



**FACULTY FEBE
MAIN EXAM JUNE 2014**

DEPARTMENT OF QUALITY AND OPERATIONS MANAGEMENT

MODULE : **OPERATIONS MANAGEMENT 1V**

CODE : **BPJ 44A4**

DATE : **10 JUNE 2014**

DURATION : **(SESSION 1) 8:30 - 11:30**

OPEN BOOK EXAM

TIME : **038X – 08:30hr**

TOTAL MARKS : **100**

EXAMINER : **Dr. A. VERMEULEN**

MODERATOR : **Prof. D KRUGER**

NUMBER OF PAGES : **1 PAGE**

INSTRUCTIONS TO CANDIDATES:

- Question papers must be handed in.
- This is an open book assessment.
- Read the questions carefully and answer only what is asked.
- Number your answers clearly.
- Write neatly and legibly
- Structure your answers by using appropriate headings and sub-headings.
- The general University of Johannesburg policies, procedures and rules pertaining to written assessments apply to this assessment.

PREPARATION AND REQUIREMENTS:

Student Requirements:

Stationery, Graph Paper, Examination Book, Z-distribution Table (see Appendix)

Equipment Requirements (minimum):

Financial Calculator / Scientific Calculator

SECTION A – OPERATIONS TECHNOLOGY STRATEGY (50 MARKS)

SECTION B – PROJECT MANAGEMENT (50 MARKS)

SECTION A (50 MARKS)

SECTION A (50 marks)

Operations & Technology Management Strategy

Note to Students:

Read the following scenario carefully and answer the questions at the end of the case study. Make use of practical examples to illustrate your knowledge and understanding of problem solving.

Introduction:

There were numerous major quality breakthroughs over many years. However, it is only when management realise that business and operational processes, and not only people are key to capability and optimal performance. Organisations therefore need to understand operational and individual business processes as well as their strategic impact they have on the entire supply network.

Recent research has shown that key to successful process decisions requires that specific criteria's should be taken into consideration. Some of these are (i) the best fit for the situation – logical operational chain, (ii) optimisation of one process at the expense of another – utilises organisation's resources, (iii) processes as building blocks that create a total business value chain which include the cumulative phases of business processes affecting output, customer satisfaction and competitive priorities + advantage – defined objective, (iv) that there is no distinction between any processes in the value chain either performed by internal or by outside suppliers – include all stakeholders, and (v) that managers pay attention to interfacing all processes ensuring cross-functional coordination (operational) – achievement of measurable results.

Company XYZ

Background

Lately there has been an unexpectedly large increase in the demand for services and products in the company. Due to the increase in demand the company is presently struggling to satisfy the demand for their products and services. In addition to this they have seen an opportunity to provide their services and products to be exported to central African and South American markets.

Presently the company is in the process of increasing their output and as part of this process are re-evaluating their supply chain. In order to achieve this departments have hired casuals and are working the maximum possible overtime.

At a recent strategic meeting the following facts were revealed:

1. The marketing director of the company states that there is a delay in deliveries to customers. However, the factory manager says that the marketing department gave him un-realistic sales order due dates and that sales targets are crazy. The factory manager also pointed out that delays are due to the re-prioritisation of works orders and projects.
2. At the same meeting, the financial director expressed a concern about the high wage bill - especially the high overtime cost and number of casuals employed. He stated that the total expenses were much higher than the budget allowed and that the budget had been calculated on previous years' actual expenses which has been averaged out at a flat rate per month. He as well as the factory manager mentioned that the company does not have the necessary capability to take care of the unexpected increase of demand for their products and projects.
3. A major concern is that the quality manager says that he is sick and tired that the marketing and financial director is always complaining about customer satisfaction, bad quality and high overhead cost. He stated that they know nothing about quality and operational processes.

As the result of the above statement the quality manager send a memorandum to the CEO expressing his concern that over the past 6 months no quality improvements have been made and that everybody does just do what they want too to get the jobs

done – chasing targets and bonuses.

The following common concerns were identified after thorough operational and business process analysis. These are:

- i. Lack of identification and measurement of competitive priorities
- ii. Miss-understanding and attitude towards quality
- iii. Inadequate tools to determine the status of operational and quality within the organisation.
- iv. Inadequate problem identification and handling
- v. No clear defined supply chain strategy in place
- vi. Lack of application of good project principles.

The CEO of the organisation decided to develop “new OTM strategy

Questions:

You are the newly appointed operational director of the company. Analyse the above scenarios and propose possible strategic operational actions that you will take to “improve” the present situation. Justify your answer(s) by means of practical examples.

(30 Marks)

In fulfilment of this objective compile a framework that will ensure future continuous improvement measures and operational capability in order to maintain competitiveness, and operational performance.

(20 Marks)

Take note: Do NOT make use of bullet format answers. All answers to be justified.

Total marks 50

Hint: Make use of practical examples (no theory). You may make use of your individual and group assignment as guidelines to improve the above companies OTM strategy.

SECTION B (50 marks)**PROJECT MANAGEMENT**

Case Study:

Note that this is a brief version of the following case study.

Given the background in section A.

After analysis of the capability study conducted at the above mentioned company (Section A) the company alter some processes and machinery to increase capacity. The company thereafter purchased new machinery to replace older machinery and relocated some machinery. It was determined that if these changes were not made in time the company will make a loss of R1, 3000, 000 per week and with a possibility of being closed down at the end of the year.

As the project manager in consultation with your project team have determined all the activities as well as their estimated times as well as their precedence relationship. All the activities, their time estimates is displayed in the following table.

Activity	Description	Normal Cost	Activity	Estimated Activity		
		(R 1,000,000)	Predecessor	Times Weeks		
A	Order new machinery	50	-	1	2	3
B	Plan new physical layout	10	-	3	5	7
C	Determine safety changes in existing machinery	2.5	-	2	3	5
D	Receive equipment	10	A	6	10	14
E	Hire new employees	6	A	3	7	9
F	Make plant / processes alterations	25	B	10	15	18
G	Make changes in existing machinery	15	C	6	9	12
H	Train new employees	1	D, E	2	5	8
I	Install new machinery	10	D, E, F	3	4	5
J	Relocate old machinery	5	D, E, F, G	6	10	14
K	Conduct employee safety orientation	3	H, I, J	2	3	5

QUESTIONS AND INSTRUCTIONS

1. Determine the estimated completion time of the project inclusive of all possible estimated times, i.e. critical delivery times, slack times, E-start, E-

finish, L-start, L-finish.

(20 Marks)

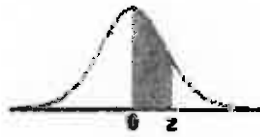
2. Discuss the project life cycle and (by means of Gantt Chart and Histogram / Cost Analysis Chart) the utilization of project resources. (10 Marks)
3. Determine the probability that the project can be completed five weeks before the initial **estimated** completion date. Write a report on your findings. (8 Marks)
4. What will the effect be on the completion of the project if the training of new employees is delayed by 4 weeks? What corrective actions will you take to ensure that the project will still be able to finish in a reasonable time? Show all calculations in support your answer. (12 Marks)

Total Section B = 50 Marks

TOTAL 100 MARKS

APPENDIX
Z-DISTRIBUTION CURVE

Area between 0 and z



	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817

2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990