



A Quality Assessment Tool to Support Improvement Planning

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The Situation

- Improvement planning requires identification and prioritization of improvement needs
 - Small to mid-size organizations may have limitations
 - Regular organizational assessments
 - Knowledgeable management and staff
 - Resources (people, money, time)
 - Often hindered and limited by lack of appropriate data and information
 - Anecdotal (squeaky wheel)
 - Consensus among management and staff
 - Case Study

Problem Definition

- Organizational assessments have a hierarchical structure

Objective: Minimizing Unit Cost of Production

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graph TD; A[Objective: Minimizing Unit Cost of Production] --- B[Marketing]; A --- C[Raw Materials]; A --- D[Process Operations]; A --- E[Quality Assurance]; A --- F[HR]; A --- G[Business Planning];
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Level 1

Marketing

Raw
Materials

Process
Operations

Quality
Assurance

HR

Business
Planning

Level 2

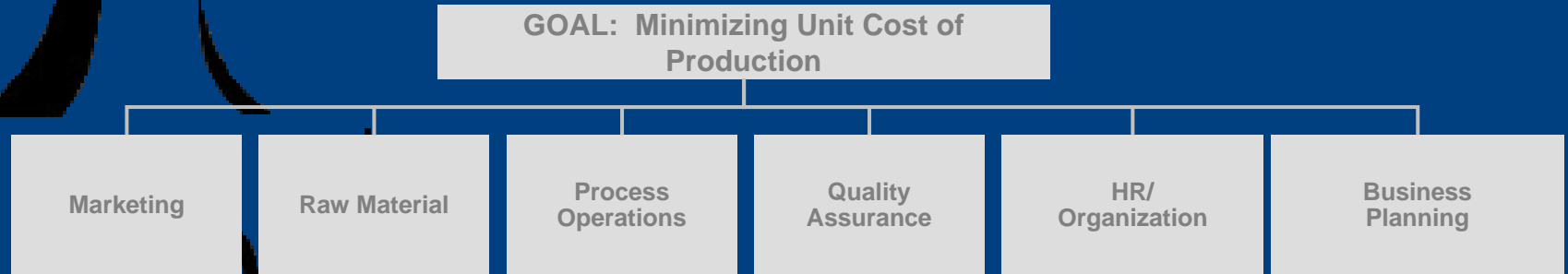
Key tasks and responsibilities associated with each function

Analytical Hierarchy Process (AHP)

- Multi-criteria decision support tool
 - Establishes relative importance (weight) for each criterion at each level of the hierarchy
 - Represents the relative importance of each criteria to achieve the overall goal
 - Utilizes a simple paired comparison process to establish relative importance of items at each level of the hierarchy
 - Based on expert opinion
 - Easy to drive consensus
 - Well suited to the hierarchical nature of the problem

Application

- AHP was applied to the first level of the hierarchy



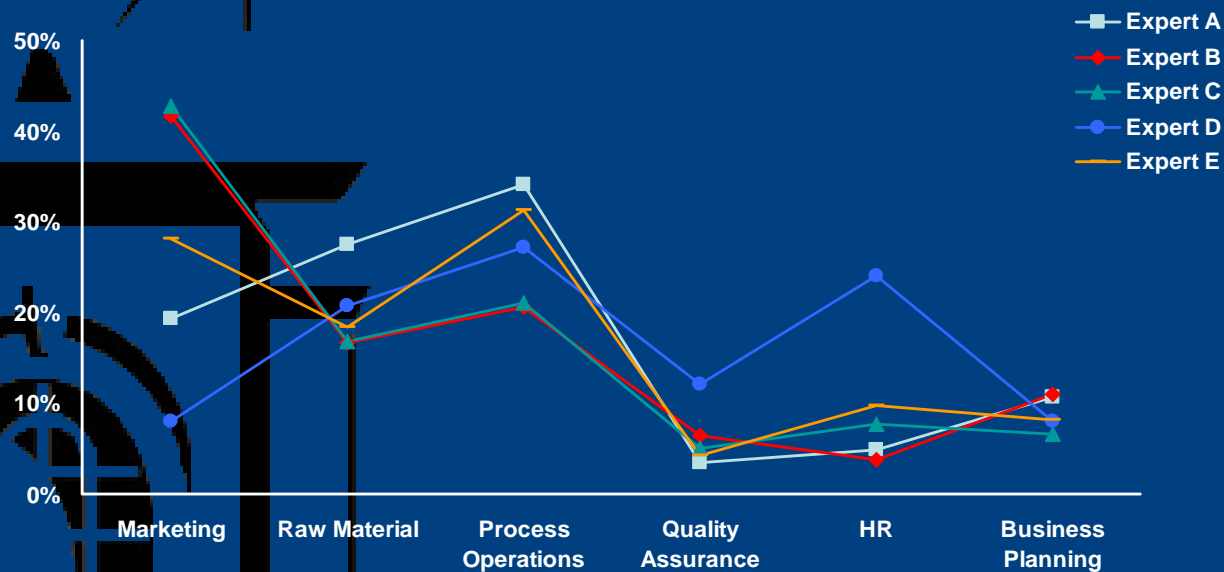
- Content experts provided pair-wise comparisons of importance of each functional area in achieving the goal

