

APPENDIX E

VALIDATION OF INDUSTRIAL CASE STUDIES

PERODUA

Table E.1: Input of *Organisation Environment Perspective* Module for PERODUA

Variables Description	Data		
Name of user (the interviewee)	Zamzakri Daud		
Post	Engineer		
Department	Press Shop		
Organisation	Perodua Manufacturing Sdn. Bhd.		
Address of Organisation	Perodua Automotive Centre, Sungai Choh, Locked Bag 226, 48009 Rawang, Selangor Darul Ehsan.		
Annual Sales	> RM25 million		
Number of Employees	> 150		
Position in Automotive Industry	OEM		
Products	Passenger Cars		
Age of Organisation	13 years (1995)		
	Age of Relationship		
	< 5 years	5 – 10 years	> 10 years
Number of Suppliers	18	125	28
Number of Customers	0	0	1
	Last Year	2 Years Ago	3 Years Ago
CLMM Investment Activities:			
Just-In-Time (JIT)	Yes	Yes	Yes
Manufacturing Resources Planning (MRP II)	No	No	No
Total Quality Management (TQM)	Yes	Yes	Yes

Table E.2: Output of *Organisation Environment Perspective* Module for PERODUA

Category	Description
Size of Organisation	Large
Stage in Business Cycle	Harvest stage
Relationship with Suppliers	Good and Stable
Relationship with Customers	Good and Stable
Strategic improvement	Yes
CLMM activities	Implemented, but not for all activities

Table E.3: Inputs of *Market Analysis* Module for PERODUA

Main Product: Passenger Cars			
Market Competition	2007	2006	2005
Local	5-20 companies	5-20 companies	5-20 companies
Regional	5-20 companies	5-20 companies	5-20 companies
Global	> 20 companies	> 20 companies	> 20 companies
Market Share	2007	2006	2005
Local	30-40%	30-40%	30-40%
Regional	< 10%	< 10%	< 10%
Global	< 10%	< 10%	< 10%

Table E.4: Output of *Market Analysis* for PERODUA

		Trend	Remarks
Market Competition	Local	Steady for 3 years	
	Regional	Steady for 3 years	
	Global	Steady for 3 years	
Market Share	Local	Steady for 3 years	
	Regional	Steady for 3 years	Need attention
	Global	Steady for 3 years	Need attention

Table E.5: Summarised GAP Analysis Results of *Lean Manufacturing Perspective* for PERODUA

Level 2: Lean Manufacturing Perspective	No of Questions	GAP Analysis						
		GP	BP	Problem Category				
				1	2	3	4	5
Product Design for Manufacture								
Conceptual Design	49	33	16	0	0	7	9	0
Design Tools for Analysis	19	19	0	0	0	0	0	0
Product Development	16	14	2	0	2	0	0	0
Total	84	66	18	0	2	7	9	0
Internal Lean Chain								
Internal Continuous Improvement	31	29	2	0	0	0	2	0
Internal Process Control	18	17	1	1	0	0	0	0
Total	49	46	3	1	0	0	2	0
External Lean Chain								
Integration with Suppliers	24	21	3	1	1	1	0	0
Integration with Customers	8	8	0	0	0	0	0	0
Total	32	29	3	1	1	1	0	0
Grand Total	165	141	24	2	3	8	11	0

Table E.6: AHP Analysis with priority vector for *PDfM* module for PERODUA

Aspect	Conceptual Design	Design Tools for Analysis	Product Development	Priority Vector
Conceptual Design	1	2	½	0.3119
Design Tools for Analysis	½	1	½	0.1976
Product Development	2	2	1	0.4905

Table E.7: AHP Analysis with priority vector for *ILC* module for PERODUA

Aspect	Internal Continuous Improvement	Internal Process Control	Priority Vector
Internal Continuous Improvement	1	½	0.3333
Internal Process Control	2	1	0.6667

Table E.8: AHP Analysis with priority vector for *ELC* module for PERODUA

Aspect	Integration with Suppliers	Integration with Customers	Priority Vector
Integration with Suppliers	1	2	0.6667
Integration with Customers	½	1	0.3333

Table E.9: AHP Analysis with priority vector for *Lean Manufacturing Perspective* for PERODUA

Aspect	Product Design for Manufacture (PDfM)	Internal Lean Chain (ILC)	External Lean Chain (ELC)	Priority Vector
Product Design for Manufacture (PDfM)	1	2	½	0.3119
Internal Lean Chain (ILC)	½	1	½	0.1976
External Lean Chain (ELC)	2	2	1	0.4905

Table E.10: Summary of AHP Results for *Lean Manufacturing Perspective* for PERODUA

