COMmercial vehicle Electronic and Telematic Architecture

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Content :

Annex 1 : analysis of truck market, market segment for transport services in some European countries and of on-board computer market in Europe

D6.4 Annex 1: The Market

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1. THE MARKET

1.1 TRUCK MARKET IN EUROPE

This chapter aims to delineate a reference picture concerning the trucks market in Europe. In particular the following elements have been analysed:

- current dimension of the European trucks market
- possible development of the trucks market in Europe
- leading suppliers in trucks production and corresponding market shares in Europe.

1.1.1 Current dimension of the truck market

Automotive industry (manufactures of motor vehicles and of bodies and equipments) represents a fundamental segment of the european market. The table 1.1.1 [1] shows the structural data regarding the automotive total activities in EU and controlled from EU in the 1997. From the table it is possible to notice that the activities concerning the automotive industry had in 1997 a turnover of over 430 billion of ECU with an added value of over 100 Billion of ECU (about 9 % of the EU Added Value of the Manufacturing sector). In 1997 the total employment of this productive sector was around 1,9 million (about 8 % of the total employment of the manufacturing industry). Finally, the contribution of the automotive industry to the EU GDP is of about 1,6 %.

	Manufacture of Motor Vehicles	**Manufacture of Bodies & Equipments**	**Total**
Turnover (Billion of ECU)	321	112	433
Production Value (Billion of ECU)	276	105	381
Value Added at factor costs (Billion of ECU)	70	36	106
Labor Costs (Billion of ECU)	45	26	71
Gross Wages & Salaries (Billion of ECU)	35	20	55
Total Employment	1121270	764110	1885380

Table 1.1.1: EU Automotive Industry: Structural Data. Total Activities in EU and Controlled from EU (1997)

The table 1.1.2 [1] summarizes the production of motor vehicles in the European Union during the years 1995, 1996, 1997 and 1998. Observing the total values (add of passengers cars, light commercial vehicles, trucks and buses) it can be noted a constant growth with a global increase between 1995 and 1998 of over 15 %. The figure 1.1.1 shows the trend of the total production of motor vehicles in this period.

Analysing the data of the "light commercial vehicles + trucks" segment it can also be observed a constant growth (see figures 1.1.2) of the production from 1995 to 1998 with a global increase of around 23 %.

In the specific case of trucks production a different trend is present; the figure 1.1.3 shows a decrease of the production between 1995 and 1996 then followed however by a renewal with constantly increasing values. Particularly, the overall variation of production between 1995 and 1998 is around the 9 %, while that related to the period 1996-1998 results to be around the 22 %.

	1995	**1996**	**1997**	**1998**
Passenger Cars	12636067	13061348	13451272	14510472
Light Commercial Vehicles	1318462	1393245	1570265	1675315
Trucks	348577	310204	334562	379094
Buses	30519	32001	36672	35397
Total	14333625	14796798	15392771	16600278

Table 1.1.2: Automobile production in the European Union

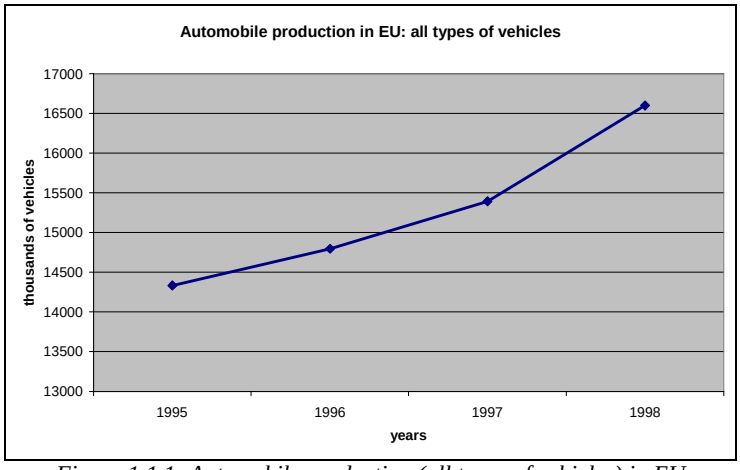

Figure 1.1.1: Automobile production (all types of vehicles) in EU

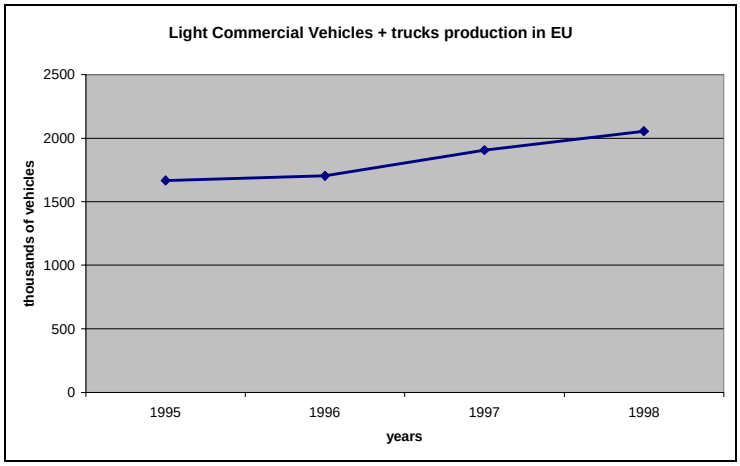

Figure 1.1.2: Production of "light commercial vehicles + trucks" in EU (1995-1998)

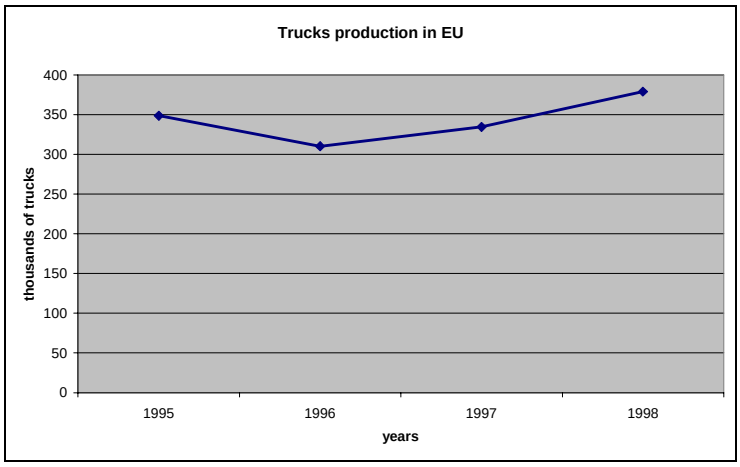

Figure 1.1.3: Production of tucks in EU (1995-1998)

For an in-depth analysis of the trucks production, the figure 1.1.4 [4] represents the trucks (over 5 tons GVW) production share by country in the EU in 1998. The five main countries of trucks production are: Germany (about 37 %), France (about 12 %), NL (about 12 %), Italy (about 10 %) and Sweden (about 8 %).

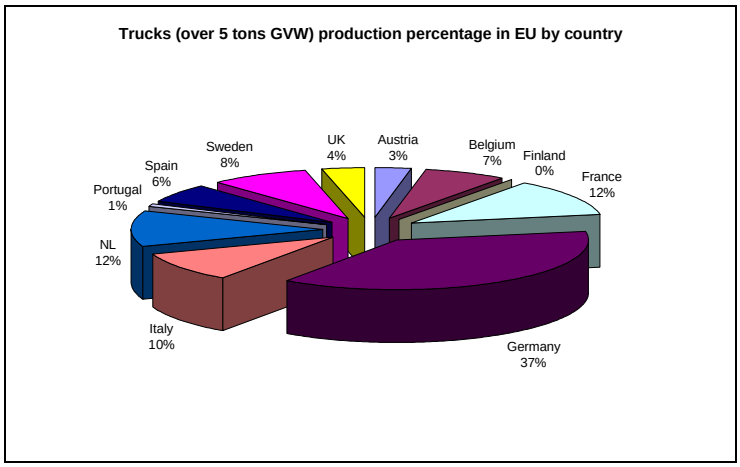

Figure 1.1.4: Trucks production (over 5 tons GVW) percentage in EU by country (1998)

Another important analysis of the trucks market concerns the market share by country. The figure 1.1.5 [2] shows the West European markets percentage of trucks over 5 tons GVW by country in 1997. As it can be observed Europe is dominated by five markets: Germany, the UK, France, Spain and Italy.

