QUALITATIVE AND QUANTITATIVE ANALYSIS OF NOKIA

Authors (Universitat de Barcelona):

Mª Goretti Gràcia Abillà

Adrián Díaz-Salazar

Elena Gigante López

EDITOR: Jordi Marti Pidelaserra

(Dpt. Comptabilitat, Universitat Barcelona)

INDEX

INTRODUCTION

We have chosen to do the paper about Nokia Corporation because is a company that has become less important in the field of telephony, due to the fact that Nokia belongs to a sector with a strong competition and constantly changing. With the commercial and financial analysis (the second one further on) we want to know the actual situation of Nokia.

Through this project we want analyze the structure of Nokia's group, its segments, main markets, filial and subsidiaries, as well as its stakeholders and shareholders.

First of all we want to know the background of the company, aims and the business structure. Secondly, and the main part of the paper, is analyze the sales function by means of the annual report of the last four years, taking into account that the most recent information available is for 2011, with a particular focus on the commercial items such as changes in operating and reportable segments, the results of each segment, the subsidiaries and so on. Once analyze the structure of Nokia Group, we are going to explain more accurately each business segment, standing out its net sales, markets, clients and suppliers.

All of these sections are strongly linked and for this reason we will be continuously interrelating concepts in order to reach a final conclusion which allows us to understand the actual situation of the company and comprise which products are top sellers.

We have done a Gantt chart to organize the tasks and check if we are fulfilling the objectives set before starting work.

Nokia was founded as Nokia Company in 1865 in a small town of the same name in central Finland. Nokia has evolved from its origins in the paper industry to become a world leader in mobile communications.

About Nokia's mission is simple: Connecting People. The goal of the firm is to build great mobile products that enable billions of people worldwide to enjoy more of what life has to offer. The company has the challenge to achieve this in an increasingly dynamic and competitive environment.

NOKIA GROUP

SUBSIDIARIES

Nokia Group is a holding and is formed by a parent company that is Nokia OYJ and then a lot of subsidiaries which consolidate the accounts that are the following ones.

Company	Country of Incorporation	Nokia Ownership Interest	Nokia Voting Interest
Nokia Inc.	United States	100%	100%
Nokia GmbH	Germany	100%	100%
Nokia UK Limited	England & Wales	100%	100%
Nokia TMC Limited	South Korea	100%	100%
Nokia Telecommunications Ltd.	China	83.9%	83.9%
Nokia Finance International B.V.	The Netherlands	100%	100%
Nokia Komárom Kft	Hungary	100%	100%
Nokia India Pvt. Ltd.	India	100%	100%
Nokia Italia S.p.A	Italy	100%	100%
Nokia Spain S.A.U.	Spain	100%	100%
Nokia Romania S.R.L.	Romania	100%	100%
Nokia do Brasil Tecnologia Ltda	Brazil	100%	100%
OOO Nokia	Russia	100%	100%
NAVTEQ Corporation	United States	100%	100%
Nokia Siemens Networks B.V.	The Netherlands	50%[1]	50%[1]
Nokia Siemens Networks Oy	Finland	50%	50%
Nokia Siemens Networks GmbH & Co KG	Germany	50%	50%
Nokia Siemens Networks Pvt. Ltd.	India	50%	50%

(1) Nokia Siemens Networks B.V., the ultimate parent of the Nokia Siemens Networks group, is owned approximately 50% by each of Nokia and Siemens and consolidated by Nokia. Nokia effectively controls Nokia Siemens Networks as it has the ability to appoint key officers and the majority of the members of its Board of Directors and, accordingly, Nokia consolidates Nokia Siemens Networks.

Table 1: Information from the annual reports of Nokia. Table copied from annual reports.

In the particular case of Nokia, the firm consider that has control over an entity when the Group owns, directly or indirectly through subsidiaries, over 50% of the voting rights of the entity, the Group has the power to govern the operating and financial policies of the entity through agreement or the Group has the power to appoint or remove the majority of the members of the board of the entity.

The Group's share of profits and losses of associates is included in the consolidated income statement in accordance with the equity method of accounting. An associate is an entity over which the Group exercises significant influence. Significant influence is generally presumed to exist when the Group owns, directly or indirectly through subsidiaries, over 20% of the voting rights of the company.

All inter-company transactions are eliminated as part of the consolidation process. Profit or loss and each component of other comprehensive income are attributed to the owners of the parent and to the non-controlling interests. In the consolidated statement of financial position, non-controlling interests are presented within equity, separately from the equity of the owners of the parent.

The entities or businesses acquired during the financial periods presented have been consolidated from the date on which control of the net assets and operations was transferred to

the Group. Similarly, the result of a Group entity or business divested during an accounting period is included in the Group accounts only to the date of disposal.

In the consolidated accounts, all income and expenses of foreign subsidiaries are translated into Euro at the average foreign exchange rates for the accounting period.

During the four year that we are analysing, the subsidiaries of the company are not change. It's important talk about NAVTEQ which was acquired in 2008.

There is a list of all the subsidiaries of Nokia[1], we have noticed that although Nokia has the 100% of some firms, there are not global integrated and follows the equity method which usually is useful from companies with a control by the entity between 50% and 25%. This is an especial case which we must take into account in the financial part of the paper.

The parent company of Nokia adopted its current operational structure during 2011. From 2008 to 2011 the business areas were Devices & Services, NAVTEQ® and Nokia Siemens Networks. And it is because in 2008 Nokia acquired NAVTEQ® but the integral merge didn't produce up 2011. When the merge were did it Nokia create a new business area called Location and Commerce and inside this area put NAVTEQ®.

As of April, 2011 Nokia's Devices & Services business includes two operating and reportable segments that are Smart Devices, which focuses on smartphones, Mobile Phones, which focuses on mass market feature phones and Devices and Services other which includes net sales of Nokia's luxury. You can find more information about each area; you must go to the area of the paper in where we have developed in more detail.

BRANDS

As we have seen, in 2011 the Finnish group Nokia has basically 3 business areas, each of which is dedicated to the sale of certain products or the offer of certain services: *Devices & Services*, main business activity of the group Nokia, which sells basically Nokia mobile devices, *Location and Commerce*, which develops a range of location-based products and services for consumers, as well as platform services and local commerce services for device manufacturers, application developers, Internet services providers, merchants, and advertisers; and *Nokia Siemens Networks*, which provides telecommunications infrastructure hardware, software and services.
Within the area of mobile devices, Nokia has two brands: the famous Nokia mobile phones that we all know and the luxury mobile phone Vertu, famous for being the world's most expensive phone.
The Location and Commerce business, formed during 2011 by combining the acquired NAVTEQ with the existing Devices & Services social location services operations offers their products and services through some brands, as HERE Maps, HERE Drive+ Beta, HERE Transit and HERE City Lens.

Finally, Nokia Siemens Networks is a multinational data networking and telecommunications equipment company headquartered in Espoo, Finland and a joint venture between Nokia of Finland and Siemens of Germany. The brand is the name of the company, Nokia Siemens Networks.

[1] See Annex 1: Participate Companies

SUPPLIERS

The Suppliers of Nokia OYJ are divided in the three basic areas of Nokia, so in each area of the paper are developed in more detail.

The supplier's companies are not included in the report, and it is normal because they want to maintain the confidence of each supplier. All the suppliers of Nokia need to accomplish the Supplier Base Management Process, that consists to make regular audits to identify risks, assess compliance and share best practice. We have to take into account that, Nokia is very aware with energy and climate change, so it requires that the suppliers are aware with this themes because if Nokia need to be carefully the suppliers must be carefully. However, in large terms and the most important ones, the suppliers Devices and Service's Nokia are the plastic supplier, the chips provider, the operative system like Microsoft or Symbian, the wire-cable provider and so on.

In Location and Commerce area there are any supplier and it is because when in July 2008, NAVTEQ® was acquire, the company had all the maps in their data base and the only thing that the company has done since 2008 is actualize, improve and make research and development to improve the maps.

