Important Information

- I am still working on this training material. I will finish this by this weekend.
- It will be available to you for printing on by Monday Morning.
- Sending this training ppt along with few exercise for VedaWit your review and knowing that we have enough emphasis on operational excellence
 - I am sending you pre-read and references. You can share those with participants.
 - Please share Monthly Status report of L&T TS with me
 - Krittika, please go ahead to use the material here to prepare handouts

Operation Excellence Workshop

Trainer : Hari Prasad Thapliyal

(PMP, PMI-ACP, CSM, MBA, MCA, PGDOM, PGDFM, CIC, PRINCE2-Practitioner)

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Pre-read & Work

Read

- Case Study: Product Development & Collaboration Platform
- Optional: Walk through the reference links given at the end of this presentation.

Write

- Create a WBS for Case Study Project and share with Trainer.
- Prepare a list of key challenges which you want to address through this workshop. Share a summarized list along with participants name with trainer

Setup

Microsoft Project 2013 Installed & active on every trainee's machine



Workshop Objective

- ✓ Operational Excellence
- **Delivery Excellence:**
 - Planning & Organizing. Analytical Thinking and Decision Making
 - Adherence to Project Metrics. BSC
 - **Control to Project Metrics**
- Vedawit **Business Acumen:**
 - Finance for non-finance Managers

Introduction

Introduction & Expectation Setting

- Name
- Role
- Total Experience /PM Experience
- Expectations

Workshop Ground Rule

- ✓ Please keep your mobile on the silent mode. Always take your calls outside the training room.
- ✓ No corner talk! Discussions only when group discussion is allowed
- ✓ Keep your focus on the ongoing topic. Await your turn during the questionnaire round.
- ✓ Strictly follow the workshop schedule for management of time.
- ✓ There is parking lot. Write you questions and post with your name on parking lot.
- ✓ Breaks only on agreed time
 - ✓ Tea
 - ✓ Lunch
 - ✓ Tea
- ✓ Everybody need to contribute
- ✓ Use your experience only for relating the processes and best practices. To avoid confusion keep it outside of the class. Unlearning is first and biggest learning to learn something new.
- ✓ Two Bowls

Theme of Workshop

- 1. Proactiveness
- 2. Plan
 - the work and work the plan
- 3. Transparency
 - Report the progress
- 4. Create Alternative Solutions
 - Report with solution and seek advice
- 5. Self Motivation
 - Remain Motivated
- 6. Measure
 - Measurement is the key to improve
- 7. Value Chain
 - Value for Customer
- 8. Communication

Workshop Agenda

Day 1:

- Define Project
- Planning with Microsoft Project
- Buffer Management

Day 2:

- Project Tracking
- Communication & Reporting
- Risk Management
- How to bring almost failed project on track
- Business Acumen



Case Study Introduction

PLM Practice: Developing, deploying and implementing the technologies, products, application. Helps in lowering cost, delivering value, saving time, ensuring quality.

Client: Automobile part manufacturer in Japan. Specialized in Global procurement needs of automobile manufacturers

Business Perspective: Provide secure, reliable, cost-effective end-to-end implementation, maintenance and support of PLM System

Project Work: PLM System has Product Development (PD) Collaboration Framework (PDCF).

- Replace existing env with PDCF, so that a global repository is in place
- Integrate PDCF with existing legacy system
- Release Design data for OEM
- Automating the processes
- Intercontinental network connectivity and caching using Akamai Tech.
- Accommodating new requirements to PDCF
- Global support model

Approach

- Setup a Offshore Del Centre (to handle complete process)
- Study (legal system and file transfer tool) to establish bi-directional communication with PDCF
- Design (network layout and installation) of secured volume server
- Creation of custom service (for inter application communication with high performance and no data-loss)
- Import legacy data to PDCF
- Creating monolith JT and HPGL files (through TeamCenter Dispatcher)
- Handover of design and drawings (across global sites)
- Setting up 4-tier architecture (without disturbing existing 2-tier arch)
- Suggesting and implementing best solution to resolve Functional and op issues
- Consultation to enhance business process

Tools: PLM TeamCentre 8.3, Akamai (Terra Solutions, Apache Tomcat Web Server)

Impact: 80% reduction (in post production defects), 40% faster (business process, decreased time to market), 25% reduction (IT and systems support costs), 20% reduction (cost in specific operational areas), 10% increase (profit)

Final Result: Complete control over usage of licenses, Reduced COQ, Reduced TTM (lead time), Improved data security, Reduced failure risk, Better global collaboration

Operational Excellence

- Operational Excellence =
 - Strategy Deployment+
 - Performance Management +
 - High Performance Work Teams +
 - Process Excellence
- **Process Excellence = Efficiency + Effectiveness** redavit
 - **Lean = Efficiency:** is about **reducing the lead time** of a process or value stream.
 - SixSigma = Effectiveness: is about reducing the variation in a process or value stream.

