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Market Watch

Sector Report  
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1

*e-business*  
**w@tch**



## ICT & e-Business in the Food, Beverages & Tobacco Industry

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European Commission  
Enterprise Directorate General  
e-Business, ICT Industries  
and Services

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## Introduction

European policy is in a number of areas, including economic, innovation and SME policies, increasingly focused on promoting business techniques and new ways of working which will provide the economic and social foundation of the information society in Europe. To help policy-makers define their programmes, and to monitor the effectiveness of these policies, reports on progress and areas requiring active support are essential. At the same time, many areas of European business are lacking information about the speed of technological progress in European markets, which they expect to make a strong impact on their global competitiveness.

Despite the increasing number of studies and market research on electronic business, especially on electronic commerce, released by a number of authors and research organisations across Europe and the world, there is still a lack of reliable empirical information about the extent, scope, nature of and factors affecting the speed of e-business development in Europe at the industry level in an internationally comparative framework. This report intends to provide such information for the Food, beverages and tobacco industry.

This report has been published in the framework of the "European e-Business Market Watch" (or, in short, the "*e-Business W@tch*"). This is a market observatory established by the European Commission, DG Enterprise. Laying the groundwork for a continuous facility, the *e-Business W@tch* monitors and assesses the maturity of electronic business in 15 industry sectors across all EU Member States, including seven manufacturing and eight service sectors. At least two reports will be published on each sector during the 18-month life-time of the *e-Business W@tch*. The sectors and the publication schedule for these reports are as follows:

	Sector	1 <sup>st</sup> Issue Report	2 <sup>nd</sup> Issue Report
1	Food, beverages, tobacco	July 2002	January 2003
2	Publishing, printing and reproduction of recorded media	October 2002	April 2003
3	Manufacture of chemicals and chemical products	July 2002	January 2003
4	Manufacture of Metal products	October 2002	April 2003
5	Manufacture of machinery and equipment	October 2002	April 2003
6	Manufacture of electrical machinery and electronics	October 2002	April 2003
7	Manufacture of transport equipment	July 2002	January 2003
8	Retail	October 2002	April 2003
9	Tourism	October 2002	April 2003
10	Credit institutions, investment firms, leasing enterprises	July 2002	January 2003
11	Insurance and pension funding services	July 2002	January 2003
12	Real estate activities	October 2002	April 2003
13	Business Services	October 2002	April 2003
14	Telecommunications and computer related services	July 2002	January 2003
15	Health and social work	July 2002	January 2003

The research presented in these Sector Reports is intended to help to measure progress and to assess how electronic business development can be further enhanced at the European or at Member State level with a view to strengthening the competitiveness of European businesses. Special attention is paid to the SME dimension of e-business. More information about the *e-Business W@tch* is available at [www.ebusiness-watch.org](http://www.ebusiness-watch.org).

# Food, Beverages and Tobacco: Sector Profile & e-Business

## 1 Economic profile

### 1.1 Definition and structure

The sector consists of two major activities within the NACE Rev. 1 classification, the manufacture of food products and beverages (15) and the manufacture of tobacco products (16). Food and beverages are subdivided further into nine groups covering meat, fish, fruit and vegetables, fats, dairy products, grain mill and starch products and beverages and finally a group for animal feed. Food accounts for more than 75% of the total production value of the sector, whilst beverages represent about 15%. Tobacco represents about 8% of total production.

*Table 1-1: Classification of activities within the Food Sector*

CODE	ACTIVITY
15	Manufacture of food products and beverages
15.1	Production, processing and preserving of meat and meat products
15.2	Processing and preserving of fish and fish products
15.3	Processing and preserving of fruit and vegetables
15.4	Manufacture of vegetable and animal oils and fats
15.5	Manufacture of dairy products
15.6	Manufacture of grain mill products, starches and starch products
15.7	Manufacture of prepared animal feeds
15.8	Manufacture of other food products
15.9	Manufacture of beverages
16.0	Manufacture of tobacco products

In the European Union, the food industry is highly concentrated and considerably fragmented. On the one hand, a few large, vertically integrated multinationals produce a wide range of products and play a significant role in the international performance of the industry. On the other hand, there are a large number of smaller firms responsible for local production and specialising in one or two sub-sectors.

The production share of the four largest countries in Europe is about 65%, which is below their corresponding share in the total manufacturing output (more than 70%). This is due to the fact that the food industry processes fresh products with a relatively low production value which often remain within national markets and because regional preferences boost local production. This dichotomised structure of the industry was taken into account when developing the research design for this report and other ongoing research of the *e-Business W@tch*.

## 1.2 Macro-economic profile

### Food and beverages

The EU is the world's largest producer of food and beverages, with combined production estimated (for 2000) at 593 billion Euro, 100 billion Euro higher than in the USA (457.6 billion Euro in 1997) and more than 300 billion Euro higher than in Japan (258.6 billion Euro in 1997). The USA however, generates more value than the EU (195 billion Euro in 1997 versus 122.7 billion Euro in the EU in 1996), whilst Japan follows with 89.2 billion Euro (1996). As can be seen from the data in Table 1-2, France and Germany achieve a higher production value with 121 and 119 billion Euro in 2000. The United Kingdom ranks third in this classification with 91 billion Euro, followed by Italy (63 billion Euro), Spain (60 billion Euro) and the Netherlands (35 billion Euro).

As of 2000, Germany, France, Spain and Italy had the highest number of companies operating in the food and beverage industry. Taking into account only companies with more than 20 employees: in Germany there were over 6,035 companies; in France, Spain and Italy 3,645, 3,040 and 2,844 companies respectively; and in the UK 2,200 companies. Denmark had the lowest number of companies of the EU Member States (275).

*Table 1-2: Food & beverage: structure/production by country (estimates for 2000)*

	Production (*)	Value added (**)	Employees (***)	No. of companies (****)
EU 15	593	133	2,666	26,095
Belgium	23 <sup>(1)</sup>	5	62	754
Denmark	16 <sup>(1)</sup>	4	83 <sup>(1)</sup>	275
Germany	119	27	548	6,035
Greece	5	1	43	1,036 <sup>(1)</sup>
Spain	60 <sup>(1)</sup>	13	363 <sup>(1)</sup>	3,040
France	121 <sup>(2)</sup>	21	400	3,645
Ireland	15	4	47	687 <sup>(1)</sup>
Italy	63	12	197	2,844
Netherlands	35	6	103	876
Austria	11 <sup>(1)</sup>	3	77 <sup>(1)</sup>	664
Portugal	11 <sup>(1)</sup>	2	112 <sup>(3)</sup>	1,916 <sup>(3)</sup>
SF	8 <sup>(1)</sup>	2	43 <sup>(1)</sup>	1,785 <sup>(1)</sup>
Sweden	15 <sup>(1)</sup>	3	54	338
United Kingdom	91 <sup>(1)</sup>	30 <sup>(1)</sup>	534 <sup>(1)</sup>	2,200
(*) Current prices (billions of Euro)		(***) Companies with more than 20 employees except:		
(**) In billion Euro		(1): more than 1 employee		
(***) x 1000		(2): more than 3 employees		
		(3): more than 9 employees		

Source: Eurostat New Cronos

Germany had the highest number of employees (548,000 estimated in 2000), followed by the United Kingdom (534,000) and France (400,000). The average number of employees per company was 10 for the year 2000. Denmark had the highest average number of employees per company (about 30.2), while countries such as Italy and Portugal had the lowest number of employees per company. This reflects the important role SMEs play in the economy in these Member States (cf. Table 1-3).

*Table 1-3: Food & beverage: distribution of companies according to size (2000)*

N° of employees per company in %	Number of companies (%)							
	I	E	P	F	D	B	DK	S
Year	1996	2000	1999	1999	2000	2000	1999	2000
Small companies (10 to 49 employees)	87.7	81.5	80.5	61.6	54.2	76.3	72.3	75.5
Medium-large companies (50 employees and more)	12.3	18.5	19.5	38.4	45.8	23.7	27.7	24.5
<b>TOTAL</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: CIAA, Annual Report 2001

Production per employee ranges from 98,000 Euro in Portugal to 371,000 Euro in Belgium. At medium to high levels, we find the Netherlands (340,000 Euro), Italy (320,000 Euro), Ireland (319,000 Euro) and France (303,000 Euro).

*Table 1-4: average number of employees per company and production per employee (2000)*

	Average number of employees per company	Production per employee ('000 of Euro)
<b>EU 15</b>	<b>10.2</b>	<b>222</b>
Belgium	8.2	371
Denmark	30.2	193
Germany	9.1	217
Greece	4.2	116
Spain	11.9	165
France	11.0	303
Ireland	6.8	319
Italy	6.9	320
Netherlands	11.8	340
Austria	11.6	143
Portugal	5.8	98
Finland	2.4	186
Sweden	16.0	278
United Kingdom	24.3	170

Source: Developed from Eurostat New Cronos

The food and beverages sector accounted for 16.2% of the total manufacturing output within the EU in 1996, representing a total value of 570.9 billion Euro. Using the NACE classifications sub-sections (14 in manufacturing), the food and beverage sector provides the highest percentage of manufacturing output in the EU, ahead of transport equipment by about 3.5 percentage points.

Luxembourg showed the lowest share of food and beverage contribution, where the sector accounts for just 8.6% (in 1997) of the total national manufacturing (Table 1-5). At higher levels, one finds Denmark (where food and beverage holds 27.2% of the share in national manufacturing production), the Netherlands (24.5%) and Ireland (23.7%).

In almost every country, food, beverages and tobacco production has been declining as a proportion of total manufacturing output in recent years.

*Table 1-5: Food & beverages: production value: share in total manufacturing (million Euro)*

Country	1996		1997		1998	
	Total manu- facturing	% Food & beverages production	Total manu- facturing	% Food & beverages production	Total manu- facturing	% Food & beverages production
Austria	83,196.6	14.9%	80,842.5	13.7%	88,017.5	12.3%
Belgium	147,550.1	17.7%	150,872.1	17.8%	n.a	n.a
Denmark	59,387.7	28.8%	59,792.0	27.2%	n.a	n.a
Finland	62,373.4	12.4%	71,018.2	11.2%	75,859.4	10.2%
France	659,329.4	17.8%	692,125.2	17.4%	729,710.9	17.0%
Germany	n.a	n.a	n.a	n.a	n.a	n.a
Ireland	45,873.8	29.8%	55,495.2	26.8%	63,036.9	23.7%
Italy	637,001.1	13.3%	n.a	n.a	n.a	n.a
Luxembourg	6,112.5	8.9%	6,342.7	8.6%	n.a	n.a
Netherlands	161,469.2	25.3%	168,736.1	24.5%	n.a	n.a
Portugal	57,788.0	17.7%	60,658.9	17.9%	59,895.3	16.0%
Spain	259,476.1	21.2%	276,367.4	20.8%	n.a	n.a
Sweden	125,244.5	10.5%	130,107.8	10.0%	n.a	n.a
UK	526,633.1	18.5%	630,930.6	18.2%	n.a	n.a

Source: Eurostat New Cronos

The average value added accounts for about 22.4% of the total food and beverages production at the European level (Table 1-6). Higher than average levels are found in the United Kingdom (where the percentage of value added stands at 33.0%), while levels are particularly low in the Netherlands and Portugal (17.1% and 18.2%). Value added per employee is especially high in Ireland (85,100 Euro) and Belgium (about 80,600 Euro). Portugal shows the lowest level, where the value added per employee was about 17,900 Euro in 2000.

*Table 1-6: Food & beverages: value added per employee and proportion of value added on production (2000)*

	<b>Proportion (%) of value added on production</b>	<b>Value added per employee(thousands of Euro)</b>
EU 15	22.4	49.9
Belgium	21.7	80.6
Denmark	25.0	48.2
Germany	22.7	49.3
Greece	20.0	23.3
Spain	21.7	35.8
France	17.4	52.5
Ireland	26.7	85.1
Italy	19.0	60.9
Netherlands	17.1	58.3
Austria	27.3	39.0
Portugal	18.2	17.9
Finland	25.0	46.5
Sweden	20.0	55.6
United Kingdom	33.0	56.2

Source: Developed from Eurostat New Cronos

Value added in the food and beverage industry accounts for 13-15% of the total value added of manufacturing output. Sweden and Luxembourg show the lowest percentage values, 7.8% and 8.5% respectively, of total of manufacturing (Table 1-7). Denmark (with 19.6%), the Netherlands (18.6%) and Ireland (17.0%) have the highest levels. All European countries show food & beverages sector value added decreasing as a proportion of total manufacturing value added.

Looking more closely at the individual sectors within the EU food industry (Table 1-8), one sees that meat products is the largest sector in terms of production, value added and employees. The beverage sector also represents a high percentage of the total, especially in terms of value added (contributing 21.1% to the total). Dairy product production accounts for 16% of total production and 10.2% of total employment. The smallest product sector is fish products, which accounts for just 2.45% of total production and 3.4% of total employees. Within the "other food products" (which account for 26.3% of total production and 38.9% of total employment), the greatest share is held by the bakery, pastry, chocolate and confectionery product sector, at over 50% of the total sub-sector.