NET SALES AND MARKET STRUCTURE

Though the following graph, we are going to analyze the net sales of Nokia's group in each area where the firm operate.
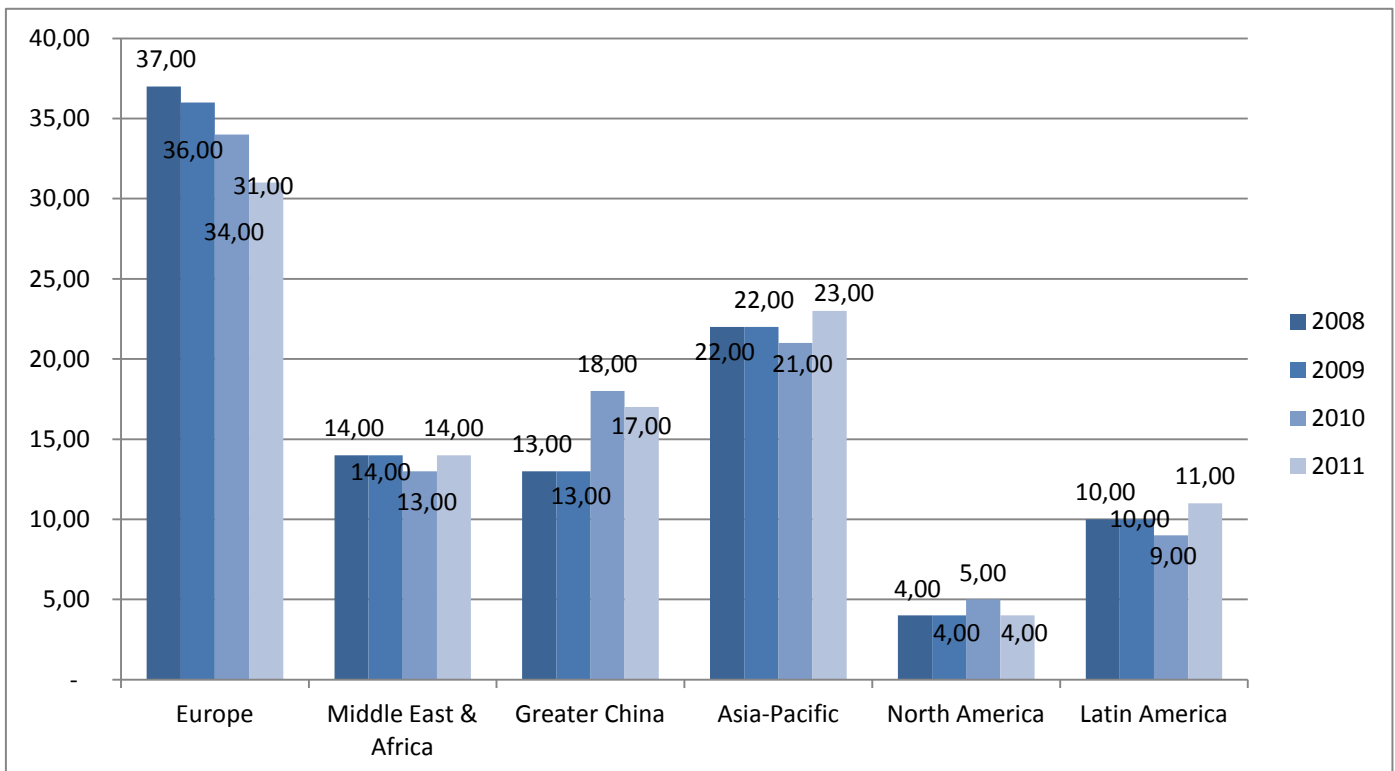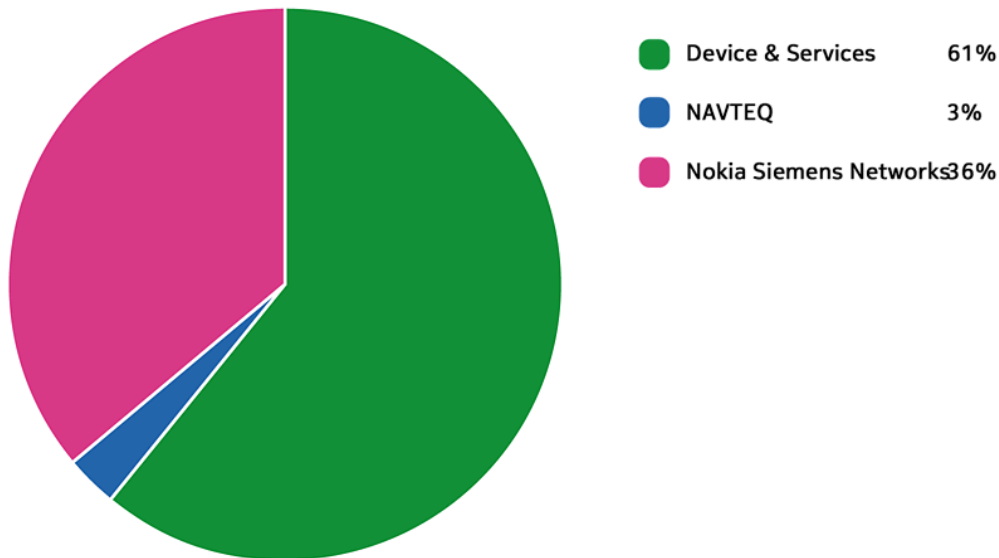

Graph 1: Information from the annual reports of Nokia. Graph made it for us.

As we can observe in the previous graph, the net sales have become less important in Europe with each passing year. Is the market where the Nokia revenues have fallen more. Moreover,

stand out Middle East & Africa, Asia-Pacific, North America and Latin America because the net sales in that market have been more or less stable. Regarding to the Greater China, is the only one market, where the net sales has increased considerably.

Focusing on the last year available, 2011, we are going to analyze its sales function. We can observe in the following picture that the main net sales come from the device & services segment which represent de 61% over the 3% generated by NAVTEQ and the 36% of Nokia Siemens Network.

Graph 2: Information from the annual reports of Nokia Graph copied from annual reports.

Although the mobile device industry continued to see volume growth in 2011, Nokia's net sales and profitability were negatively affected by the increasing momentum of competing smartphone platforms relative to Nokia's Symbian smartphones in all regions as Nokia embarked on Nokia's platform transition to Windows Phone, as well as Nokia's pricing actions due to the competitive environment in both the smartphone and feature phone markets. In addition, during the first half of 2011Nokia's net sales and profitability were adversely affected by Nokia's lack of dual SIM products, which continued to be a growing part of the market. For Nokia Siemens Networks, net sales growth was driven primarily by the contribution from the acquired Motorola Solutions network infrastructure assets, which was completed in April 2011. On a year-on-year basis the movement of the euro relative to relevant currencies had almost no impact on Nokia's overall net sales.

For these reasons, the net sales have decreased 9% in 2011 and the same happens with the cost of sales, which have been reduced 8%. These reductions have affected the expenses in R&D, marketing and administrative and general expenses, the whole reduction reaches the 7%.

CLIENTS

The clients of the group of Nokia are divided in the three basic areas that are Devices and Services, Location and Commerce and Nokia Siemens Network. In each area are more developed the clients, however we make an annex which includes all the clients that Nokia have.

The clients of Devices and Services are a lot of customers around the globe, usually and the most common client is the final consumer. Few companies buy Nokia phones for their managers, because until 2011 the most famous brand for managers was Blackberry. Nowadays the tendency is changing, and Nokia wants to take the opportunity and become the brand of the managers. Also, Nokia want to increase the market share of their final customers, because is decreasing due to the increase of the competence with the others brands, but specially with Samsung and Nokia.

The clients of Location and Commerce are the ones that want to buy licences of maps, geological systems, navigation… nowadays; NAVTEQ® is used for some automotive companies like Volkswagen, Mercedes Benz, Daimler, BMW, Hyunday, Volvo, Opel… that suppose more than 85% of automotive market. Also, one of the biggest clients is Garmin that is a GPS and it's the directly competence of Tom Tom. We must to take into account that Pioneer is another big client of Nokia; Pioneer is producing electronics products like video, music… Also, Flight Simulator X, the best game device that artificially re-creates aircraft flight use NAVTEQ®![2]

The clients of Nokia Siemens Network are a lot of customers around the globe, these clients are more industrial that in the Devices and Services area, which the clients are the final customers in the majority. The products that the clients of NSN want to buy are IP Partner, Mobile broadband, dedicated networks, transport networks… The clients of each area are Telefónica, Vodafone, Netcom, Telekom, Nextel, Telmex… as you can see are companies that their products are phone operators because Nokia is one of the biggest suppliers of the phone networks, and they buy it the phone networks.[3]

SHARES AND SHAREHOLDERS

Nokia has only one type of shares and each one entitles the holder to one vote on the General Assembly. From 2008 to 2011, the price of shares in the market share decrease in 84,52%, and it is because the globe is suffering a high crisis. In 2008 has a maximum value of 24,36 and the last value in 2011 was 3,77. The number of shares at the end of December of 2011 was 3.744.956.052, the same as 2010 and 2009, however is a little bit lower than in 2008 that was 3.800.949.000 and the book value of 2011 was 3,72 while in 2010 was 4,33 and in 2009 was 3,94 and in 2008 was 4,34. The percentage in the book value decrease in a 14,28% and as you can see is less higher than the decrease in the stock market.

The names of the shareholders who have more shares in the company are:[4]

As you can see in the table the maximum shareholder only has a 6%, however with only this 6% can dominate the decisions inside the company.

The stock markets where the shares operate are: Nasdaq OMX – Helsinki, Boerse Berlin, Boerse Duesseldorf, Boerse Frankfurt, Boerse Hamburg, Boerse Hannover, Boerse Munchen, Boerse Stuttgart, Borsa Italiana - MTA (Mercato Telematico Azionario), Budapest Stock Exchange, Euronext Amsterdam, London Stock Exchange, Nasdaq OMX – Stockholm, US Exchange, XETRA.

---

[2] See Annex of Clients to see the brands.
[3] See Annex of Clients to see the brands.
[4] See Annex 3: Shares and Shareholders

DEVICES AND SERVICES

The business area of Devices & Services is the most important of the three areas of activity of the Nokia Group, since in 2011, the last of which we have information about; it represented approximately the 62% of the revenues of Nokia Group. As its name indicates, *Devices & Services* is responsible for developing and managing the Group's portfolio of mobile devices, services and their combinations as well as designing and developing services, applications and content. *Devices & Services* also manages the supply chains, sales channels, brand and marketing activities, and explores corporate strategic and future growth opportunities for Nokia. As of April 1, 2011 this important area was divided in three operating and reportable segments, where each one offers some specific products or services:

-*Smart Devices*, area that focuses on the sale of smartphones, the

type of mobile phone that is fashionable today. To strengthen its presence in this market, which currently has very high growth rates, Nokia and Microsoft announced plans to form a partnership that brings together their complementary strengths and expertise to create a new global mobile ecosystem. Under the partnership, *Windows Phone* serves as Nokia's primary smartphone platform.

In fact, Nokia and Microsoft signed a definitive agreement on the partnership in April 2011.