Operational Excellence

Operational Excellence is an element of organizational leadership that stresses the application of a variety of principles, systems, and tools toward the sustainable improvement of key performance metrics.

Improvement: Lower operating cost or reduced inventory while others describe it in terms of increased efficiency or better quality.

Key Concepts of Continuous Improvement

What

- Customer Focus
- Work Process Improvement
- Continuous Measurement
- Supportive Work Environment

How

- Doing the Right Things
- Doing Things Right
- Fact-based
- Involving Everyone in making it happen



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Define Project & Scope

Scope Management Concepts

- High-level scope is defined in project charter and consists of boundary statements and deliverables.
- Project boundary: (Example)
 - This application affects only finance department
 - Security implementation to all the legacy application
 - Only procurement and legal department workflow integration is part of this application. Others are out of scope.
- Scope (List of deliverables: documents, trainings, product, components, supports etc)
 - Product Scope
 - Project Scope
- Business Requirement
 - Functional Requirements (behaviour, how system)
 - Non-functional Requirements or Features (usability, performance, security etc)
- In PLC business requirements may change not the boundary nor the deliverables.



Scope Management Concepts

- Output: Product delivered by the project to the customer
- Outcome: Operation results to the customer by the use of product. Number of incident decreased, efficiency increased, defect decreased, easy handling
- Benefits (Business value): Value which customer gets from the usage of product. % save in money, % defects decrease, % productivity increase.
 - Scope Creep: Unapproved, unplanned, unbaselined small work, which is done at the customer request to keep him happy.

Change Management

What is change?

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- Anything which you have to do to make project successful and customer happy but it is not part of the baseline plan is change.
- A request for the change may be for scope, requirement, process, human resources, report
- Change has impact on project objectives
 - Cost, Schedule, Scope and Quality
 - Change can introduce new risks
- Every change request should be evaluated and decision should be made by project manager or above authorities
- Based on the impact decision making is done by different change control board.



Exercise Scope Management

Success Criteria

Project Success Criteria

- In project life cycle project progress need to tracked using certain metrics like SV, CV, Defects, Requirement Stability, Change Request, Productivity, Resource Utilization, Resource Iterations, # of communication, Cost of Communication,
- Project success criteria for every stakeholder may be different.

Product Acceptance Criteria

 When product will be shown to the customer he will test the product against some parameters. Define those criteria as early as possible in PLC

Product Success Criteria

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 When customer uses product and it impacts his operational efficiency, profit margins, reduces defects, productivity that he considers the product success.



Project Sing-off Checklist

- 90% of the work happens in 90% of the time and 10% of the work takes another 90% of the time.
- If PM does not have a well defined checklist for the project signoff he may spend huge amount of time towards the end of project.
- Prepare a checklist of project signoff and keep that in Wedawit mind from the first day of the project.
 - Checklist may be
 - Features Delivered/committed: 100%
 - No of known defects: xx
 - No of trainings conducted/committed: 100%
 - Documentation completeness: 100%
 - Release note prepared: Yes

Exercise Success Criteria

Test Cases

- Quality Test Cases
 - Test cases defined by the Quality team of L&T to test the product develop by the team
 - Test results of quality testing shows maturity of development processes
- Acceptance Test Cases
 - Test cases defined by the customer of L&T to test the product delivered by L&T
 - Test results of acceptance testing shows the maturity of L&T delivery



Exercise Test Cases

Stakeholders

- Individuals or organizations who are affected or perceives as affected by the progress or completion of the project.
- Example: Sponsor, Management, PMO, Departments, Govt, Community, Competitor, Vendors etc.
- Every project manager need to maintain a stakeholder register and manage the engagement using this document.



<u>Exercise</u> Prepare Stakeholder Register

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Requirement Traceability Matrix

- What is RTM?
- When to setup & update this?
- How to use it?
- Structure of RTM
 - Requirement #
 - SOW Ref#
 - Functional Requirement Ref#
 - Design Ref#
 - Test Ref#
 - UAT Test Ref#
 - Status
 - Requirement Owner (Stakeholder)
 - Due Date
 - Type of Requirement



Planning with Microsoft Project

WBS

- Understand WBS
- WBS type
- Control Accounts
- Which type of WBS is suitable for my project?