Table 1-7: Value added at factor cost: percentage in total manufacturing (million Euro)

Country	1996		1997		1998	
	Total manu- facturing	% Food & beverages production	Total manu- facturing	% Food & beverages production	Total manu- facturing	% Food & beverages production
Austria	n.a.	n.a.	29,865.3	11.1%	34,288.5	10.0%
Belgium	38,323.6	13.0%	38,586.3	13.0%	n.a.	n.a.
Denmark	20,952.8	19.9%	21,596.7	19.6%	n.a.	n.a.
Finland	20,689.6	10.0%	23,268.1	9.0%	25,124.2	8.0%
France	181,388.5	13.4%	184,852.0	13.3%	191,336.9	13.1%
Germany	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ireland	15,772.5	21.6%	19,998.2	18.6%	21,363.8	17.0%
Italy	186,648.4	9.0%	n.a.	n.a.	n.a.	n.a.
Luxembourg	1,932.5	8.9%	2,045.0	8.5%	n.a.	n.a.
Netherlands	48,256.2	18.8%	49,359.6	18.6%	n.a.	n.a.
Portugal	15,625.5	13.2%	16,507.1	12.4%	16,893.7	12.5%
Spain	75,808.2	16.4%	80,166.1	15.7%	n.a.	n.a.
Sweden	36,847.8	9.0%	43,858.3	7.8%	n.a.	n.a.
UK	170,499.6	13.9%	205,451.8	13.6%	n.a.	n.a.

Source: Eurostat New Cronos

Table 1-8: Food and beverage: structure/production by sector (estimates 2000)

	Production		Value added		Employees	
	Billions of Euro	%	Billions of Euro	%	Billions of Euro	%
Meat products	113	19.1	21	15.8	588	22.1
Fish products	14	2.4	3	2.3	91	3.4
Processed fruit & vegetables	36	6.1	8	6.0	174	6.5
Oils & fats	23	3.9	2	1.5	38	1.4
Dairy products	95	16.0	14	10.5	271	10.2
Flour & starch products	21	3.5	4	3.0	61	2.3
Animal feed	37	6.2	6	4.5	90	3.4
Other foods	156	26.2	47	35.3	1,037	38.9
Beverages	98	16.5	28	21.1	316	11.9
<b>TOTAL</b>	<b>593</b>	<b>100</b>	<b>133</b>	<b>100</b>	<b>2,666</b>	<b>100</b>

Source: Eurostat New Cronos

## Tobacco

The tobacco industry has grown in the two-year period 1999 to 2000 (Tables 1-9 and 1-10). Cigarette production increased (accounting for the largest share in the sector with 742 million Euro) along with cigars (which grew from 6.8 to 7.0 million Euro), pipe tobacco (from 17.9 to 21.7 million Euro) and finally hand rolling tobacco (where production increased from 71.5 in 1999 to 74.5 million Euro in 2000). Germany, the Netherlands and the United Kingdom are the main producer countries in the European Union. Belgium is also an important producer of pipe and hand rolling tobacco. Despite the sector growth, there was a slight decrease in employment from 1,406,636 (1999) to 1,379,779 (2000) employees.

The value of cigarette consumption is stable, at around 605-606,000 million Euro. The country with the highest cigarette consumption in the EU is Germany (with 139,265 million Euro, equal to 23.0% of the total), followed by Spain (with 95,663 million Euro) and France (with 82,513 million Euro). The number of smokers has risen slightly, increasing overall from 92 million to 93.5 million people.

*Table 1-9: Tobacco Industry: production and consumption (2000)*

	Cigarette production	Cigar prod.	Pipe tobacco prod.	Hand rolling tobacco production	Tobacco related employment	Cigarette consumption	Number of smokers
	million	million	tonnes	tonnes		million	million
Austria	25,431	20.9	-	-	17,000	15,441	1.9
B./Lux.	19,739	47.2	12,651 <sup>1</sup>	-	23,500 <sup>2</sup>	19,739 <sup>3</sup>	2 <sup>4</sup>
Denmark	11,018	306	4,625 <sup>1</sup>		6,000	9,432	1.7
Finland	3,500	0.5	-	800	450	4,659	0.08
France	38,240	625	1,478	2,675	217,759	82,513	14
Germany	206,770	1,861	791	28,725	150,000	139,265	20.8
Greece	41,989	-	13 <sup>1</sup>	-	425,000	32,138	3.8
Ireland	7,000	60	-	6,216	5,000	6,700	0.8
Italy	44,300	88	67.4	-	278,170	100,400	14
Netherlands	123,071	2,300	350	30,700	27,500	16,679	4.5
Portugal	20,383	-	-	-	-	17,394	1.3
Spain	68,597	981	19.1	147.3	90,000	95,663	11.2
Sweden	6,000	0	400	500	3,400	8,500	1.65
UK	126,105	763	1,335	4,831	136,000	56,600 <sup>5</sup>	15
<b>TOTAL</b>	<b>742,143</b>	<b>7,052.6</b>	<b>21,729.5</b>	<b>74,594.3</b>	<b>1,379,779</b>	<b>605,483</b>	<b>93.45</b>
<sup>1</sup> Pipe tobacco and hand rolling tobacco combined							
<sup>2</sup> Belgium only							
<sup>3</sup> Sales figure							
<sup>4</sup> 1999 figure							
<sup>5</sup> UK duty paid only - total cigarette consumption estimated at 84bn							

Source: CECCM 2001

Table 1-10: Tobacco Industry: production and consumption (1999)

	<b>Cigarette production</b>	<b>Cigar production</b>	<b>Pipe tobacco production</b>	<b>Hand rolling tobacco production</b>	<b>Tobacco related employment</b>	<b>Cigarette consumption</b>	<b>Number of smokers</b>
	<b>million</b>	<b>million</b>	<b>tonnes</b>	<b>tonnes</b>		<b>million</b>	<b>million</b>
Austria	24,370	22.3	-	-	17,000	15,585	1.9
B./Lux.	19,012	55	11,949 <sup>1</sup>	-	24,500	19,012	2
Denmark	11,370	337	2,797	1,501	6,000	8,375	1.5
Finland	3,600	0.7	-	1,000	450	4,753	0.8
France	42,406	660	950	2,950	217,759	83,675	14
Germany	203,994	1,823	667	26,747	150,000	145,265	20.5
Greece	31,663	-	17 <sup>1</sup>	-	425,000	31,569	3.3
Ireland	6,350	85	-	3,018	5,000	6,700	0.8
Italy	42,025	86	56	-	307,000	95,980	14.1
Netherlands	119,983	2,000	350	28,700	24,500	16,453	4.5
Portugal	16,884	-	-	-	-	16,612	1.4
Spain	71,969	950	19	144	90,000	93,089	11.2
Sweden	5,090	64	91	665	3,427	6,890	1.4
UK	134,568	777	1,085	6,794	136,000	63,000 <sup>2</sup>	15
<b>TOTAL</b>	<b>736,284</b>	<b>6,86</b>	<b>17,981</b>	<b>71,519</b>	<b>1,406,636</b>	<b>606,958</b>	<b>92.4</b>
<sup>1</sup> Pipe tobacco and hand rolling tobacco combined							
<sup>2</sup> Belgium only							
<sup>3</sup> Sales figure							
<sup>4</sup> 1999 figure							
<sup>5</sup> UK duty paid only - total cigarette consumption estimated at 84bn							

Source: CECCM 2001

Within the EU, the value of the sales of all tobacco based products reached 94,757 million Euro in 2000, which is a 2% rise compared to 1999. The largest tobacco markets are the United Kingdom and Germany, worth 20,654 and 20,765 million Euro respectively (Tables 1-11 and 1-12), followed by the Italian (12,563 million Euro) and the French market (13,113 million Euro).

In 2000, the percentage excise and VAT applied to tobacco products rose considerably. Total tax receipts also increased overall, rising from 60,419 million Euro to 68,059 million Euro, registering a growth of 12.6%.

External trade with non-EU countries in the same period dipped dramatically from a trade surplus of 1,586 to only 319 million Euro. Exports fell from 7,209 million Euro in 1999 to 6,854 million Euro in 2000, while imports increased considerably, rising from 5,623 million to 6,535 million Euro.

Table 1-11: Tobacco Industry: domestic sales, taxes and duties and trade outside the EU (2000)

	Value of domestic sales, all tobacco products	Receipts from Excise & VAT on all tobacco products	Tax receipts as a % of total central Government Tax revenues	Trade in manufactured tobacco products Exports	Trade in manufactured tobacco products Imports	Balance of trade in manufactured tobacco products
	million Euro	million Euro		million Euro	million Euro	million Euro
Austria	2,184	1,537	-	45.4	301.9	- 256.5
Belg./Lux.	3,517	1,792 <sup>2</sup>	2.5 <sup>2</sup>	412 <sup>2</sup>	397 <sup>2</sup>	15 <sup>2</sup>
Denmark	1,788	1,369	2.07	143	24	119
Finland	978	776	2.05	7.1	56.3	- 49.2
France	13,113	9,820	3.16	313	2,340	-2,027
Germany	20,765	14,250	2.04	1,779.5	703.1	987.4
Greece	2,720	1,953	6.07	135	150	-15
Ireland	1,700	1,289	4.07	91.3	36.7	54.6
Italy	12,563	9,256	2.06	7.2	1,254	- 1,246.8
Netherlands	3,150	2,080	2	2,100	400	1,700
Portugal	1,281	1,085	-	47	1	46
Spain	8,444	5,682	5.05	84.1	593.3	- 509.2
Sweden	1,900	1,250	1.19	31.8	114.4	- 82.6
UK	20,654	15,920	3	1,658	164	1,494
<b>TOTAL</b>	<b>94,757</b>	<b>68,059</b>		<b>6,854.4</b>	<b>6,535.7</b>	<b>318.7</b>
<sup>1</sup> Pipe tobacco and hand rolling tobacco combined						
<sup>2</sup> Belgium only						
<sup>3</sup> Sales figure						
<sup>4</sup> 1999 figure						
<sup>5</sup> UK duty paid only - total cigarette consumption estimated at 84bn						

Source: CECCM 2001

Table 1-12: Tobacco Industry: domestic sales, taxes and duties and trade outside the EU (1999)

	Value of domestic sales, all tobacco products	Receipts from Excise & VAT on all tobacco products	Tax receipts as a % of total central Government Tax revenues	Trade in manufactured tobacco products Exports	Trade in manufactured tobacco products Imports	Balance of trade in manufactured tobacco products
	million Euro	million Euro		million Euro	million Euro	million Euro
Austria	2,115	1,483	4	40.9	247	- 206.1
Belg./Lux.	3,249	1,691	2 to 2.4	453	384	69
Denmark	1,528	1,361	2.5	142	19	123
Finland	1,010	762	2.7	10	96.5	- 86.5
France	12,666	9,510	3	246	1,590	-1,344
Germany	21,069	14,563	2.6	1,597	628	969
Greece	2,914	2,090	7.2	98.4	180	- 81.6
Ireland	1,422	1,069	4.6	57.4	22.2	35.2
Italy	11,835	8,711	2.5	8.2	1,183	-1,175
Netherlands	3,050	2,028	2	2,700	450	2,250
Portugal	1,292	1,100	-	17	3	14
Spain	7,856	5,261	5.5	64	489	-425
Sweden	1,953	1,276	1.14	25.1	113.3	- 88.2
UK	20,874	9,514 <sup>3</sup>	2 to 3	1,750	218	1,532
<b>TOTAL</b>	<b>92,833</b>	<b>60,419</b>		<b>7,209</b>	<b>5,623</b>	<b>1,586</b>

<sup>1</sup> Pipe tobacco and hand rolling tobacco combined

<sup>2</sup> UK duty paid - total cigarette consumption est. 84 billion

<sup>3</sup> Due to timing of receipts value appears low. Based on 1999 sales, receipts are estimated to be around 17,330 million Euro

UK figures have been updated with latest information for 1999 by TMA.

Source: CECCM, 2001

## 1.3 General trends and business issues

### 1.3.1 Competition at country level

Competition in the food, beverages and tobacco sector is likely to continue to increase in the next few years. The structure of the market is bipolar: on the one hand a few very large companies –multinationals like Coca-Cola (USA), Nestle (CH) or Danone (F) for example – operate transnationally; on the other hand a significant group of small and medium sized enterprises operate mostly in regional markets, and concentrate on regional preferences for local specialities.

The sector profile varies from country to country. The UK and the Netherlands (where most of the multinationals are registered, including the "giants" British American Tobacco and Unilever) contrast significantly with Italy and Greece, where SMEs still play a major role in production and distribution. Forecasts suggest that in Italy, and in other fragmented markets (i.e. Greece, Spain and Belgium), large multinationals will progressively dominate, through aggressive acquisition strategies.

The competitive pressures are global, despite EU Member States' and the US' global sector dominance. (The tobacco sector, where competition is greater in other countries and continents, is an exception.)

In 2000, the EU food and beverage industry recorded an external trade deficit. Export of processed agricultural products to non-EU countries, after two years of substantial stability, increased by 12.5% compared to 1999 (Table 1-13). Export of processed agricultural products represents more than double the total exports of agricultural products. Roughly 35% of exports of those products are exported in the form of high value added products, which are known as the "non Annex I" products. The United States (with 20.7% of total exports) represents the most important market. Other major destination countries include Japan with 8.5%, Switzerland with 5.8% and Russia with 4.7% of total exports (Figure 1-1).