In the 1997 the "big five" have accounted for about 72 % of all European truck sales, the remaining countries sharing the residual 28 % between them. However, these values vary from time to time; in 1996-97 the German market was enjoying a "peak", while both Italy and Spain were below their normal volumes.

The "big five" also have major truck building resources, even if one of the smallest markets (Sweden) is also a major trucks producer (being the country of Scania and Volvo).

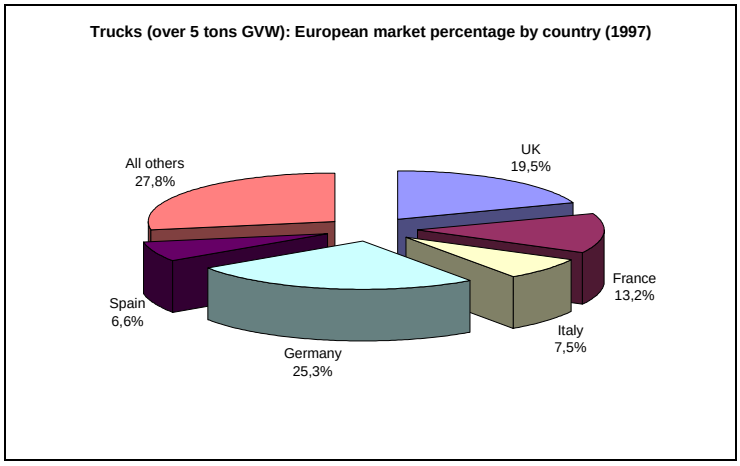

Figure 1.1.5: Trucks (over 5 tons GVW): European market percentage by country (1997)

Finally, for the market analysis, it is interesting to examine the data related to the exports and to the imports of trucks.

The following table 1.1.3 [1], [4] collects data concerning exports and imports in EU with regard to overall automobile production.

	EU Exports				**EU Imports**				**EU Balance**			
Year	**1995**	**1996**	**1997**	**1998**	**1995**	**1996**	**1997**	**1998**	**1995**	**1996**	**1997**	**1998**
Passenger Cars	29592	31852	35046	36289	11216	12393	16122	20424	18376	19459	18924	15865
Light Commercial Veicles	1029	1348	1708	1717	952	1056	1595	1852	77	292	113	-135
Trucks	3215	3628	4167	4247	346	347	457	473	2869	3281	3710	3774
Buses	424	486	590	718	52	72	102	143	372	414	488	575
Total	34260	37314	41511	42971	12566	13868	18276	22892	21694	23446	23235	20079

Table 1.1.3: EU Automobile Trade (in million Eur)

The figure 1.1.6 presents the percentages of export and import of trucks in comparison with the relative total values (all type of vehicles); from the figure it can be noted that trucks considerably contributes (over 9 %) to the market of motor vehicles export and as trucks export is clearly higher than the import. In the considered years and in absolute values the number of exported trucks from the EU results middly nine times greater than the import.

The figure 1.1.7 shows, always with regard to the years from 1995 at 1998, the trend of the balance between exports and imports for the trucks market. The graph presents values characterized by a constant growth even if with a slackening in the last period (1997-1998).

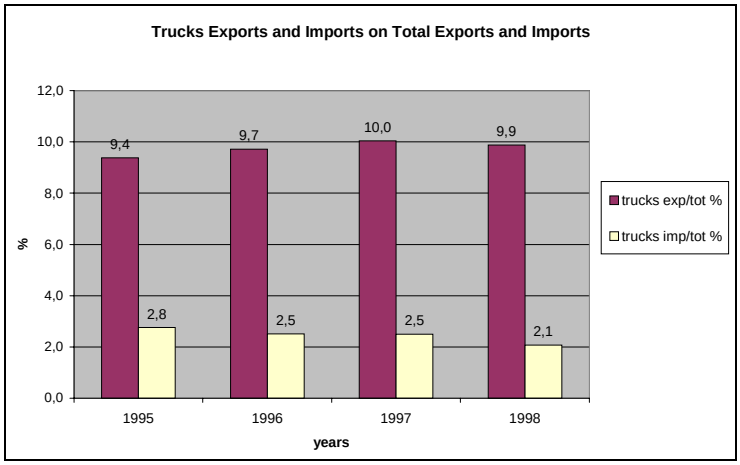

Figure 1.1.6: Trucks Exports and Imports on total Exports and Imports (percentages)

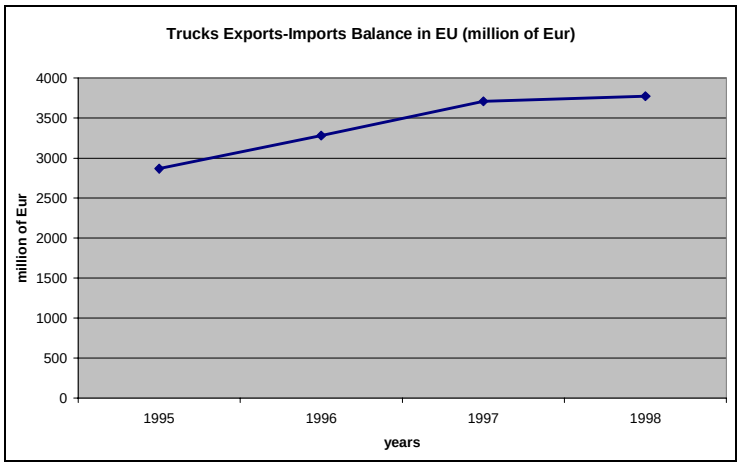

Figure 1.1.7: Trucks Exports-Imports Balance in EU (million of Eur)

1.1.2 Attended evolution of the truck market

Concerning the Europe, different opinions about the rate of trucks growth in the immediate future are present. First fundamental step in this analysis is the definition of "Europe"; in fact, if "traditional" Europe only (consisting of the EU countries together with Norway and Switzerland) is considered the analysis can indicate some lines of development, while, if eastern countries, such as Poland, Hungary, etc., are included, an entirely different picture can emerge.

The following parts present a qualitative analysis [2] based on the opinions of experts in the sector of trucks production and concerning "traditional" Europe.

Future trucks trend in these countries appears more different in the opinions of the European truck industries managers. Main opinions are the following:

1° it is unlikely for the European trucks market to regain the high level of sales and new registrations of the 1989
2° there is possibility of a market return to the high levels of the 1989
3° the market can develop around to the levels of the 1989 even without the help of the new states in the east of Europe.

Concerning the first opinion, the believe is that attempts are being made to sell trucks, or to put them into the market in leasing contracts, at a rate which is higher than the rate at which they are being decommissioned at the end of their life.

The reasons of the second opinion are that many trucks sold in this period are now coming to the end of their useful lifes and consequently they will have to be replaced with an equivalent number of vehicles.

At the basis of the third opinion there is that some political changes in the Europe of the last years seem to have had positive impacts on the goods transportation by road. Changes in the structure of operations, and regulations on the flexibility of cross-border truck operations have made the load factors of long-haul trucks much better. Meanwhile, for purely national haulage, the sheer pressure of economic requirements has forced truck operators into higher utilization factors and more efficient operation.

1.1.3 Leading suppliers and their respective market shares

Concerning the analysis of "industrial" vehicles ("light commercial vehicles + trucks") suppliers it is interesting to observe how much these vehicles incide on the total production of the different industrial groups. To this aim the figure 1.1.8 [1] shows that four groups (PACCAR-DAF-LDV, SCANIA, MAN and VOLVO) are characterized by percentages of production of these vehicles respect to the total from about 96 % to about 89 %; the voice "*others European Manufactures*" is around 69 %, while for the groups DAIMLER-CHRYSLER, PSA-PEUGEOT-CITROEN, FIAT, RENAULT, FORD, VOLKSWAGEN, GM and BMW-Rover the percentages are from 21 % to 8 %.

