T-17 Operational efficiency of PVT

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1. OPERATIONAL EFFICIENCY

Efficiency is explained by a number of definitions.

Jablonský J. (2004) defines efficiency as the ratio of desired outputs, which produces review unit, and input that in this production consumes.

Each unit is thus characterized by a set of input and output of numerical characteristics. The term production unit case can generally understand that forms an output whose production consumes some inputs. It is a homogeneous unit, performing the same or similar activity.

Evidence vehicle operating costs

Evidence of operating costs must be kept to an individual vehicle. This means that each cost item recorded in the accounts must include the identification of the vehicle (registration plate or vehicle code).

If the cost item binds to multiple vehicles or concerns Corporate Governance (ie., That is not related to any specific vehicle), to include the so-called overheads. Total expenses were then divided on individual vehicles.

1. OPERATIONAL EFFICIENCY

Cost items

- total material
  - fuel other material
- personal expenses
- depreciation, lease payments
- Repair and maintenance
- other direct costs
  - road tax tolls
  - accident insurance insurance of responsibility…
  - fare other costs
- overhead costs

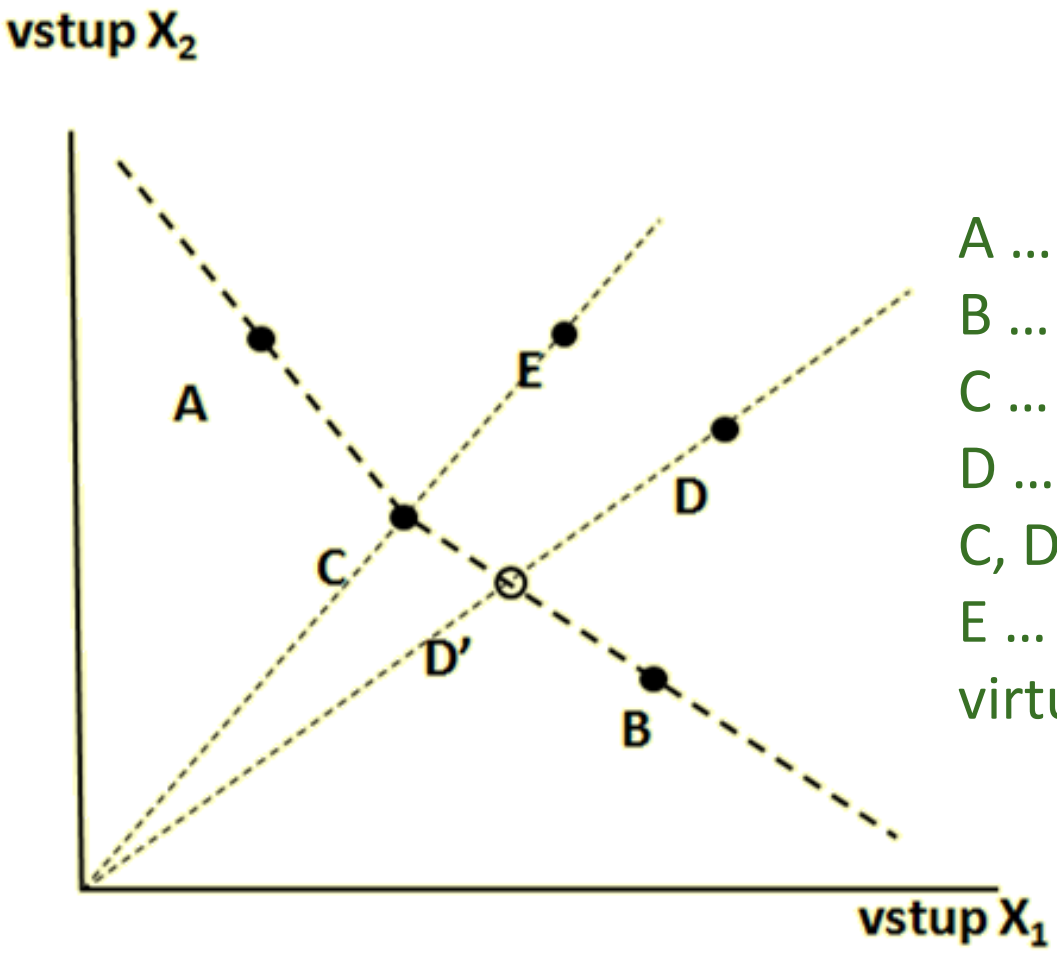
1. OPERATIONAL EFFICIENCY

Reserves in the process of checking drivers, driving the economy and administration

- Dispatchers have no direct control over drivers
- drivers do not drive the economy established with regard to fuel consumption
- **it is not possible to prove theft of PLO**
- **the inability to compare filled up vs evidenced by the amount of fuel**
- **bug tracking engine at idle, heating and complete timesheets drive**

2. APPLICATION OF NEW TOOLS

DEA method



