

**OLLSCOIL NA hÉIREANN, GAILLIMH
NATIONAL UNIVERSITY OF IRELAND, GALWAY**

SUMMER EXAMINATIONS 2000

**B.COMM. DEGREE
B.Sc. INFORMATION TECHNOLOGY
B.E. DEGREE IN INDUSTRIAL ENGINEERING & INFORMATION SYSTEMS
VISITING STUDENTS**

OPERATIONS STRATEGY

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Time allowed: 3 hours

Attempt: 3 questions:

Question 5 (Case Study) is compulsory, plus any other 2 questions.

- Q 1**
- a) Discuss the four stages in Manufacturing's strategic role
 - b) *"Competing means being the best in an area that generates satisfaction in our client".*

Describe the steps in the static design of the operating structure following the OSA (Operations Strategic Analysis) methodology.

- Q 2**
- "Process design is a knowledge encapsulation process. The obtainment of a good or service can be formulated as a problem solving operation. The problem – materialise the product from the design – should be approached from the context of the knowledge resources available to the company."*

Discuss the strategic function of process design within the company.

- Q 3**
- a) Discuss the development from an adversarial to a partnership relationship between the buyer and supplier
 - b) *"Materials can, if managed badly, serve as a means of covering problems, both in terms of production/operations and poor supplier performance."* Discuss.

- Q 4**
- Lee and Schniederjans (1994) summarise the strategic importance of quality when they state :

"The only basic weapon for economic superiority today and in the twenty-first century is product or service quality" Discuss.

Q 5 CASE STUDY

Heathrow. 7:30 p.m. The British Midlands flight is on time. Claude Joigneault is feeling happy.

The day spent at Rank Xerox's European headquarters has been successful. The Group's European logistics strategy has been tied up. The Just-in-Time management project has been accepted by the general management. The stakes are high, not only for the Group but also for Rank Xerox's French (RXF) subsidiary. Claude is the Logistics Director at Rank Xerox France, and is in charge of defining and putting into practice the logistics equipment strategy for France.

The objectives are clear and the current situation and environmental factors are known. So the meeting he has organized the following morning with his project manager. Jerome, should enable him to move ahead on the design of the logistics strategy project methodology for the French subsidiary.

Saint Ouen 8:30 a.m. the following morning.

Claude Recalls the Objectives:

1. Conformity of French Strategy and the International Logistics Strategy

The Group has decided to build a European logistics set-up based on a distribution network operating from a European center located in Venray in The Netherlands. The new fundamental element is the setting-up of a Just-in-Time process between the Group's European subsidiaries to manage information flows, both downward and upward, and also physical flows.

The aim is to achieve the greatest potential flexibility in bringing the stocks to Venray.

2. Improving Customer Satisfaction

The Group's top priority is customer satisfaction.

Detailed analysis shows that a very satisfied customer is a loyal customer who displays blind trust in his supplier. This is an essential point when considering customers' repurchasing decisions of the Group's machines.

3. Cutting Logistics Costs and Machine Assets

At European level overall logistics costs come to 12%. Introducing the new strategy should bring this figure down to 8%.

As far as machine assets are concerned, the figure for Europe is 180 days. The aim is to get it down to 80 days. If the objective is reached, huge savings will be made because of the high cost of borrowing money.

Jerome Describes the Current Situation

1. The Distribution Network

The machines are manufactured in three European plants in Mitcheldean, Wales, Neuville-en-Ferrain, close to Lille, France, and Venray, Holland, not far from Dusseldorf, Germany. Orders from European countries are centralized at European headquarters in Marlow in England. They are then sent to the plants according to a monthly, quarterly, or yearly supply and demand process.

The machines are delivered to each country through each distribution center according to production and/or the level of available stock. Delivery depends on the goodwill of each plant, their goal being to deliver as late as possible in the month.

France uses two warehouses. One is located at Garonor and has a capacity of 11,000 sq. meters where new and repaired machines are stocked. The other one is at Gonesse, has a capacity of 6,300 sq. meters, and is used for returned machines.

The warehouse at Garonor does not have a computerized management system. However, operations are managed through a bar codes system.

Machines are allocated to customers each day at Garonor and are entrusted to ten carriers who provide transport services through 21 regional platforms. The aim is that handling is done on the customers' premises, either by his team or by a subcontractor's team (see transport services, appendix 1). Two carriers provide specialized services, one in common carrier distribution, the other for products called electronic photocopying and printing systems.