Then, the figures 1.1.9 and 1.1.10 [1] separately illustrate the percentage of light commercial vehicles and of trucks production with reference to the total vehicles production for the different groups. Observig the figures it can be noted than:

- the total production of seven groups (RENAULT, FORD, FIAT, DAIMLER-CHYSLER, *Japanese Manufactures* and, PSA-PEUGEOT-CITROEN and PACCARD-DAF-LDV) is characterized by a percentage of light commercial vehicles greater than 10 %,

- the overall production of five groups (PACCARD-DAF-LDV, *Other European Manufactures*, VOLVO, MAN and SCANIA) is characterized by a percentage of trucks greater than 60 %.

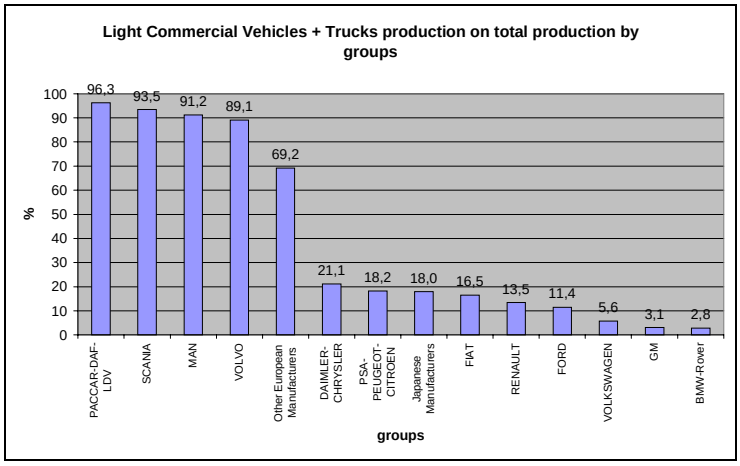

Figure 1.1.8: Percentage of production of "light commercial vehicles + trucks" on the total production by group (1998)

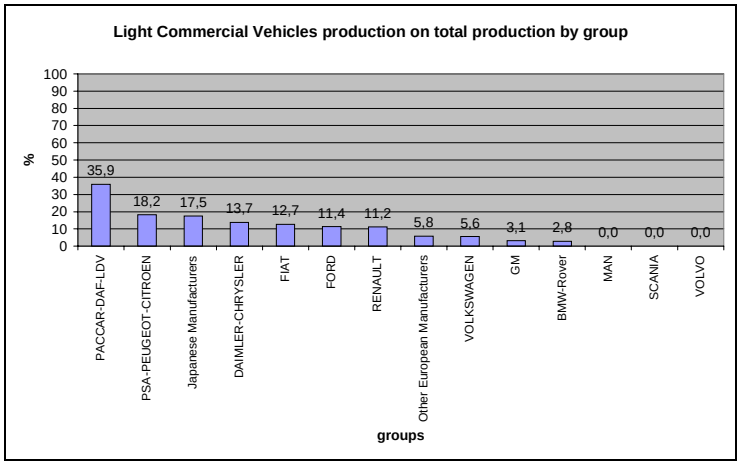

Figure 1.1.9: Percentage of Light Commercial Vehicles production on total production by group (1998)

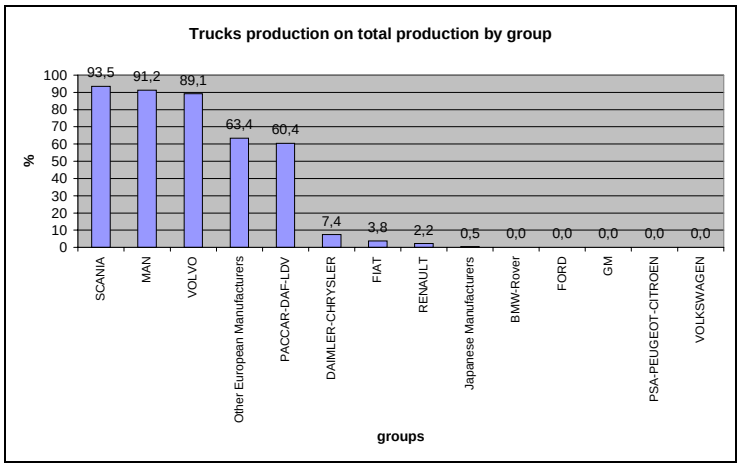

Figure 1.1.10: Percentage of Trucks production on total production by group (1998)

Finally, the figures 1.1.11 [1] and 1.1.12 [1] respectively show the percentage of production of light commercial vehicles and of trucks respect to the overall "light commercial vehicles + trucks" segment for the same previous industrial groups.

From the analysis of the two figures it can be observed that:

- five groups (VOLKSWAGEN, PSA-PEUGEOT-CITROEN, GM, FORD and BMW-Rover) have production of light commercial vehicles only. The *Japanese Manufactures* have a percentage of 97,5 % and the other groups have percentaces variable from the 83,5 % (RENAULT) to 8,4 % (*other European Manufactures*); three groups (MAN, SCANIA and VOLVO) don't produce light commercial vehicles,
- in the trucks sector MAN, SCANIA and VOLVO presents 100 % of the production, *others European Manufactures* is in fourth place and the group PACCAR-DAF-LDV in fifth place. DAIMLER-CHRYSLER, FIAT, RENAULT and *Japanese Manufactures* have percentages from the 35,3 % to the 2,5 %.

Concerning trucks [2] it is then interesting to observe than only three groups (DAIMLER-CHRYSLER, FIAT – Iveco –, RENAULT and PACCAR-DAF-LDV) offer a full truck range from the 3,5 tons threshold to maximum weight. VOLVO and MAN offer trucks in the medium class as well as "heavies", typically from around 6 tons GVW, but no lighter machines in the 3,5 - 6 tons sector. SCANIA is a manufacturer of heavy trucks only.

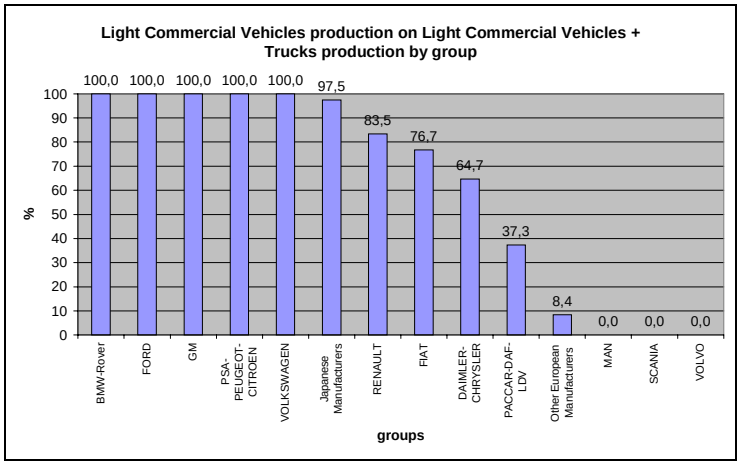

Figure 1.1.11: Light Commercial Vehicles production on "light commercial vehicles + trucks" production by group (percentages) (1998)

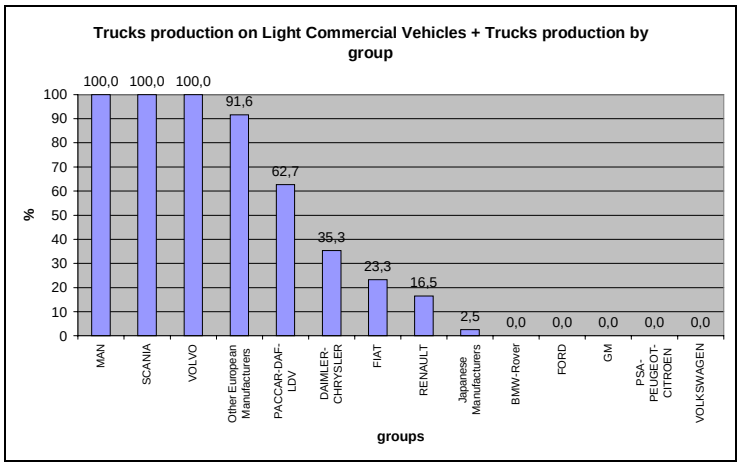

Figure 1.1.12: Trucks production on "light commercial vehicles + trucks" production by group (percentages) (1998)

Concerning the market shares covering by the different trucks suppliers, the following figures 1.1.13, 1.1.14 and 1.1.15 [2] show for the 1996 the registrations of trucks by manufactures. The figures are related to three different market segment:

- the light segment (2,5 - 6 tons GVW)
- the medium segment (6,1 – 15,9 tons GVW)
- the heavy segment (16 tons GVW and upwards)

furthermore the situation of the overall truck market is presented in the figure 1.1.16.