Some models of smartphones that have integrated *Windows Phone* as operative system have already been launched to the market, as the *Nokia Lumia 800* and the *Nokia Lumia 710*, models that Nokia expects will have a good acceptation by consumers.

-*Mobile Phones,* which focuses on mass market feature phones and related services and applications and has profit-and-loss responsibility and end-to-end accountability for the full consumer experience, including development, management and marketing of feature phone products, services and applications.

-And *Devices & Services Other*, in which is included net sales of Nokia's luxury phone business *Vertu*, as well as intellectual property related royalty income.

SUPPLIERS

The supplier's companies are not included in the report, and it is normal because they want to maintain the confidence of each supplier. However, in large terms and the most important ones, the suppliers Devices and Service's Nokia are the plastic supplier, the chips provider, the operative system like Microsoft or Symbian, the wire-cable provider and so on.

NET SALES AND MARKET STRUCTURE

By all of us is well known that until very recently Nokia was the market leader in mobile telephony. In fact, it is very rare that any of us has not had a Nokia in his hands in the last five years. However, it is easy to see an enormous loss of Nokia leadership in this market, in which has been ousted by multinational giants like Apple or Samsung, who have bet more on innovation and have known to adapt to the needs of its customers.

The following graph shows clearly that. It shows the evolution of net sales of devices and services that Nokia offers of the last four years (2008-2011), in millions of euros:
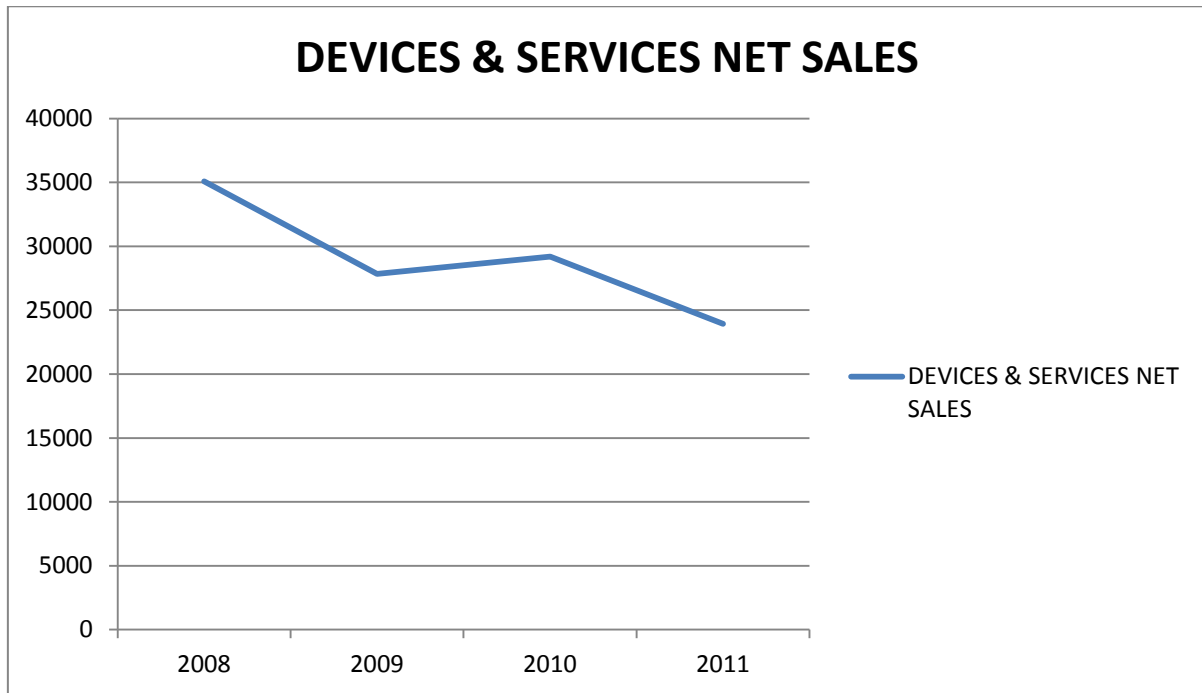
Graph 3: Information from the annual reports of Nokia. Graph made it for us.

As we can see, the net sales of Devices & Services have a clear negative trend, a true reflection of the loss of Nokia's leadership in recent years in this market. In just four years, sales of Devices & Services have fallen more than 46%, which has led Nokia to present negative results in this period.

Nokia sells its mobile devices in most of the world, although its three main markets are: Europe, Greater China and Asia-Pacific, markets that in 2011 represented over the 70% of the net sales of the business area of Devices & Services.

The following graph shows the evolution of net sales of Devices & Services that Nokia offers in these three markets in the last three years:
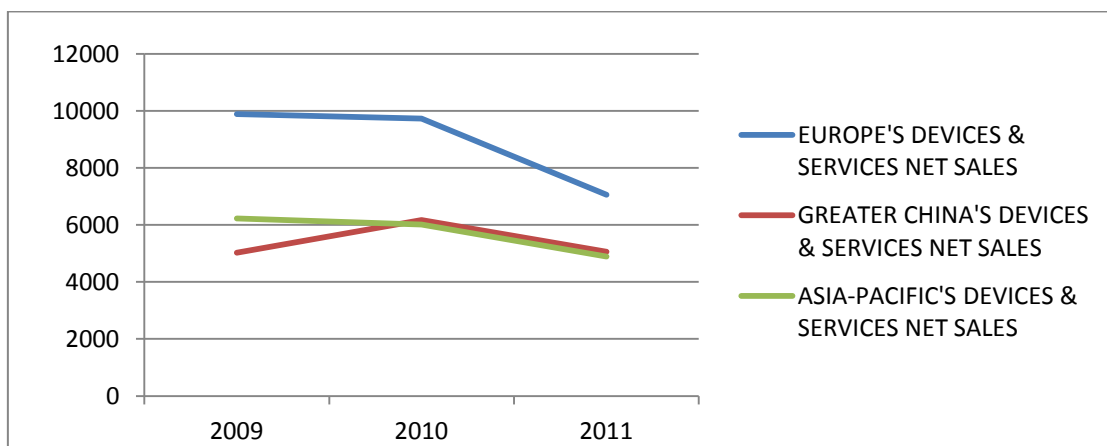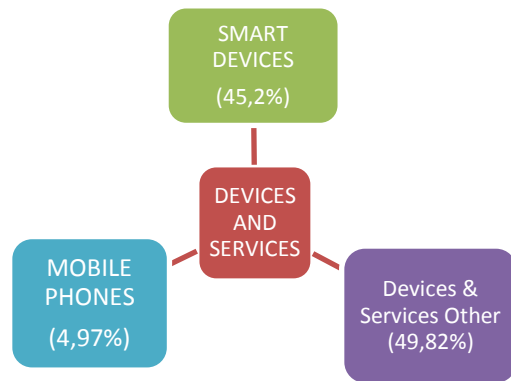

Graph 4: Information from the annual reports of Nokia. Graph made it for us.

Although these three markets, principal markets of the Devices & Services area, show strong

differences regarding tastes, culture of society...etc., all them have one similarity: a huge drop in the net sales of the area Devices & Services of Nokia in the last three years. As we can see, the huge drop in sales in these three markets is the main reason for the drop in sales of the area Devices & Services and the group as a whole; given that Devices & Services is the most important area of the Finnish company. Nokia has been unable to satisfy the needs of the consumers of these three major markets, something of what has been able to do other companies such as Samsung, Apple or LG, reason why now they dominate most of these three markets, the major buyers of mobile devices.

If we focus on the year 2011, the sales of Smartphones ("*Smart Dervices subarea*") represented a 45.2% of the revenues from the Devices & Services area, while sales of mass market feature phones ("*Mobile Phones subarea*") and income from Devices and Services and Other accounted for 49.82% and 4.97% respectively. We can see, then, that the sale of smartphones and mass market feature phones represent the majority of revenues of the Devices & Services area and the Nokia Group, given that this is the most important business area of the Finnish multinational.
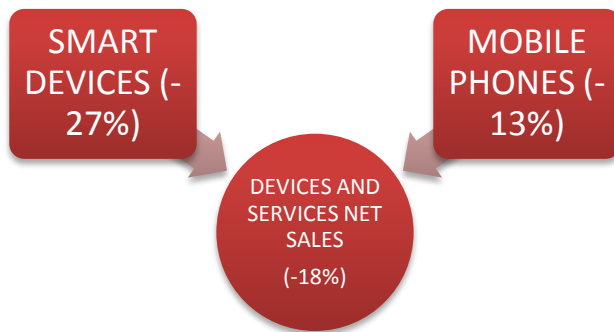

Graph 5: Information from the annual reports of Nokia. Graph made it for us.

In 2011, net sales of the business area Devices & Services decreased an 18%, which explains, by being the most important business area of the Nokia Group, the fall in total sales of 9% in this group Nokia of the same year.

This 18% drop is mainly due to a huge slump on revenue from these three sub areas in its three main markets that we mentioned before: Europe, where sales of Devices & Services area fell 27%, China, where sales fell 18%, and Asia-Pacific, where the fall was of 19%. This decline, was, at least, partially offset by higher IPR royalty income.

If we analyze this fall of 18% more specifically, we can see that the main reason that explains it is a huge drop in the volume of smartphones (-27%) and mass market mobile phones (-13%) sold to distributors and operators in Europe and China, the two main markets in which Nokia offers its mobile phone products. This drop in demand is explained by the increasing momentum of competing smartphone platforms relative to Nokia's Symbian smartphones as well as Nokia's pricing actions due to the competitive environment in both the Smartphone and feature phone markets. In addition, Nokia's net sales and profitability were adversely affected by Nokia's lack of dual SIM products, which continued to be a growing part of the market.