The machines are collected by the same teams, the products are prepared on the regional platforms and sent to Gonesse once a month. Machines are sorted into categories depending on different criteria that allow the machines in good condition to be repackaged there and then, to take out parts that cannot be reused, to scrap obsolete products and to send those products that can be reworked back to the plant.

No forward return system has, up until now, been introduced.

Three carriers, along with their subcontractors, deal with 80% of the business.

2. Information Network

Products are sold through two networks. The first one involves direct selling, with a direct sales force approaching public and private major accounts and an indirect sales network comprising 150 Rank Xerox sole agents mainly targeting the mass market.

The direct sales force transmits their details of contracts to the sales secretary, who validate and enter them into a system called SOFIA as they arrive. The agents send in their orders by MINITEL, the French viewdata system, entering the information at their offices via a system called JERI.

Each night all orders are interfaced with the stock machines, in a system called MISTRAL, using a logistics system bearing the name ACCORD.

ACCORD is a recent system featuring functions allowing for the advanced integration of the logistics system with the accounting, invoicing, stock, order follow-up and customer service (after sales) systems.

As soon as a contract is deemed to be ready to install, and given that there is a machine available at Garonor, a preparation request is issued in the morning and the warehousemen can start dealing with the order. A bar code system carries out the complete task of dealing with the order, i.e., machine allocation, batch installation, and accessories for a given contract.

Follow-up of the different stages of the product's progress in the logistics chain is done through the RITA system, a computerized reporting system on MINITEL, reception on platforms, planning and delivery. All Rank Xerox France people involved may call up information about the contract on their screens and see where the contract has got to, ordering, delivery, setting up the machine, etc.

The process for collecting machines is the same, data entry is SOFIA and transmission of collection papers to the corresponding service provider. The information is entered into the same computerized information systems.

No information system links Rank Xerox France to other European sites, not even to headquarters in England. Electronic information exchange projects in the immediate future are not in vogue. Their implementation can only be envisaged in the long term, given the huge investment they entail.

3. Personnel

At Garonor 49 people are employed in logistics. The break-down is laid out as follows:

Handling (warehouse)	21
Transport and customs	7
Supply demand	14.5
Management, development, secretarial	4.5
Budget and management control	2

At Gonesse 39 people handle returns.

Handling and packaging	11
Repackaging machines	13
Parts repairs and cannibalization (detaching parts for customer service use)	3
Production and quality control	4
Administration	
Management and secretarial staff	5

4. Volumes

See Appendix 2. Machine returns amount to roughly half of the whole volume distributed.

5. Costs (in French francs)

Transportation	46,515
Personnel (salaries, taxes on salaries, temporary staff)	20,967
Warehouse costs (including maintenance)	8,209
Information system (share allocated by RXF data processing department)	4,400
Miscellaneous	<u>3,388</u>
TOTAL	83,479

Preliminary studies show potential gains in productivity. One example concerning a single moving operation at Garonor shows a gain of 150 francs. Excluding top of the range products, productivity gains are expected to be 66%. Return handling costs amount to approximately 175 francs and productivity costs associated with returns are estimated to be 52%.

6. Assets

Stock level calculated in millions of francs and number of days of stock are set out in appendix 3. The results are in line with targets established by the current organization structure.

7. Customer Satisfaction

Results appear in Appendix 4. Achieved levels are satisfactory and correspond to a favorable position compared to other functions in the corporation. A comparative study taking into account competitors' performances is being carried out and will give an idea of where the service provided should be positioned on the market.

8. Prices

Invoicing by carriers is done each month, and prices are fixed on the basis of product and department (geographical administrative areas in France). The number of price references is very high indeed, and control is, therefore, long and arduous.

Claude Reviews the Environmental Factors That Must Be Taken into Account in Any Study

1. European Considerations

The JIT strategy has been adopted by the Group. It is based on the following considerations:

- Centralizing stocks in a European center at Venray in The Netherlands. Stocked products are neutral, in relation to allocation of batches for each country.
- An electronic information system supports the strategy. The implementation of a European information network including information exchange between all sites, whether they be plants, distribution, or operational centers. The system will allow for automatic dispatch of order quantities to Venray, to have Venray deliver equipment directly to national central sites, to provide all information needed for reception in the systems of equipment in transit and to make information about the progress of any one operation available instantly.
- Defining a project for machine returns with a view to optimizing re-use of machines (spare parts, re-packaging, and scrap). This strategy includes the environmental protection rules based on the most advanced in Europe, the German *Blue Angle* system.