Module	Priority Vector	Sub-module	Priority Vector
Product Design for Manufacture (PDfM)	0.3119	Conceptual Design	0.3119
		Design Tools for Analysis	0.1976
		Product Development	0.4905
Internal Lean Chain (ILC)	0.1976	Internal Continuous Improvement	0.3333
		Internal Process Control	0.6667
External Lean Chain (ELC)	0.4905	Integration with Suppliers	0.6667
		Integration with Customers	0.3333

Table E.11: Summarised GAP Analysis Results of *Competitive Priorities Perspective* for PERODUA

Level 3: Competitive Priorities Perspective	No of Questions	GAP Analysis						
		GP	BP	Problem Category				
				1	2	3	4	5
Quality								
Quality in Supply	16	15	1	0	0	0	1	0
Quality in Production	20	20	0	0	0	0	0	0
Quality in Delivery	16	15	1	0	0	0	1	0
Sub-total	52	50	2	0	0	0	2	0
Time								
Time in Supply	11	5	6	0	0	3	0	3
Time in Production	11	8	3	0	0	0	0	3
Time in Delivery	11	4	7	1	0	1	5	0
Sub-total	33	17	16	1	0	4	5	6
Flexibility								
Flexibility in Supply	7	7	0	0	0	0	0	0
Flexibility in Production	15	15	0	0	0	0	0	0
Flexibility in Delivery	7	7	0	0	0	0	0	0
Sub-total	29	29	0	0	0	0	0	0
Value								
Material cost	5	5	0	0	0	0	0	0
Production cost	10	9	1	1	0	0	0	0
Resources cost	10	8	2	0	0	2	0	0
Sub-total	25	22	3	1	0	2	0	0
Supply Chain								
Location	7	7	0	0	0	0	0	0
Logistics	8	8	0	0	0	0	0	0
Sub-total	15	15	0	0	0	0	0	0
Grand Total	154	133	21	2	0	6	7	6

Table E.12: AHP Analysis with priority vector for *Quality* module for PERODUA

Aspect	Quality in Supply	Quality in Production	Quality in Delivery	Priority Vector
Quality in Supply	1	2	1	0.4000
Quality in Production	½	1	½	0.2000
Quality in Delivery	1	2	1	0.4000

Table E.13: AHP Analysis with priority vector for *Time* module for PERODUA

Aspect	Time in Supply	Time in Production	Time in Delivery	Priority Vector
Time in Supply	1	2	½	0.2973
Time in Production	½	1	1/3	0.1638
Time in Delivery	2	3	1	0.5390

Table E.14: AHP Analysis with priority vector for *Flexibility* module for PERODUA

Aspect	Flexibility in Supply	Flexibility in Production	Flexibility in Delivery	Priority Vector
Flexibility in Supply	1	1	1	0.3333
Flexibility in Production	1	1	1	0.3333
Flexibility in Delivery	1	1	1	0.3333

Table E.15: AHP Analysis with priority vector for *Value* module for PERODUA

Aspect	Material Cost	Production Cost	Resource Cost	Priority Vector
Material Cost	1	½	½	0.1976
Production Cost	2	1	2	0.4905
Resource Cost	2	½	1	0.3119

Table E.16: AHP Analysis with priority vector for *Supply Chain* module for PERODUA

Aspect	Location	Logistics	Priority Vector
Location	1	1	0.5000
Logistics	1	1	0.5000

Table E.17: AHP Analysis with priority vector for *Competitive Priorities Perspective* for PERODUA

Aspect	Quality	Time	Flexibility	Value	Supply Chain	Priority Vector
Quality	1	½	2	½	2	0.1889
Time	2	1	2	2	2	0.3222
Flexibility	½	½	1	½	1	0.1222
Value	2	½	2	1	2	0.2444
Supply Chain	½	½	1	½	1	0.1222

Table E.18: Summarised GAP Analysis Results of *Resources Perspective* for PERODUA

Level 4: Resources Perspective	No of Questions	GAP Analysis						
		GP	BP	Problem Category				
				1	2	3	4	5
Human Resource								
Development	26	24	2	0	1	1	0	0
Support	14	14	0	0	0	0	0	0
Values	11	11	0	0	0	0	0	0
Sub-total	51	49	2	0	1	1	0	0
Technology Resource								
Technology Management	11	11	0	0	0	0	0	0
Process Technology	15	9	6	6	0	0	0	0
Information Technology	8	8	0	0	0	0	0	0
Sub-total	34	28	6	6	0	0	0	0
Financial Resource								
Financial for Human	9	9	0	0	0	0	0	0
Financial for Technology	9	7	2	0	0	0	2	0
Financial for Implementation	3	3	0	0	0	0	0	0
Sub-total	21	19	2	0	0	0	2	0
Grand Total	106	96	10	6	1	1	2	0

Table E.19: AHP Analysis with priority vector for *Human Resource* module for PERODUA