A … effective
B … effective
C … effective
D … inefficient, peer units B and C, D virtual unit '(hypothetical)
E … inefficient, peer unit C, a virtual unit C (fair)

2. APPLICATION OF NEW TOOLS

Writing assessment model, production units

$$U_1 = \frac{u_1 y_{11} + u_2 y_{21} + \ldots + u_n y_{n1}}{v_1 x_{11} + v_2 x_{12} + \ldots + v_m x_{m1}} = \frac{\sum_{i=1}^{n} u_i y_{i1}}{\sum_{j=1}^{m} v_j x_{j1}}, \qquad \leq 1$$

$$U_2 = \frac{u_1 y_{12} + u_2 y_{22} + \ldots + u_n y_{n2}}{v_1 x_{12} + v_2 x_{22} + \ldots + v_m x_{m1}} = \frac{\sum_{i=1}^{n} u_i y_{i2}}{\sum_{j=1}^{m} v_j x_{j2}}, \qquad \leq 1$$

.....

$$U_k = \frac{u_1 y_{1k} + u_2 y_{2k} + \ldots + u_n y_{nk}}{v_1 x_{1k} + v_2 x_{2k} + \ldots + v_m x_{mk}} = \frac{\sum_{i=1}^{n} u_i y_{ik}}{\sum_{j=1}^{m} v_j x_{jk}}, \qquad \leq 1$$

Kde:

u_{ik} *a* v_{jk} = *jsou individuální váhy jednotlivých vstupů a výstupů pro hodnocené jednotky*

U = *produkční jednotka.*

2. APPLICATION OF NEW TOOLS

Define the inputs and outputs for evaluating supply platoon

vozidlo	označení jednotky	vstupy pořizovací cena [Kč]	spotřeba PH na 100 km [l]	náklady na 1. servisní kontrolu [Kč]	náklady na 2. servisní kontrolu [Kč]	výstupy ložná plocha [m^3]	maximální roční přepravní kapacita [m^3]	počet km do servisní údržby [km]
IVECO	U1	2560000	35	12 200	20 000	86	25800	5000
MAN	U2	1982000	27	12 700	18 000	52	15600	4000
SCANIA	U3	2658000	37	14 500	20 000	86	25800	7000
VOLVO	U4	3175000	33	16 000	21 000	78	23400	7000
DAF	U5	2784000	38	13 500	18 000	90	27000	5000
Renault	U6	2430000	35	13 000	19 500	76	22800	4000

Inputs

- Number of staff
- direct personnel costs
- direct costs per unit (fuel, ND)
- overhead costs (training, accounting depreciation,
- number of vehicles

Outputs

- mileage
- number of shipments
- duration of transport,
- weight of transported material,
- number of vehicles