Microsoft Excel - pairwise matrix.xls

	A	B	C	D	E	F	G
1 Respondent G							
2		Marketing	Raw Material	Process Ops	Quality Assur	HR	Bus Pning
3 Marketing	1		4	4	4	5	5
4 Raw Material	0.25	1		0.5	5	3	4
5 Process Operations	0.25		2	1	5	4	3
6 Quality Assurance	0.25	0.2	0.2		1	1	0.33
7 HR	0.2	0.33	0.25		1	1	3
8 Business Planning	0.2	0.25	0.33		3	0.33	1

Application

- Weights were derived using the special properties of the comparison matrices
 - Consistency diagnostics identify inconsistencies within expert
 - Results help drive consensus across experts



Application

- Additional components
 - Weights were established for the tasks/responsibilities in the second level for each functional area
 - Diagnostic questions were established to assess performance on each level two criteria
 - Performance scales were standardized
 - Benchmarks were established for each diagnostic question
 - Evaluation was translated to a spreadsheet

Results

- Assessment questionnaire and AHP model
 - Identifies functional areas offering greatest opportunity to achieve goal

Summary Results

Overall Results

Best Practice Score	600
Company Score	271.1
Improvement Opportunity	328.9

Level 1 Results

	Best practice score	Current Score	Gap
Marketing	168.0	102.4	65.6
Raw Materials	119.9	59.8	60.1
Process Operations	150.0	49.3	100.7
QA	18	8.8	9.2
HR	60	25.5	34.5
Business Planning	84.0	25.3	58.7

Results

- Level 2 evaluation
 - focuses opportunities

Illustrative Example of Responses and scoring for Process Operations

	(0)	(1)	(2) = (0)x(1)	(3)	(4) = (2)x(3)	(2)-(4)
WT	0.25					
Points	150					
	WT	Best Practice Value	Example Assessment Question Score	Example Sub-Issue Score	Example GAP (arithmetic)	
Raw Material Utilization	23.5%	35.3	33.0% 11-20	11.7	23.7	
Plant Utilization	24.5%	36.8	50.0% 41-60	18.4	18.4	
Facility Design & Layout	3.5%	5.2	50.0% 10-100km	2.6	2.6	
Process Control & Line Efficiency	16.6%	24.9	33.0% 21-30	8.2	16.7	
Equipment maintenance & Documentation	11.6%	17.4	0.0% Don't have	0.0	17.4	
Energy Conservation	5.9%	8.8	50.0% 21-30	4.4	4.4	
Packaging & Labeling	9.1%	13.7	0.0% none	0.0	13.7	
Transport	5.4%	8.1	50.0% some	4.0	4.0	

Discussion

- Very flexible process
- Self-assessment and prioritization tool
- Could be directly linked to best practice resources and references to facilitate improvement
- Drives consensus for improvement needs
- Helps allocate scarce resources to where they are likely to have the greatest impact