<u>Exercise</u>Create/Review WBS

Steps for Preparing Project Schedule

- Identify Activities
- Sequence Activities
- Estimate Activity Resources
- Estimate Activity Durations
- Critical Path Analysis
- Schedule Compression
- Fast Tracking
- Lead & Lag Analysis
- Schedule Optimization
- Negotiate Schedule
- Critical Path Simulation
- Baseline Schedule

Facts/Tips for Critical Path

- <u>Total Float</u> is the amount of time the task can delayed without delaying the project finish date.
- <u>Free float</u> is the amount of time a task can slip without delaying the early start of any task that immediately follows it
- It is possible that a zero float activity may not be on critical path
- Longest path & shortest time possible to complete the project
- A project can <u>multiple critical</u> paths
- <u>Difference</u> between late and early is float
- <u>Positive float</u> (the activity can wait to start even after previous activity finishes)
- Negative float (the activity must start before previous finishes)
- Zero float (the activity must immediately start after the finish of previous one)
- Crashing activities to short the overall duration of project
- <u>Fast-tracking</u> activities to short the overall duration of project
- Be <u>cautious</u> that non-critical activity is not being delayed than the allowed free float
- <u>Take care of sub-critical path or non-critical path</u>
- Manage <u>critical path resources</u> very closely
- <u>Do not overload</u> critical path activity resources
- Avoid multitasking for resources working on critical path activities

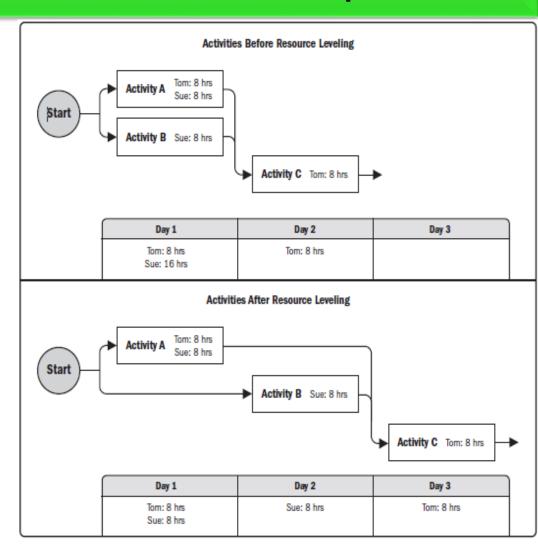
Resource Optimization Techniques

Resource Levelling

Ensure resource are not allocated more than their availability for the given project. Can lead to change in critical path.

Resource Smoothing

Adjust activities in such a way that resources requirement do not exceed than defined limit. No change in critical path. Activities can be delayed within their float (free/total).



Estimation

- Estimate resources, duration, cost.
- Range of Estimate
- Analogous Estimation
- PERT Estimation
- Parametric Estimation
 Bottom-up Estimation
 - **Basis of Estimation**
 - Alternative Analysis
 - Reserve Analysis (Buffer Estimation)

Project Baseline

- What is a baseline?
- What does it comprised of?
- Importance of baseline.
- Best practices for project baselining.
- Negotiating baseline with relevant stakeholders.





<u>Exercise</u> Complete Project Baseline

Buffer Management

- Difference between slack & buffer.
- How to estimate buffer?
- What should be part of buffer?
- Relationship between buffers and risk





Project Tracking, Project Governance

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Measurement: KPI, BSC

If you cannot measure you cannot manage

- Vision or Destination Statement
- Strategic Objective
- BSC 4 Perspective
 - Financial Performance (increase revenue, increase profit, lower cost)
 - Internal Business Process: Efficiency (process efficiency, lower cycle time, reduce waste)
 - Customer: Satisfaction (lower wait time, improve customer retention)
 - Organizational Capacity: Knowledge and Innovation (Improve Skills, Improve Tools, Improve Technology)
- Create Strategy Map
- Performance Measure & Target Strategic Initiative

Measurement: Project Metrics & Data

- Identify project metrics which can be mapped to minimum one KPI of either of 4 perspective of BSC (Balance Score Card)
- Identify what data is required is generate the metrics
- Define processes to get that data on the source.
 Define roles, responsibilities & frequency of data collection. Automatic data collection is better.
- Define frequency you analyse the data, compile metrics and reflect overall progress on BSC.
 Automatic KPI generation is better.