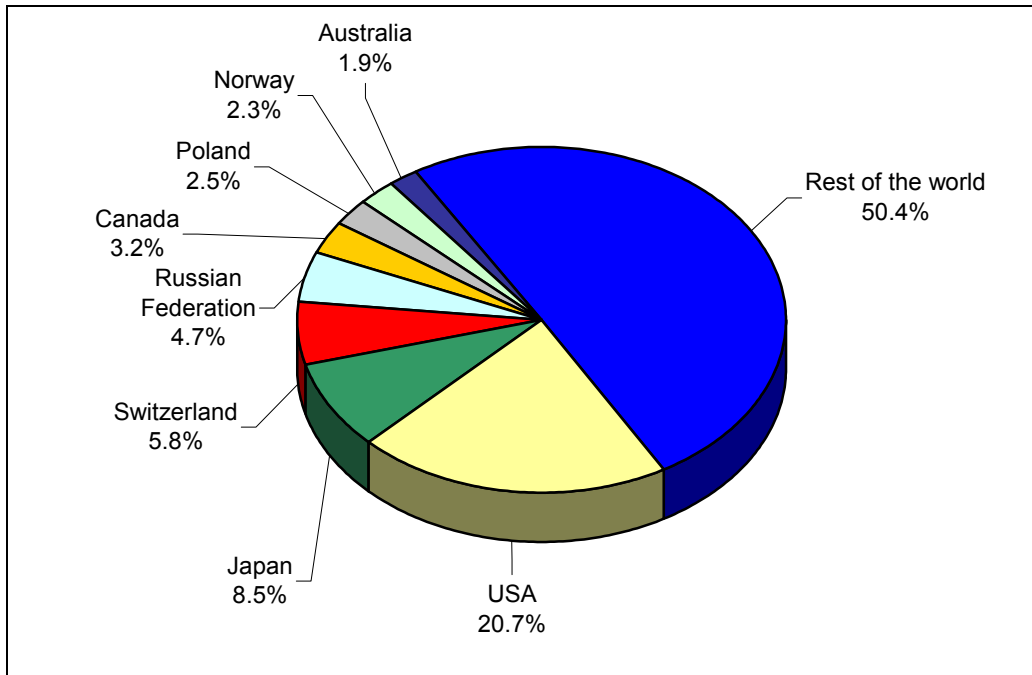
In terms of imports, the largest supplying country is Brazil, which contributes 11% of the total EU imports, followed by the United States (8.2% of all imports) and Argentina (7.3%) (cf. Figure 1-2).

*Table 1-13: Food and beverages: import - export (estimates 2000, billion Euro)*

	Exports	Imports	Balance
Primary agricultural products	11.8	23.4	- 11.6
Processed agricultural products:	41.4	39.1	2.3
<i>Of which, non Annex I products</i>	<i>14.5</i>	<i>3.5</i>	<i>11.0</i>
All primary and processed Agricultural products	53.2	62.5	-9.3

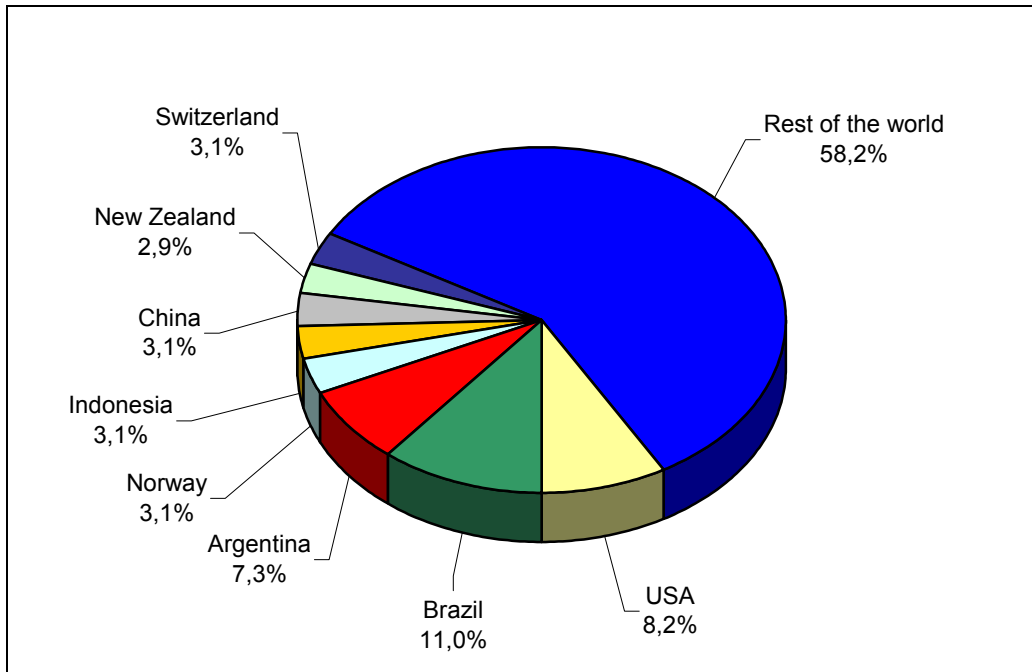
Source: Eurostat New Cronos

Figure 1-1: Food, beverages and tobacco: destination of EU exports, 2000 (%)



Source: Eurostat New Cronos

Figure 1-2: Food and beverages: origin of EU imports, 2000 (%)



Source: Eurostat New Cronos

## Competition at business level

The sector operating environment is characterised by:

- gradual deregulation of the markets;
- reduction in the support prices (food subsidies);
- regulations on improved food hygiene;
- deregulation of the distribution network;
- anti-trust limits on a European level;
- European standards on local products (systems for protecting the origin through geographic indication) and biological/ecological production techniques and produce;
- labelling regulations;
- European standards on genetically modified foods.

Multinational food manufacturers' purchasing power exerts major downward price pressure on inputs, counterbalanced by powerful national or multinational retailers' pressure for reduced prices on outputs. The escalating costs of brand development and increased distribution channels have pared margins for food and agriculture producers alike, though some sub-sectors, notably the beverages industry, still enjoy significant margins. The dominance of the distribution and retail network, focused on price control, will be the driving force behind change in the sector.

As the distribution and retail networks drive down costs, well-informed consumers are setting another trend, through their willingness to pay more (but not always enough) for organic, high quality, and life-style products. Changing consumer demand patterns drive agribusiness companies towards establishing well-known brand names that consumers trust, putting an emphasis on food quality safety and assurance as well as traceability. Recent European food scares have amplified the consumer preference towards healthy diet as it becomes publicly accepted that certain intensive production techniques are risky, especially for people afflicted with food allergies and intolerance, for instance to nuts or wheat.

Consumers have an increasing demand for more and better information about methods of farm production and other nutritional issues. Consequently, leading multinational brands are making an effort to enhance customer trust and to create brand loyalty by increasing information and positioning products as diet and healthy life-style options. This has led to standardised products becoming more customised and personalised. Food manufacturers have consequently changed their approach to the consumer. Focusing on consumer demands through interaction with the customers has led to tailored offers.

Against this background, the food and beverage sector will in the next few years see the following trends, predominantly shaped by the strategies of large companies:

- **Increased segmentation of markets**, new regional/global producers;
- **Developing mega-brands** (products available throughout Europe) that stand as clear market choices. The large multinationals will continue to invest in substantial brand development;
- **Widening of the range of products/offers**. Under the global brand, products will become increasingly diversified and targeted towards niche markets (low-fat, etc.);
- **Intensive use of Information and Communication Technologies**. E-business will compliment significant media investment in strengthening and supporting brands;

- **Reduction of "me too" products**, allowing companies to focus more on the core business. The expense of product and brand development in an increasingly competitive market is prohibitive. Products produced by several manufacturers competing on price inevitably leads to consolidation;
- **Joint venture development through agreements at the pan-European level**. Products are increasingly being produced under licence or in collaboration with regional producers. Competitive advantages sought include time to market and local focus;
- **Greater integration with raw material suppliers**. Integration is less about e-business & ICT and more about long-term relationships and trusted partnerships focused at reducing cost (for the manufacturer) and safeguarding demand (for the producer); and,
- **Increasing collaboration in distribution**. This activity focuses upstream on distribution and retail chains. Automatic stock replenishment and deliveries are increasingly becoming the responsibility of producers (for example WalMart (US & UK) & Tesco (UK)). In the near future, competition in the food industry will be conducted among Pan-European supply chains rather than individual companies.

The current and persistent market environment penalises SMEs and mandates few sophisticated suppliers with the ability to (a) maintain the life cycle of the product, (b) support it with modern distribution, and (c) source from international suppliers of raw ingredients, which puts increasing pressure on local producers.

SMEs are likely to respond to such threats by: (a) developing of their own brands; (b) positioning their products to niche markets; and (c) meeting market demand for organic produce on traditional farms. ICTs & e-business have provided a channel to support marketing and distribution niche products. Furthermore, e-business improves communication with consumers, advances business operations, and enhances business relations profoundly.

## 2 Usage of ICT and e-business

### 2.1 Sector value chain and specific role of ICT

Core sector business areas are: supply, production, logistics, services, and marketing & sales. Other critical areas now being targeted for improvement are: packaging processes, the control of quality in Hazard Analysis and Control Critical Points (HACCP), the quality of the product, and the reverse supply chain management of returned products.

In the production sector, verifying the quality of the raw material is becoming increasingly more important. Vertical integration and control between production processes and their suppliers have been the focal point of many agribusiness ICT initiatives.

However, whilst there is a demand for increased ICT integration, the current diffusion of applications is believed to be low outside of large multinationals and their larger suppliers. For the most part, suppliers have more traditional relationships and communication techniques, and the operational focus is on quantity, quality, and delivery schedules. An e-business solution that would guarantee food safety to end consumers and integrate (vertical) business operations across the supply chain would be likely to become the 'killer application' in the food industry.

Production in food and beverages tends to be characterised by small batch processes that are hard to consolidate and integrate. As in other sectors (for instance in machinery, but also in manufacturing in general), the capital intensive and incremental developments of food production have created "islands" of activity that have proved difficult and costly to integrate, and consequently will not be directly connected to supplier or to customers in the short term. Many food manufacturing processes require significant amount of personnel and labour to operate those "islands" of activity imposing a significant barrier to greater ICT diffusion (food manufacturing labour production values are 6.4% lower than manufacturing in general).

E-business solutions (ICTs & software) focus predominately on the business interface and on integrating activities such as accounting, administration, and stock control. Large software houses have developed flexible ERP systems for many food manufacturers. It is mostly the larger agribusinesses that deploy this software, though there are examples of bespoke applications created by small in-house IT teams, (often in medium-sized enterprises).

Recently there has been a growing trend for larger companies (in nearly all the sectors) to concentrate on improving logistics, by upgrading the management of warehouses and the capacity for storage, and trying to improve the flows of input and output in order to avoid stock breaches and to guarantee more punctual deliveries. Sophisticated electronic infrastructures have been installed to improve distribution.

Table 2-1: Food, beverages and tobacco: primary activities and support for generating value

INFRASTRUCTURE ACTIVITY				
HUMAN RESOURCE MANAGEMENT				
RECRUITING AND TRAINING				
TECHNOLOGICAL DEVELOPMENT				
Automation and optimisation of incoming flows		Just in time distribution Quality control in HACCP Food safety		Retail assistance and more consumer information
VARIOUS FUNCTIONS				
Raw Material Flow Management	Material Handling and Packaging	Shipping Order Management	Attendance at fairs and sector events	After-sales customer service
Management and pick up of raw materials	Selection of raw materials	Ad hoc palletising per customer	Advertising Promotion Sales force management	Return policies
Control of incoming raw materials	Production and packaging	Deliveries Vehicle routing and Scheduling	Price and discount policy	Collection of out-of-date merchandise
Quality control on outgoing merchandise	Finished product warehousing inventory Management	Shipment and consignment Tracking	Trade marketing activities Agreements with large scale retail & organised distribution Assortment and product policies	

INCOMING LOGISTICS

OPERATING ACTIVITIES

OUTGOING LOGISTICS

SALES AND MARKETING

SERVICES

Source: Databank Consulting, 2002

In the large multinationals, the role of ICTs is evolving from mere instrumentation for reducing production costs to become a growing support for strategic decisions and greater e-business interaction/models. However, the degree of diffusion of ICT within the EU food industry depends heavily upon the adoption behaviour of SMEs, which are the predominant institutional type (Tab. 1-4).

The strategic use of new ICTs is depicted by various Efficient Customer Response (ECR) initiatives that have gradually spread since the 1990s throughout North American and EU countries. The objectives of the ECR initiatives include reducing operating costs and optimising the principal processes of the food chain, i.e. efficient replenishment of products and efficient store assortment, and developing more efficient promotion and efficient new product introduction. These projects involve the larger distribution companies and a variety of manufacturing companies, most of which operate in the food service sector. For instance, the Efficient Foodservice Response (EFR) initiative aims at billions of Euro savings that may be achieved in food supply chain across five defined strategies: (a) equitable alliances, (b) supply chain demand forecasting, (c) electronic commerce, (d) logistics optimisation, and (e) foodservice category management. The starting point for every ECR project is typically the development of an efficient replenishment process, aiming to optimise the number and cost of replenishments at the individual retail store.

An *efficient replenishment process* is founded on a wide variety of techniques that automate and optimise the fundamental functions of the product chain: communication by the producer of sales conditions, product ordering, physical distribution and payment. Essentially, an automatic replenishment system generate orders using computer-assisted ordering techniques: For example, the system compares an optimal predetermined level of stock, the current stock, and the sales forecast in order to arrive at an automated replenishment order (continuous replenishment). These orders are transmitted via Electronic Data Interchange (EDI) from the sales point to the producer either directly or by means of distribution centres. The manufacturer prepares the products immediately and sends them to the individual sales points or distribution centres through programmes designed to minimise shipping costs and delivery times.

An important area in food retail marketing remains *efficient store assortment*, which is the optimal composition of the range of products offered by each retail store. This strategy aims to meet the needs of the consumers and at the same time optimise the productivity of the warehousing and sales space. Furthermore, as changes in customer demand are amplified upstream due to safety stock levels (a phenomenon known as *industrial dynamics*), efficient assortment improves the space utilisation in the distribution centres and provides manufacturers and producers with more accurate information (better signalling). It should be noted that assortment optimisation is not an issue exclusively for the distribution companies but concerns all the members of the food supply chain.