Graph 6: Information from the annual reports of Nokia. Graph made it for us.

To try to recover this loss of power in the mobile phone market, Nokia has reached an agreement with Microsoft to use Windows Phone as its smartphone operating system, so the previous Nokia operating system, Symbian, has not had a good consumer acceptance. The idea is to replace gradually the phones with Symbian operating system for smartphones that incorporate new sleek design and Windows Phone as operating system. Nokia has bet heavily and has made a great effort to replace Symbian for Windows Phone as its main platform, because has very good prospects. The results will be seen in 2012 and 2013.

CLIENTS

The clients of Devices and Services are a lot of customers around the globe, usually and the most common client is the final consumer. Few companies buy Nokia phones for their managers, because until 2011 the most famous brand for managers was Blackberry. Nowadays the tendency is changing, and Nokia wants to take the opportunity and become the brand of the managers. Also, Nokia want to increase the market share of their final customers, because is decreasing due to the increase of the competence with the others brands, but specially with Samsung and Nokia.

LOCATION AND COMMERCE

Location&Commerce is a business of Nokia and consists in different kind of activities like NAVTEQ® Maps products, the Nokia Location Platform as well as Nokia maps that it include Nokia Drive, Nokia Transport and Nokia City Lens, aims to build location experiences for great mobile products, products of navigation industry, automotive market, government and business solutions.

Nokia Location Platform (NPL) is an application for mobiles, webs and HTML 5. This platform is to build "rich, customizable location-based mobile apps with complete functionality for Maps, Positioning, Places, Directions, and Traffic". Some important companies have this application, and those companies are Amazon, Oracle…

Nokia maps is a global map of the globe that is a free service of Nokia's map for his mobile telephones, Smartphone and devices multimedia. Nokia Maps includes Nokia Drive, Nokia Transport and Nokia City Lens, weather…

NAVTEQ® is Navigation Technologies Company and was set up in the ninety's. Nokia in October 2007 announced that it would acquire NAVTEQ®, shareholders accept the merge in December 2007, however the European Commission had to evaluate that if the merge is produce didn't' break the antitrust rules, so European Commission didn't accept the merge until July 2008. From this moment, began a period of fusion and until the 2011 was not entirety merged. So, from 2008 to 2011 NAVTEQ® was a subsidiary of Nokia, and nowadays are a business of Nokia that is called Location and Commerce, which also include some applications to make possible and easy the commercialization. So, when Nokia complete the NATVEQ® merge, create a new business called Location and Commerce, but before 2011 that is when the merge is completed the NATVEQ® become to Location and Commerce business.

NAVTEQ® Maps is a business where continually are refining, expanding and improving digital map, traffic and location data and also constantly are developing the tools and support which will move the industry forward towards a bright future.

SUPPLIERS

Location and Commerce business hasn't got suppliers and it is because when Nokia bought NAVTEQ®, this had all the maps and the geological system, so nowadays they do a lot of research and development to maintain the leadership. As you know, NAVTEQ® was the first company to advice about the traffic in real time. They only have to maintain, actualize and improve the geological system and the maps. With the total integration of NAVTEQ®, Nokia create two other areas inside Location and Commerce, and those ones are to show and use the globe maps. Also the customers can use with their mobile phones, laptops, computers, music equipment… for this reason Nokia has to expend a lot of money in research and development to develop the best technology and could reproduce the maps. And also, has to create some applications to use with all kind of mobiles, laptops, music equipment… because Nokia can sell licences to use with devices.

NET SALES AND MARKET STRUCTURE

From 2008 to 2011 the net sales of NAVTEQ® and after 2011 the net sales of Location and Commerce increases a lot, so have a positive tendency growing up. If we compare the net sales from 2009 to 2011 we have an increase of 62,84%, we don't include 2008 because we only have data about 6 months due to the merge took place in July 2008. Each year the net sales increase a lot, since 2009 to 2010 increase the net sales in 29,70% and from 2010 to 2011 increase 25,55%; those two values are very important and significant because we have to take into account the global crisis that we are suffering, so if a company have a grows of net sales closed to 25-30% it's a real good new, because means that the market and the company are in expansion.

From 2008 we have no data about which markets in Location and Commerce business were more profitable, however we have data about the others years and if we make a table, we can see the evolution of areas during the years:

Country	2009	2010	2011
Europe	46,00%	43,73%	44,73%
North America	44,00%	37,05%	26,03%
Middle East & Africa	4,00%	5,06%	6,78%
Asia & Pacific	3,00%	5,75%	6,78%
Latin America	2,00%	1,84%	3,94%
Greater China	1,00%	6,56%	11,73%
Total	100,00%	100,00%	100,00%

Table 2: Information from the annual reports of Nokia. Table made it for us.

As we can see in this table, the European and North America markets decrease the net sales in relative terms during the years; those markets are the most important ones and also are those who are suffering in a higher level the global crisis. However, the other ones increase during the years the net sales, but notice that the country which increases more higher is Greater China around the 11%.

If we make the graph of net sales of each year, we obtain:

Graph 7: Information from the annual reports of Nokia. Graph made it for us.
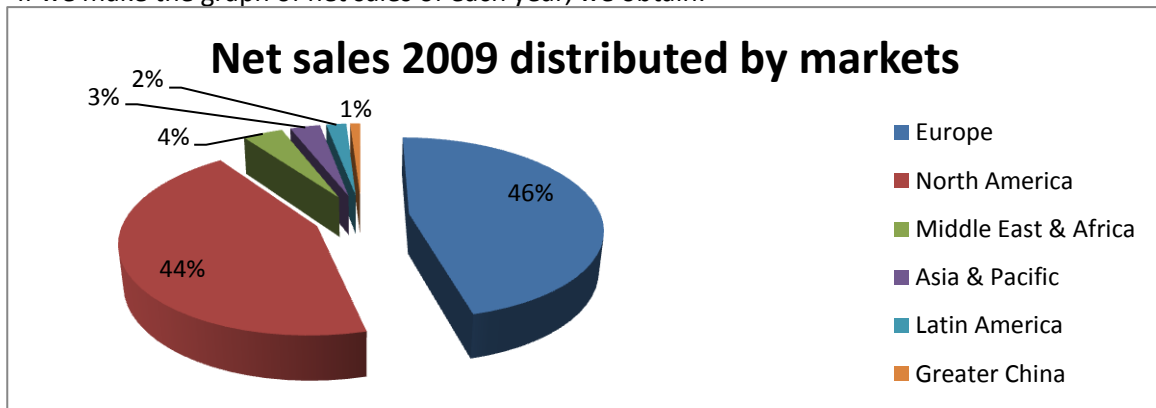
Net sales 2010 distributed by markets

Graph 8: Information from the annual reports of Nokia. Graph made it for us.
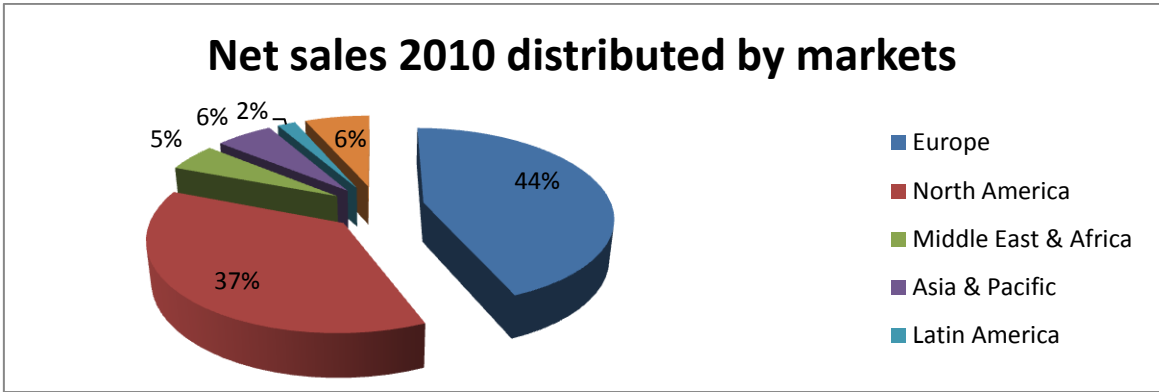
Net sales 2011 distributed by markets

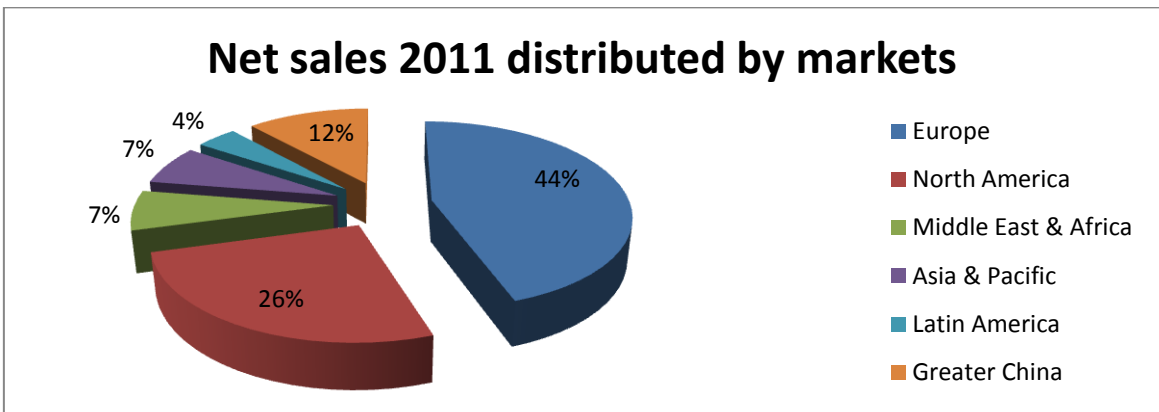Graph 9: Information from the annual reports of Nokia. Graph made it for us.