Project Governance

- Define Project Governance Structures
- Define who will review what metrics and KPI (senior management do this) with whom
- Define who prepare CAPA plan
- Define who makes decision for the course correction





Analytical Thinking & Decision making

"As much as 95% of quality related problems in the factory can be solved with seven fundamental quantitative tools." - Kaoru Ishikawa



DOE

Design of Experiments is an analytical technique, which aims using testing (experiments) to test different values of quality system or product.

- Reduce time and cost, design and testing of a product or system
- Improving the quality of a product or system
- Reducing the cost of pilot series



Mind Map

 Mind Maps are highly efficient analytical technique applicable particular in problem solving, learning and personal development.



Mind Map



PESTLE

PESTLE Analysis is an analytical technique used for the strategic analysis of organizational surroundings.

- Political
- Economical
- Social
- Technological
- <u>L</u>egal
- <u>E</u>cological

QFD (Quality Function Deployment)

QFD is used for quality planning in the development of customer requirements into product requirements. It therefore converts customer requirements to product characteristics. This method

- Reducing the number of product changes
- Reducing the cost of the product development
- Shorten the product development time
- Transfer the customer requirements into the final product

QFD

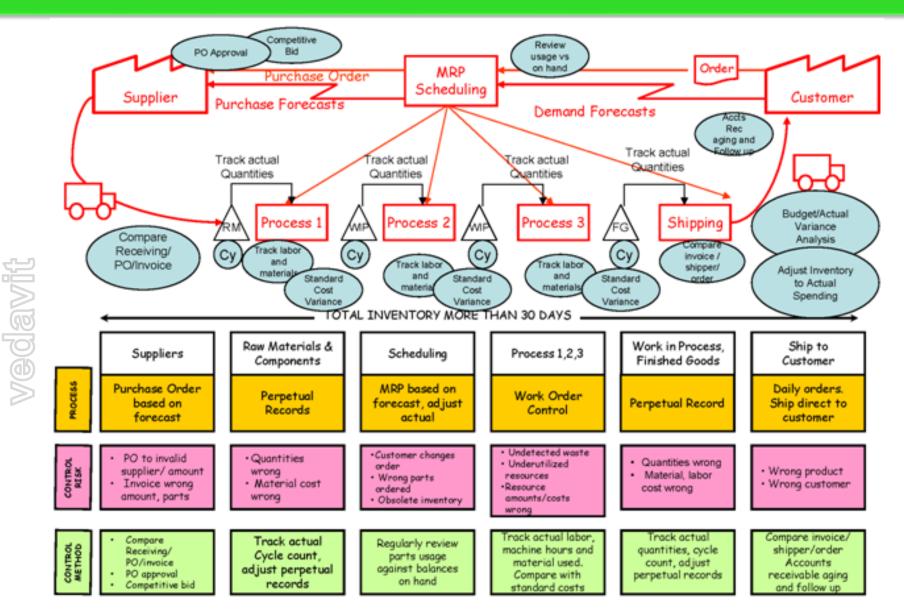
Attributes	Consequences	
Safety	The vehicle provides accurate safety warnings.	
	The vehicle has high safety and standard ratings.	
Efficiency	The vehicle gets good mileage.	
	The vehicle is energy efficient.	
	The vehicle has high horsepower.	
Cost	The vehicle is affordable.	
	The vehicle has an extensive warranty.	
	The vehicle is a hybrid (i.e., it splits power between electric and gas).	
Performance	The vehicle has towing capabilities.	
	The vehicle does not compromise speed and handling.	
	The vehicle can be driven for longer distances (>400 miles).	
Comfort	The vehicle provides a comfortable ride.	
	The vehicle has a quality audio system.	
	The vehicle is climate controlled.	
	The vehicle comfortably fits a sufficient number of people.	
Eco-friendliness	The vehicle has low emissions.	
	The vehicle is environmentally friendly.	

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Value Stream Mapping (VSM)

 It uses a graphical display of the flow value (flow value visualization), which can be financial, material, information or other and it helps deeper understanding of the entire flow of the production processes that pass through the entire organization and its relation to the organizational management system, planning and customer requirements.