Efficient New Product Introduction aims to achieve greater selectivity so that new products are characterised by truly innovative elements, able to expand the demand or significantly improve value for consumers with respect to products already on the market. Unconditioned, uncontrolled introduction of new products breaks up the offer instead of expanding demand. Efficient product introduction achieves an offer more in tune with the consumers' needs and is obtained through testing new products before introducing them on a large-scale.

Promotions have always been one of the major causes of inefficiency in the distribution system. Larger chains in the retail trade can take advantage of several "special offers" simultaneously, classified in different categories. This surplus of promotional offers can lead to inefficiency in the logistical/administrative flow. For the producers, inefficiencies are linked

to added costs, such as the costs related to the design of offers, the need for changes and improvements, and downtime in the production line. Efficient promotion management (co-ordinated together with the producers) eliminates dysfunctions on both sides. To achieve these objectives, ECR initiatives aim to overcome traditional relationships between producers and distributors, characterised by conflict centred on prices, by developing joint marketing, integrated logistics and more strategic use of new ICT.

**Barilla: Reorganisation of the distribution system**

Barilla, a leading Italian company in the pasta and baked food business, has been using ECR (Efficient Customer Response) products for years. Through its subsidiary, Number One (to which the parent company sold the logistics-distribution business unit), it has reorganised its entire distribution system, using a system of electronic connections with the main Distribution Centre. More than 50% of the total business volume realised with retail trade chains is managed by continuous replenishment whilst the other 50% of receivables are collected through electronic data interchange (EDI). Upstream from the reengineering process, launched five years ago, factories have become specialised by product. For example, all the biscuit and Mulino Bianco brand products have been concentrated in a single area: the Castiglione dello Stiviere factory. The integrated logistics system (just in time) implies direct delivery from the factory to the Distribution Centre or retail store (only in the case of hypermarkets) through a system of automatic reordering that minimises the risk of stock breakage and at the same time, reduces the average level of inventoried product. The strength of this organisation consists in optimising shipments through careful planning and use of a satellite tracking system that provides constant surveillance of the vehicles and avoids unnecessary travelling, with significant cost savings.

## 2.2 Diffusion of ICT and e-business applications

The spread and use of ICT technologies mirrors the structure of the industry: dominance by large multinationals, where the creation of industrial groups (tied to mergers and subsidiaries) has encouraged the installation of interconnected local networks.

Internet connectivity polarises along the same axis: large enterprises with all their employees linked via intranets, and SMEs, which provide for 59.7% of employment in this sector, with lower levels of connectivity (around 20-30%). Poor diffusion of ICTs within smaller enterprises may be explained partially by their position vis-à-vis larger manufacturers, in most cases being several tiers *upstream* in the manufacturing process.

Sophisticated technologies and applications are less pervasive than in other manufacturing sectors, focusing mainly on intra-organisational processes and procedures. The main factors that push companies in the food sector to consider ICT solutions include:

- greater efficiency in internal processes (productive, administrative, delivery of orders, etc.)
- integration of internal processes with external organisations to improve logistics and reduce costs.

**EDI** was one of the early network applications and is still the primary communication tool between customers and suppliers. It was introduced to manage the connections between enterprises (with electronic mail), thus reducing the invoicing and operating costs of ordering. The EDI system connects the computers at the producer's facilities directly with the distribution chain, creating efficiencies by eliminating printed documents and decreasing time dedicated to the "order-delivery-invoicing" procedure. However, the spread of EDI systems has not been equally fast across EU Member States. The UK was a pioneer (using its Tradanet system), followed by Netherlands (with Trasnet), Germany (Sedas), Austria (Ecodex), Belgium (Icom) and France (Allegro). While a pan-European network does not exist, it is plausible considering the mounting internationalisation of procurement centres.

On a separate front, financial institutions are promoting inter-connectivity with banking systems, for checking accounts, conducting on-line bank transfers, and using guaranteed payment systems before shipping. Moreover, Corporate Banking services, often provided at very favourable conditions, are spreading in the food and beverage sector. These allow enterprises to reach all the financial institutions that they deal with through a unique connection. Until recently, Corporate Banking was used mainly for information purposes, but now it is more and more used for transactions as well.

While more advanced solutions have languished, simple electronic mail (**e-mail**) has emerged as a kind of (ICT) "killer application", particularly for SMEs, as a simple, cheap and rapid means of communication. E-mail differs from EDI in its unstructured format, (documents exchanged via EDI have a predefined structured form), which can be an advantage and disadvantage. A clear advantage of e-mail is that it is so easy that virtually everybody can use it; SMEs do not need to employ specially trained personnel to send and receive e-mails, which is not the case for some of the more sophisticated applications.

Video-conferencing remains limited to larger companies; Groupware has yet to stimulate any interest. Enterprises in the sector are more oriented towards work-flow systems rather than enhanced "discussion database" applications, suggesting the likely evolution towards using the Internet as an information exchange tool, albeit in a limited way.

Nearly all enterprises have some kind of web presence. The uptake, as in other fields, has been facilitated by progressive cost reduction and ease of creation of simple non-interactive websites. Many sites are therefore characterised as "stage one", providing one-way information to their customers with minimal interactivity. For SMEs this can often be a low cost marketing and communication tool, mostly for the presentation of company activities and of available products. Companies that can leverage financial resources to design more interactive websites are beginning to take advantage of being able to interact with their own customers.

Companies are under continuous pressure to optimise internal processes and to integrate them with those of customers and suppliers. Integration is stimulated through the optimisation of partner relationships, especially with partners from the retail and distribution network.

As in other sectors, operational needs, such as Y2K compatibility, have stimulated integrated management information systems. Many companies that have chosen this route credit it with advantages over custom solutions developed internally in the company or non-integrated software packages.

The use of computers to handle data and information internal to an organisation creates a need for computers to mediate inter-organisational communication. However, very few companies in the sector have implemented **Enterprise Resource Planning** (ERP) to integrate their information systems with their customers. Only rarely is information managed

via internal ERP systems exchanged with trading partners; generally, information is still received in printed form and then manually inserted into the system.

The relatively low penetration of integrated management applications is not surprising, given the application cost to company size ratio, and the lack of specific solutions for small and medium sized enterprises.

However, integrated management systems adoption will emerge as a trend in the coming years as the major ERP suppliers create solutions for small and medium sized businesses, opening up new perspectives for those companies with the available capital to invest. Up to now, this sector has not shown a particular interest in ERP, opting rather for traditional business models more adapted to their size and characteristics.

#### ***ERP implementation at Nestlé***

Nestlé is an international company that operates in 70 countries, selling products that range from beverages to sweets and food and pharmaceutical products and employs more than 200,000 workers. The corporate challenge faced by Nestlé is integration of its systems and activities, simultaneously obtaining high quality and consistent and efficient management.

Support for optimisation of the company processes through the entire logistical chain and closer connection among corporate international sites were objectives at Nestlé before selecting a suite of integrated software applications. The risk of inefficient integration was a concern for company management, which felt pressure to increase market shares, reduce costs and improve services. Furthermore, Nestlé was interested in software that would enhance the flow of information and standardise reporting in order to improve international comparison and performance benchmarking. To this end, the company selected an ERP system by SAP® to control order entries, purchases, invoicing and inventories. The primary advantages of the implementation of ERP system were: improve of customer service, integration of logistics on an international level, greater capacity to meet deadlines, reduced lead times, better inventory management, and improved production planning.

SAP, J.D. Edwards and Cisco are the leading integrated systems software suppliers to the sector. Their multi-supplier, open standards applications increase integration in production and scheduling, delivering benefits to producers and retailers especially for more perishable goods with a shorter shelf life. Some small- and medium-sized companies are gaining access to the full power of an ERP system but without requiring heavy investments in hardware and software, through Application Service Providers. The functionalities of ERP systems are integrated by means of specific sector utilities, for example management of returns, handling recyclable packaging, HACCP quality control, handling with double independent measure units or recipe management.

The development of bilateral integration with manufacturers and retailers is a side benefit associated with greater accessibility of information on demands and consumption trends. Leading companies in this sector are developing applications for Sales Force Automation (with the objective of upgrading the management of the sales force), Supply Chain Management, (with the aim of improving physical distribution and reducing logistics costs),

and Business Intelligence (in particular, the management of the information supplied to the sales force), and systems to support CRM philosophies, with the objective of improving customer service and building up loyalty.

Supply Chain Management (SCM) is in an embryonic phase, but presents significant opportunities. After reengineering internal processes to increase efficiency, large companies (especially in the food and beverage sector) have attempted to increase their competitive advantage by achieving inter-organisational goals, such as decreasing time-to-market and distribution costs. In the process, companies are reshaping relationships with their suppliers, producers, distributors, retail stores and customers. SCM projects move toward integration of these processes, throughout the complete supply chain from receiving the order to procurement and from production to delivery.

#### **SCM at Nabisco**

Nabisco, a leading food production company, disappointed Wall Street because of its lack of innovation and the 2% loss on sales in 1997. The main problem was considered to lie in its non-integrated, highly fragmented supply chain. Distribution at Nabisco Cookies, the baked goods product line, was handled by one system whereas the Food Division (Life Savers and Gray Poupon) revolved around another. Another problem was the lengthy delivery times and the frequent breakage in the stock. The retail sales points responded to these problems with decreased loyalty. To overcome these issues, Nabisco created inventory points in the supply chain, connected with both the sales points, and the company factories and offices. Nabisco was therefore able to significantly shorten delivery times and rotation of products at the stores, substantially improving customer loyalty and consumer satisfaction.

#### **SCM at Starbucks**

Starbucks (with headquarters in Seattle, USA) is a leader in the coffee business. Its retail points burgeoned from 11 local stores in 1987 to over 3,000 shops internationally today, with an exponential growth in sales, and production that exceeds 50,000 tons per year. Starbucks is pursuing a strategy of becoming the most famous brand of coffee in the world. Growth is part of its strategy, but technology is also a key component to aiding growth.

The company's supply chain system is integrated vertically, controlling all aspects of the business from the raw materials (green coffee beans), to roasting, packaging and distribution through company-owned stores. With this structure, the company must correctly plan sales and purchases, scrupulously supervise levels of inventory, allocate capacity, and maintain minimum levels of stock. To manage resource allocation, the company facilitates sales and inventory information flow between all the international offices and headquarters in Seattle. Some of the benefits of the SCM at Starbucks include excellent allocation of critical resources, improvement of the quality of service, enhanced operating speed and global control of the flow of materials in the production processes.

Only a small proportion of sector companies use **Sales Force Automation (SFA)** software, despite a period of rapid growth off a small base, which has stabilised recently. Developmental difficulties are essentially associated with difficulties in calculating the ROI and reluctance by sales personnel to implement this business solution. Applications usually include personalised date books (appointment calendars and address and telephone books) and focus on improving the administrative productivity of the sales agents through automation of specific functions (such as handling contracts and sales expectations).

An emerging customer-centred approach and the spread of concepts such as "segment by one" and "mass customisation" have encouraged the implementation of **Customer Relationship Management** by some of the larger companies. Primarily, CRM is a strategy and an operating method whose goal lies in improving and expanding the connection with the customer, with the aim of generating new business opportunities.

CRM system implementations mostly involve customer contact points with the company in: sales, marketing, trade assistance services, order management, distribution and delivery. Typically, the first areas tackled in implementing CRM are automation of the sales force and call centre management. CRM systems offer new specialised applications, but also use or reuse investments already made in structures such as Help desks and Websites, redirecting them to meet CRM needs (for instance at Coca Cola). Thus the service component is still more important than the software application component.

Table 2-2 shows ICT and e-business application distribution, whilst Table 2-3 demonstrates data trends.

*Table 2-2: Food, beverages and tobacco: degree of ICT and e-business applications utilisations*

Type of technology	Leading companies	SMEs
EDI	Industry wide	limited to hub and spoke situations
ERP	Increasing in uptake and sophistication	individually tailored systems (medium sized enterprises)
E-mail	Standard	Standard
Video-conferencing	Limited	Absent
Groupware	Limited	Absent
Websites (stage 1)	Standard	Standard
Websites (increased functionality)	Varied functionality	Absent
Corporate banking	Standard	Increasingly widespread usage
SCM	limited, demonstrating strong growth potential	Absent
SFA	Limited	Absent
CRM	significant integration by multinationals	Absent

Source: Databank Consulting

*Table 2-3: Food, beverages and tobacco: short and medium term trends in the spread of IC technology and e-business applications*

<b>Type of technology</b>	<b>Leading companies</b>	<b>SMEs</b>
EDI	Stability	Stability
ERP	Strong growth	Growth
E-mail	Slight growth	Slight growth
Video-conferencing	Slight growth	
Groupware	Growth	Launch
Websites	Stability	Slight growth
Corporate banking	Stability	Slight growth
SCM	Strong growth	Launch
SFA	Stability	
CRM	Growth	

Source: Databank Consulting

### **Web-Based E-business**

The web is fostering E-business in the sector, where formerly the need for expensive Value Added Networks slowed the adoption of EDI. The trend in the larger companies is towards innovation, despite the fact that most systems focus primarily on internal processes and procedures. Initially, companies have used the web for showcase web pages and portals, but a few food marketplaces have been established. Their business proposition is to attempt to gain market share by reducing costs, mostly by standardising procurement, and developing online auctions, purchasing groups, and virtual consortia. The following table shows the main marketplace initiatives on a European level.