2. APPLICATION OF NEW TOOLS

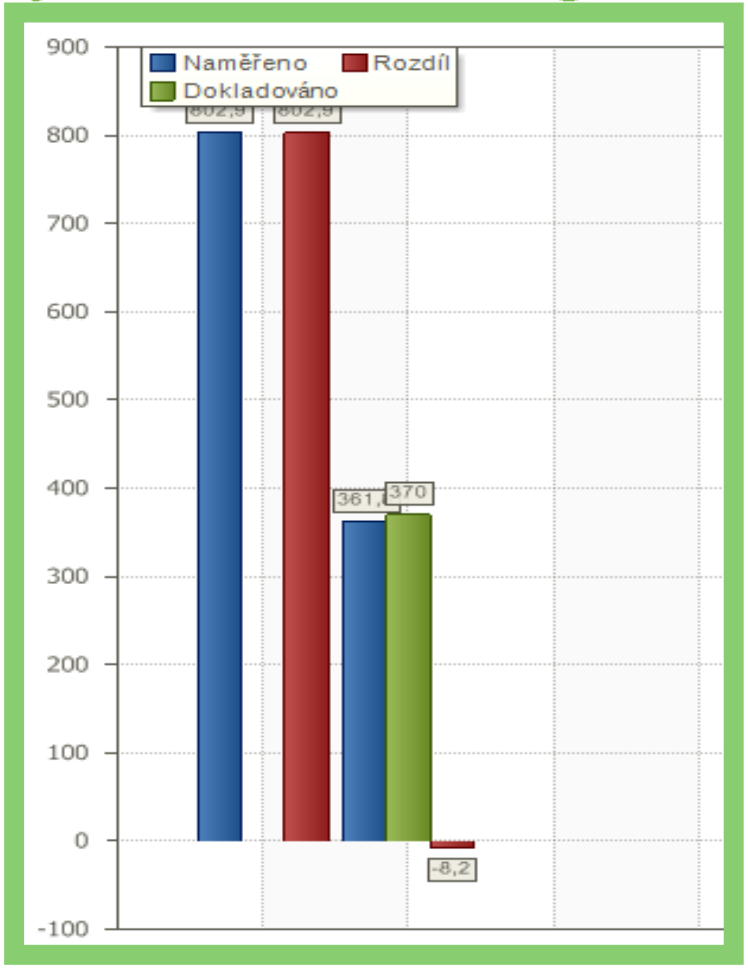
The output configuration of the monitoring system