In those three graphs, we can observe the evolution between the different areas of Location and Commerce, and notice that the value that increase more is the Greater China and the ones that decrease more is North America. As I said, Europe and North America are the countries that the global crisis affect much high, also are the countries that produce and sell more cars, so if the NAVTEQ® sell a lot of licences to automotive companies it's normal that if the demand decrease, the sales decrease too. Greater China increase considerably and it is because Great China has started to produce more electronics products that require a navigation system, so need to buy a licence for the three big companies of navigation systems that are NAVTEQ®, OSKANDO, Tele Atlas. "Location & Commerce net sales increased 26% to EUR 1091 million in 2011, compared to EUR 869 million in 2010. The year-on-year increase in net sales in 2011 was primarily driven by higher sales of map content licenses to vehicle customers due to increased consumer uptake of navigation systems and higher recognition of deferred revenue related to sales of map platform licenses to Smart Devices."[5]

We have no information about research and development before 2010, but as you can see the research and development decrease from 2011 to 2010 and it can was because the highest research was do it in 2010 so until 2011 is only to improve.

The gross margin every year is higher than the year before, so it is a good sign, however the profit is much negative every year so we must to analyse what's happened with the operating expenses.

---

[5] Annual Report 2011 Nokia

As I said before, the research and development expenses decrease in 5%. Also decrease the marketing and selling expenses in 5% and it is due to the lower marketing spending and the cost controls that the company is doing to minimize costs and the general expenses decrease a 9% due to the depreciation of the closed offices.

However, the most important expenses that increase in a 372% is the other expenses and income and it is because the impairment of the Location and Commerce's goodwill. Nokia to evaluate the impairment of the Location and Commerce's goodwill make a test in the market to assess if events or changes in circumstances indicated that the carrying amount of Nokia's goodwill may not be recoverable. So, for that reason the operating profit was negative about 130% between 2011 and 2010. Now, Nokia is working in some applications for the costumers and those ones are:

- Nokia Maps, a mobile application that gives people new ways to discover and explore the world around them, as well as enabling them to search for and navigate to addresses and places of interest
- Nokia Drive, a dedicated in-car navigation application, equivalent to a fully-fledged personal navigation device, including voice-guided navigation in multiple languages for more than 100 countries, 2D and 3D map views and day and night modes
- Nokia Public Transport, a dedicated public transport application which provides smart public transportation routing for more than 231 cities worldwide on mobile, including timetable routing for bus and train routes for 77 cities
- Nokia Pulse, an application that enables people to instantly share their location or other information with family, friends or any other pre-defined group
- Nokia Live View, an augmented reality application that enables people to see information about points of interest–such as a restaurant, hotel or shop–in their camera viewfinder
- Nokia Maps HTML-5 a mobile web version of Nokia Maps providing access to Nokia's rich mapping experience to owners of non-Nokia smartphones and tablets
- maps.nokia.com, Nokia's mapping offering on the web, enabling people to discover the world easy and comfortably with City Pages, heat maps, stunning 3D maps for more than 20 cities, a rich places directory, superior content from leading guides, and local insights from Nokia users.

CLIENTS

Also, Nokia is working in attract more clients and at the end of 2011 Nokia achieve take clients like Daimler AG, Yahoo! maps, Mercedes Benz (specially E-class), Ford.

I said a lot of clients, and may be is better make a table with all companies that are clients of Location and Commerce and determine which products or licences are buying.[6]

The clients of Location and Commerce are the ones that want to buy licences of maps, geological systems, navigation… nowadays; NAVTEQ® is used for some automotive companies like Volkswagen, Mercedes Benz, Daimler, BMW, Hyunday, Volvo, Opel… that suppose more than 85% of automotive market. Also, one of the biggest clients is Garmin that is a GPS and it's the directly competence of Tom Tom. We must to take into account that Pioneer is another big

---

[6] See Annex 2 Clients

client of Nokia; Pioneer is producing electronics products like video, music… Also, Flight Simulator X, the best game device that artificially re-creates aircraft flight use NAVTEQ®!

NOKIA SIEMENS NETWORKS

Nokia Siemens Networks (NSN) is one of the Nokia's businesses. Is multinational data networking and telecommunications equipment company headquartered in Espoo, Finland and a joint venture between Nokia of Finland and Siemens of Germany. It began full operations on 1 April 2007. According to Siemens, Siemens only retain a non-controlling financial interest in NSN, with the day-to-day operations residing with Nokia.

The firm provides a portfolio of mobile, fixed and converged network technology, as well as professional services including managed services, consultancy and systems integration, deployment and maintenance to operators and service providers. The firm, since 2010, has organized its operations within the following three business units: Business Solutions (BSO), Network Systems (NWS) and Global Services (GS).

The main products and services for this business segment of Nokia are the following ones:

▪ Business Support Systems (BSS): Converge charging and billing for more flexible, personalized offers.

▪ Convergence/ IMS: pave a smooth evolution path towards an all-IP core with IMS as the core controller of choice for LTE networks offering voice and multimedia services.

▪ Customer Experience Management (CEM): Gain a holistic, real-time view of your subscribers, and turn this insight into targeted actions that improve the customer experience and drive loyalty and profitability.

▪ Dedicated networks: Support mission-critical operations in industries with reliable voice and data communication services.

▪ IP Partner products Leverage the right skills, partners and solutions to support your IP transformation process.

▪ Mobile broadband: We can help you make sure your networks can efficiently handle increased data traffic as well as improve the experience for your customers. For instance 2G and 3G.

▪ Operations Support Systems (OSS:) Smart OSS helps you use your network to ensure better customer experience in a cost-efficient way.

▪ Transport networks: Get the fastest connections across fixed and mobile environments to efficiently manage explosive traffic growth.

SUPPLIERS

About the suppliers, as the clients, NSN has thousands of suppliers around the world. All suppliers are defined in its Supplier Base Management Process and the company, conducts regular audits to identify risks, assess compliance and share best practices. It also raise awareness and work with suppliers to improve sustainability capability in its supply chain by running workshops and providing feedback. Moreover, NSN works with suppliers on specific issues such as energy and climate change to share best practices and promotes target setting.

In order to promote sustainable improvements throughout the supply chain, the firm asks its suppliers to put in place similar sustainability requirements for their own suppliers.

NET SALES AND MARKET STRUCTURE

Nokia Siemens Networks has operations in around 150 countries. In the following graph, we can observe the main markets of Nokia Siemens Networks through the net sales in each one. In the annual report there is only available information from 2009[7]
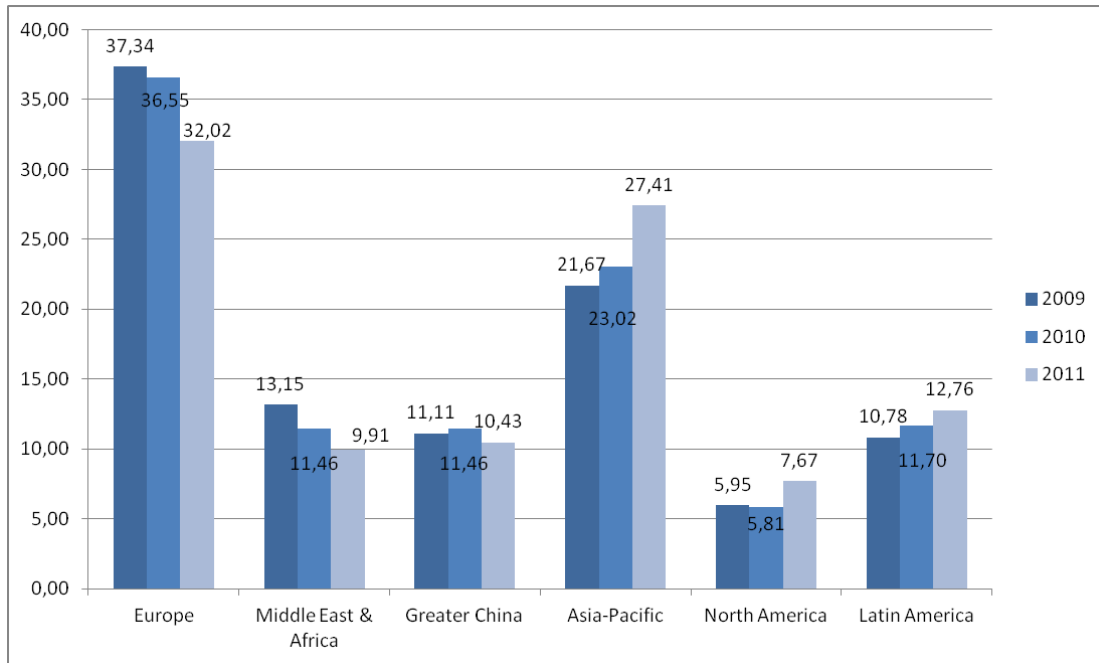
Graph 10: Information from the annual reports of Nokia. Graph made it for us.

Country	2009	2010	2011
Europe	4695	4628	4496
Middle East & Africa	1653	1451	1391
Greater China	1397	1451	1465
Asia-Pacific	2725	2915	3848
North America	748	735	1077
Latin America	1356	1481	1791
TOTAL	12574	12661	14068

Table 3: Information from the annual reports of Nokia. Table made it for us.