Analysing the figures the following observations can be done:

- in the light segment FORD, VOLKSWAGEN and DAIMLER are the three leaders, with FIAT in fourth place
- in the medium segment MERCEDES and FIAT Iveco are the leaders with MAN in the third place and RENAULT in the fourth
- in the heavy trucks sector (16 tons and over) DAIMLER-BENZ, VOLVO and SCANIA are the three leaders, with FIAT Iveco in fourth place
- in the overall market from 3,5 tons GVW upwards, DAIMLER is at the top, FIAT Iveco is a second, and SCANIA and VOLVO area respectively third and fourth.

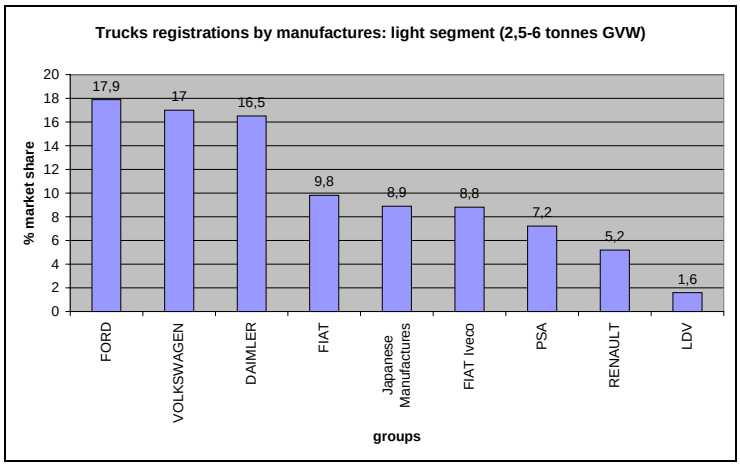

Figure 1.1.13: Trucks registrations by manufactures: light segment (2,5-6 tons) GVW

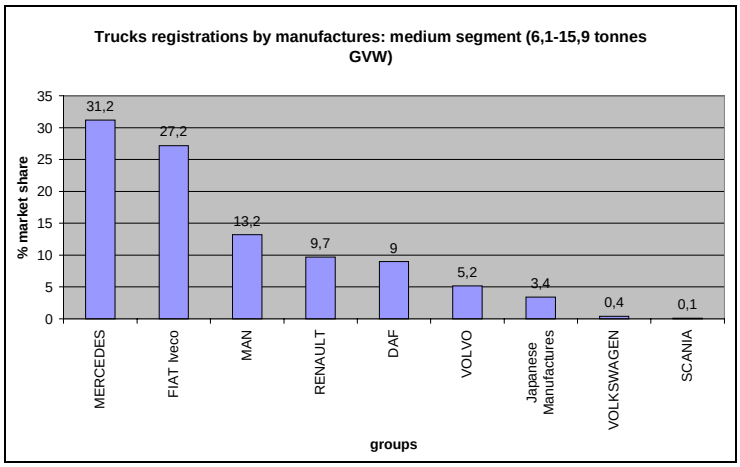

Figure 1.1.14: Trucks registrations by manufactures: medium segment (6,1-15,9 tons GVW)

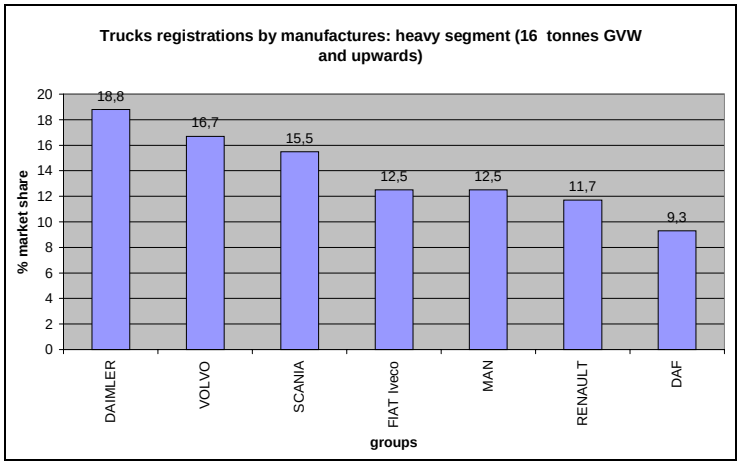

Figure 1.1.15: Trucks registrations by manufactures: heavy segment (16 tons GVW and upwards)

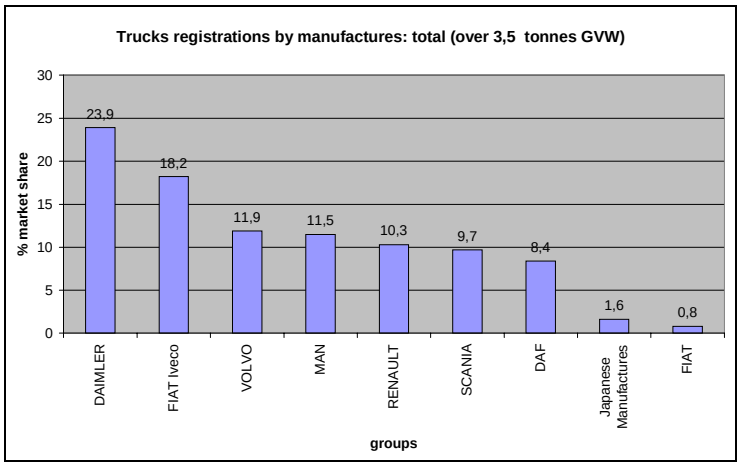

Figure 1.1.16: Trucks registrations by manufactures: total (over 3,5 tons GVW)

1.2 MARKET SEGMENTS FOR TRANSPORT SERVICES IN SOME EUROPEAN COUNTRIES

This chapter aims to the definition of the main market segments for transport services in some European Countries in terms of:

a) service typology
b) size the market segments in terms of numbers of transport companies
c) transport companies organisation.

In the following the information are presented separately for Italy, France, Germany and Netherlands; the global analysis of the data can furnish useful indications concerning the European transport services market.

1.2.1 Road freight transport services in Italy

Road freight transport services in Italy contribute more than 90 % of the overall transport operations.

The effects induced by the development of the logistics activities (the fragmentation of the deliveries, the reduction of the dimension of the lots, the increase of the average number of items and the greatest rapidity of the service) also contribute to the development of road transport on medium and long distances.

Some specific critical "structural conditions" are present In Italy, for which the problems of the road freight transport continue to represent a structural factor that is destined to stay such in the next decade:

- the geographical configuration of the country
- the population and the companies dispersion on the territory
- the low average dimension of the companies
- the fragmentation of the companies
- the diffused practice of the outsourcing
- the high importance of the retail.

Considering only the Italian operators, excluding the urban distribution and the vehicles with GVW lower than 3,5 tons, over than 1,2 billion tons of goods have been moved by road in 1998. The following table 1.2.1 [5] represents the data related to the Italian road freight transport in 1998 divided in internal and international service. An important feature can be immediately noted analysing the table: the average covered distance is relatively low, around 150 km for internal transports and around 850 km for international transports.

	tons x 10^6	tons x km x 10^6	average kilometers
Italy	1218302	181962852	149,40
International	11603	10290703	886,90
Total	1229905	192253555	156,32

Table 1.2.1: Italy: internal and international road freight transport

Globally, the statistical data [6] indicate that the 78 % of the transported tonnage by road covers averagely less than 200 kilometers.