Vozidlo: Scania R 380 LA4X2 **RZ:**

Datum	Od	Do	Začátek cesty/konec cesty	Stát	Přestávka [h:min]	Doba jízdy [h:min]	Km	Prům. spot. [l/100km]	± PHM	T	Stav nádrže [l]	Stav nádrže [%]	Topení [h:min]	Tachometr
30.08.2013	00:59	01:59	Ulice Nádražní, Mikulov, Okres Břeclav (CZ) Ulice Nádražní, Mikulov, Okres Břeclav (CZ)	CZ CZ	-	01:00	0,0	0,0	802,9		802,9		-	901505
30.08.2013	04:18	04:27	Ulice Nádražní, Mikulov, Okres Břeclav (CZ) Drasenhofen, Okres Mistelbach (AT)	CZ AT	02:18	00:08	2,2	0,0	-8,8		794,0		-	901507
30.08.2013	04:27	07:59	Drasenhofen, Okres Mistelbach (AT) Übelbach, Okres Graz-Umgebung (AT)	AT AT	-	03:32	270,0	26,3	-71,0		723,0		-	901777
30.08.2013	07:59	08:53	Übelbach, Okres Graz-Umgebung (AT) Ulice Murmühlweg, Gratwein, Okres Graz-Umgebung (AT)	AT AT	-	00:53	17,1	0,0	-3,3		720,2		-	901794
30.08.2013	10:22	10:29	Ulice Murmühlweg, Gratwein, Okres Graz-Umgebung (AT) Ulice Murmühlweg, Gratwein, Okres Graz-Umgebung (AT)	AT AT	01:29	00:07	0,4	0,0	2,3		722,5		-	901794
30.08.2013	10:46	10:48	Ulice Murmühlweg, Gratwein, Okres Graz-Umgebung (AT) Ulice Murmühlweg, Gratwein, Okres Graz-Umgebung (AT)	AT AT	00:16	00:01	0,0	0,0	-1,4		721,1		-	901794
30.08.2013	11:13	13:23	Ulice Murmühlweg, Gratwein, Okres Graz-Umgebung (AT) Guntramsdorf, Okres Mödling (AT)	AT AT	00:24	02:09	171,3	26,1	-44,7		676,5		-	901965
30.08.2013	13:55	15:49	Guntramsdorf, Okres Mödling (AT) Mikulov, Okres Břeclav (CZ)	AT CZ	00:32	01:53	116,0	34,1	-39,5		636,9		-	902081
30.08.2013	15:49	16:33	Mikulov, Okres Břeclav (CZ) Brno, Okres Brno-Město (CZ)	CZ CZ	-	00:44	53,3	26,9	-14,4		622,6		-	902134
30.08.2013	-	-	-	-	05:01	10:32	630,3	28,6	-183,1	-	622,6		-	902134
02.09.2013	06:28	08:56	Brno, Okres Brno-Město (CZ) Ivančice, Okres Brno-Venkov (CZ)	CZ CZ	-	02:28	51,5	59,5	-30,6		591,9		-	902186
02.09.2013	09:35	09:35	Ivančice, Okres Brno-Venkov (CZ) Ivančice, Okres Brno-Venkov (CZ)	CZ CZ	00:38	00:00	0,0	0,0	0,0		591,9		-	902186
02.09.2013	10:54	10:58	Ivančice, Okres Brno-Venkov (CZ) Ivančice, Okres Brno-Venkov (CZ)	CZ CZ	01:18	00:04	0,2	0,0	2,3		594,3		-	902186