Aspect	Development	Support	Values	Priority Vector
Development	1	2	2	0.5000
Support	½	1	1	0.2500
Values	½	1	1	0.2500

Table E.20: AHP Analysis with priority vector for *Technology Resource* module for PERODUA

Aspect	Technology Management	Process Technology	Information Technology	Priority Vector
Technology Management	1	1/5	1	0.1429
Process Technology	5	1	5	0.7143
Information Technology	1	1/5	1	0.1429

Table E.21: AHP Analysis with priority vector for *Financial Resource* module for PERODUA

Aspect	Financial for Human	Financial for Technology	Financial for Implementation	Priority Vector
Financial for Human	1	½	1	0.2500
Financial for Technology	2	1	2	0.5000
Financial for Implementation	1	½	1	0.2500

Table E.22: AHP Analysis with priority vector for *Resources Perspective* for PERODUA

Aspect	Human Resource	Technology Resource	Financial Resource	Priority Vector
Human Resource	1	1/3	2	0.2519
Technology Resource	3	1	3	0.5889
Financial Resource	½	1/3	1	0.1593

Table E.23: Summarised GAP Analysis Results of *Organisation CLMM Alignment - Process* for PERODUA

Level 5: Process Perspective	No of Questions	GAP Analysis						
		GP	BP	Problem Category				
				1	2	3	4	5
Employee Involvement								
Measurement & benchmark	12	9	3	0	0	1	2	0
Evaluation, diagnosis & action	9	9	0	0	0	0	0	0
Sub-total	21	18	3	0	0	1	2	0
Waste Elimination								
Measurement & benchmark	7	7	0	0	0	0	0	0
Evaluation, diagnosis & action	4	3	1	0	1	0	0	0
Sub-total	11	10	1	0	1	0	0	0
Continuous Improvement								
Measurement & benchmark	12	12	0	0	0	0	0	0
Evaluation, diagnosis & action	3	2	1	0	1	0	0	0
Sub-total	15	14	1	0	1	0	0	0
Grand Total	47	42	5	0	2	1	2	0

Table E.24: AHP Analysis with priority vector for *Employee Involvement* module for PERODUA

Aspect	Measurement & Benchmark	Evaluation, Diagnosis & Action	Priority Vector
Measurement & Benchmark	1	2	0.6667
Evaluation, Diagnosis & Action	½	1	0.3333

Table E.25: AHP Analysis with priority vector for *Waste Elimination* module for PERODUA

Aspect	Measurement & Benchmark	Evaluation, Diagnosis & Action	Priority Vector
Measurement & Benchmark	1	½	0.3333
Evaluation, Diagnosis & Action	2	1	0.6667

Table E.26: AHP Analysis with priority vector for *Continuous Improvement* module for PERODUA

Aspect	Measurement & Benchmark	Evaluation, Diagnosis & Action	Priority Vector
Measurement & Benchmark	1	½	0.3333
Evaluation, Diagnosis & Action	2	1	0.6667

Table E.27: AHP Analysis with priority vector for *Organisation CLMM Alignment - Process* for PERODUA

Aspect	Employee Involvement	Waste Elimination	Continuous Improvement	Priority Vector
Employee Involvement	1	½	½	0.1976
Waste Elimination	2	1	2	0.4905
Continuous Improvement	2	½	1	0.3119

PHN

Table E.28: Input of Organisation Environment Perspective Module for PHN

Variables Description	Data		
Name of user (the interviewee)	Zulkifli Abu Hassan		
Post	Head of Department		
Department	Dies Engineering		
Organisation	PHN Industry Sdn. Bhd.		
Address of Organisation	Lot PT 75-77, Jalan 26/6, Kawasan Perindustrian HICOM, Seksyen 26, 40710 Shah Alam, Selangor Darul Ehsan.		
Annual Sales	> RM25 million		
Number of Employees	> 150		
Position in Automotive Industry	1 st tier supplier		
Products	Dies		
Age of Organisation	17 years (1991)		
	Age of Relationship		
	< 5 years	5 – 10 years	> 10 years
Number of Suppliers	8	10	15
Number of Customers	0	0	4
	Last Year	2 Years Ago	3 Years Ago
CLMM Investment Activities:			
Just-In-Time (JIT)	Yes	Yes	No
Manufacturing Resources Planning (MRP II)	Yes	Yes	No
Total Quality Management (TQM)	Yes	Yes	No

Table E. 29: Output of *Organisation Environment Perspective* Module for PHN

Category	Description
Size of Organisation	Large
Stage in Business Cycle	Harvest stage
Relationship with Suppliers	Good and Stable
Relationship with Customers	Good and Stable
Strategic improvement	Yes
CLMM activities	Implemented for all activities