Value Stream Mapping (VSM)



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Variance Analysis

Compare actual vs planned

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Check Sheet

Histogram

From a set of data compute

- Sum
- Mean (x)
- Max
- Min



Histogram

Data Set from last Thursday(pizza slices of Pizza Hut)

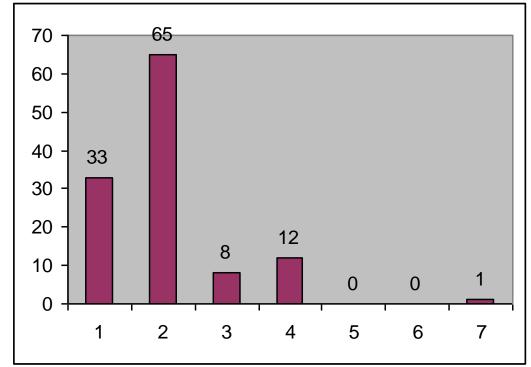
2212241312122434143223212212214221212212121 212121222121212223142232221232242244122232 2122421242172122312112122212121222404



Mean = 2.032258

Max = 7

Min = 0



Histogram

How to use this information for strategic planning?



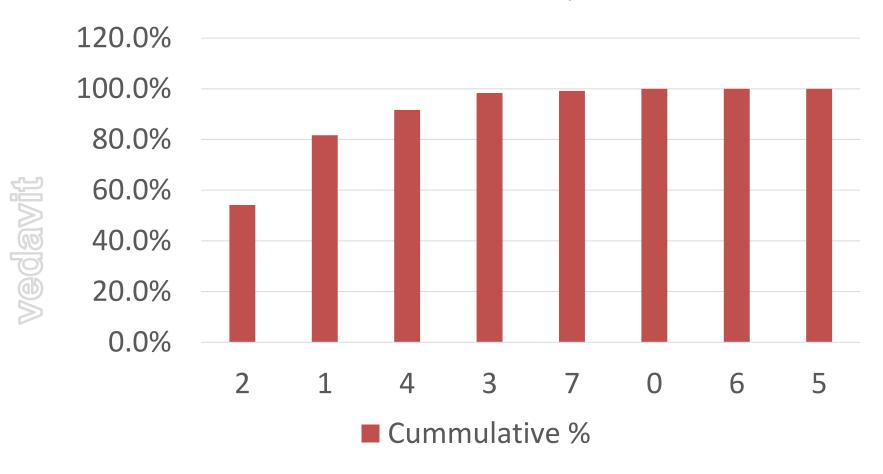
Pareto Chart

80/20 Rule

Slices	Frequency	%
0	1	0.8%
1	33	27.5%
2	65	54.2%
3	8	6.7%
4	12	10.0%
5	0	0.0%
6	0	0.0%
7	1	0.8%

Pareto Chart





Pareto Chart

How to use this information for strategic planning?

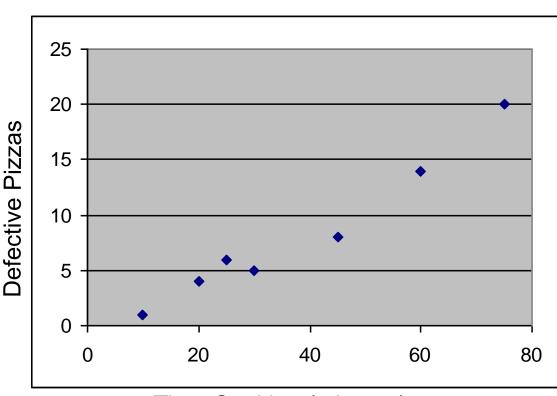


Scattered Diagram

Minutes	Defective
Cooking	Pies
10	1
45	8
30	5
75	20
60	14
20	4
25	6

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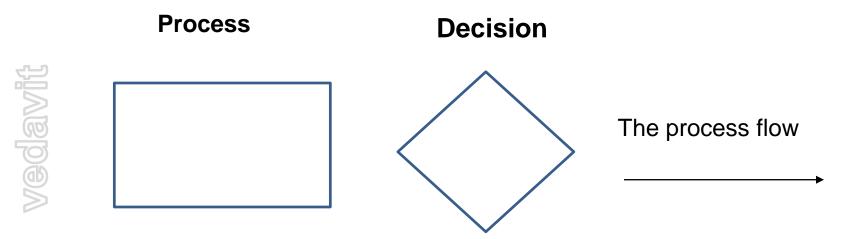
In this simple example, you can find the existing relationship without much difficulty but...



