence

units that use mediating technologies lead to pooled interdependence. Progress by one unit is independent of the progress of other units. The demand for coordination is minimal. Rules and standard procedures provide enough information to align activities. Examples of pooled task interdependence are faculties at universities and day and night shifts at plants.

2. Sequential task interdependence

tasks are performed in a sequential order wherein the progress of a worker earlier in the process determines the progress of workers down the line. The demand for coordination to prevent slowdown is greater than for pooled task interdependence. Planning and scheduling is required to optimise capacity utilisation. An example of sequential task interdependence is the assembly line.

3. Reciprocal task interdependence

the scope of a task is too large for one unit. Units must work together simultaneously to produce the desired result. Information must flow between the involved units during the execution of the task to harmonise their efforts. This relationship, the most complex of the three task interdependencies, requires mutual adjustment as a coordination mechanism. An example is project-based teamwork.

Thompson proposed structuring organisational hierarchies on the basis of his three task interdependencies. In Thompson's view, the intensity of coupling different work tasks determined the kind of coordination required. Work groups with similar coordination mechanisms need to be grouped to determine the way units within the organisation are clustered.

Work tasks with reciprocal interdependencies (coordinated through mutual adjustment) should be grouped at the lowest hierarchical level. Tasks linked by sequential interdependencies (coordinated through planning and schedules) form separate operational groups in the hierarchy. Tasks exhibiting pooled interdependencies (coordinated through standardization) should be clustered at the highest level. Administration, information technology, and HR are nearly independent from one another and represent good candidates to be clustered into separate departments.

assets:



thompson task interdependence

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thompson technology typology

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pros:

- James Thompson's study was built on Woodward's study that challenged classical management's belief in the existence of universal principles to structure effective organisations.

- By adding input as a variable to organisation's transformation processes, Thompson, more than Woodward, stressed the importance of the environment. He predicted that most change occurs from external factors.

- The typology applies to service as well as to manufacturing organisations.

- Thompson categorised coordination types and explained their role based on the organisation's work process.

cons:

- Although the contingency theory provided useful insights, the analysis lacked refinement. Most organisations now operate in what contingency theorists call a dynamic environment requiring an organic organisation.

- Contingency theory adopted technological determinism as a key assumption that negated the possibility of using one technology in multiple ways.

- Contingency theory assumed that one factor could change while the other variables remained constant. In practise, this objective proved impossible.

references:

- Organizations in action: Social Science Bases of Administrative Theory
<http://www.amazon.com/gp/product/0765809915?ie=UTF8&tag=provenmodels-20&linkCode=as2&camp=1789&creative=9325&creativeASIN=0765809915>
James David Thompson • 1967 • McGraw Hill • United States • ISBN 0765809915