Table E.30: Inputs of *Market Analysis* Module for PHN

Main Product: Dies			
Market Competition	2007	2006	2005
Local	< 5 companies	< 5 companies	< 5 companies
Regional	No information	No information	No information
Global	No information	No information	No information
Market Share			
Local	30-40%	30-40%	30-40%
Regional	No information	No information	No information
Global	No information	No information	No information

Table E.31: Output of *Market Analysis* for PHN

		Trend	Remarks
Market Competition	Local	Steady for 3 years	
	Regional	No information	Need to measure
	Global	No information	Need to measure
Market Share	Local	Steady for 3 years	
	Regional	No information	Need to measure
	Global	No information	Need to measure

Table E.32: Summarised GAP Analysis Results of *Lean Manufacturing Perspective* for PHN

Level 2: Lean Manufacturing Perspective	No of Questions	GAP Analysis						
		GP	BP	Problem Category				
				1	2	3	4	5
Product Design for Manufacture								
Conceptual Design	41	35	6	0	0	0	6	0
Design Tools for Analysis	19	19	0	0	0	0	0	0
Product Development	16	14	2	2	0	0	0	0
Total	76	68	8	2	0	0	6	0
Internal Lean Chain								
Internal Continuous Improvement	31	26	5	3	0	0	2	0
Internal Process Control	18	14	4	4	0	0	0	0
Total	49	40	9	7	0	0	2	0
External Lean Chain								
Integration with Suppliers	24	16	8	4	4	0	0	0
Integration with Customers	8	8	0	0	0	0	0	0
Total	32	24	8	4	4	0	0	0
Grand Total	157	132	25	13	4	0	8	0

Table E.33: AHP Analysis with priority vector for *PDfM* module for PHN

Aspect	Conceptual Design	Design Tools for Analysis	Product Development	Priority Vector
Conceptual Design	1	2	½	0.3119
Design Tools for Analysis	½	1	½	0.1976
Product Development	2	2	1	0.4905

Table E.34: AHP Analysis with priority vector for *ILC* module for PHN

Aspect	Internal Continuous Improvement	Internal Process Control	Priority Vector
Internal Continuous Improvement	1	½	0.3333
Internal Process Control	2	1	0.6667

Table E.35: AHP Analysis with priority vector for *ELC* module for PHN

Aspect	Integration with Suppliers	Integration with Customers	Priority Vector
Integration with Suppliers	1	3	0.7500
Integration with Customers	1/3	1	0.2500

Table E.36: AHP Analysis with priority vector for *Lean Manufacturing Perspective* for PHN

Aspect	Product Design for Manufacture (PDM)	Internal Lean Chain (ILC)	External Lean Chain (ELC)	Priority Vector
Product Design for Manufacture (PDM)	1	1/2	1/3	0.1638
Internal Lean Chain (ILC)	2	1	1/2	0.2973
External Lean Chain (ELC)	3	2	1	0.5390

Table E.37: Summary of AHP Results for *Lean Manufacturing Perspective* for PHN

Module	Priority Vector	Sub-module	Priority Vector
Product Design for Manufacture (PDM)	0.1638	Conceptual Design	0.3119
		Design Tools for Analysis	0.1976
		Product Development	0.4905
Internal Lean Chain (ILC)	0.2973	Internal Continuous Improvement	0.3333
		Internal Process Control	0.6667
External Lean Chain (ELC)	0.5390	Integration with Suppliers	0.7500
		Integration with Customers	0.2500

Table E.38: Summarised GAP Analysis Results of *Competitive Priorities Perspective* for PHN

Level 3: Competitive Priorities Perspective	No of Questions	GAP Analysis						
		GP	BP	Problem Category				
				1	2	3	4	5
Quality								
Quality in Supply	16	15	1	0	1	0	0	0
Quality in Production	20	12	8	4	1	1	0	2
Quality in Delivery	16	15	1	0	1	0	0	0
Sub-total	52	42	10	4	3	1	0	2
Time								
Time in Supply	11	5	6	0	0	3	0	3
Time in Production	11	8	3	0	0	0	0	3
Time in Delivery	11	4	7	1	0	0	3	3
Sub-total	33	17	16	1	0	3	3	9
Flexibility								
Flexibility in Supply	7	5	2	2	0	0	0	0
Flexibility in Production	15	10	5	3	0	2	0	0
Flexibility in Delivery	7	7	0	0	0	0	0	0
Sub-total	29	22	7	5	0	2	0	0
Value								
Material cost	5	5	0	0	0	0	0	0
Production cost	10	9	1	1	0	0	0	0
Resources cost	10	7	3	0	0	3	0	0
Sub-total	25	21	4	1	0	3	0	0
Supply Chain								
Location	7	7	0	0	0	0	0	0
Logistics	8	8	0	0	0	0	0	0
Sub-total	15	15	0	0	0	0	0	0
Grand Total	154	117	37	11	3	9	3	11