Time Cooking (minutes)

Flowchart

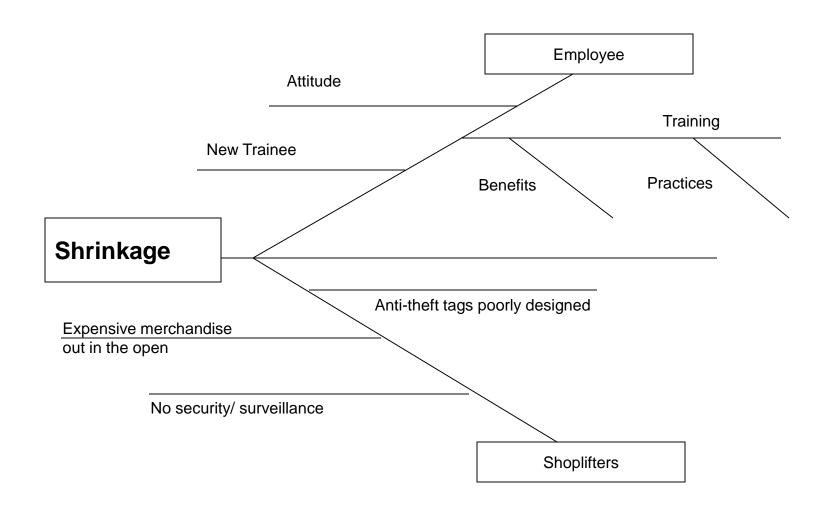
A graphical picture of a PROCESS



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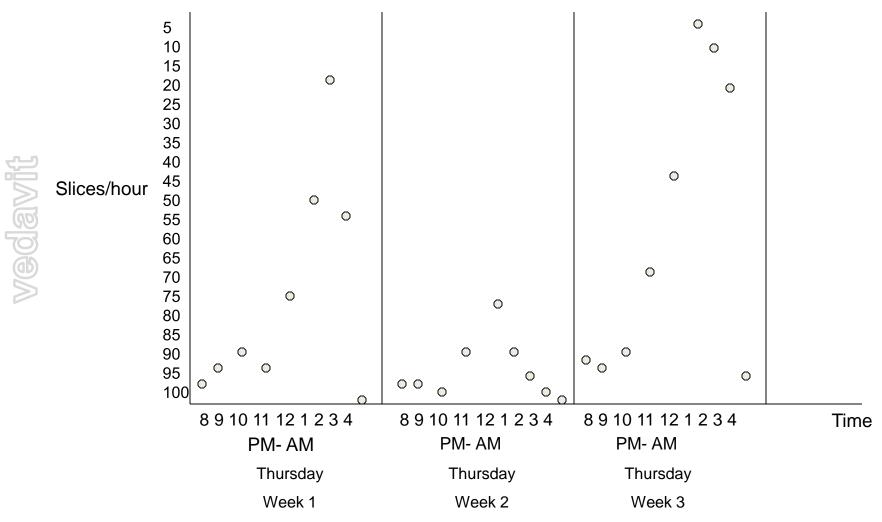
Fishbone Diagram

Problem: High Inventory Shrinkage at local Drug Store



Run Charts

- Pizza Hut counter.
- What do you interpret from this chart?



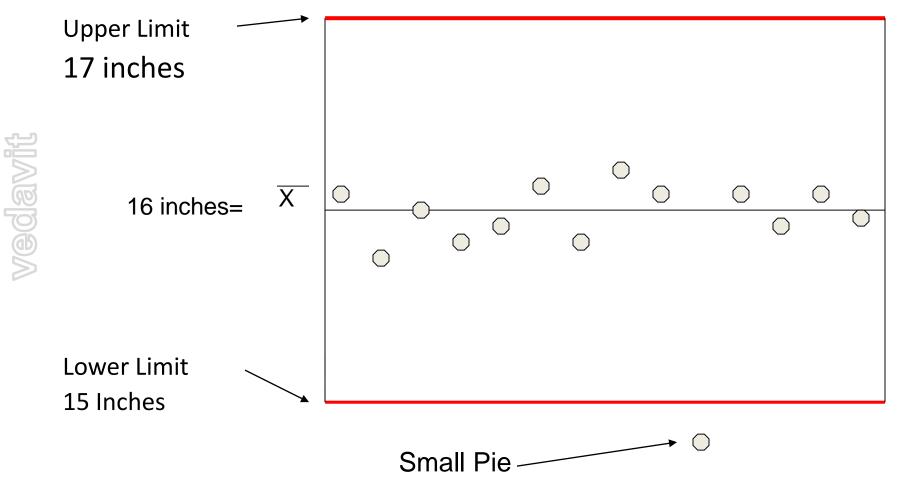
Control Chart

Pizza Hut Management wants to get in on the control chart action

- Average Diameter = 16 inches
- Upper Limit = 17 inches
- Lower Limit = 15 inches

Control Chart

What do you interpret from this chart?