Table 2-4: Main on-line initiatives in Europe

Name	URL	Country	Target	Description	Services offered										Other services		
					marketplace	auctions	search engine	list of companies	logistics	transportation	marketing	financial services	analysis and studies	legal services		insurance	
<b>Food-Link.com</b>	<a href="http://www.food-link.com">http://www.food-link.com</a>	Italy	Businesses operating in the food and agricultural sector and related commercial partners	The first B2B e-marketplace for Italian agricultural food products. The website includes a directory of producers and their products. Food-Link provides buyers with the possibility to make direct purchases from producers.	x	x	x	x	x	x	x	x	x	x			On-line community promotions mailing list
<b>CPGmarket.com</b>	<a href="http://www.cpgmarket.com">http://www.cpgmarket.com</a>	Europe	Businesses producing mass consumption goods and related commercial partners	The principal European marketplace for mass consumption products (Consumer Packaged Goods, CPG)., created by Nestlè, Danone, Henkel and SAPmarkets to provide integrated Supply Chain solutions that support the entire sales cycle.	x									x			Consulting
<b>eFoodManager</b>	<a href="http://transaction.efoodmanager.com">http://transaction.efoodmanager.com</a>	Germany	Businesses operating in the food and agricultural sector and related commercial partners	The main supplier of e-commerce solutions for the European food industry. It develops and handles private marketplaces, e-shops, on-line auctions; and e-procurement solutions. The eFoodManager marketplace is grouped by product category: fruit and vegetables, fish, meat and poultry.	x	x		x	x		x					x	Consulting

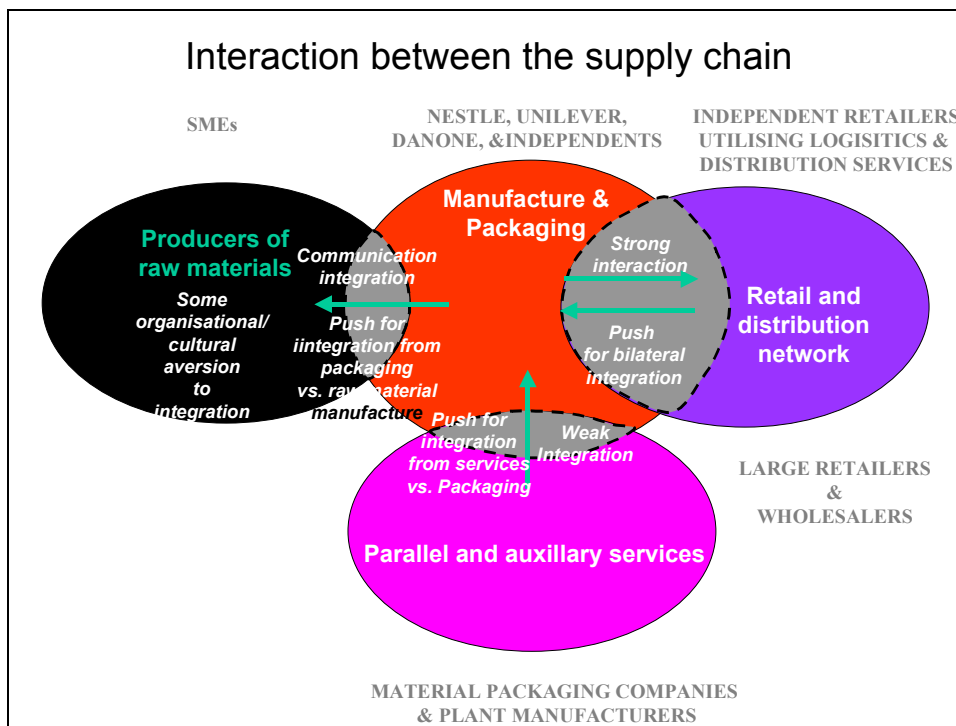
Name	URL	Country	Target	Description	Services offered									Other services	
					marketplace	auctions	search engine	list of companies	logistics	transportation	marketing	financial services	analysis and studies		legal services
<b>FruitLine Trading</b>	<a href="http://www2.fruitline.com">http://www2.fruitline.com</a>	Sweden	Importers, exporters and retailers of fresh products.	Marketplace where potential buyers/sellers of fresh products can negotiate directly and in real time. This platform enables users to negotiate not only with commercial partners acquired in the past but also with new partners.	x								x		
<b>Food Bourse</b>	<a href="http://www.foodbourse.fr/">http://www.foodbourse.fr/</a>	France	Importers, exporters and producers of food products. businesses that market food products	A business-to-business marketplace in which food and agricultural products can be bought and sold. In addition to buying and selling, potential buyers or suppliers can access yearbooks of importers, exporters, producers, supermarkets and retailers from different countries. Potential buyers and suppliers can receive information about the trade fairs throughout the world, access a list of banks, insurance companies and legal companies and set up a website.	x		x	x			x		x		
<b>DairyStreet.com</b>	<a href="http://www.dairystreet.com">http://www.dairystreet.com</a>	U.S.A. / Netherlands	Businesses operating in the dairy and cheese sector and related commercial partners	Offers private access platform for marketing dairy and cheese products. Furthermore, it manages an electronic marketplace that connects producers in the dairy and cheese industry with potential buyers.	x								x		Consulting; hosting

Name	URL	Country	Target	Description	Services offered								Other services		
					marketplace	auctions	search engine	list of companies	logistics	transportation	marketing	financial services		analysis and studies	legal services
<b>Foodxs.com</b>	<a href="http://www.food-link.com">http://www.food-link.com</a>	N.A.	Businesses operating in the food and agricultural sector and related commercial partners	An Internet portal that enables free access to a database of the larger companies operating in the international food industry. The home page lists the main categories of food products; each product type is grouped into sub-categories which can be viewed on the website. For each category, the website features a list of producers, related companies, associations, research institutes, etc.	x		x	x					x		Information on the trade fairs
<b>GrowNex.com</b>	<a href="http://www.food-link.com">http://www.food-link.com</a>	Germany	Agricultural producers and buyers in the food sector	Marketplace that brings together agricultural producers and potential buyers in the food industry.	x				x						
<b>ProWine.com</b>	<a href="http://www.pro-wine.com">http://www.pro-wine.com</a>	France	Producer, distributors and tradesmen in the wine industry, restaurateurs.	Marketplace where wine producers, tradesmen, and importers and restaurateurs can negotiate and make deals.	x		x	x							Newsletters; links to category associations, equipment suppliers and sundry organisations
<b>WorldofFood.com</b>	<a href="http://www.worldoffood.com">http://www.worldoffood.com</a>	Netherlands	Small and medium sized businesses operating in the food sector	Provides food industry businesses a platform for conducting electronic commerce activities without the need to have their own technological infrastructure. The electronic market of World of Food is designed especially for SMEs.	x		x	x							

Name	URL	Country	Target	Description	Services offered										Other services	
					marketplace	auctions	search engine	list of companies	logistics	transportation	marketing	financial services	analysis and studies	legal services		insurance
<b>vfm.net</b>	<a href="http://www.vfm.net/">http://www.vfm.net/</a>	UK	Businesses producing fresh products	Delivers services to companies operating in the fresh products sector for purchasing and supply chain management.	x			x					x			Links to industrial organisations
<b>eSkyeSolutions.com</b>	<a href="http://www.eskyesolutions.com">http://www.eskyesolutions.com</a>	U.S.A/UK/Spain	Businesses producing wines, spirits and beer	Provides businesses operating in the beverage sector (wines, spirits and beer) an efficient order management system.							x		x			Management of customer services, amongst which on-line management of customer profiles.
<b>Interfood sinergy</b>	<a href="http://www.pero.it">http://www.pero.it</a>	Italy	Italian agricultural and food businesses and their customers (current and/or prospective) foreign or domestic.	Offers export services to Italian businesses, providing access to a vast active and consolidated customer base.	x							x				Technical sales and marketing consulting
<b>Bravofood</b>	<a href="http://www.bravofood.it">http://www.bravofood.it</a>	Italy	Food businesses and their potential suppliers	Business to business initiative by Newco.com (Italcementi Group) that holds on-line auctions for the food sector, taking advantage of the experience gained in the building sector through Bravobuild.it		x	x	x								

Integration of tiers of suppliers to manufacturers and to the retail and distribution network could drive down costs, improve logistics and ultimately improve customer satisfaction. The actual extent of collaboration and integration by means of B2B e-commerce is dependent on many factors. Whilst it is necessary to achieve a greater collaboration and integration between producers and suppliers of raw materials, it is evident that the diffusion of network technologies can only build on an average penetration rate of EDI solutions. The integration of upstream suppliers is inhibited by the dominance of traditional transaction and communication channels, where the "social factor" (personal contact with business partners, "handshake agreements", long-term partnerships) plays a very important role. Even so, there are efforts to achieve better integration by implementing Supply Chain Management (SCM) applications. The "push" for integration between production, packaging and modern distribution is bilateral, in the sense that the initiatives for e-business are promoted from both parties, and are now supported by greater interaction from the so-called "parallel" sectors, e.g. packaging manufacturers and food production process companies.

Figure 1-3: Supply chain interactions in the food and beverage industry



Source: Databank Consulting, 2002

## 2.3 The Business-to-Consumer (B2C) e-commerce

Business to Consumer (B2C) in the food and beverage industry has grown steadily in recent years. Despite the overall crisis that hit the "new economy", the food and beverage sector has grown in 2001. Two types of sites drove growth:

- sites that have introduced new e-commerce offers as an extension of existing, more information based and less interactive facilities,
- sites created specifically to exploit B2C e-commerce business.

The strong performance of many food and beverage sites underscores the importance of offering products online that might not otherwise be accessible to consumers, for instance local products (e.g. specialities, wine, olive oil). Culinary and gastronomic culture has fostered excellent B2C interaction, building virtual communities for food and wine articles.

### [www.thebestraffaello.com](http://www.thebestraffaello.com)

[www.thebestraffaello.com](http://www.thebestraffaello.com) demonstrates the capacity of the Net to connect a food producer with its culinary audience. This Italian-based site promotes more than just pasta, and has taken regional Italian cuisine and embellished it. The Best Raffaello was founded as a hand-made pasta company in the heart of Italy, the Marche region, with a high quality line of pasta called Di Sanzio. While the business originated as a pasta manufacturer, the company transformed quickly into something much greater: offering the best and most characteristic food products found in Italy. The transition from a strictly regional market base to a national one was swift. The brand Raffaello Sanzio represents enthusiasm, love of beauty and an obsessive interest in detail, a corporate image that has proved popular.

The Best Raffaello strives to present and promote the most exclusive Italian-made products to a European audience. The site also includes features dedicated to ancient recipes, gastronomic itineraries, classic holiday farms, and much more. Its ultimate objective is to extend its market to other continents, including the US, Japan and South Africa.

Beverage website initiatives are well documented, with brand specific sites, and portals that act as showcases. Among these, notable are [www.enotrya.com](http://www.enotrya.com) (an Italian wine site), [www.scotch-whisky.com](http://www.scotch-whisky.com) (a site that has gained the status of a virtual club for Scotch whisky connoisseurs), [www.vinsdebourgogne.com](http://www.vinsdebourgogne.com) (a virtual community for Burgundy wine, with news on wines, wineries, wine makers, and more) or [www.chianticlassico.com](http://www.chianticlassico.com) (the e-commerce site of the historic Chianti Classico consortia).

Other important sites in the beverage sector include [www.winespectator.com](http://www.winespectator.com) (an American site that catalogues 87,000 wines from all over the world, with related information), [www.winebid.com](http://www.winebid.com) (a portal that includes great wine auctions launched across the globe), [www.absolut.com](http://www.absolut.com) (a site dedicated to the market leading Swedish Absolut vodka).

Research on B2C e-commerce (including studies by the US Department of Commerce and the European Community) suggests that the main factors affecting consumer acceptance are: the variety of the range offered, the wealth of accompanying information, the

convenience of use (including the ordering process), and the quality of the product and/or the service. In the food and beverage sector the driving force would seem to be the convenience and ease of ordering, in addition to making local specialties available in other regions as well. The utility of this consumer demand suggests convenience/commodity purchases, and not higher value added products, evinced by the poor emphasis on impulse purchases and a lack of promotional marketing.

Furthermore, sites tend to pay little attention to quality, service issues or product information, especially as regards bulk fresh products. Payment terms and conditions usually offer credit card payment or bank transfer.

***Webvan.com represents one of the most important cases of company failure.***

Webvan was founded in December 1996 under the name Intelligent System for Retail, to sell food and housewares on-line throughout the US. Through an IPO, the company obtained \$405 m in financing and investments, one of the best performances ever of a new economy company. This money was invested by Webvan in creating super-automatic computerised warehouses, setting up a fleet of trucks for home delivery, and Internet applications and marketing. The company intended to reach on-line distribution in 26 cities in the shortest possible time, starting in its founder city San Francisco. At the start of 2000, Webvan opened operating bases in other states. The quality of its services was excellent. Gomez advisors lauded it as the best company in its sector: web orders were precise and the merchandise was delivered on time in more 98% of the cases. In autumn 2000, Webvan acquired Homegrocer, its main on-line competitor.

Growth seemed unstoppable, but at the end of 2000, it registered losses of \$453 m; in the first quarter of 2001, it lost another \$217m and by July 2001 it had declared bankruptcy. Two thousand workers were laid off and shares in Webvan sank down to 2 cents a piece from its peak of \$34 at the end of 1999. Failure was attributed to four factors:

- poor market acceptance; only 2% of Internet users purchased food on line in 2001 in the US.
- excessive geographic expansion and the necessary investments that this expansion entailed.
- A lack of alliances within the traditional market.
- financial markets allowed the company to fail, as they had lost confidence in its future.

Food and beverage sites compare unfavourably with other sites in terms of fulfilment. In particular, indications of the delivery schedule and methods are relatively rare.