2. APPLICATION OF NEW TOOLS

Comparison refueling



2. APPLICATION OF NEW TOOLS

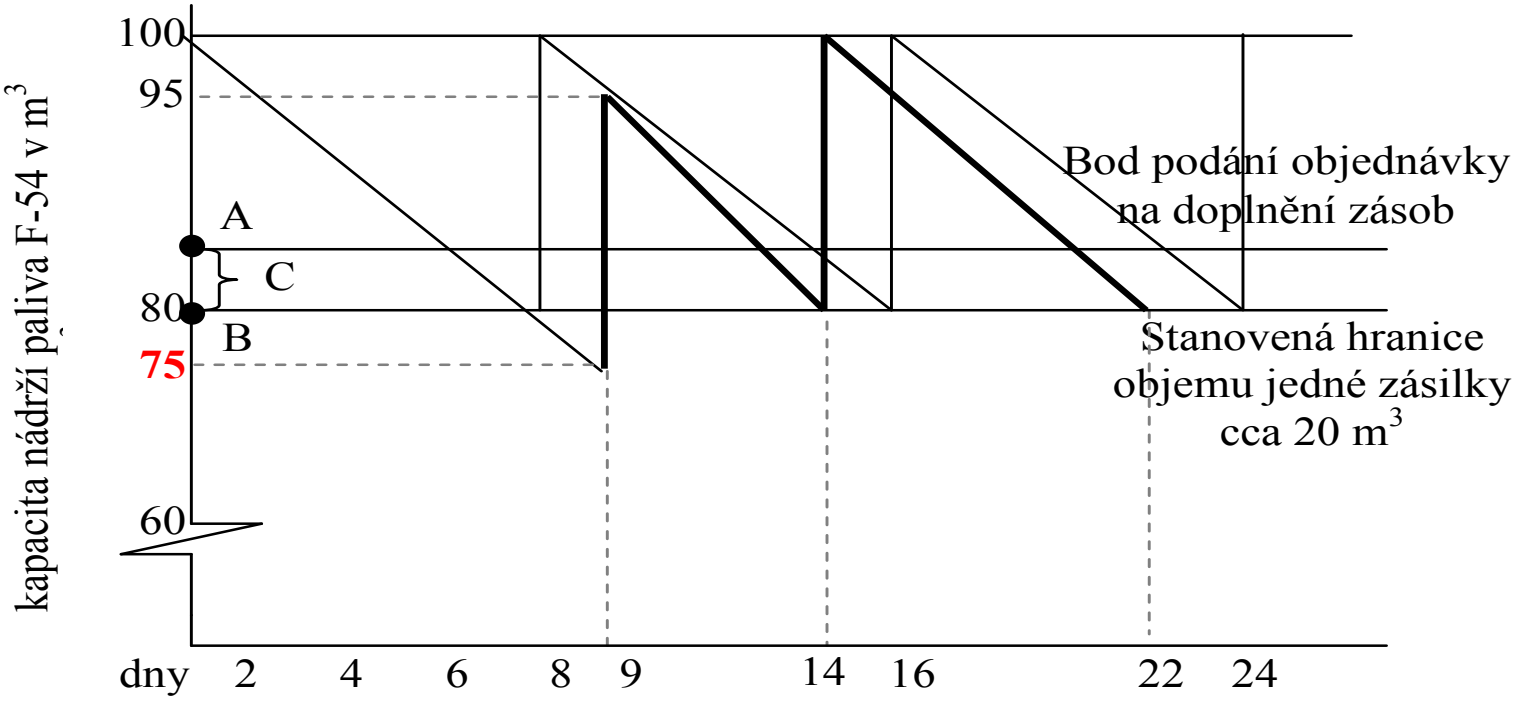
Driving style – gear change overview

rychlost [km/h]	otáčky do [1/min]						
	0 - 800	800 - 1000	1000 - 1200	1200 - 1400	1400 - 1600	1600 - 1800	> 1800
> 90	0,0 %	0,0 %	0,0 %	0,0 %	0,4 %	0,0 %	0,1 %
85 - 90	0,0 %	0,0 %	0,0 %	22,3 %	0,5 %	0,3 %	0,8 %
75 - 85	0,0 %	0,0 %	2,8 %	20,1 %	0,2 %	0,1 %	1,0 %
65 - 75	0,0 %	0,0 %	14,5 %	1,8 %	0,3 %	0,7 %	0,7 %
50 - 65	0,1 %	2,5 %	5,4 %	2,9 %	1,0 %	0,5 %	0,3 %
20 - 50	1,2 %	3,1 %	5,6 %	3,2 %	1,4 %	0,2 %	0,1 %
1 - 20	3,2 %	1,3 %	1,0 %	0,4 %	0,1 %	0,0 %	0,0 %
0 - 1	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %

Optimální	20:01:06	50,6 %
Méně výhodné	18:01:56	45,6 %
Nevýhodné	01:28:54	3,7 %
Volnoběh	----	0,0 %

3. OPERATIONAL EFFICIENCY OF FUEL DEPOTS

Scheme of realization of delayed orders of fuel F-54



Economic order quantity shipments PLO (F-54)

When determining the strategy for the implementation of the order, the aim should be to minimize the sum of the cost of holding inventory and ordering costs delight called. Model economic order quantity (Economic Order Quantity, EOQ) is a concept which determines the optimal order quantities based on the ordering costs and maintenance supplies . The optimal order quantity occurs when ordering incremental cost is the incremental cost of maintaining inventory.

EOQ can be determined using the following equation.

$$EOQ = \sqrt{\frac{2PD}{CV}}$$

CONCLUSION

Evaluation of effectiveness of the operation in terms AČR ⇒ approaches correspond with civilian organizations.

Many management decisions are not in accordance with the principles of effective management of the limited resources.

Sophisticated systems provide relevant information for target-oriented analysis with consequent positive impact on operational efficiency. It is necessary to move beyond merely watching overconsumption traditional approach and adopt modern methods.

In the case of detection of aggressive driving or speeding is an important contribution to the prevention of accidents caused.