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What if Scenario Analysis

 Assess the feasibility of project schedule under adverse conditions. Prepare a contingency plan to overcome the problems.
 Or prepare mitigation plan to reduce the impact of unexpected situations.

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Decision Tree

Communication & Reporting



 How to establish the purpose of every communication. What to communicate?



 Decision making process, speed of decision making and technology of communication



What should be part of a status report?



What should be part of a progress report?



What should be part of a forecast report?

Interpersonal Skills of PM

- 1. Leadership
- 2. Team Building
- 3. Motivation
- 4. Communication
- 5. Influencing
- 6. Decision Making
- 7. Political & Cultural Awareness
- 8. Negotiation

Perception Management

- People give their own meaning to the data, event, behavior to the world around them is perception creation.
- Perception is about organizing the data, image in mind. On the validation you can find that perception may be true or may not be.

What do you see?



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Perception Management Steps

Think: How people are perceiving you

Know: How you are actually being perceived

Decide: How you want to be perceived

Story: Create a full end-to-end consistent story, which you want

tell to achieve your goal

Meet: Meet to the people and tell your story

Feedback: Ask them questions which helps you in knowing

whether your goal is achieved

Confirm: Paraphrase the feedback to confirm whether you

understood properly

Thanks: Say thanks to people who have given time to listen your

story.

By: Hari Thapliyal

Management by Exception

- Project Manager should have enough control required to manage the project with minimum day intervention from the Management
- Project boards should have checkpoint and event based control over the project
- Project manager and project board should work within their tolerance limit of scope, time, cost and quality
- Tolerance limit should be defined in project management plan.

Risk Management

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 What is the meaning of risk? How to identify risk? Relationship between risk, assumption, dependency, constraints, risk impact



• Prepare a risk register



Risk assessment



Strategies to manage threats (negative risks)



Strategies to manage opportunities (positive risks)



 How to establish contingency buffer to manager risks

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Risk tracking & reporting. Timing,
 Responsibilities, Format

Failed Project Case Study

How to bring almost failed project on track



Business Acumen

Value Chain Analysis

Value Chain Analysis is a useful tool for working out how you can create the greatest possible value for your customers.

- Activity Analysis: First, you identify the activities you undertake to deliver your product or service.
- Value Analysis: Second, for each activity, you think through redavit what you would do to add the greatest value for your customer.
 - **Evaluation and Planning:** Thirdly, you evaluate whether it is worth making changes, and then plan for action.





Exercise Value Chain Analysis

Type of Costs

- Transaction cost: Example- Buying a used car. Search, Bargain, Policy
- Sunk/Retrospective Cost: a cost that has already been incurred and cannot be recovered. Sinking cost in installation of some software/systems. Selling a newly purchased car.
- Opportunity Cost: choice of a best alternative lost while making a decision. The opportunity cost of leaving their money in the Chinese stock market or Chinese real estate market is too high relative to yields available in the USA real estate market. The cash expenditure of \$100 represents a lost opportunity to purchase something else with the \$100.
- Material Cost: Material are those things which will be consumed in the project and cannot be taken out of the project after product is handover to customer.
- Labour Cost: Cost of human resources, for which project has to pay for every hours of timesheet.
- Service Cost: Cost of equipment, testing, training, third party audit.
- License Cost, Network equipment Cost are material cost

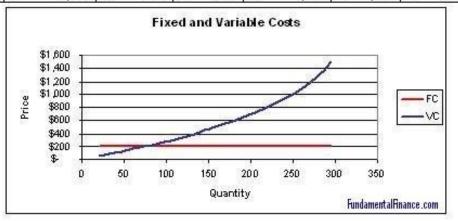
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Classification: Type of Cost

- Variable Cost:

 Pay on usage.
 Depends upon output.
- Fixed Cost:
 Fixed for per
 period
 irrespective of
 usage.