Despite good sector performance on-line, many sites closed between 1999 and 2001 or decided to eliminate e-commerce from their offer. Most of the failures involved companies that were only present as virtual shops. Companies with a bricks and mortar outlet to support their web activities were generally more successful, thriving on their existing infrastructure and brands. Pure Internet plays failed to convince enough consumers to purchase products on-line from virtual brands with no visible "bricks and mortar" foundations.

## **Barriers to B2C e-commerce**

From a consumer's perspective, the barriers to e-commerce in the sector are:

- lack of confidence in on-line security
- a preference for making purchases in physical shops
- privacy issues and – for some consumer groups (e.g. older customers) poor web access.

For companies, the main difficulties (especially acute in small enterprises) include:

- infrastructure not sufficiently adapted to the changes necessary to a commercial venture on the Internet;
- poor confidence in the potential of the network and prohibitive costs;
- technical integration problems between the website and the company information system;
- company culture reluctant to embrace change;
- lack of e-business readiness, i.e. of necessary resources (funds & trained personnel) and of unclear e-business strategy;
- unclear e-business vision: many companies perceive that e-business would change their business operations;
- unclear and poorly quantified financial gains.

## 2.4 Scoreboard of basic e-commerce indicators

This Sector Report is one of the first series of seven sector reports published by the *e-Business W@tch*, six months after its launch in 2002. Since desk research and interviews for this report and editorial work was going on in parallel with the preparation and field work for a European enterprise survey on electronic business launched by the *e-Business W@tch*, it was not possible to use the survey results for this edition of the Sector Report. Instead, the report presents in this chapter

- (1) an overview of the e-business statistics that can be expected for the forthcoming edition of this Sector Report (expected for January 2003), and
- (2) an initial benchmarking of industry macro-sectors based on other sources, namely on data collected by (i) the Eurostat enterprise survey on e-commerce in 2001 and (ii) by a survey carried out by the "SIBIS" EU project ([www.sibis-eu.org](http://www.sibis-eu.org)) in 2002. It must be noted at this point, however, that due to differences between these surveys in terms of survey methodology and sample there is only limited comparability of data, particularly on a sector level (cf. information below), to the statistics which the *e-Business W@tch* survey will deliver in the forthcoming issues of sector reports.

### 2.4.1 Forthcoming: Results of the European e-Business Survey

The European e-Business Survey is a cornerstone to the monitoring activities of the *e-Business W@tch*, as it is the key instrument to collect e-business indicators on a sector level which are not otherwise available yet, and certainly not in a comparable manner across sectors. The field work of this enterprise survey has been carried out in June and July 2002 (parallel to the desk research and editing of this Sector Report). Data are currently being processed and analysed. Results will be reported in the forthcoming edition of this sector report and in the European E-Business Report (both expected for early 2003). A first overview with a benchmarking of the 15 sectors covered by the *e-Business W@tch* based on a number of key indicators may be available earlier in the form of an electronic e-Business Pocket Book on the website of this observatory ([www.ebusiness-watch.org](http://www.ebusiness-watch.org)).

The European e-Business Survey has been carried out by computer-aided telephone interview (CATI) technology. CATI was preferred to alternative survey methods, in particular postal surveys which are sometimes used for company surveys of this kind, mainly to guarantee sample size. The decision maker interviewed was normally the person responsible for ICT within the company, typically the IT manager. Alternatively, especially in small enterprises which do not have a separate IT unit, the managing director or owner was interviewed. In total, about 10,000 interviews with decision makers in European enterprises were conducted. The questionnaire used for the survey interviews will provide data for the following ICT and e-business indicators:

Table 2-5: Indicators of the European e-Business Survey

Area	Main indicators
Computer and internet usage by enterprises	<ul style="list-style-type: none"> <li>• Percentage of companies using computers</li> <li>• Percentage of companies having access to the internet / not yet online but planning to have internet access (12 months)</li> <li>• "Refusers": Percentage of companies not (and not planning to be) online</li> <li>• Type of internet access</li> </ul>
Usage of network applications	<ul style="list-style-type: none"> <li>• E-mail / WWW / Intranet / Extranet / LAN / WAN / EDI</li> <li>• Plans of non-users to use network applications (same as above)</li> </ul>
Size of IT and web department	<ul style="list-style-type: none"> <li>• Average number of employees occupied with maintenance of IT and networks</li> <li>• Average number of employees occupied with maintenance of company website</li> </ul>
IT skills gap	<ul style="list-style-type: none"> <li>• Percentage of companies having recruited staff with special IT skills</li> <li>• Percentage of companies having experienced some / great difficulties in recruiting IT specialists</li> </ul>
Employees' access to ICT	<ul style="list-style-type: none"> <li>• Employees' access to e-mail for internal / external communication</li> <li>• Employees' access to the WWW / to the intranet</li> </ul>
Website	<ul style="list-style-type: none"> <li>• Percentage of companies having a website / planning to have a website</li> </ul>
E-commerce: selling online	<ul style="list-style-type: none"> <li>• Percentage of companies selling online / planning to sell online</li> <li>• Starting point of selling online (&gt; 2 years / for 1-2 years / &lt; 1 year)</li> <li>• E-commerce through company website / electronic market places / extranet</li> <li>• EDI / mobile e-commerce</li> <li>• Online share of total sales</li> <li>• Method of processing online orders (orders are fully integrated with the back-end system / online orders generate an automatic e-mail)</li> </ul>
E-commerce: procuring online	<ul style="list-style-type: none"> <li>• Percentage of companies procuring online / planning to procure online</li> <li>• Starting point of procuring online (&gt; 2 years / for 1-2 years / for &lt; 1 year)</li> <li>• Online share of total procurement</li> </ul>
Barriers to e-commerce	<ul style="list-style-type: none"> <li>• Barriers to selling online</li> <li>• Barriers to procuring online</li> </ul>
E-business: external business processes	<ul style="list-style-type: none"> <li>• Online collaboration with business partners for designing products / to forecast product demands</li> <li>• Online management of capacity / inventory</li> <li>• Electronic exchange of documents with suppliers / customers</li> <li>• Online negotiation of contracts</li> <li>• Participation in B2B e-marketplaces / Type of activity undertaken on e-marketplaces</li> </ul>
E-business: special solutions	<ul style="list-style-type: none"> <li>• Implementation and usage of special solutions in the company / plans to implement: SCM / CRM / Knowledge management / ASP / ERP</li> </ul>
E-business: internal business processes	<ul style="list-style-type: none"> <li>• Sharing documents/ to perform collaborative work</li> <li>• Tracking working hours and production time</li> <li>• Supporting the human resources management</li> <li>• e-learning</li> </ul>
Impact of e-business	<ul style="list-style-type: none"> <li>• Impact of selling online: Volume of sales / Number of customers / Sales area / Quality of customer service / Efficiency of internal business processes / Costs of logistics and inventory</li> <li>• Impact of procuring online: Procurement costs/Relations to suppliers/ Internal business/ processes/Costs of logistics &amp; inventory/No of suppliers</li> <li>• Perception of general importance of e-business today</li> <li>• Impact on organisational structure and work processes</li> <li>• Impact on offer of products and services</li> <li>• Expected beneficiaries of e-business (SMEs vs. large enterprises)</li> <li>• Satisfaction with e-business</li> <li>• Trend in expenditure on e-business technologies</li> </ul>

## 2.4.2 The Eurostat survey on e-commerce

Since data from the *e-Business W@tch* observatory's own survey are not yet available, this edition of the report presents instead some key indicators and a preliminary benchmarking of sectors based on data provided by the Eurostat survey "E-Commerce in Europe".<sup>1</sup>

The survey was conducted in the context of an effort by DG Enterprise to develop and carry out regular data collections in the area of e-commerce. DG Enterprise therefore supports Eurostat and the National Statistical Institutes to carry out such surveys. As a first step, a pilot survey on e-commerce was undertaken by 13 of the EU Member States and Norway in late 2000 / early 2001. It was carried out as a questionnaire survey. More than 100,000 enterprises were contacted and the response rate was close to 50%. In the follow-up survey ("Community e-commerce survey 2002") all 15 Member States will participate and, in addition, several Candidate countries (Czech Republic, Estonia, Latvia, Poland) intend to carry out pilot surveys in 2002 based on the Eurostat questionnaire.

While the strengths of this survey are the large sample size and the broad coverage of countries (particularly in the forthcoming 2002 survey), there are some serious limitations with regard to the comparability of the data delivered by the (first) pilot survey across industry sectors, which is the main dimension of analysis and comparison for the *e-Business W@tch*.<sup>2</sup> The scoreboards presented below should be regarded as an initial presentation of figures only, which will be complemented and, for the sake of a coherent methodology, substituted by the more recent data from the recent *e-Business W@tch* sector survey. The following table shows the main differences between the two surveys by Eurostat and by the *e-Business W@tch*:



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<sup>1</sup> Eurostat: E-Commerce in Europe. July 2002. Download:

<http://europa.eu.int/comm/enterprise/ict/studies/lr-e-comm-in-eur-2001.pdf>. A summary of main findings is available in an edition of Statistics in Focus: "E-commerce in Europe" (11 April 2002). This summary as well as a number of other resources can be downloaded from

<http://europa.eu.int/comm/enterprise/ict/statistics/e-commerce.htm>.

<sup>2</sup> For many variables covered by the Eurostat e-Commerce Survey there are considerable differences between 'global' figures broken down by size (category 'All') and 'NACE averages'. The most likely explanation is that this occurs because of gaps in countries' reporting on sectors, as Eurostat confirms: "The data with the breakdown by NACE have often been compiled with a more restricted country coverage than the global (and size class) figures because of weaker data availability. Hence, a direct comparison between the data by activity and the global figures can not be made. For this reason, most of the tables and figures providing data by activity include a second global figure called the 'NACE average'. (...)" A closer look at the coverage of NACE sub-sections shows that in general figures Germany, Finland and Sweden are missing in the NACE related statistics altogether. For some sub-sections other countries are not included either, and for some variables yet another different set of countries is considered. In some tables footnotes state that the UK is not included (for example, Table 2.3.9: Internet e-sales processes). For many of the sectors monitored by the *e-Business W@tch*, however, Germany and the UK account for a substantial part of the production value (often over 40%) in Europe. Hence information that excludes these two countries has only limited value for a sector analysis, for instance in the chemicals or the transport equipment sector where Germany is the largest industry in the EU. This problem becomes evident when figures for the category 'all' are compared with 'NACE averages' which tend to be far below the 'global' averages. This is not surprising when considering that Germany belongs to the countries with the highest e-commerce activity in Europe.

	 European E-Business Survey	 Survey E-Commerce in Europe
Method	CATI (telephone interview)	Questionnaire mailings
Focus	e-business sectors	e-commerce countries
Sample	~ 10,000	~ 50,000 (returned questionnaires)
Time (field work)	June/July 2002	1 <sup>st</sup> half 2001
Field work organisation	Inra (based on contract with the e-Business Watch)	National Statistical Institutes in participating countries

The following table presents the findings for six basic ICT and e-commerce indicators broken down by business activity (cf. note under table). A vast majority of companies in all NACE sections use computers. In e-business surveys, this indicator is consequently mainly used as a filter for follow-up questions about e-commerce and e-business in order to get a second optional computation base for more significant indicators.

*Table 2-6: Basic e-commerce indicators for industries*

% of enterprises using / having implemented	Computers	intranet	EDI	Web access	e-purchasing	e-sales
Manufacturing	89	27	12	68	13	8
<b>Food, beverages and tobacco</b>	<b>88</b>	<b>25</b>	<b>17</b>	<b>66</b>	<b>7</b>	<b>9</b>
<i>Textiles</i>	73	16	7	49	6	4
<i>Leather</i>	78	11	3	51	4	3
<i>Wood</i>	90	16	7	61	6	5
<i>Pulp, paper, publishing and printing</i>	95	34	14	77	23	13
<i>Coke, refined petroleum, nuclear fuel</i>	94	54	37	87	27	24
<i>Chemicals and man made fibres</i>	97	43	15	86	16	10
<i>Rubber and plastics</i>	96	31	12	75	19	12
<i>Other non-metallic mineral products</i>	91	25	8	72	7	4
<i>Basic metals, fabricated metal products</i>	91	26	12	66	11	6
<i>Machinery and equipment n.e.c.</i>	95	37	13	82	17	8
<i>Electrical and optical equipment</i>	94	40	14	80	28	12
<i>Transport equipment</i>	94	37	20	74	17	12
<i>Manufacturing n.e.c.</i>	89	24	11	64	11	7
Distribution	94	34	18	71	20	11
Hotels and restaurants	72	12	6	47	11	15
Transport, storage and communication	87	31	18	67	17	12
Business services	93	35	16	73	29	9
<b>Nace average</b>	<b>89</b>	<b>29</b>	<b>14</b>	<b>68</b>	<b>18</b>	<b>10</b>

Source: Eurostat / own presentation

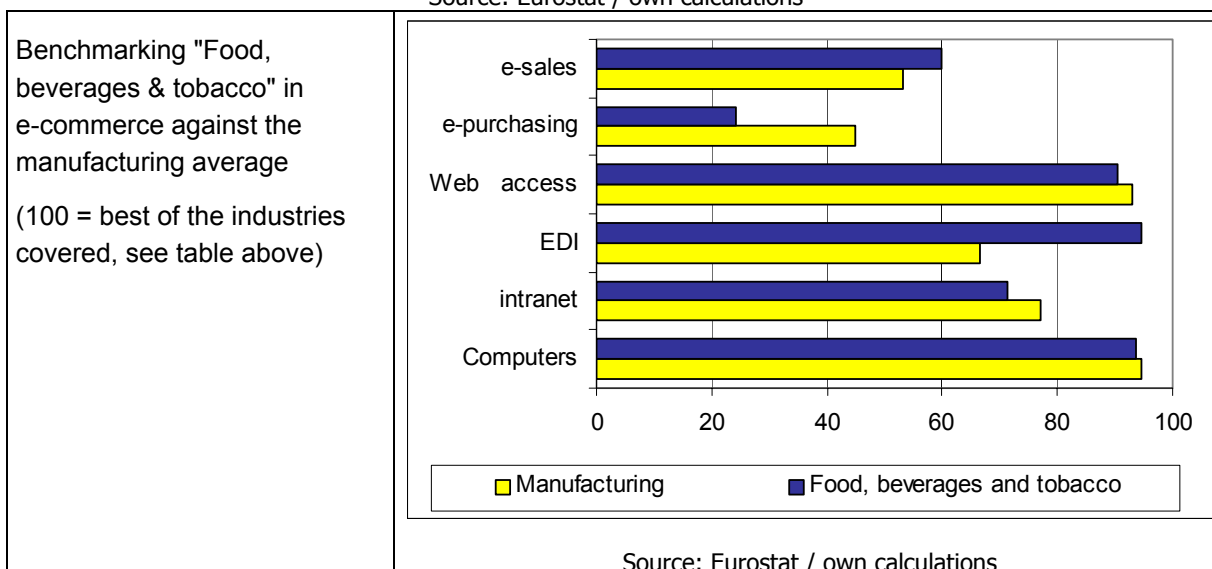
Note: The Eurostat survey presents "NACE average" figures based on the NACE Rev. 1 Sections D (Manufacturing), G (Distribution, i.e. mainly wholesale and retail trade), H (Hotels and restaurants), I (Transport, storage and communication) and K (Real estate, renting and business activities). Since J (Financial intermediation) was not included in a number of national surveys by the NSIs, the "NACE average" does not include this section.