With reference to the transport companies the data in figures 2 [5] indicate that the "third party" transport has grown from 83,6 % to 85,3 % in the years from 1995 to 1998, while the "own account" transport has gone down from 16,4 % to 14,7 %.

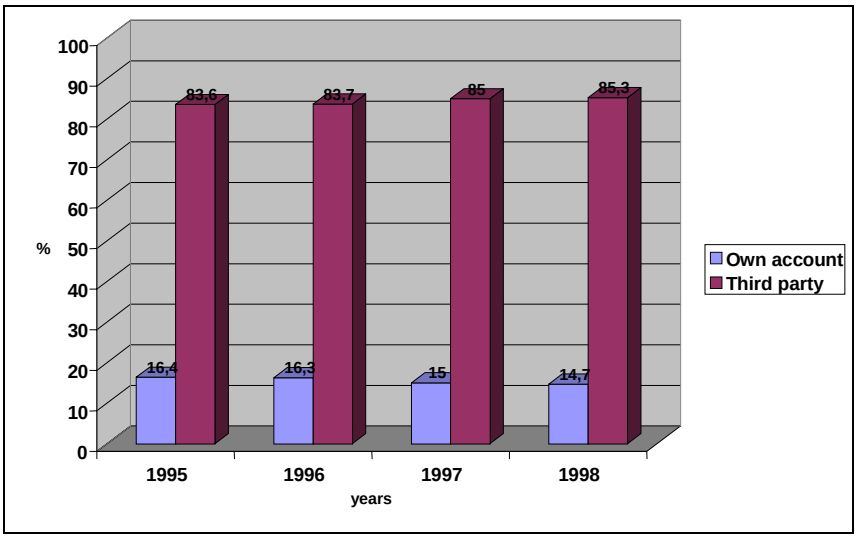

Figure 1.2.1: road freight transport in Italy: own accoun t- third party percentage distribution

The table 1.2.2 represents data concerning Italian internal road freight transport by classes of distance in 1997 [7]. The data indicate that the "own account" transport mainly covers the short distances, while the "third party" transport is mostly present in the medium – long distance service.

	Own account		Third party		Total	
	tons x 10^3	tons x km x 10^3	tons x 10^3	tons x km x 10^3	tons x 10^3	tons x km x 10^3
up to 50 km	230934	4913104	264662	6417189	495596	11330293
51 -100 km	66313	4866599	134837	10267659	201150	15134258
101 - 150 km	29466	3713839	89034	11392876	118500	15106715
151 - 200 km	16027	2826315	70681	12623583	86708	15449898
201 - 300 km	13620	3351449	86046	21571004	99666	24922453
301 - 400 km	5327	1868750	45104	15892952	50431	17761702
401 - 500 km	2202	980825	21127	9566028	23329	10546853
500 km and over	3203	2741489	52353	40606247	55556	43347736

Table 1.2.2: Italy: internal road freight transportation by classes of distance (1997)

The table 1.2.3 represents the dimensional distribution (number of vehicles) of the Italian companies which operate in the field of "third party" transport. The table refers only to the companies with at least one vehicle having "net load" over than 11,5 tons (normally corresponding to companies that offer medium – long distance services). The data of the table derive from the application of some and hypothesis and calculation (such as the estimation the average number of vehicles per company and the calculation of the distribution of the companies by vehicles number).

Dimension (vehicles number)	Total vehicles (by census)	Average number of vehicles per company (hypothesis)	Number of companies (hypothesis)	Percentage on the total (%)
1 – 2	40521	1,1	36837	64,5
3 – 5	38394	3,2	11998	21,0
6 –10	27645	6,5	4293	7,5
11 – 20	24395	12,0	2033	3,6
> 20	42557	22,0	1934	3,4
Total	173512	3,0	57095	100

Table 1.2.3: Italy: percentage distribution of the transport companies by vehicles number (operating in the field of "third party" transport and with at least one vehicle having "net load" over than 11,5 tons)

Observing the table 1.2.3 the following comments are possible:

- the number of transport companies that offer services for the medium and long distances is around 1/3 of the total;
- within this class of companies, the "mono – vehicle" companies are prevailing.

The table 1.2.4 represents the number of companies and employees (by employees classes) for the road freight transport segment in 1996 in Italy [6] (the data are based on the last available census of the industries and services that has been done at national level). The figure 1.2.3 (derived by table 1.2.4) shows the percentage distribution of the companies by classes of employees. The data of the table 1.2.4 and figure 1.2.3 point out that:

- the companies were altogether around 111400
- the employees were altogether around 270000, that is around 2,4 per company
- over than 83 % of the companies had one or two employees only.

Finally, the structured companies [5] were 5,4 % of the total and they had, directly, 31 % of the employees.

N° of employees	Companies	Independent employees	Dependent employees	Total employees
1	76779	76779	0	76779
2	16090	25692	6488	32180
3 - 5	10822	20542	18604	39146
6 – 9	4147	8346	21843	30189
10 – 15	1750	3914	16887	20801
16 – 19	570	1429	8482	9911
20 – 49	993	2806	26055	28861
50 – 99	180	457	11868	12325
100 – 199	57	71	7840	7911
200 – 249	11	11	2401	2412
250 - 499	16	17	5300	5317
500 - 999	5	5	2988	2993
1000 and over	1	1	1666	1667
Total	111421	140070	130422	270492

Table 1.2.4: Italy: road freight transport: companies and employees by classes of employees.

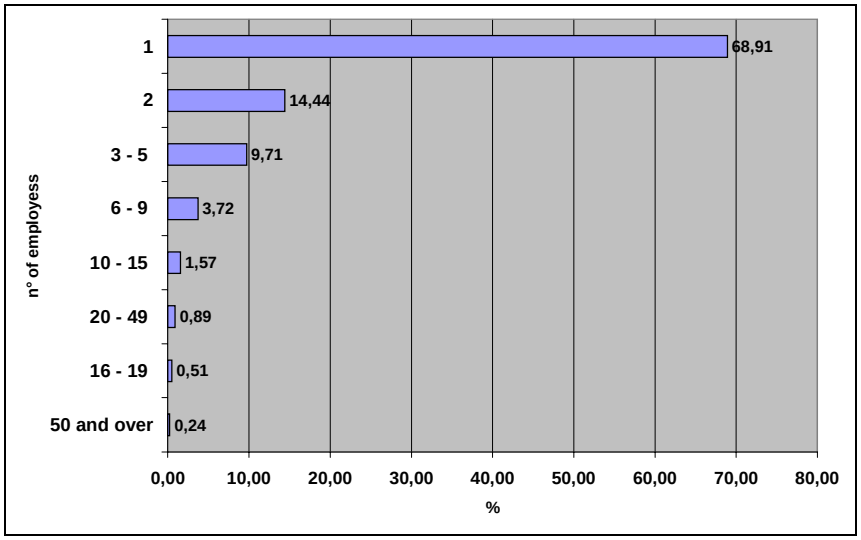

Figure 1.2.2: Italy: road freight transport: companies by classes of employees (percentage distribution)

Concerning the number of freight transport vehicles, there were about 2916000 industrial vehicles in Italy in 1996. In 1997 the number of industrial vehicles in use in Italy was of 2996000, (the fifth place in EU and about 13 % of the total EU number) with a growth of around 2,7 % from 1996.

Finally, the table 1.2.5 [8] presents a comparison among the first one hundred Italian, English and French transport and logistic companies on the basis of their average turnover. The average turnover of the Italian companies is around 2,5 times lower than the average turnover of the English companies and around 3,5 times lower than the average turnover of the French companies.

	Italy	England	France
Average turnover (billion of Italian £ 1994)	122,3	305,9	429,5

Table 1.2.5: average turnover of the first one hundred Italian, English and French transport and logistic companies

1.2.2 Road freight transport services in France

The following table 1.2.6 collects some of the main indicators concerning road transports in France. From the table it appears that:

- the road transport in France is characterized by a great number of companies (about 77%) having less than 5 employees: this sector is very artisanal
- the average number of employees per companies is around 7.