Table E.39: AHP Analysis with priority vector for *Quality* module for PHN

Aspect	Quality in Supply	Quality in Production	Quality in Delivery	Priority Vector
Quality in Supply	1	1/3	1	0.2000
Quality in Production	3	1	3	0.6000
Quality in Delivery	1	1/3	1	0.2000

Table E.40: AHP Analysis with priority vector for *Time* module for PHN

Aspect	Time in Supply	Time in Production	Time in Delivery	Priority Vector
Time in Supply	1	2	½	0.3119
Time in Production	½	1	½	0.1976
Time in Delivery	2	2	1	0.4905

Table E.41: AHP Analysis with priority vector for *Flexibility* module for PHN

Aspect	Flexibility in Supply	Flexibility in Production	Flexibility in Delivery	Priority Vector
Flexibility in Supply	1	2	4	0.5571
Flexibility in Production	½	1	3	0.3202
Flexibility in Delivery	¼	1/3	1	0.1226

Table E.42: AHP Analysis with priority vector for *Value* module for PHN

Aspect	Material Cost	Production Cost	Resource Cost	Priority Vector
Material Cost	1	½	½	0.1976
Production Cost	2	1	2	0.4905
Resource Cost	2	½	1	0.3119

Table E.43: AHP Analysis with priority vector for *Supply Chain* module for PHN

Aspect	Location	Logistics	Priority Vector
Location	1	1	0.5000
Logistics	1	1	0.5000

Table E.44: AHP Analysis with priority vector for *Competitive Priorities Perspective* for PHN

Aspect	Quality	Time	Flexibility	Value	Supply Chain	Priority Vector
Quality	1	2	½	2	2	0.2375
Time	½	1	1/3	½	2	0.1274
Flexibility	2	3	1	2	3	0.3611
Value	½	2	½	1	2	0.1801
Supply Chain	½	½	1/3	½	1	0.0957

Table E.45: Summarised GAP Analysis Results of *Resources Perspective* for PHN

Level 4: Resources Perspective	No of Questions	GAP Analysis						
		GP	BP	Problem Category				
				1	2	3	4	5
Human Resource								
Development	26	21	5	0	3	2	0	0
Support	14	14	0	0	0	0	0	0
Values	11	8	3	1	2	0	0	0
Sub-total	51	43	8	1	5	2	0	0
Technology Resource								
Technology Management	11	11	0	0	0	0	0	0
Process Technology	15	15	0	0	0	0	0	0
Information Technology	8	2	6	5	1	0	0	0
Sub-total	34	28	6	5	1	0	0	0
Financial Resource								
Financial for Human	9	3	6	0	0	4	2	0
Financial for Technology	9	6	3	0	0	2	1	0
Financial for Implementation	3	0	3	0	0	2	1	0
Sub-total	21	9	12	0	0	8	4	0
Grand Total	106	80	26	6	6	10	4	0

Table E.46: AHP Analysis with priority vector for *Human Resource* module for PHN

Aspect	Development	Support	Values	Priority Vector
Development	1	2	$\frac{1}{2}$	0.2973
Support	$\frac{1}{2}$	1	$\frac{1}{3}$	0.1638
Values	2	3	1	0.5390

Table E.47: AHP Analysis with priority vector for *Technology Resource* module for PHN

Aspect	Technology Management	Process Technology	Information Technology	Priority Vector
Technology Management	1	1	$\frac{1}{7}$	0.1111
Process Technology	1	1	$\frac{1}{7}$	0.1111
Information Technology	7	7	1	0.7778

Table E.48: AHP Analysis with priority vector for *Financial Resource* module for PHN

Aspect	Financial for Human	Financial for Technology	Financial for Implementation	Priority Vector
Financial for Human	1	2	$\frac{1}{2}$	0.3119
Financial for Technology	$\frac{1}{2}$	1	$\frac{1}{2}$	0.1976
Financial for Implementation	2	2	1	0.4905

Table E.49: AHP Analysis with priority vector for *Resources Perspective* for PHN

Aspect	Human Resource	Technology Resource	Financial Resource	Priority Vector
Human Resource	1	½	½	0.1976
Technology Resource	2	1	2	0.4905
Financial Resource	2	½	1	0.3119

Table E.50: Summarised GAP Analysis Results of *Organisation CLMM Alignment - Process* for PHN

Level 5: Process Perspective	No of Questions	GAP Analysis						
		GP	BP	Problem Category				
				1	2	3	4	5
Employee Involvement								
Measurement & benchmark	12	8	4	0	0	4	0	0
Evaluation, diagnosis & action	9	9	0	0	0	0	0	0
Sub-total	21	17	4	0	0	4	0	0
Waste Elimination								
Measurement & benchmark	7	5	2	0	1	1	0	0
Evaluation, diagnosis & action	4	3	1	0	1	0	0	0
Sub-total	11	8	3	0	2	1	0	0
Continuous Improvement								
Measurement & benchmark	12	12	0	0	0	0	0	0
Evaluation, diagnosis & action	3	2	1	0	1	0	0	0
Sub-total	15	14	1	0	1	0	0	0
Grand Total	47	39	8	0	3	5	0	0