In the table below, the NACE sections and the sub-section "Food, beverages and tobacco" are benchmarked according to the same six indicators presented above. For each indicator, the highest penetration has been indexed as 100.

Table 2-7: Sector benchmarking for "Food, beverages &amp; tobacco" (best = 100)

Benchmark = 100	Computers	intranet	EDI	Web access	e-purchasing	e-sales
<b>Food, beverages and tobacco</b>	<b>94</b>	<b>71</b>	<b>94</b>	<b>90</b>	<b>24</b>	<b>60</b>
Manufacturing	95	77	67	93	45	53
Distribution	100	97	100	97	69	73
Hotels and restaurants	77	34	33	64	38	100
Transport, storage and communication	93	89	100	92	59	80
Business services	99	100	89	100	100	60
<b>Nace average</b>	<b>95</b>	<b>83</b>	<b>78</b>	<b>93</b>	<b>62</b>	<b>67</b>

Source: Eurostat / own calculations



The spread and use of ICT technologies tends to reflect the structure of the industry, and this is particularly true for the food & beverages sector. The dominance by large multinationals, where the creation of industrial groups (tied to mergers and subsidiaries) has encouraged the installation of interconnected local networks, is a decisive factor for the application of ICT and e-business technologies.

25% of the enterprises in the food & beverages industry use an **intranet**. This figure varies considerably across industry sections. The structure of the industry is one of the relevant variables, since large enterprises are much more likely to make use of the intranet than small enterprises. In addition, the value of an intranet is inherently higher for enterprises with a large number of office workers and/or teleworkers and mobile workers who need to access company information from abroad. This helps to explain, for instance, the low percentage of intranet usage in the "hotels and restaurants" sector.

**EDI** was one of the early network applications in the food & beverages industry and is still the primary communication tool between customers and suppliers. Usage of EDI was with 17% of the enterprises in this sector above the manufacturing average (12%) and the overall NACE average (14%) at the end of 2000. In the 1990s, electronic data interchange was one of the first e-commerce instruments to be used by enterprises. Nowadays EDI can be integrated into internet technologies which lowers the cost of usage.

Except for the very small enterprises, most companies in the food & beverages sector have **web access** (66% of all companies, compared to 68% of all manufacturing companies), and many enterprises have some kind of **web presence**. The uptake, as in other fields, has been facilitated by progressive cost reduction and ease of creation of simple non-interactive websites. However, many sites in the sector can still be characterised as "stage one", being

limited to one-way information to their customers with minimal interactivity. Again, the type of activity partly explains the lower demand for web access by enterprises from this section. "Web access" must not be confused with the frequently used indicator "having a website", which is basic requirement for conducting e-commerce on the internet. The Eurostat survey reports that 29% of enterprises had their own website (NACE average) at the end of 2000 and 11% planned to have one in 2001. Business services was the most advanced section in that respect with 40% of enterprises having a website, while the other sections showed very consistent figures between 24 and 29%.

**Online selling and purchasing**, obviously highly correlated activities, are key indicators for the maturity of electronic business and cornerstones in all surveys on this topic. The Eurostat survey – taking into account all the methodological implications discussed above – suggests that almost twice as many enterprises practise e-purchasing (18% NACE average) as e-selling (10%). This is in line with the general observation that B2B electronic commerce has developed faster than B2C e-commerce. In general, companies are more likely to buy electronically from their suppliers than to sell online. However, the food & beverages sector is special in this respect. While the sector is slightly above average in the adoption of e-sales, it is a laggard in terms of online procurement. Only 7% of companies purchase online (compared to 18% across all sectors). This may be an indicator that in this sector, more than in others, companies were inclined (at least initially) to use the web mainly for showcasing products and portals. Only a few food marketplaces have been established on the web which allow standardising procurement and developing online auctions, purchasing groups, and virtual consortia.

Comparing the industry sections reveals further interesting results. While enterprises in business services are most likely to procure online, hotels and restaurants – the "laggards" in many of the other indicators – are most advanced in selling online (15% of enterprises). Tourism was clearly one of the forerunners in establishing online reservation systems, and this is probably one of the factors reflected by this figure. It is also interesting to see that the distribution sector (NACE G) which could be expected to be a leader in online selling is only slightly above average (11%), but in fact makes more use of online purchasing (18%). Hotels and restaurants are the only sector where online selling outperforms online purchasing, which again reflects the nature of the business.

### 2.4.3 The e-readiness of industry sectors

The "e-readiness" of an industry sector (or, alternatively, of a country or size class) can be described by the percentage of enterprises that have implemented a certain level of ICT infrastructure and actually apply this infrastructure for e-business purposes. empirica has developed an e-commerce typology by using an ordinal scale of six levels ranging from "off-liners" (level 1 – companies without a website that do not have access to the Internet or e-mail) to "all-rounders" (level 6 – the most advanced companies that sell online and practise value chain integration).

The model distinguishes between "front office" applications and "back office functions" as regards achieving full e-commerce potential. Companies that concentrate on the development of e-commerce for front office applications use the internet, often in combination with other ICTs, for marketing and conducting online sales to customers. Companies that concentrate on back-office functions exploit the Internet as a way to

integrate business processes (also involving suppliers and distribution partners) along the value chain.

In the food and beverages sector, production tends to be characterised by small batch processes that are hard to consolidate and integrate. The capital intensive and incremental developments of food production have created "islands" of activity that have proved difficult and costly to integrate, and consequently will not be directly connected to supplier or to customers in the short term. Many food manufacturing processes require significant amount of personnel and labour to operate those "islands" of activity imposing a significant barrier to greater ICT diffusion and integration. Furthermore, the application ICT and e-business in the EU food industry depends heavily upon the adoption behaviour of SMEs which are the predominant institutional type.

Table 2-8: e-Commerce Typology: six stages of sophistication

Level	Type	Description
(1)	<b>Offline</b>	Companies / establishments without access to the Internet, e-mail and without a Website
(2)	<b>Basic Online</b>	Companies / establishments without a presence on the Internet (e.g. Website), but with access to the Internet or e-mail.
(3)	<b>Web Marketing</b>	Companies / establishments with a presence on the Internet (e.g. Website), but none of the following
(4)	<b>Web Sales</b>	Companies / establishments that sell goods or services via the Internet (through own Website and/or via e-marketplaces), but none of the following
(5)	<b>Value Chain Integration</b>	Companies / establishments that use EDI or Extranets for communication with forward or backward linkages in the value chain, but none of the following
(6)	<b>Allround E-Commerce</b>	Companies / establishments that sell online as well as practise value chain integration

```

graph LR
    subgraph BACK_OFFICE [BACK OFFICE]
        Offline([Offline]) --> BasicOnline([Basic Online])
    end
    subgraph FRONT_OFFICE [FRONT OFFICE]
        WebMarketing([Web Marketing]) --> WebSales([Web Sales])
        ValueChainIntegration([Value Chain Integration]) --> WebSales
    end
    BasicOnline --> WebMarketing
    BasicOnline --> ValueChainIntegration
    WebSales --> AllroundECommerce([All round E-Commerce])
    
```

Source: empirica

The model works for individual companies as well as for aggregates of companies, e.g. on sector or country level. For instance, the higher the percentage of companies from an industry sector is in the more advanced levels, particularly in levels 5 and 6, the higher is the "e-readiness" of this sector. This e-commerce typology has proved to be useful to monitor progress over time<sup>3</sup>, although the definition of the levels may have to be adjusted in the future once e-business has reached a certain maturity, requiring monitoring activities to focus on other (and probably more qualitative) aspects than simply on whether a company has an internet presence or sells online. For the time being, however, the model can still be

<sup>3</sup> cf. EC-KMU: Status Quo and Development Prospects of Electronic Commerce in Germany, Europe and the USA 1999 and 2001. Study by empirica for the German Ministry of Economy and Technology.

considered as a useful tool to benchmark the maturity of electronic business in various industry sectors or countries.

A recent decision maker survey in establishments of seven EU Member States (Germany, France, the UK, Italy, Spain, Finland and Greece) carried out by the SIBIS project ([www.sibis-eu.org](http://www.sibis-eu.org))<sup>4</sup> finds that 13.6% of establishments are e-commerce all-rounders, and another 33.2% have reached the level of value chain integration. Only 6.5% are still off-line. The results are comparable for the macro-sectors covered by the SIBIS survey, especially those for the lower levels. On the highest level, the public and social services lag behind with only 5.7% of establishments being characterised as all-rounders. Financial and business services, on the other hand, are most advanced with more than 50% of establishments having reached levels (5) or (6).<sup>5</sup>

*Table 2-9: E-Commerce Typology: the e-readiness of industry macro-sectors (% of establishments)*

Type	Manu-facturing	Distribution	Financial & business services	Public & Social services	Total EU
Allround E-Commerce	11,6	20,3	17,9	5,7	13,6
Value Chain Integration	33,2	26,3	35,7	39,5	33,2
Web Sales	5,8	11,9	9,9	5,0	8,0
Web Marketing	18,6	15,1	15,9	26,4	19,1
Basic Online	23,1	16,5	17,0	20,6	19,6
Offline	7,8	9,9	3,6	2,8	6,5
	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>

Base: all establishments (N=3139), weighted by employment; EU7 additionally weighted by employment per country. Each establishment is assigned exclusively to one e-commerce type. Macro-sectors as defined by SIBIS:

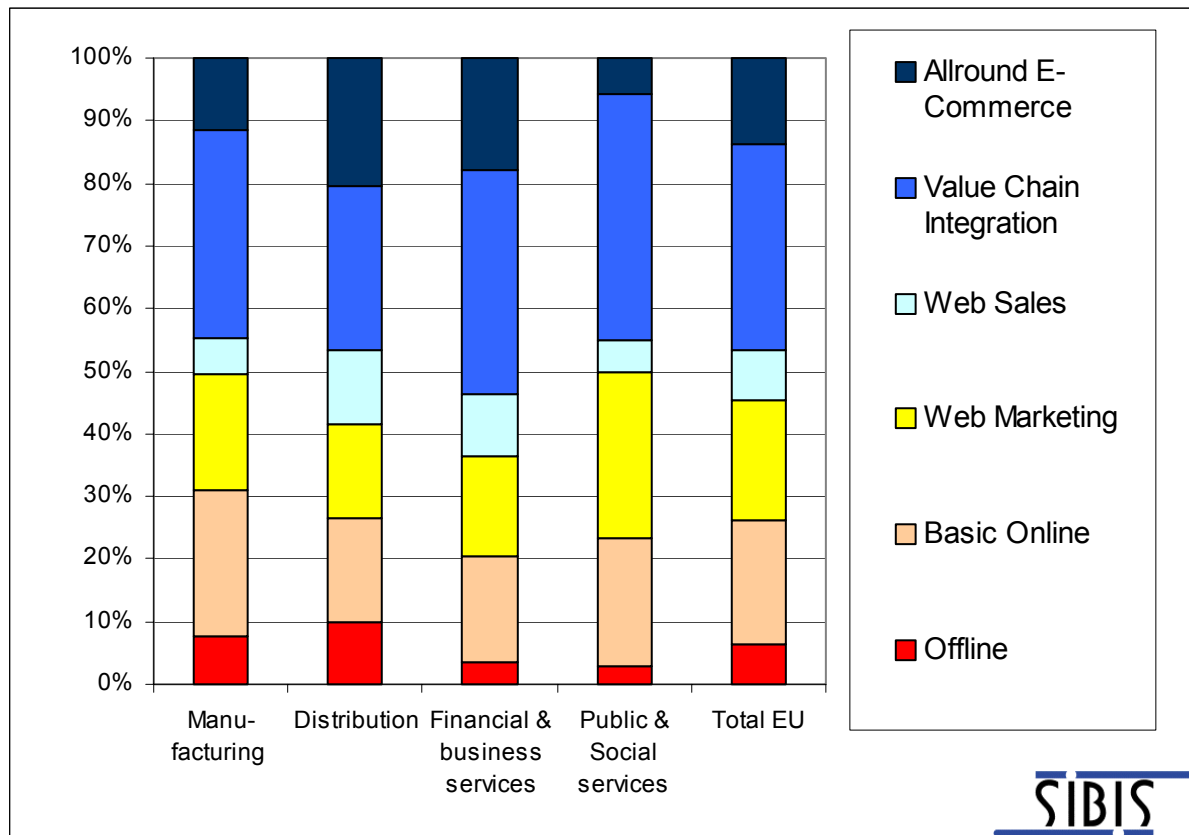
- (i) Manufacturing, energy, mining, construction
- (ii) Distribution, catering, communication & transport
- (iii) Financial and business services
- (iv) Public administration, health, education, other social/personal services

Source: SIBIS (DMS – preliminary data)

<sup>4</sup> SIBIS (Statistical Indicators Benchmarking the Information Society) is a project in the "Information Society Programme" of the European Commission (IST-2000-26276) running from January 2001 to June 2003. SIBIS has taken up the challenge of developing innovative information society indicators to take account of the rapidly changing nature of modern societies and to enable the benchmarking of progress in EU Member States. The SIBIS Decision Maker Survey (DMS) covers the five topics e-commerce, telecommunication & access, security, e-government, and Internet for R&D. It is targeted at establishments and carried out in Germany, France, the UK, Italy, Spain, Finland and Greece. The sample taken is a disproportionately stratified sample reflecting labour force distribution across establishment size bands. Sample sizes range from 300 to 500 per country resulting in an overall sample of 3,100. The survey was conducted via CATI (Computer Aided Telephone Interview).