2. French Considerations

Provide *afauliless service* process including the possibility of customer service differentiation, capacity to deliver products in 48 hours, integration of end-of-month peaks, when 40% of all movements happen in the last three days of the month and continuing to offer services to customers outside the Group.

3. Product Range

Rank Xerox France labeled as *The Document Company* sells a product range made up of the following:

- Products at the very top of the range such as electronic photocopying systems or electronic printing systems, specially customized products made to customer requirement. It is at Mitcheldean and Lille that they are made. Orders come in by electronic mail.

Preparing the systems is a complicated process. They often include several elements that are either assembled beforehand at one of the plants or put together by customer service technicians on the customer's site.

Market expectations concerning delivery are three to four weeks.

- Regular Photocopiers, which come in an entire range going from 12 to 100 copies a minute and weighing between 40 and 300 kilos.

Delivery times are approximately one to three weeks, depending on the importance of the product in the range.

- Commodity products, which cover a great variety of products, small printers, fax machines, personal copiers weighing less than 30 kilos.

Delivery times usually go from two to five days.

Some of these products are provided by suppliers from outside Rank Xerox, mainly from supplier distribution centers located in France. Quantities of these commodity products are naturally high compared to those in the first two categories.

The first category accounts for 1 % of all movements, the other two share the rest.

4. Planning

Rank Xerox's experience in implementing new logistics strategies shows that a new project requires a study lasting two months to be carried out. A further month should be dedicated to having it adopted by the different functions and general management and two months for joint labor management instances to give it their go-ahead.

A bidding process takes four months and changing carriers takes another three.

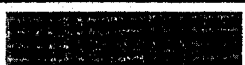
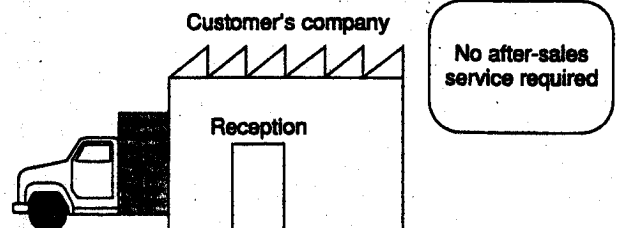

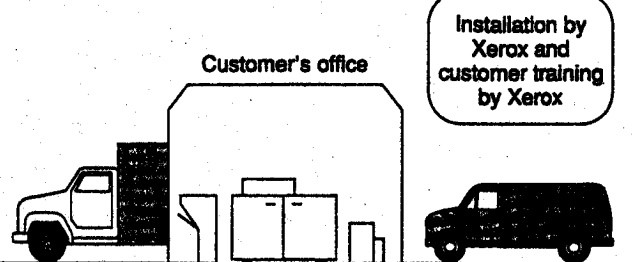

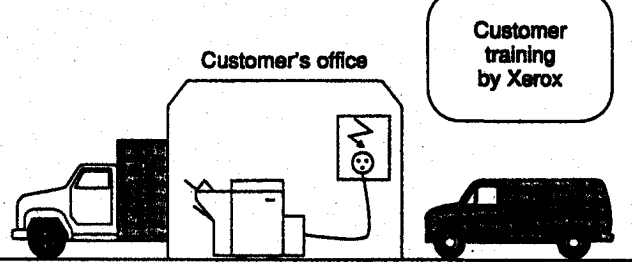

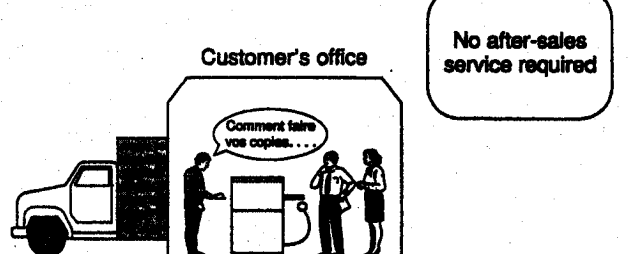
Setting up a JIT process demands about a year's work, and implementing a stock management system takes six months.

Questions

You are Jerome and are in charge of the new strategy project. At the end of the meeting your objective is to present the project, and in particular:

1. The physical and information organizational diagram representing current flows.
2. Diagnosis of the current situation.
3. Likely developments, given the aims that have been fixed and the European and French orientations.
4. The key issues, recommended scenarios, rejected and retained scenarios per logistics category.
5. Scheduling and implementation.
6. For services sub-contracted outside the firm, draw up the specifications and make a list of both qualitative and quantitative selection criteria.
7. Description of the JIT process, short-term information transfer solutions, and your long-range recommendations.
8. An analysis of the project's cost/profit ratio.
9. The communication and information plans given the economic consequences, the effect on industrial relations and the process of change.