As we can observe in the graphs, NSN has decreased its sales in Europe and the Middle East and Africa. In total, the variation has been 4.23 and 15.85% respectively. However, the firm has increased its presence in Asia-Pacific, North America and Latin America, where the increase has been 41.21%, 43.98% and 32%. About the greater China, the variation is very smooth, only increase around a 4.86%. Then, we can conclude that the lost sales in Europe and Middle East and Africa has been less than the increase in Asia and America because of the net sales over the last two years has increased.

---

[7] Annual Nokia Report 2011 ,2010 and 2009

The year-on-year increase in Nokia Siemens Networks' net sales in 2011 was driven primarily by the contribution from the acquired Motorola Solutions networks assets, which was completed in April 2011. Excluding the acquired Motorola Solutions networks assets, net sales would have increased 4% year-on-year, primarily driven by growth in services, which represented approximately 50% of Nokia Siemens Networks' net sales in 2011.

Moreover, we can notice that in 2010, the net sales have increased a 1% over the previous year. This growth is consequence of the improved market conditions in the second half of the year in both, the product and services business, largely offset by challenging competitive factors, as well as industry-wide shortages of certain components and security clearances issues in India preventing the completion of product sales to customers during the second and third quarters of 2010 .

Also, the positive impact from the acquired Motorola Solutions networks is reflected in the gross margin of the company, which was 27.1% in 2011 compared to 26.8% in 2010. The acquisition offset the negative effects of the competitive industry environment.

On November 23, 2011, Nokia Siemens Networks announced its strategy to focus on mobile broadband and services and the launch of an extensive global restructuring program. Nokia

Siemens Networks expects substantial charges related to this restructuring program in 2012 but we can't analyze it because the annual report of 2012 isn't approved yet.

The main reason to change its strategy is that the competitive environment in the mobile and fixed networks infrastructure and related services market continues to be intense and is characterized by equipment price erosion, a maturing of industry technology and intense price competition. Moreover, mobile network operators' cost reductions are reducing the amount of available business resulting in increased competition and pressure on pricing and profitability. Overall, participants in this market compete with each other on the basis of product offerings, technical capabilities, quality, service and price. Nokia Siemens Networks competes with companies that have larger scale and higher margins affording such companies more flexibility on pricing, while some competitors may have stronger customer finance possibilities due to internal policies or governmental support.

CLIENTS

Regarding the clients[8] of NSN, the firm has numerous customers around the world. The firm has clients in five major market areas such as utilities (which include not only water and power utilities but also oil, gas and mining), transportation, public sector, enterprises and operators.

Utilities   Enterprises   Public Sector   Transportation   Operators

---

[8] See Annex 2: Clients

The clients of Nokia Siemens Network are a lot of customers around the globe, these clients are more industrial that in the Devices and Services area, which the clients are the final customers in the majority. The products that the clients of NSN want to buy are IP Partner, Mobile broadband, dedicated networks, transport networks… The clients of each area are Telefónica, Vodafone, Netcom, Telekom, Nextel, Telmex… as you can see are companies that their products are phone operators because Nokia is one of the biggest suppliers of the phone networks, and they buy it the phone networks.

LONG TERM

ANALYSIS OF MARKET RISK

If we want to analyze the market risk in comparison of our company, we have to take into account that we have to compare Nokia and Eurostoxx 50[9]. During 2008 and 2011 Nokia was inside Eurostoxx 50 that is configured by the biggest fifty companies; however and only as a curiosity in 18th of March 2013, Nokia stopped quoted due to the separation of joint venture with Siemens.

Before the analysis we want to show the evolution about the two values, and to do that as the Eurostoxx values have a greater value we separate the data in two graphs. Firstly we show the Eurostoxx graph:
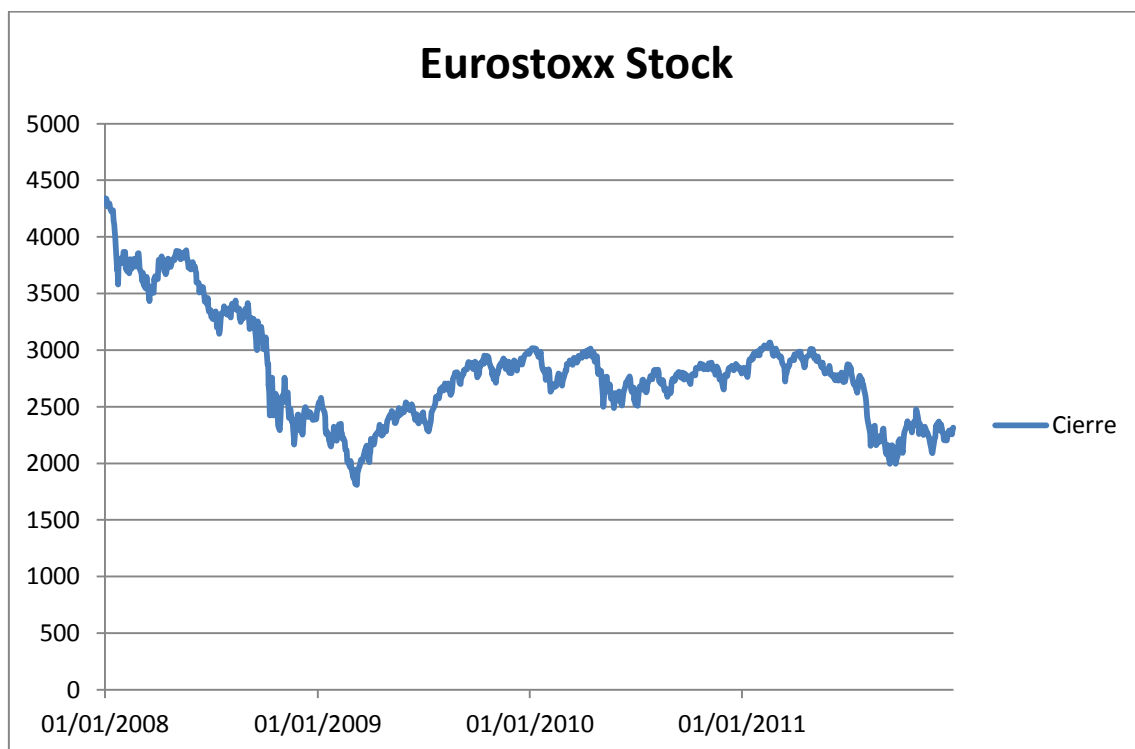
Graph 11: Information from the annual reports of Nokia. Graph made it for us

As you can see, when the crisis started in the end of 2008 the stock drop a lot, however, until 2009 made a little recuperation of the value and from the middle 2009 until the end of 2011 the value of Eurostoxx is quite similar. We can say that the crisis affect quite a lot this value and also the fifty biggest European companies that are integrated. Then if we look at the Nokia graph:

---

[9]All the data showed in Market Analysis is in Euros.

Nokia Stock
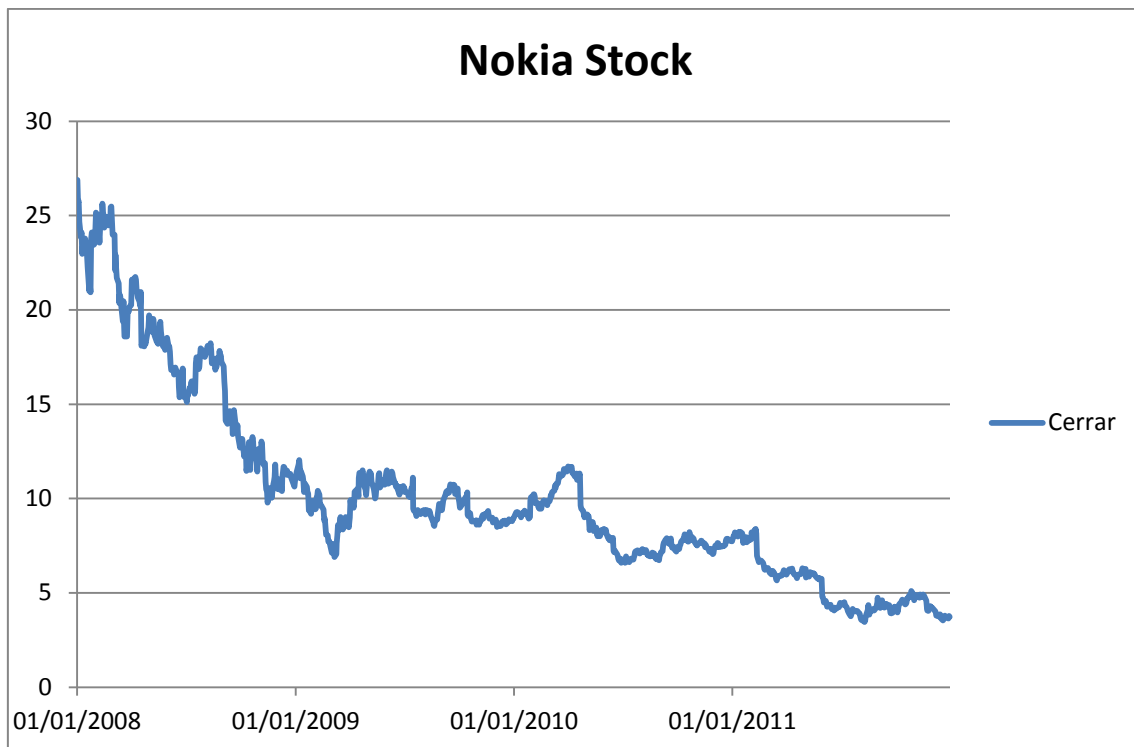
Graph 12: Information from the annual reports of Nokia. Graph made it for us

However, in this case Nokia after the crisis started their values drop a lot, and we can see a negative trend and no indices of grow. The crisis in Nokia was relevant and affects the market value of the company. One of the reasons, which could explain the drop, is that the competitive increase due to Samsung and Apple are increasing their market share quite a lot due to the new smartphones with touchscreens. And here is when Nokia taught a bad decision because Nokia don't want to produce smartphones with touchscreens due to the Japanese people doesn't like. However, the market tendencies were more touchscreens and less touchpad; so, the mobile sales and smartphones sales drop and consequently the people didn't like and didn't buy any mobile because were not in tendency.