<sup>5</sup> Important note: These data are only preliminary (the fieldwork was carried out in April and May 2002) and still need to be consolidated by the SIBIS project. They are not yet officially reported. Data have been technically checked e.g. for consistency and for correct filtering.

Figure 2-1: E-Commerce Typology: the e-readiness of industry macro-sectors (% of establishments)



Source: Source: SIBIS (DMS – preliminary data) / own presentation

### Participation in e-marketplaces

An indicator which is not considered in this model, but which may become an important indicator for measuring e-readiness in the future, is the participation of enterprises in e-marketplaces. These are specialised sites on the internet that allow buyers and suppliers to trade goods and services. Electronic marketplaces can be operated by individual buyers or suppliers, by consortia or by third parties. Access can be public or restricted to selected business partners. The SIBIS survey has investigated whether establishments trade on such electronic marketplaces. As expected, the percentage of establishments doing so is still small, but reaches 9.8% if figures are employment weighted.<sup>6</sup> Initial results suggest that the main activities on marketplaces are catalogue based offering of goods and services (5.2%) and catalogue based selling (4.2%), compared to a lower level of participation in auctioning (1.6% for bidding, 2% for selling), launching calls for tender (1.8%) and answering calls (2.3%).<sup>7</sup>

<sup>6</sup> That means that 9.8% of employees work in establishments that participate in e-marketplaces. 1.9% of the establishments surveyed said "don't know", the rest said "no" or were not asked (filter) because they lacked infrastructure requirements.

<sup>7</sup> Important note: Data reported are only preliminary (the fieldwork was carried out in April and May 2002) and still need to be consolidated by the SIBIS project. They are not yet officially reported. Data have been technically checked e.g. for consistency and for correct filtering.

The Eurostat survey on e-commerce also presents figures about marketplace participation. These are somewhat lower than in the SIBIS survey, but considering that (i) the field work of the Eurostat survey took place in early 2001 (compared to April 2002 for SIBIS) and that (ii) presentation of Eurostat data is not employee-weighted, figures stemming from the two surveys are quite consistent. Eurostat finds that already in late 2000 about 10% of the large enterprises participated in e-marketplaces compared to around 5% of SMEs. Business services seem to be the most active users (6% of enterprises). Furthermore, the Eurostat survey finds that SMEs seem to use marketplaces for procurement purposes more than for selling, while large enterprises were more frequently selling (10%) than buying (7%). A description of some food & beverages marketplaces is given in table 2-4 (Main on-line initiatives in Europe).

*Table 2-10: Use of specialised B2B marketplaces on the internet (% of enterprises using them)*

	<b>Purchases through B2B internet marketplaces *</b>	<b>Sales through B2B internet marketplaces *</b>
Manufacturing	2%	1%
Distribution	4%	1%
Hotels & restaurants	2%	3%
Transport & communication	5%	2%
Business services	6%	1%
NACE average	3%	1%

\* Note: Activity breakdown excludes D and S – therefore percentages are lower than the figures given for "All" where D and S are included.

Source: Eurostat

The European e-Business Survey of the *e-Business W@tch* will provide fresh data about the usage of marketplaces by enterprises from the 15 industry sectors covered. Considering the high level of attention that the B2B marketplaces receive from policy and industry alike, it will be interesting to see whether trading on marketplaces has actually gained momentum.

## 3 Summary and conclusions – possible policy implications

### 3.1 Summary of main findings

The food, beverages and tobacco sector comprises 15% of the total manufacturing production of the European Union. This intensely competitive sector is characterised, on the one hand by a relatively small group of large companies that tend to operate globally and, on the other, by a large number of small and medium sized business that operate locally, with the balance varying between countries. In the United Kingdom and the Netherlands multinationals predominate, while in France and Southern Europe SMEs still play a major role. This is likely to continue to grow in the coming years, pursuant to acquisitions and mergers.

Larger companies strategy will be informed by:

- (a) expansion of the product range with more emphasis on quality and food safety, in order to meet customer demand,
- (b) optimisation of the price/quality ratio,
- (c) increased usage of advertising and communication tools,
- (d) reduction of "me too" products and, instead, concentration on company core business,
- (e) development of joint ventures and pan-European agreements, and
- (f) vertical integration with raw materials suppliers and fostering collaboration with distribution operators.

Small and medium sized businesses will focus on:

- (a) private label production,
- (b) market niche positioning on a European level and,
- (c) development of product control policies (e.g. local products, biological goods).

The spread of ICTs reflects the structure of the food industry. Large multinational companies (usually leaders in their sectors) are the most technologically advanced companies, while smaller companies lag in adopting ICT, especially upstream of the various product lines.

ICTs are still seen primarily as an instrument to reduce costs. However, a more integrated view is emerging, with leading companies looking for ways to apply technology strategically to improve business management activities. The gradual acceptance of several ECR (Efficient Customer Response) initiatives, involving co-operation between modern distribution and industry, has been particularly significant.

E-business in the food, beverages and tobacco industry mainly involves in-house processes and procedures. The most common applications used by large-, small- and medium-sized companies alike are e-mail and websites. These are followed by corporate banking, EDI and ERP systems (most of which are rarely found in SMEs yet). The most advanced technologies, including CRM, SFA and SCM systems are used mainly by the largest companies.

Despite the internal focus on processes and procedures, Internet initiatives have grown over the years, dominated by marketplace, and to a lesser degree, e-procurement portals.

Contrary to the perception of a crisis plagued new economy, B2C e-commerce in the sector has grown in the recent months, driven by bricks and mortar companies exploiting their existing infrastructure and recognised brands. Another phenomenon has been the emergence and success of sites dealing in local speciality food products.

The main hurdles are cultural (especially among small and medium sized companies); company structures unable to deal with change; and managers' lack of confidence in the potential of new technologies. Consumer, obstacles and constraints are reservations about the security of electronic transactions and, especially, a strong reluctance to modify traditional and well established buying habits.

### 3.2 Outlook

In the recent months, the European B2B food and beverage market has followed the trends of the entire ICT sector, which is currently undergoing a phase of reflection and consolidation. The trends in the coming months should witness companies making more selective and targeted investments. In particular, analysts expect to see strong growth in ERP led by the demands of larger companies (thanks to increasingly personalised software for the specific needs of food companies) and by the tendency of ERP suppliers to extend their reach to small and medium sized companies.

Electronic mail usage still shows slight growth, despite the very good coverage at all company levels. EDI systems and corporate banking are essentially stable, and are now at a mature stage in their life cycle.

Among the more advanced systems, analysts expect healthy growth in SCM applications as solutions are developed that are more suitable for small and medium sized companies. However, more modest growth is likely in CRM and Groupware systems and video-conferencing, whilst SFA should remain stable.

*Table 3-1: Food, beverages and tobacco: short and medium term trends of spread of ICT and e-business applications*

Type of technology	Leading companies	SME
EDI	Stability	Stability
ERP	Strong growth	Growth
E-mail	Slight growth	Slight growth
Video-conferencing	Slight growth	
Groupware	Growth	Launch
Websites	Stability	Slight growth
Corporate banking	Stability	Slight growth
SCM	Strong growth	Launch
SFA	Stability	
CRM	Growth	

Source: Databank Consulting, 2002

The intensity of B2C e-commerce has increased at the same rate as the number of Internet users. Table 3-2 shows the number of "web users" and web buyers in Europe, in 1999 and the forecasts for both for 2002. In 2002, experts expect that there will be about 135 million web users (i.e. more than double the figure of 1999). The trend is even more positive for the "web buyers" which, according to Eito estimates, are expected to increase from 9.4 million in 1999 to 34.4 million in 2002 (Table 3-2).

Performance in the food and beverage sector could be even higher as far as web users are concerned. They are attracted by more engaging sites that highlight typical products, comprising the real driving force of the sector.

*Table 3-2: Web users and web buyers in Europe*

	Web users (millions)		Web buyers (millions)	
	1999	2002	1999	2002
Germany	16.0	32.9	2.7	8.6
France	7.0	23.0	0.8	5.6
UK	13.1	23.0	1.9	5.9
Italy	5.3	13.3	0.8	3.3
Spain	3.6	8.4	0.5	2.0
Scandinavia	6.6	10.8	1.1	3.4
Netherlands	5.1	11.0	0.8	2.8
Other Western countries				
Europe	6.9	13.4	0.8	2.8
<b>Total Western Europe</b>	<b>63.5</b>	<b>135.7</b>	<b>9.4</b>	<b>34.4</b>

Source: Eito 2002

### 3.3 Policy implications

The findings of the empirical study in the framework of the *e-Business W@tch* are yet to be analysed, and further desk research will reveal new insights in the second report. Still, the following set of (possible) implications arising from the impact of electronic business on the food and beverages sector are likely to be important for the future development and should be considered as policy relevant already at this point.

**The food & beverage industry has been a *follower* of e-commerce and e-business development rather than an early adopter. Encouraging the further up-take of e-business by this sector, and especially among SMEs, will therefore be a key issue for policy actions.**

In the food & beverage industry, the adoption of e-business has been slower than in leading sectors such as other manufacturing sectors and electronics in particular. E-mail and EDI have been introduced later, and more sophisticated technologies and applications are still poorly diffused, except at large multinationals and their larger suppliers. EDI is therefore still the dominant B2B System. ERP, CRM, SCM and ASP are still in a pilot stage.

The overall degree of diffusion of ICT within the EU food industry depends heavily on the adoption behaviour of SMEs, which are the predominant institutional type. It is necessary to foster SMEs' access to e-business solutions. SMEs have clearly increased their efforts, but important issues still need to be addressed in order to exploit the potential of e-business. These include the affordability of the solutions proposed, the development of standards, security issues and the optimisation of financial measures supporting these goals.

**The integration of business processes along the supply chain and logistics will become a key to success in the food & beverages sector and therefore the most important area for e-business applications.**

There is a continuous pressure in the food & beverage sector to optimise internal processes and to integrate them with those of customers and suppliers. Products are increasingly being made under licence or in collaboration with regional producers. Long-term relationships and trusted partnerships with raw material suppliers are becoming even more important in order to safeguard the quality of products. Collaboration with distribution networks is increasing.

The sector, however, is still characterised by the existence of "islands of activity" which have proved to be difficult and costly to integrate. Many food manufacturing processes are still labour intensive and this imposes a significant barrier to a greater ICT diffusion. There have been massive investments in logistics, but these are largely limited to the bigger companies. Thus, there is a strong case for developing affordable integrated management solutions for small and medium-sized enterprises.

This pressure for integration also raises policy challenges, especially in the area of harmonisation of product legislation and regarding the monitoring of transports and logistics impacts on economy and environment.

## **Awareness raising continues to be important – recognising the future impact of ICTs**

Until now, only leading companies have progressed their usage of ICTs from a mere tool for reducing production costs to a support tool for strategic decisions and e-business interaction models. The dominant culture, especially among SMEs, is still conservative. They lack confidence in the potential and benefits of new technologies for their business, and instead underline the common concerns about security and the cultural reluctance to any change of established procedures.

Companies of all size, however, should be fully aware and recognise the future impact which e-business applications will have on their business, e.g. for achieving competitive advantages and enhancing profitability. Successful initiatives, which have developed forms of collaborative product design, joint marketing and integrated logistics among the various players in the value chain, should be promoted and become common knowledge in the sector.

To this end, especially among SMEs, there is a need for promoting information about ICT potential through the dissemination of best practices, enhancing trust and confidence, developing awareness raising actions and for ensuring that appropriate skills are available. Industry associations will play an important role in taking up these actions and getting their members involved.

## **Quality assurance, including food safety, is a key issue that most companies in the food industry are facing today.**

Verifying the quality of raw materials and finished products is becoming increasingly important. ICT are important in this respect as they play a key role in facilitating vertical integration and control between production processes and their suppliers. An e-business solution that would guarantee food safety to consumers and vertically integrate business operations across the supply chain would have a good chance of becoming the “killer application” for e-business in the food industry. In this context, transparency of information and actions aimed at building customers’ trust and loyalty will be key issues of the near future.

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