Table E.51: AHP Analysis with priority vector for *Employee Involvement* module for PHN

Aspect	Measurement & Benchmark	Evaluation, Diagnosis & Action	Priority Vector
Measurement & Benchmark	1	2	0.6667
Evaluation, Diagnosis & Action	½	1	0.3333

Table E.52: AHP Analysis with priority vector for *Waste Elimination* module for PHN

Aspect	Measurement & Benchmark	Evaluation, Diagnosis & Action	Priority Vector
Measurement & Benchmark	1	½	0.3333
Evaluation, Diagnosis & Action	2	1	0.6667

Table E.53: AHP Analysis with priority vector for *Continuous Improvement* module for PHN

Aspect	Measurement & Benchmark	Evaluation, Diagnosis & Action	Priority Vector
Measurement & Benchmark	1	½	0.3333
Evaluation, Diagnosis & Action	2	1	0.6667

Table E.54: AHP Analysis with priority vector for *Organisation CLMM Alignment - Process* for PHN

Aspect	Employee Involvement	Waste Elimination	Continuous Improvement	Priority Vector
Employee Involvement	1	½	2	0.3119
Waste Elimination	2	1	2	0.4905
Continuous Improvement	½	½	1	0.1976

PROFEN

Table E.55: Input of *Organisation Environment Perspective* Module for PROFEN

Variables Description	Data		
Name of user (the interviewee)	Mohd Jarisman Abdul Jalil		
Post	Manager		
Department	Procurement and Vendor Development		
Organisation	Profen Sdn. Bhd.		
Address of Organisation	Lot 9, Kawasan MIEL Fasa II, Jalan Bursa 23/4, Section 23, 40300 Shah Alam, Selangor Darul Ehsan.		
Annual Sales	> RM25 million		
Number of Employees	> 150		
Position in Automotive Industry	1 st tier and 2 nd tier supplier		
Products	Dies and body components		
Age of Organisation	19 years (1989)		
	Age of Relationship		
	< 5 years	5 – 10 years	> 10 years
Number of Suppliers	8	10	2
Number of Customers	0	0	4
	Last Year	2 Years Ago	3 Years Ago
CLMM Investment Activities:			
Just-In-Time (JIT)	Yes	Yes	No
Manufacturing Resources Planning (MRP II)	Yes	Yes	No
Total Quality Management (TQM)	No	No	No

Table E.56: Output of *Organisation Environment Perspective* Module for PROFEN

Category	Description
Size of Organisation	Large
Stage in Business Cycle	Harvest stage
Relationship with Suppliers	Good and Stable
Relationship with Customers	Good and Stable
Strategic improvement	Yes
CLMM activities	Implemented but not for all activities

Table E.57: Inputs of *Market Analysis* Module for PROFEN

Main Product: Dies and Body Components			
Market Competition	2007	2006	2005
Local	20 - 50 companies	20 - 50 companies	20 - 50 companies
Regional	No information	No information	No information
Global	No information	No information	No information
Market Share			
Local	10-20%	10-20%	10-20%
Regional	No information	No information	No information
Global	No information	No information	No information

Table E.58: Output of *Market Analysis* for PROFEN

		Trend	Remarks
Market Competition	Local	Steady for 3 years	
	Regional	No information	Need to measure
	Global	No information	Need to measure
Market Share	Local	Steady for 3 years	
	Regional	No information	Need to measure
	Global	No information	Need to measure

Table E.59: Summarised GAP Analysis Results of *Lean Manufacturing Perspective* for PROFEN

Level 2: Lean Manufacturing Perspective	No of Questions	GAP Analysis						
		GP	BP	Problem Category				
				1	2	3	4	5
Product Design for Manufacture								
Conceptual Design	41	33	8	0	0	0	8	0
Design Tools for Analysis	19	19	0	0	0	0	0	0
Product Development	16	14	2	2	0	0	0	0
Total	76	66	10	2	0	0	8	0
Internal Lean Chain								
Internal Continuous Improvement	31	16	15	10	0	1	4	0
Internal Process Control	18	14	4	3	1	0	0	0
Total	49	30	19	13	1	1	4	0
External Lean Chain								
Integration with Suppliers	24	15	9	3	6	0	0	0
Integration with Customers	8	7	1	0	1	0	0	0
Total	32	22	10	3	7	0	0	0
Grand Total	157	118	39	18	8	1	12	0