We search all the information about the values from 2008 to 2011 of Nokia[10] and Eurostoxx 50[11]. All these data we want to analyze in terms of variance in percentage that is calculated like $\frac{Final\ value - initial\ value}{initial\ value} * 100$. With all these data we calculate some statistics, some measures to analyze the information. To do that, firstly we want to analyze year after year[12]. The graph comparing the variance in terms of percentage between Nokia and Eurostoxx is the next one:

---

[10] http://es.finance.yahoo.com/q?s=NOA3.DE searched 8th April of 2013
[11] http://www.eleconomista.es/indice/EUROSTOXX-50 searched 8th April of 2013
[12] See Annex Yearly-Market Analysis because is explained year by year
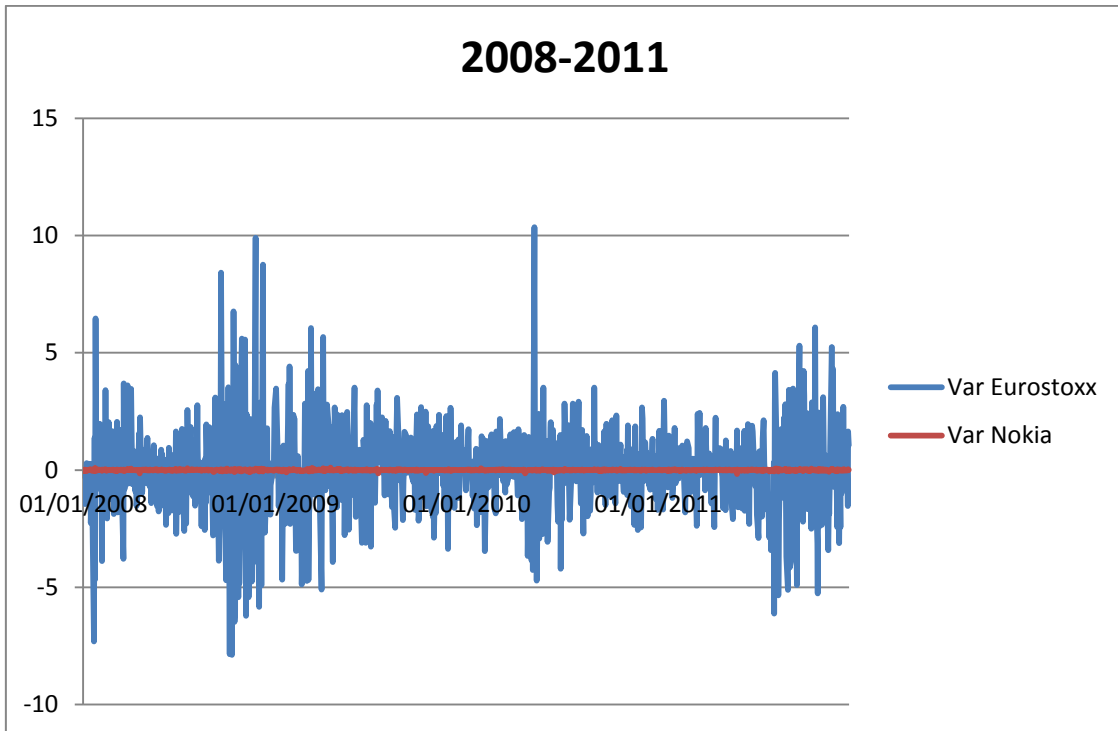
Graph 13: Information from the annual reports of Nokia. Graph made it for us

As you can see, the variation of Eurostoxx is very high and Nokia is lower, but this is because the Eurostoxx value is much higher than Nokia and it is normal that the variation will be higher too.

To smooth a little bit the data we calculate the moving average with a k=10 sessions and we could obtain the following graphs for Nokia and for Eurostoxx.
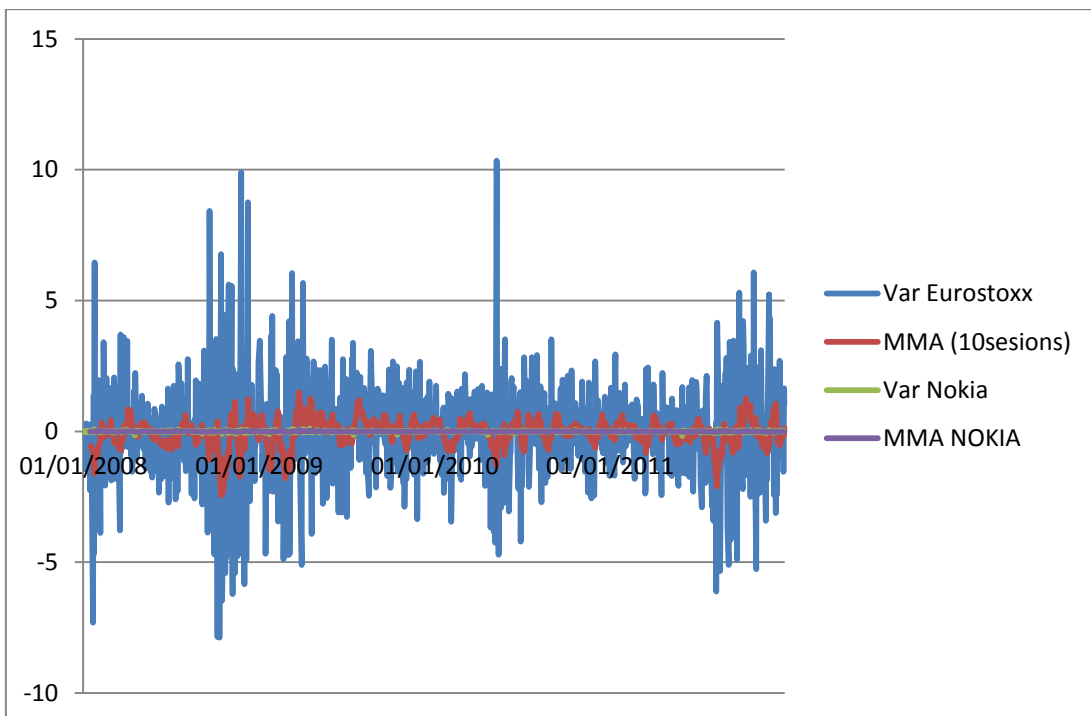
Graph 14: Information from the annual reports of Nokia. Graph made it for us

As you can see, there are some periods that are more variation than the other one[13] and the volatility in Eurostoxx is quite higher than in Nokia. However, here we cannot appreciate the variance and the moving average of Nokia due to the higher values in variation of Eurostoxx. For this reason, we separate the data and we make to graphs, one for Nokia and their moving average and other one for Eurostoxx and their moving average.

Graph 15: Information from the annual reports of Nokia. Graph made it for us

Here you can see that if we make the moving average the data is smoothing and also in comparison with Eurostoxx we can see that the absolute variation is lower than the Eurostoxx. (See Y-Axis the values are quite lower in Nokia than in Eurostoxx).

---

[13]See Annex Yearly-Market Analysis because is explained year by year
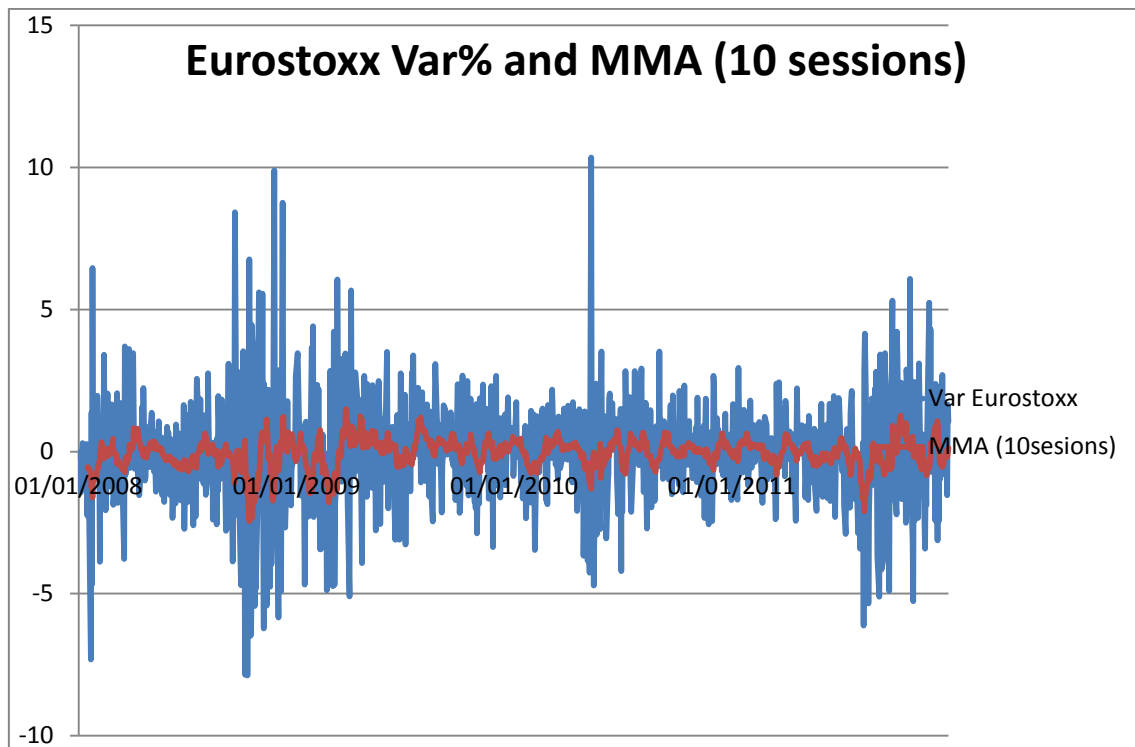
Graph 16: Information from the annual reports of Nokia. Graph made it for us