	Total
Numbers estimated companies from 0 to 5 employees	29366
Numbers estimated companies more than 5 employees	8789
Total number of companies in transport sector	38155
Total number of employees in transport sector	276438

Table 1.2.6: France: some indicators concerning road transports companies

Concerning road transport services the tables 1.2.7 and 1.2.8 respectively present: the first, the structure of road traffic by profession (billion of tons-km), and the second, the evolution of the structure of the road traffic by category between 1996 and 1997 (billion of tons-km). Observing the tables the following notes can be done:

- for the Hire and reward Transport most of the traffic concerns travelling distance more than 150 km
- for the own account traffic a lower difference is present in the traffic by travelling distance
- in the structure of the road traffic by category at the first three places are present: 1) the "manufactured Machines, vehicles, objects" transport" (about 32,3 %), 2) the "Foodstuffs and fodder" transport (about 19 %) and 3) the "building materials" transport (about 17,4 5 %).

Profession	Travelling distance	Billion of T-km		1997/96 (%)
		1996	1997	
Hire and reward Transport	less than 50 km	7,7	8,3	+ 7,8
	50 km to 150 km	15,4	16,9	+ 9,7
	more than 150 km	96,6	99,1	+ 2,6
	TOTAL	119,7	124,3	+ 3,8
Own account Transport	less than 50 km	8,7	8,8	+ 1,2
	50 km to 150 km	10,3	10,2	- 1,0
	more than 150 km	20,5	17,8	- 13,2
	TOTAL	39,5	36,8	- 6,8
Total	less than 50 km	16,4	17,1	+ 4,3
	50 km to 150 km	25,7	27,1	+ 5,5
	more than 150 km	116,1	116,9	- 0,2
TOTAL		158,2	161,1	+ 1,2

Table 1.2.7: France: structure of road traffic by profession in Billion of T-km (Source SES)

Category of traffic	1996	1997	1997/96 (%)
Agricultural produce and alive animals	19,9	21,4	+ 7,5
Foodstuffs and fodder	31,0	30,5	- 1,6
energy Products	7,4	7,4	-
Raw materials and semi-finished products	21,3	21,7	+ 1,9
building materials	26,9	28,0	+ 4,1
manufactured Machines, vehicles, objects	52,7	52,1	- 1,1
TOTAL	157,1	161,1	+ 1,2

Table 1.2.8: France: evolution of the structure of the road traffic between 1996 and 1997 (billion tons-kilometers)

1.2.3 Road freight transport services in Germany

The table 1.2.9 collects some statistical data concerning the companies being part of the "commercial goods transport on road" sector in Germany. From the table the following "indicators" can be extracted:

- average number of employees per company: about 9,5
- average number of trucks per company: about 4,5.

These numbers seems to indicate the presence of a major number of medium dimension companies respect to Italy and France.

Companies	40520
Employees	383325
Trucks	181389
Trailers	185265

Table 1.2.9 data concerning companies being part of the "commercial goods transport on road" sector in Germany (Nov 1997)

In the following table the number of transport companies in function of main business activities are presented. As it can be seen the number of companies is major for the short haulage road transports followed by the long haulage road ones.

Business activity	Number of companies	Percentage
Short haulage road transports	20185	49.8
Long haulage road transports	11597	28.6
Removal traffic with trucks	733	1.8
Unregulated road transports	1375	3.4
Other forwarding activities	1158	2.9
Other transport activities	5472	13.5
TOTAL	40520	100.0

Table 1.2.10: Germany: number of transport companies in function of main business activities (Nov 1997)

Finally, the table 1.2.11 collects the data concerning the number of companies in function of the size of the fleet. The companies with a number of trucks in the range 1-10 represent about 85 % of the total.

Size of the fleet (in trucks)	Number of companies	Percentage
1	11107	27.4
2 to 3	10460	25.8
4 to 10	12895	31.8
11 to 50	5748	14.2
51 and more	310	0.8
TOTAL	40520	100.0

Table 1.2.11: Germany: number of companies in function of the size of the fleet (Nov 1997)

1.2.4 Road freight transport services in Netherlands

In the following some data concerning freight transport services in Netherlands are furnished.

In particular, the table 1.2.12 collects the structure (in percentage) of the road transport services according to the segments transport market. The main segment transport market results to be " General Distribution Transport" (around 18,7 %), then followed by "Tip-up car transport" (around 10,4 %) and " Construction materials transport" (around 9,4 %).

Segment Transport market	Percentage
Waste material Transport	7,2
Tip-up car transport	10,4
Construction materials transport	9,4
Removal/relocation Transport	4,3
Living animals Transport	3,2
Agricultural Transport	8,9
Dairy transport	1,7
Physical & Warehousing	3,4
General Distribution Transport	18,7
Courier & Express Transport	2,6
Intermodal Transport	2,9
Airfreight Transport	1,6
Ferry Transport	8,1
Conditioned Transport	5,8
Flowers Transport	0,4
Tank Transport	3,9
Exceptional Transport	4,3
Automotive Transport	0,7
Refrigerated Transport	2,4
TOTAL	100%

Table 1.2.12: Netherlands: percentage segments transport market

The table 1.2.13, as indication of the number of trucks for company, contains the disaggregations of the transport companies according to the number of permits. The data present a maximum for the class of 1 permit (about 29,7 %), but also the class 5-9 (17,4 %) and 2 permits (13,8 %) are relevant on the total.

Permits	Companies	Percentages
Not counted	319	2,8
1	3404	29,7
2	1584	13,8
3	1008	8,8
4	732	6,4
5-9	1990	17,4
10-14	921	8,0
15-19	452	3,9
20-49	789	6,9
50-99	192	1,7
>100	69	0,6
TOTAL	11460	100%

Table 1.2.13: Netherlands: number of permits per transport companies (indication for number of trucks per company), 1997

The following table 1.2.14 presents the structure of the freight transport vehicles park by type; from the data it appear that the "Closed truck" category have the higher percentage (34 %) followed by the "Changing composition" type (18 %).

Type	Percentage
Refrigerated Truck	9
Backwards Tip-up truck	6
Open with cover	5
Open with fixed cover	4
Three sided Tip-up truck	3
Live animal Truck	3
Closed Truck	34
Tank	2
Changing composition	18
Concrete mixer	1
Open	12
Other/unknown	3
TOTAL	100%

Table 1.2.14: Netherlands: type of trucks, total: 81829, 1997

The following table 1.2.15 and 1.2.16 respectively collects the data (1997) concerning:

- domestic goods transport in the Netherlands per type of vehicle
- domestic goods transport in the Netherlands per type of goods.

In the case of the type of vehicle the higher percentage are present for the "Tip-up" (27,4 %) and the "Open vehicle with/without cover" typology (20,7 %), while concerning the type of goods at the first place there is the the transport "Raw minerals/building materials" (34,3 %) and at the second the transport of "Other goods" (26,2 %).

Type	Percentage
Tip-up	27,4
Heavy loads	0,9
Tank/bulk vehicle	11,9
Conditioned vehicle	5,1
Changeable composition vehicle	10,2
Closed vehicle	13,3
Automotive transport vehicle	0,4
Open vehicle with/without cover	20,7
Container vehicle	6,7
Others	3,4
TOTAL	100%

Table 1.2.15: Netherlands: domestic goods transport in the Netherlands per type of vehicle 1997, 295 mln Tons

Type of goods	Percentage
Food	15,4
Fuel	0,3
Agricultural products/living animals	11,3
Mineral	0,7
Chemical products	4,5
Fertiliser	2,4
Raw minerals/building materials	34,3
Metals	2,4
Other goods	26,2
Petrol & Petroleum products	2,5
TOTAL	100%

Table 1.2.16: Netherlands: domestic goods transport in the Netherlands per type of goods 1997, 295 mln Tons

1.3 OBC MARKET IN EUROPE

The objective of this chapter is a definition of the framework of the OBC market in Europe on the basis of:

- the qualitative current and foreseen situation of the market
- an analysis of the european leading suppliers.