Bakers (Labor) 1	Cakes (Q) 19.53	To	Total Revenue (TR)		Marg. Rev. MR=ΔTR/ΔQ		1500700		Variable Cost (VC)		Total Cost TC=FC+VC		vg. TC	Marginal Cost MC=ΔTC/ΔQ	
													C=TC/Q		
		\$	117	\$	6.00	\$	200	\$	50	\$	250	\$	12.80	\$	2.56
2	38.16	\$	229	\$	6.00	\$	200	\$	100	\$	300	\$	7.86	\$	2.68
3	55.90	\$	335	\$	6.00	\$	200	\$	150	\$	350	\$	6.26	\$	2.82
4	72.80	\$	437	\$	6.00	\$	200	\$	200	\$	400	\$	5.49	\$	2.96
6	104.17	\$	625	\$	6.00	\$	200	\$	300	\$	500	\$	4.80	\$	3.19
8	132.50	\$	795	\$	6.00	\$	200	\$	400	\$	600	\$	4.53	\$	3.53
10	157.99	\$	948	\$	6.00	\$	200	\$	500	\$	700	\$	4.43	\$	3.92
13	191.36	\$	1,148	\$	6.00	\$	200	\$	650	\$	850	\$	4.44	\$	4.49
16	219.44	\$	1,317	\$	6.00	\$	200	\$	800	\$	1,000	\$	4.56	\$	5.34
20	249.61	\$	1,498	\$	6.00	\$	200	\$	1,000	\$	1,200	\$	4.81	\$	6.63
25	277.32	\$	1,664	\$	6.00	\$	200	\$	1,250	\$	1,450	\$	5.23	\$	9.02
30	295.78	\$	1,775	\$	6.00	\$	200	\$	1,500	\$	1,700	\$	5.75	\$	13.55



Classification: Type of Cost

 Direct Cost: Cost of resources, which are used for a specific activity.



- Indirect Cost or Overhead Cost: Cost of resources, which are used for multiple activities. Admin Salaries, Rent, Utilities,
 - Admin Overhead
 - Manufacturing Overhead

Total Cost of Ownership

- Cost of Development
- Cost of Deployment
- Cost of Maintenance
- Cost of Support
- Cost of Phasing out

Metrics

 Metric is just another number if there is no interpretation, communication, action plan and implementation of plan to take timely measures.



Financial Ratio

- Ratio analysis is based on line items in financial statements like the balance sheet, income statement and cash flow statement;
- Helps in diagnosing the financial health of my company
- Help managers make decisions about investments or projects that the company is considering to take, such as acquisitions, or expansion
- Used to know company's operating and financial performance such as its efficiency, liquidity, profitability and solvency.
- The trend of these ratios over time is studied to check whether they are improving or deteriorating.
- Ratios are also compared across different companies in the same sector
- For a specific ratio, most companies have values that fall within a certain range.

Types Financial Ratio

- 1. Profitability Ratios
- 2. Liquidity Ratios
- 3. Activity Ratios (Efficiency Ratios)
- 4. Debt Ratios (leveraging ratios)
- 5. Market Ratios
- 6. Capital Budgeting Ratios



Read one L&T monthly report and understand



Reading Balance Sheet Reading Income Statement Analyse Financial Ratios



Invoicing Cycle & Billing Analysis



Session Closure: Action Planning

The Top 10 Must Do's for Operational Excellence

- **Communication:** IT is working on a project in the Bangalore adding a new feature but Operations is unaware of this work. Therefore, Operations needing this area fixed purchases a solution or manufactures a workaround.
- Training: If people don't know the proper processes, they create inefficient steps gradually chipping away at productivity numbers. A customized training program should blend your operational process with the vendor-generic features.
- It is important to know your operation: Once you have your process map flow the next step is to audit the process.
- Know that you are in the "People Business": Invest time on creating a team of passionate player
- Customer Service is essential: Every department needs to know who their customer is and communicate with them. Survey them and find out how to better service them and from these support teams you can improve productivity.
- X is the most costly process in the distribution center: Perform Value Chain Analysis. Identify new technologies for improvement.
- Remove barriers of success: Associates tools weren't organized creating a 30 minute search at the beginning of each shift. No batteries for RF. The IT control freak insisted on keeping extra batteries in his office which was 500,000 sq.ft away.
- Continually raise the bar: A school wanted increase their revenue. They started evening hobby classes.
- Know the value of fresh eyes! We do not know what we don't know.
- Educate yourself about the industry trend



References

- Book: <u>Design for Operational Excellence</u> by Kevin's Duggan
- 8 Operational Excellence Principles to Grow your Business:
 <u>http://www.processexcellencenetwork.com/lean-six-sigma-business-transformation/articles/8-operational-excellence-principles-to-grow-your-b</u>
- Strategy Planning and Deployment Process: https://flevy.com/browse/business-document/strategy-planning-and-deployment-process-597
- Kaizen: https://flevy.com/browse/business-document/kaizen-153
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