Table E.60: AHP Analysis with priority vector for *PDfM* module for PROFEN

Aspect	Conceptual Design	Design Tools for Analysis	Product Development	Priority Vector
Conceptual Design	1	2	½	0.3119
Design Tools for Analysis	½	1	½	0.1976
Product Development	2	2	1	0.4905

Table E.61: AHP Analysis with priority vector for *ILC* module for PROFEN

Aspect	Internal Continuous Improvement	Internal Process Control	Priority Vector
Internal Continuous Improvement	1	3	0.7500
Internal Process Control	1/3	1	0.2500

Table E.62: AHP Analysis with priority vector for *ELC* module for PROFEN

Aspect	Integration with Suppliers	Integration with Customers	Priority Vector
Integration with Suppliers	1	3	0.7500
Integration with Customers	1/3	1	0.2500

Table E.63: AHP Analysis with priority vector for *Lean Manufacturing Perspective* for PROFEN

Aspect	Product Design for Manufacture (PDM)	Internal Lean Chain (ILC)	External Lean Chain (ELC)	Priority Vector
Product Design for Manufacture (PDM)	1	1/3	1/3	0.1416
Internal Lean Chain (ILC)	3	1	2	0.5247
External Lean Chain (ELC)	3	1/2	1	0.3338

Table E.64: Summary of AHP Results for *Lean Manufacturing Perspective* for PROFEN

Module	Priority Vector	Sub-module	Priority Vector
Product Design for Manufacture (PDM)	0.1416	Conceptual Design	0.3119
		Design Tools for Analysis	0.1976
		Product Development	0.4905
Internal Lean Chain (ILC)	0.5247	Internal Continuous Improvement	0.7500
		Internal Process Control	0.2500
External Lean Chain (ELC)	0.3338	Integration with Suppliers	0.7500
		Integration with Customers	0.2500

Table E.65: Summarised GAP Analysis Results of *Competitive Priorities Perspective* for PROFEN

Level 3: Competitive Priorities Perspective	No of Questions	GAP Analysis						
		GP	BP	Problem Category				
				1	2	3	4	5
Quality								
Quality in Supply	16	13	3	2	1	0	0	0
Quality in Production	20	6	14	6	2	2	4	0
Quality in Delivery	16	13	3	2	1	0	0	0
Sub-total	52	32	20	10	4	2	4	0
Time								
Time in Supply	11	2	9	4	2	1	2	0
Time in Production	11	8	3	1	2	0	0	0
Time in Delivery	11	4	7	4	0	3	0	0
Sub-total	33	14	19	9	4	4	2	0
Flexibility								
Flexibility in Supply	7	7	0	0	0	0	0	0
Flexibility in Production	15	8	7	4	1	2	0	0
Flexibility in Delivery	7	7	0	0	0	0	0	0
Sub-total	29	22	7	4	1	2	0	0
Value								
Material cost	5	5	0	0	0	0	0	0
Production cost	10	8	2	2	0	0	0	0
Resources cost	10	5	5	2	0	3	0	0
Sub-total	25	18	7	4	0	3	0	0
Supply Chain								
Location	7	7	0	0	0	0	0	0
Logistics	8	8	0	0	0	0	0	0
Sub-total	15	15	0	0	0	0	0	0
Grand Total	154	101	53	27	9	11	6	0

Table E.66: AHP Analysis with priority vector for *Quality* module for PROFEN

Aspect	Quality in Supply	Quality in Production	Quality in Delivery	Priority Vector
Quality in Supply	1	1/3	1	0.2000
Quality in Production	3	1	3	0.6000
Quality in Delivery	1	1/3	1	0.2000

Table E.67: AHP Analysis with priority vector for *Time* module for PROFEN

Aspect	Time in Supply	Time in Production	Time in Delivery	Priority Vector
Time in Supply	1	4	2	0.5438
Time in Production	¼	1	¼	0.1103
Time in Delivery	½	4	1	0.3460

Table E.68: AHP Analysis with priority vector for *Flexibility* module for PROFEN

Aspect	Flexibility in Supply	Flexibility in Production	Flexibility in Delivery	Priority Vector
Flexibility in Supply	1	¼	1	0.1667
Flexibility in Production	4	1	4	0.6667
Flexibility in Delivery	1	¼	1	0.1667

Table E.69: AHP Analysis with priority vector for *Value* module for PROFEN

Aspect	Material Cost	Production Cost	Resource Cost	Priority Vector
Material Cost	1	1/3	¼	0.1226
Production Cost	3	1	1/2	0.3202
Resource Cost	4	2	1	0.5571

Table E.70: AHP Analysis with priority vector for *Supply Chain* module for PROFEN

Aspect	Location	Logistics	Priority Vector
Location	1	1	0.5000
Logistics	1	1	0.5000

Table E.71: AHP Analysis with priority vector for *Competitive Priorities Perspective* for PROFEN