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Appendix 1
Carrier Services

Commodity Product	 Unpacked equipment delivered to customer's premises	
Top-range photocopying Electronic photocopying and printing systems	 Equipment (except for fax machine) unpacked on customer's premises, ensure that delivery matches customer's order, and in some cases, elements assembled	
Middle-range photocopying	 Equipment unpacked on customer's premises, elements assembled and product tested	
Bottom-range photocopying Bottom of the range fax machines	 Equipment unpacked on customer's premises, accessories assembled, machine tested and demonstrated	

Appendix 2

Volumes Distributed per Regional Platform (Units and Weight)

M = Mitcheldean

V = Venray

L = Lille

H = Hors Groupe

Regional Platforms	Units					Weight (T)				
	M	V	L	H	TOT	M	V	L	H	TOT
PARIS (5)	8712	8895	2211	4577	24396	1474	1148	1204	100	3927
LYON	1565	1519	315	862	4262	248	173	170	19	610
CLERM FERRAND	335	313	53	190	890	50	32	27	4	113
GRENOBLE	676	665	129	368	1839	105	77	64	8	254
MARSEILLE	1026	984	188	571	2768	158	108	99	12	377
NICE	666	618	101	380	1765	98	61	52	8	220
COLMAR	1112	1054	190	634	2998	170	109	102	14	395
NANCY	499	475	85	279	1338	75	51	43	6	176
LILLE	1907	1795	298	1078	5077	282	184	149	24	639
ROUEN	1203	1099	186	697	3185	179	105	105	15	405
REIMS	269	252	42	152	715	40	26	21	3	90
NANTES	1396	1320	224	786	3726	208	138	112	17	475
POITIERS	767	703	112	444	2026	112	67	60	10	250
ORLEANS	590	563	99	330	1583	89	60	50	7	206
TOULOUSE	863	799	133	494	2289	128	79	71	11	288
BORDEAUX	937	852	130	545	2465	136	79	70	12	297
MONTPELLIER	537	503	79	304	1423	78	51	38	7	174
TOTAL	23068	22411	4573	12692	62744	3630	2549	2437	277	8894

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Appendix 3
Assets

Type	In Millions of Francs	DOS (Number of days of stock)
Brand new	91.8	15
Renovated	21.6	6
Returns	102.6	31
Loans/Trials	21.6	6
Total	237.6	58

Appendix 4
Customer Satisfaction in percentages
Overall Results in France (from 90-day study)
over the last 9 quarters

Indicator										
Equipment available to meet required time	VS + S	87.4	92.9	87.0	90.4	92.9	96.2	97.6	94.5	90.2
	VS + S + A	95.1	96.5	96.1	96.6	98.4	98.5	99.4	98.1	96.1
Punctuality of delivery	VS + S	85.2	90.1	86.2	89.0	92.8	93.9	95.7	91.3	89.0
	VS + S + A	93.7	94.4	94.0	95.0	97.3	97.4	98.8	93.4	95.9
Equipment matches orders	VS + S	93.8	96.5	94.8	94.2	96.2	97.2	98.2	97.3	96.9
	VS + S + A	97.3	97.6	97.5	97.7	98.6	98.7	99.4	98.7	98.4
Completeness of delivery	VS + S	93.4	96.7	94.7	92.8	96.3	96.5	97.7	96.0	95.8
	VS + S + A	96.9	97.8	97.3	96.9	98.7	98.4	99.5	99.0	98.0
Delivery teams behavior	VS + S	91.0	96.9	93.6	94.3	95.1	96.9	98.2	94.3	95.1
	VS + S + A	97.8	98.7	97.9	98.3	98.0	98.9	99.3	98.0	98.4
Time between delivery and installation	VS + S	87.3	91.4	86.3	89.9	93.0	94.5	95.7	92.5	92.2
	VS + S + A	95.1	95.6	94.7	96.0	97.5	97.6	98.6	97.7	97.1
Installation time	VS + S	89.5	94.3	91.1	91.3	94.2	95.9	96.5	94.7	95.7
	VS + S + A	96.4	96.9	97.3	97.1	98.2	98.0	98.6	98.9	98.9

VS - Very Satisfied

S - Satisfied

A - Acceptable