To this aim the chapter is so structured:

- analysis of the OBC categories actually produced for Freight and Fleet Management
- analysis notes concerning current and foreseen OBC market in Europe
- analysis of the leading suppliers and of their respective market for different european countries.

1.3.1 OBC categories

From the hardware point of view if we simply consider the OBCs as "portable computers" it would be possible to classify them according to the following general categories:

- *Handheld Personal Computer*
- *Laptop PC Portable*
- *Microcomputer*
- *Notebook*
- *Palmtop*.

Really, on the basis of a survey carried out within COMETA, we can say that only few on-board computers actually produced for Freight and Fleet Management belong to the above mentioned categories; the survey pointed out that the so called "other" category is the most important; microcomputers, laptops and PCs are not very numerous. These results are shown in the figure 1.3.1 [9] and are a clear feature of the actual fragmentation of the OBC's market.

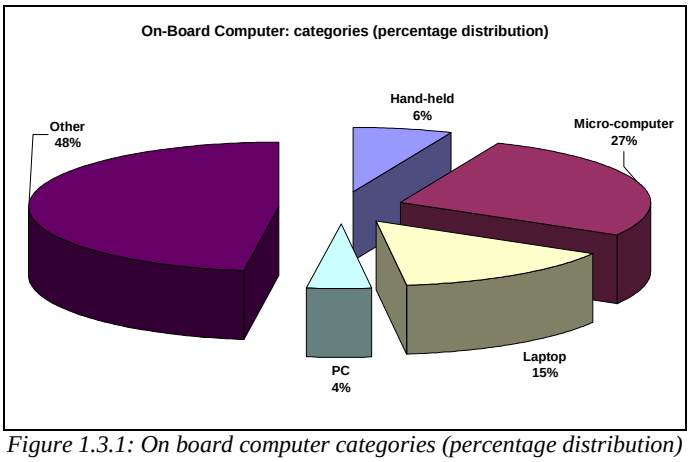

Figure 1.3.1: On board computer categories (percentage distribution)

The survey indicates that the "other" category prevails also with regard to microprocessors (figure 1.3.2) and operating systems types (figure 1.3.3); these data confirm the actual fragmentation of the market[1].

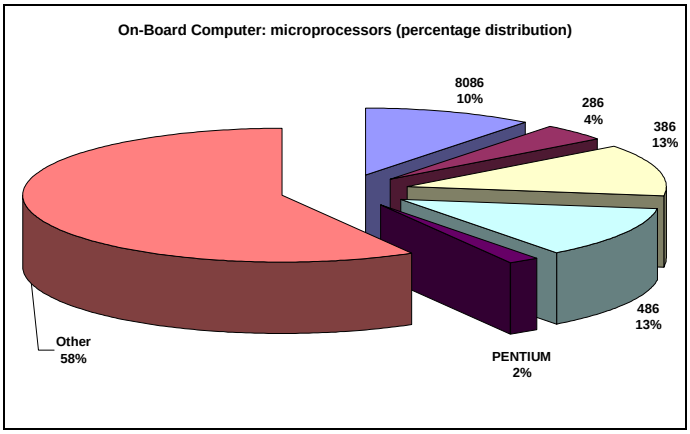

Figure 1.3.2: Microprocessor categories

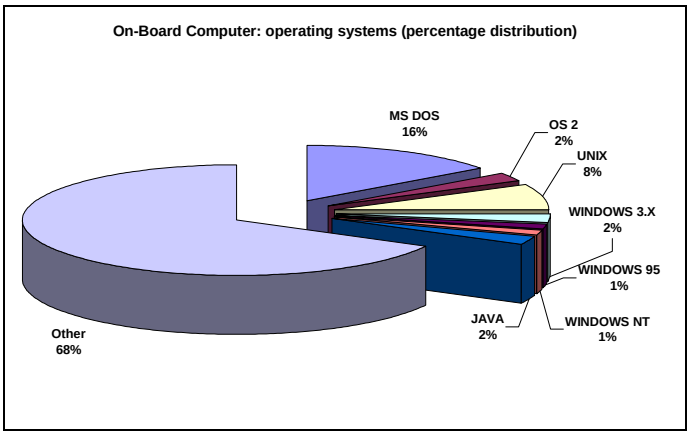

Figure 1.3.3: Operating system categories

Finally, it seems that the most part of on the board computers are interfaced with a communication system, are stand alone equipments dedicated for commercial vehicles and are installed by the systems providers.

1.3.2 Current and foreseen OBC market

In the following, some qualitative notes concerning current and foreseen OBC market in Europe are presented [6]. The analysis is organized according to:

- hardware aspects
- software aspects
- functional aspects
- integration aspects.

[1] Concerning microprocessors various types of devices produced by NEC, Motorola etc. are included in the cathegory "other", while among the "other" operating systems a new important one recently appeared on the market: WINDOWS-CE.

Hardware aspects

The actual market appears fragmented and characterised by a number of different on board computers, components and other dedicated devices of various types. Each of them is based on electronic technologies, but common standards for on board equipment are still not well defined. Furthermore, these hardware components are for the most part stand alone equipments actually installed by the systems providers.

A high percentage of telematic systems is actually equipped with a number of different electronic devices such as vehicle devices/sensors, data capture devices, location/position devices and communication devices; the number and the types of these devices (especially communication devices) are expected to increase in the short term.

A tendency appears for the near future (probably in the medium term): the on board equipment will probably work much as a PC works now. In particular on board computer will be the "center" of the telematic on board system and any add-on system/device will probably plug into the computer. The telematic systems based on this technology will be directly installed by the vehicle manufacturers and will be more integrated with the electronic architecture and the productive process of the vehicle.

Software aspects

Both the freight and the fleet management software appear to be well implemented by the actual telematic systems. Except some particular situation, also the software for drivers activity/vehicle maintenance management is already present in a considerable percentage of systems. Regarding the software for productivity and performance follow-up and the software for administrative/commercial management the actual situation is quite similar to that described for the other families.

In the near future (short term) a general 15 % increase is expected in the amount of software installed. In the medium term this increase could be more pronounced, depending on the fact that the amount of memory and the capacity of the on board computers will considerably increase.

The percentage associated to "on board only" software appears very low today and in the future (short term); "home based only" software and "both on board and home based" software are more frequently implemented. This situation is expected to change in the medium term; if, as showed in the previous section, the on board computer become a real PC in the medium term, the increase of software directly installed on board will probably be considerable.

Functional aspects

The surveys carried out in the context of the COMETA D3 indicate that the most important categories of functions carried out by the OBC are: execution functions, controlling functions and vehicle/driver management functions. However, the average number of implemented functions is low if compared with the results of the detailed analysis; this indicates that the actual systems are "specialised" for some particular kind of functions and frequently don’t implement at all some other type of functions.

With respect to the actual situation, the percent increase that appears more important regards the same categories above mentioned; therefore, existing differences among different categories are expected to increase in the short term.

In the medium term it is possible that new multi-purpose and more integrated systems will be less specialised and will be able to perform a number of different functions.

Integration aspects
The actual level of integration between devices appears very low. This situation seems to remain unchanged in the short term; considering the before mentioned devices-proliferation phenomenon, the low integration represents a crucial aspect for the actual state of the art and the future evolution of the market.

The actual low level of integration mainly depends on the fact that the most part of systems providers actually operate independently from truck manufacturers. Trade agreements will probably be established between systems providers and truck/car manufacturers; therefore, telematic systems will be directly installed on the truck during the making process of the vehicle.

1.3.3 Leading suppliers and their respective market

Belgium
At the beginnig of 1998 there was only one significant actor in Belgium in the sector of on-board computers for freight and fleet management. Company and product were known under the name of Transics. The company has sold about 15000 OBCs up to 1998 and it was seeking new markets in the European Union and was closely following up the latest developments such as the digital tachograph. In terms of functionality, Transics is similar to the leading products in The Netherlands.