Aspect	Quality	Time	Flexibility	Value	Supply Chain	Priority Vector
Quality	1	½	2	2	3	0.2369
Time	2	1	3	3	4	0.3920
Flexibility	½	1/3	1	½	3	0.1322
Value	½	1/3	2	1	3	0.1708
Supply Chain	1/3	¼	1/3	1/3	1	0.0681

Table E.72: Summarised GAP Analysis Results of *Resources Perspective* for PROFEN

Level 4: Resources Perspective	No of Questions	GAP Analysis						
		GP	BP	Problem Category				
				1	2	3	4	5
Human Resource								
Development	26	21	5	0	3	2	0	0
Support	14	5	9	3	6	0	0	0
Values	11	8	3	1	2	0	0	0
Sub-total	51	34	17	4	11	2	0	0
Technology Resource								
Technology Management	11	11	0	0	0	0	0	0
Process Technology	15	6	9	9	0	0	0	0
Information Technology	8	2	6	5	1	0	0	0
Sub-total	34	19	15	14	1	0	0	0
Financial Resource								
Financial for Human	9	2	7	0	2	4	1	0
Financial for Technology	9	2	7	0	3	3	1	0
Financial for Implementation	3	0	3	3	0	0	0	0
Sub-total	21	4	17	3	5	7	2	0
Grand Total	106	57	49	21	17	9	2	0

Table E.73: AHP Analysis with priority vector for *Human Resource* module for PROFEN

Aspect	Development	Support	Values	Priority Vector
Development	1	¼	½	0.1373
Support	4	1	3	0.6232
Values	2	1/3	1	0.2395

Table E.74: AHP Analysis with priority vector for *Technology Resource* module for PROFEN

Aspect	Technology Management	Process Technology	Information Technology	Priority Vector
Technology Management	1	1/6	1/7	0.0703
Process Technology	6	1	½	0.3496
Information Technology	7	2	1	0.5801

Table E.75: AHP Analysis with priority vector for *Financial Resource* module for PROFEN

Aspect	Financial for Human	Financial for Technology	Financial for Implementation	Priority Vector
Financial for Human	1	½	1/8	0.0812
Financial for Technology	2	1	1/8	0.1290
Financial for Implementation	8	8	1	0.7898

Table E.76: AHP Analysis with priority vector for *Resources Perspective* for PROFEN

Aspect	Human Resource	Technology Resource	Financial Resource	Priority Vector
Human Resource	1	1/4	1/3	0.1199
Technology Resource	4	1	3	0.6080
Financial Resource	3	1/3	1	0.2721

Table E.77: Summarised GAP Analysis Results of *Organisation CLMM Alignment - Process* for PROFEN

Level 5: Process Perspective	No of Questions	GAP Analysis						
		GP	BP	Problem Category				
				1	2	3	4	5
Employee Involvement								
Measurement & benchmark	12	7	5	0	4	1	0	0
Evaluation, diagnosis & action	9	8	1	0	1	0	0	0
Sub-total	21	15	6	0	5	1	0	0
Waste Elimination								
Measurement & benchmark	7	3	4	2	1	1	0	0
Evaluation, diagnosis & action	4	1	3	0	3	0	0	0
Sub-total	11	4	7	2	4	1	0	0
Continuous Improvement								
Measurement & benchmark	12	8	4	4	0	0	0	0
Evaluation, diagnosis & action	3	1	2	0	2	0	0	0
Sub-total	15	9	6	4	2	0	0	0
Grand Total	47	28	19	6	11	2	0	0

Table E.78: AHP Analysis with priority vector for *Employee Involvement* module for PROFEN

Aspect	Measurement & Benchmark	Evaluation, Diagnosis & Action	Priority Vector
Measurement & Benchmark	1	2	0.6667
Evaluation, Diagnosis & Action	1/2	1	0.3333

Table E.79: AHP Analysis with priority vector for *Waste Elimination* module for PROFEN

Aspect	Measurement & Benchmark	Evaluation, Diagnosis & Action	Priority Vector
Measurement & Benchmark	1	2	0.6667
Evaluation, Diagnosis & Action	1/2	1	0.3333

Table E.80: AHP Analysis with priority vector for *Continuous Improvement* module for PROFEN

Aspect	Measurement & Benchmark	Evaluation, Diagnosis & Action	Priority Vector
Measurement & Benchmark	1	2	0.6667
Evaluation, Diagnosis & Action	½	1	0.3333

Table E.81: AHP Analysis with priority vector for *Organisation CLMM Alignment - Process* for PROFEN

Aspect	Employee Involvement	Waste Elimination	Continuous Improvement	Priority Vector
Employee Involvement	1	1/3	1/3	0.1416
Waste Elimination	3	1	2	0.5247
Continuous Improvement	3	½	1	0.3338