Practical activity #3

Chapter 2

Student EQF level: 4

Author: *AFT, SUSMILE Consortium member*

Sources for the practical exercise

- 2.1.1 Introduction to transport modes available to LMD
- 2.1.2 Internal combustion engine vehicles for LMD
- 2.1.3 Clean vehicles and zero-emission vehicles
- 2.1.4 Multimodal distribution models
- 2.3.1 Traffic Congestion and conflicts in the use of space
- 2.3.2 Consumers' behaviour and expectations
- 2.4.1 Definition of Sustainability and Sustainable Development
- 2.4.2 Sustainable Development Goals
- 2.5.1 Pollution and climate change
- 2.5.5 Customers' expectations and requests
- 2.5.7 Social utility of LMD for society

Instructions:

Exercise 1:

1. Using the appendixes available, please calculate the estimated number of parcels to be delivered in 2022 for all French shipments.
2. Estimate accordingly the number of parcels that will be carried by each type of transport.
3. Can you give an example of multimodality between at least two modes of transport from the list provided, and explain the advantages that can be gained?
4. Which modes of transport from the list provided are more likely to be affected by congestion?
    - Please specify your answer.

Exercise 2:

For this exercise, you will need to use the link below to simulate multimodal transport services, compared to full road transport services:

https://www-notation.tkblueagency.com/en/performances.html

Here is a brief explanation of how the TK'T index is calculated, by considering all the elements below and developing a full database in the background of the simulation tool, that will help simulate your own scenarios accordingly:

- TRANSPORT GAIN: purchasing, quality, management
- COMPLIANCE SAVINGS: clearances, compliance, risks
- FINANCIAL GAINS: overstock, stock market rating, invoices
- IMAGE SAVINGS: internal and external

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Scenario parameters:

Please select the first four transport modes to compare their respective efficiencies: urban road, interurban road, rail, river. The last two options are multimodal operations by default due to the need to deliver to end customers, who are not equipped or located near rail or waterway infrastructure.

The data requested to fill in is as follows:

- Total freight to be transported = 19 tonnes
- Total distance travelled for the operation = 248 kms
- If multimodal rail / river freight:
    - Routing distance = 208 kms
    - Additional pre-routing distance = 17 kms
    - Additional post-routing distance = 24 kms
    - Post-routing is specified as = Urban road
- No repetition and no need to change other criteria

1. Let us analyse the conclusion of the result obtained from this simulation:
    - Which mode of transport is recommended?
    - What factors led to this conclusion?
2. Please redo the simulation, but this time the total routing distance will be 682 kilometres. What has changed and what are your conclusions?
3. Can you confirm whether a multi-modal scenario involving rail or inland waterway freight is plausible for a B2C operation?
    - Please specify your answer.
4. You are given the responsibility to transport and deliver 240 tons of freight. Using the parameters and scenario in the main instructions (distance 248 kms for interurban road and 208 kms for river transportation), you allocate 40% of the volumes to multimodal (river) operations and the rest through an interurban road transport:
    - Is it a positive or negative impact on the environment compared to a full-road operation? Please specify your answer.
    - Is it a positive or negative impact on the environment compared to a full transfer of the volumes on river multimodal solution? Please specify your answer.

Exercise 3:

1. You supervise a fleet of 48 trucks (40t). You operate over a regular distance of 680 km to deliver to a customer who needs sand every month. The total capacity of your fleet is the tonnage that is delivered monthly.
    - Which other transport mode seems the most adapted to cover the same capacity in terms of cost per weight?
    - How much would it cost to operate, if you had converted all your vehicles into that more efficient transport mode?
    - Would that solution be the most capacity & environment effective?
2. What would be the impact of converting the fleet to cycle logistics operations:
    - How many cargo cycles would compensate the current fleet capacity?
    - What would be the consequence on the environment in terms of CO2 emissions?

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- If you now consider the delivery distance for each bike as 12 kilometres maximum, from a neighbouring city warehouse. What would be the consequence on operational costs and delays?

Appendixes

I- Global freight data indications – French market

Evolution of parcel shipments in France over a 5-year period:

Postal activity and related distribution markets	2016	2017	2018	2019	2020	Evolution 2019-2020
Items distributed in France						
Mailings (including delivery against signature)	10 922	10 258	9 360	8 715	7 014	-19,5%
Packages	N/a	1 041	1 152	1 234	1 389	12,6%
Postal distribution of the press to subscribers	1 115	1 030	956	888	822	-7,4%
Total addressed items distributed in France	N/a	12 329	11 468	10 837	9 225	-14,9%
Exported items						
Mailings	292	282	270	247	211	-14,7%
Packages	N/a	61	67	71	77	9,2%
Press	15	15	14	12	11	-12,6%
Total exported addressed items	N/a	358	351	330	298	-9,5%

The average increase in parcel shipments for the coming years is estimated at a growth of:

- 12% per year for the domestic market
- 15,4% per year for the exported items

Indicative table of the distribution of deliveries by type of vehicle:

Scooter	Minivan	Mini Truck	Box Truck	Trailer Carrier
4%	26%	31%	31%	8%

II- CO2 emissions data, per mode of transport, for freight delivery

Cost & CO2 emissions per mode of transport, for freight carried over 1 km		
• Inland waterway (1 000t)	10,0 €/t	18,8g eq. CO2 / t.km
• Rail (30 000t)	12,5 €/t	10,1g eq. CO2 / t.km
• Truck (40t)	14,0 €/t	94,9g eq. CO2 / t.km
• Cyclo cargo logistics (0,5t)	4,6 €/t	0g eq. CO2 / t.km

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