France
Over twenty systems was available on the French market at the beginning of 1998. It has been estimated that a little over 10000 French trucks, mainly used for load transport, had equipped with on-board information technology. In the same year, many companies, both SMEs and Groups, were beginning to show interest or had on-going projects, this mainly because of the constraints in terms of management of work time imposed by labour legislation, but also due to the fact that optimising transport was becoming increasingly crucial in the current economic environment. Some of the French leading suppliers in the OBC market are:

System country	***System name***	***Company***
France	Elocom	ACCISS/Bretagne
France	AERO DATA 2010	AERO PRODUCT
France	MOBILSAT	AGS France (Assistance Globole Satellite)
France	EUTELTRACS	ALCATEL
France	SMARTBUS	ALCATEL CGA TRANSPORT
France	Amtech AUI Systems	Amtech International
France	ARAMUS	AXYGEST
France	SIE 1	C.E.S.I. (Compagnie Européenne des systèmes d'information embarqués)
France	Smartbus	Cegelec Division CGA
France	OPTIMA	CELSIUS
France	ELOCOM	ELO SYSTEMES
France	MOBILINK	F C R INGENIERIE
France	INMARSAT - C	FRANCE TELECOM
France	INMARSAT D+	G M E TELECOM
France	Geotrack	Geotrack
France	Immarsat D+	GME
France	Systémes intelligents de gestion de flotte de véhicules	GTMH Département systèmes de transport
France	TRUCK Black box	ICS - Industrial Control Systems France
France	DATAPARC	INFOPARC
France	M-TRACE	METOD LOCALISATION
France	Agat tmc 2001	Michelon SA
France	MOBILOC	MOBILOC
France	MOBIGPS - MOBIMAIL	NOGEMA INGENIERIE
France	OPTIBOX	OPTIMUM SYSTEMS SERVICE
France	OPTILOT	ORTEC France SA
France	Opsion - Optibox - Optifleet	OSS - Optimum Sytems Service
France	PCMSAT	PCM SATELLITE
France	SEDOV	STERELA
France	CAPSAT	TDCOM
France	Elvist	VDO-Kienzle
France	DYNAFLEET INFO SYSTEM	VOLVO TRUCKS France

Table 1.3.1: some of the French leading suppliers in the OBC market

Germany

Concerning German OBC market the following main aspects can be pointed out[2]:

- the set of features offered by the different so called "on board computer systems" varies a lot, depending from the application they were built for: some systems are used exclusively for security reasons while others are mainly used as a navigation system and so on
- some of the systems offered consist of a number of building blocks that are developed by different (national and foreign) manufacturers
- some systems are only assembled and sold in Germany, others are assembled abroad and sold in Germany
- German OBCs market is very important both in European and international context. Some of the main systems providers are:

[2] The analysis is based on a survey referred to a sample of about 51 on board computer systems, from 32 different system providers.

Country	***System name***	***Company***
Germany	BC 04	Warok Computer & Software GmbH
Germany	TB II	Alcatel (Data & Mobiles)
Germany	SatMOS 2s SatMOS 4	SatMARS Navigations- und Kommunikationssysteme GmbH
Germany	CarOrganiser MFU 12	Magnatec Technologie-Vertriebs GmbH
Germany	Fleetec	datafactory GmbH
Germany	M/OBS 2002 Norspace 2002	Nortech Datensysteme GmbH
Germany	MOVILINE MCT	plettac mobile radio GmbH (Grundig)
Germany	PAS-SAT	PAS GmbH
Germany	RMC	Siemens (A&D IB)
Germany	Logiq MDT (Simac) Logiq MDA (Simac)	CPN Satellite Services GmbH
Germany	HiTrack HiSecure HiFleet	GAP AG
Germany	MobileHound Fleet MobileHound Cargo	Engineering Pro Time GmbH
Germany	ComTerm	Krupp Timtec Telematik GmbH
Germany	Truck Black Box VIII	ICS Deutschland GmbH
Germany	NavKos	Fugon GmbH
Germany	HW 9014	Höft & Weesel AG
Germany	DriveRight (Davis) SMT	BSE Compilot GmbH
Germany	SatMax	Ratzesberger & Sattleder OEG
Germany	GPS-Walker GPS-Roader	PC-Funk
Germany	TRANSPO-Drive 8803 TRANSPO-Drive 4010	NUFATRON AG
Germany	ADC Fahrtenbuchsystem	A.Z.I./SET
Germany		MAN Transcom
Germany		OHB
Germany		Kapsch
Germany	Mobile, Initrans	INIT GmbH
Germany	Global Transport Telematic System	COMROAD AG
Germany	Nuloc	Nukem
Germany	Gotos Structure Line	Softwarehaus Ruppack
Germany	FMS 1332	VDO-Kienzle
Germany	Fleetboard	DaimlerChrysler

Table 1.3.2: some of the German leading suppliers in the OBC market

Italy

There is a conspicuous number of OBCs suppliers In Italy. Some of the market leaders are KFT S.p.A. (which offers a complete system, developed for meeting the specific requirements coming from the commercial vehicle market) Magneti Marelli - Tecmobility, SOVECO, Business Team S.r.l., L.O.C. and DIVITECH. Furthermore, a number of other major companies are present on the Italian OBC's market such as, 4P Mobile Data, Movitrack, Voith Italia, APS, S.S.M., Securvip, T&B Europe Sat s.r.l., Securtrans, Redco Telematica S.P.A. etc.. Finally, a certain number of minor suppliers is active in this market.

The products and/or services offered depend on the particular examined provider and are:

- a system to be installed on board + telematic service;
- telematic service only ;
- system/service for trucks only;
- system/service for cars too.

Furthermore, almost all the mentioned companies offer systems and services for security/emergency management.

Except the most important systems providers (who have the possibility of interfacing with a number of different devices, offering a variety of freight/fleet management functions) the systems offered by the Italian market are equipped with a low number of devices/sensors. As a general rule, the ability of these systems to capture information from the vehicle is low.

Thanks to the fact that security/emergency aspects are very well developed by the Italian systems providers, the market offers a variety of location/positioning functions and various communication systems. The most used location system is the well known Global Positioning System but various other communication systems are employed such as GSM, E-TACS, INMARSAT C, private radio and cellular phone.

Sweden

Up to 1998 a few companies dominate the Swedish market of fleet management systems. Volvo and Hogia are two very large Swedish manufacturing companies in this field, but there are also a number of small suppliers each sold about a dozen systems. Obviously, there are several fleet management systems existing in Sweden that are not of Swedish origin.

Hogia AB is one of the biggest players in this field, with approximately 150 systems sold at 1998. Their systems are sold in Scandinavia, mostly in Sweden and Norway. Hogia has been involved in this area for many years. They have developed systems for fleet management and traffic controlling since 1993.

At 1998 Volvo had three different types of fleet management systems operating in Sweden. The first one is named "Volvo Roadly" and has been sold in about 100 copies. This is a non-communication system and contains only data about the truck. The second system called "Volvo Inroadly" is related to the first one, the only difference between the two systems being their focus. Volvo Inroadly is focusing on the office instead of the truck/vehicle and it is an office-system. Dynafleet is their third and probably the best known of Volvos systems. Dynafleet is divided into two different kinds of systems, Information and Messaging. The Messaging system is almost two years old and 200 copies have been sold so far.

The more advanced version, the Information system has been sold in about 50 copies. It has the capability of showing maps, orders, data about the vehicle, fuel etc.

Netherlands

Dutch OBCs market has a relevant weight in European and international supply of these typology of systems. Several companies operate in the country, both in the production of systems (which represent their primary item) and in parallel in the production of a more large set of devices.

Various OBC systems are offered by Dutch market; some of the main suppliers are:

System country	***System name***	***Company***
Netherlands		Groeneveld
Netherlands	ICS IT/CS system ICS-MDRS	ICS
Netherlands	Logiq LOGIC	Simac Mobile Solutions BV

Table 1.3.3: some of the Dutch leading suppliers in the OBC market

SOURCES

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[6] Censimento intermedio industria e servizi, 1996. *ISTAT (Istituto Nazionale di Statistica)*

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[9] COMETA D3: State of the art and short term perspectives in on board systems for commercial vehicles.