Quizlet

Week 7: Analysis Business Processes

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Eddie_Hu

Key concepts:

Business Process Jobs Adding

Terms in this set (46)

Stocks	Refers to items on shelf, employees and financial balance in an account (referred to as 'WIP' in a business process)
Flows	Refers to the rate sales, hiring rate and outgoing per week (referred to as throughput/jobs per time in the business process)
Process	A set of activities that transform inputs into outputs where there are two main methods for processing jobs; discrete and continuous processing
Discrete Processing	Each item produced is distinct such as cars and cell phones
Continuous Processes	No individual items are produced such as gasoline, electricity and consultancy
Processing Flow structure	- divergent - convergent - linear
Processing Flow Structure: Divergent	- Several outputs derived from one input - Also known as a V-Plant - EXAMPLE: Diary and oil products
Processing Flow Structure: Convergent	- Several inputs put together to one output - Also known as an A-Plant - EXAMPLE: car manufacturing
Processing Flow	- One input gives one output

Structure: Linear	- Also known as a I-Plant - EXAMPLE: Hospital treatment
Flow Rate	- defined as the number of jobs per unit of time - Ri (t) = rate of incoming jobs - Ro (t) = rate of outgoing jobs
Process Throughput	- Ri (t) = inflow rate of jobs at time t - Ro (t) = outflow rate of jobs at time t - IN = Average inflow rate over time - OUT = Average outflow rate over time
Work-In-Process (WIP)	Average work in process over time
WIP(t): Work in process at time t	- comprises all jobs that have entered the process but not yet left - includes jobs waiting for the previous batch to be completed - WIP(t) increases when there are more inputs than outputs - WIP(t) decreases when there are more outputs than inputs
Process Cycle Time	- the different between a jobs departure time and its arrival time and is also known as throughput time - includes both value adding and non-value activities - identifies process improvement potential
Process Cycle Type: value adding + non-value adding	- processing "time" - inspection - transportation - storage - waiting

Little's Forumlar	- states fundamental and general relationship between the average WIP, Throughput and Cycle Time - WIP = Throughput x CT
Turnover Ratio	- Indicates how often the WIP is entirely replaced by a new set of jobs - Turnover Ratio = 1/CT
Little's Formula: Implications	- shorter cycle time results in a lower WIP - if throughput increases in order to keep the WIP at its current level, CT must also be reduced
Cycle Time Analysis	Task for calculating the average cycle time for an entire process or processes segment
Average Cycle Time	The sum of the average activity times involved but must also account for rework, multiple paths and parallel activities
Rework	When processes include an inspection point where if the job does not conform it will be sent back for rework (directly affects cycle time)
Rework Formular Definitions	T - Sum of activity times in the rework r = percentage of jobs requiring rework (rejection rate)
Rework: assuming jobs are reworked no more than once	$CT = (1 + r)T$

Rework: assuming a rework job is no different than a regular job	CT = T/(1 -r)
Cycle Time Efficiency	- the percentage of total cycle time spect on value adding activities - CTE = Theoretical Cycle Time/CT
Theoretical Cycle Time	The cycle time which we would if only value adding activities were performed (activities with waiting times were replaced by ones with processing times)
Capacity Analysis	Focuses on assessing the capacity needs and resource utilisation in the process: 1. Determine the number of jobs flowing through different process segments 2. Determine capacity requirements and utilisation based on the flows obtained
Capacity Analysis: Effects of Rework on Process Flows	A rework loop implies an increase of the flow rate for that process segment
Capacity Analysis: Multiple Paths	The flow along a certain path depends on the number of jobs entering the process as a whole and the probability for a job to go along a certain path
Capacity Analysis: Parallel Activities	All jobs still have to through activities
Unit Load	The total resource time required to process one job

Unit Capacity	The number of jobs per time unit that can be processed Unit Capacity for resource j = 1/Unit load for resource j
Resource Pool	A set of identical resources available for use
Pool Capacity	The number of jobs per time unit that can be processed Pool Capacity = M **Unit Capacity = M** Unit Load
Capicty	- related to resources not to activities - determined by the bottleneck
Bottleneck	The resource or resource pool with the smallest capacity (slowest resource in terms of jobs per unit)
Capital Utilisation	Theoretical process capacity is obtained by focusing on processing times as opposed to activity times - delays and waiting times are disregarded - the actual process throughput is smaller or equal to the theoretical capacity CU = Actual Throughput/Theoretical Process Capacity
Cycle Time Reduction	- provides valuable information about process performance - helps identify problems - increases process understanding - useful for assessing the effect of design

Methods for Cycle Time Reduction	- eliminate activities - reduce waiting and processing time - eliminate rework - perform activities in parallel - move processing time to activities not on the critical path - reduce setup times and enable batch size reduction
Increasing Process Capacity	Two fundamental ways of increasing process capacity: 1) Add resource capacity to the bottleneck 2) Reduce bottleneck workload
Adding Resource Capacity at the Bottleneck	- additional equipment, labour and overtime - automation
Reducing Bottleneck Workload	- process redesign, shifting activities from the bottleneck to other resources - reducing activity time for bottlenecks jobs
Theory of Constraints (TOC)	An approach for identifying and managing bottlenecks to increase process flow and thereby process efficiency
Theory of Constraints: Focus	Focuses on improving the bottom line though: - increasing throughput - reducing inventory - reducing operating costs

Theory of Constraints: Broad Categories	1) Resource 2) Market 3) Policy
Theory of Constraints: Methodology	1) Identify the systems constraints 2) How to exploit the constraints (decision rankings for processing jobs in bottleneck) 3) Subordinate everything to decisions 4) Elevate the constraints to improve performance 5) If current constraints are eliminated return to step 1

THIS SET IS OFTEN IN FOLDERS WITH...

Week 1: Introduction to BIS

18 terms

Eddie_Huynh4

Week 2: Enterprise Systems

37 terms

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Week 3: Business Process Design and Data Flow Diag...

15 terms

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Week 4: Business Process Design and System Flow Ch...

15 terms

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