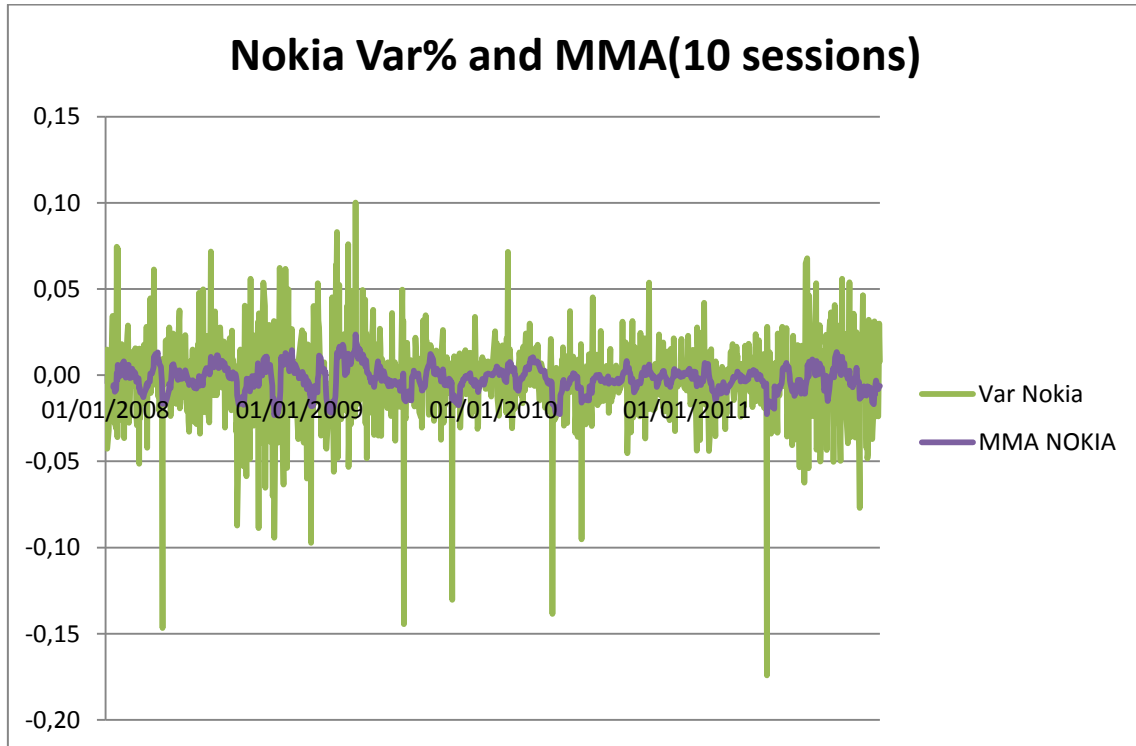Here the data as you can see is quite smooth than the first one and there are some periods that have more variation. Also, we have to add that exist variations quite high and the volatility of Eurostoxx is quite higher than Nokia, however, we want to calculate if our first impression is true. Now, we want to analyze all this information with some instruments, and to do that firstly we need to measure the descriptive analysis of the data and secondly an econometrician analysis. From the descriptive analysis we can calculate the following measures:

The first measure that we need to calculate is the variation coefficient and to do that we need to compute the average and the standard deviation. The value of the variation coefficient for Nokia is -11,68 and for Eurostoxx 50 is -35,49; so, as you can see the volatility is higher for Eurostoxxthan for Nokia and that means that if you invest in Eurostoxxyou have more probability that tomorrow the value of the shares will decrease in more proportion than the Nokia. However, if we analyze year after year[14] we can see that in the first year the variation coefficient was higher in Nokia than in Eurostoxx, due to the crisis affect in relative terms more to Nokia than to Eurostoxx.

The second measure that we need to compute is the negative semi variance on average and that means, which probability I have, to obtain values below the average. In both cases, are quite similar and a little bit higher, in the case of Eurostoxx the probability to obtain values below the average is a 24,97% while in Nokia is about 25%. So, as you can see is quite similar and quite high, this measures allows us to know if tomorrow I will lose money or not because if you have a probability of 75% it means that 1 of 4 situations I will obtain value below the average, but in 3 of 4 situations I will obtain value above the average.

---

[14]Annex Yearly-Market Analysis

The third measure that we need to compute is the interest receives it by investors, to do that we compute the daily interest and the annual interest for both values (Eurostoxx and Nokia). In both cases (Eurostoxx and Nokia) have a negative daily interest, so we don't include the interest. This is because the higher drop of the stocks. Also we can relationated with the high loses of the company, at the end of 2008 and during the years the profits decrease, however nowadays have high loses and these make a unreability of markets.

From the econometrician analysis we can calculate the following measures:

Our econometrical model is $Var\ (Nokia) = \beta_1 + \beta_2 X_2 + u_i$ while X_2 is the Var (Eurostoxx), in this specific case the model is $Var\ (Nokia) = -0,0018 + 0,0056X_2 + u_i$. The Beta that shows us the lineal estimation about Nokia and Eurostoxx, in this case the $\beta = 0,0056$ is a positive slope and that means that the regression is positive but is quite small. If we make a graph about the regression function we can see this slope in red.
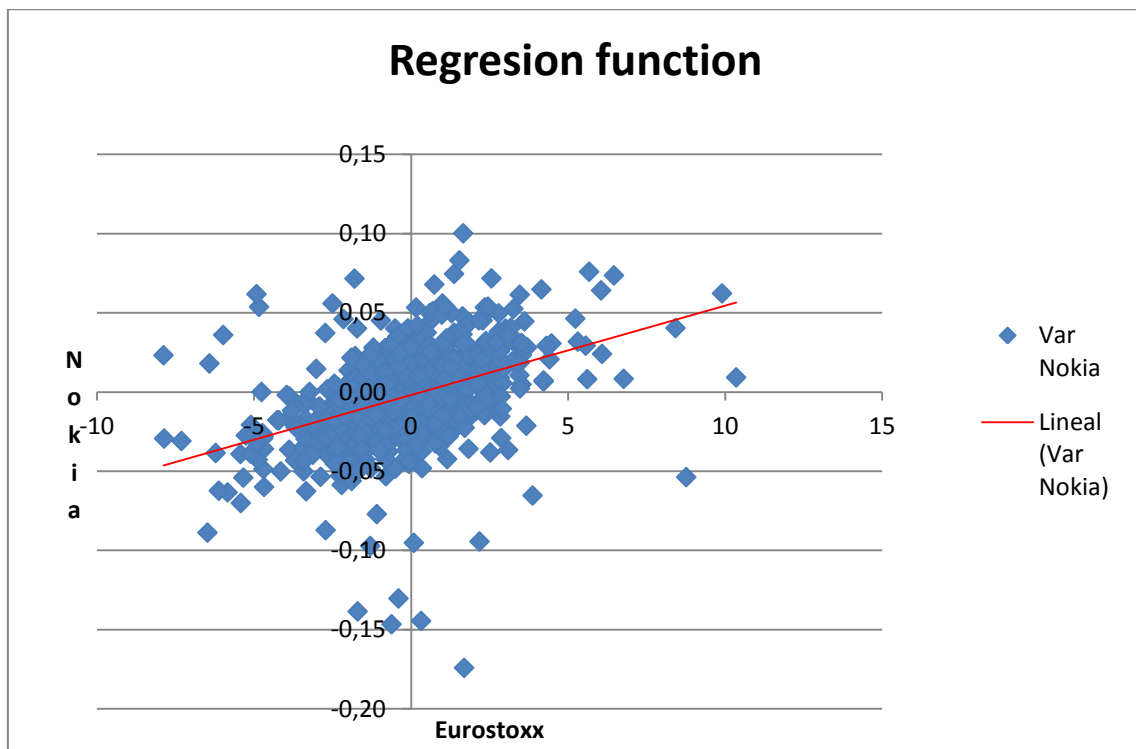
Graph 17: Information from the annual reports of Nokia. Graph made it for us

Here we can see a lot of outliers and those ones could affect to the determination coefficient of the time series. The determination coefficient about this econometrician model is 0,1818; is quite small to be a time series. As you can see, is very small and that means that if I increase a 10% the values of Nokia I would obtain an increase of 1,818% in Eurostoxx values; so it's the same as said that only a 18,18% of the independent variables are explained by the model.

As everybody knows, to compare models is better to use the adjusted coefficient ($\bar{R}^2$) due to if I increase an independent variable the coefficient is not affected while in R^2 suppose an increase and in this case is equal to $\bar{R}^2 = 0,1810$.

Now, we want to see if the model is statistically significant and to evaluate I need to compute the F- test.

$$F_{(K-1,N-K)} = F_{(2,1023)} = \frac{\frac{\sum(\hat{Y}_i - \bar{Y})^2}{K-1}}{\frac{\sum ei^2}{N-K}} = \frac{\frac{EV}{k-1}}{\frac{\overline{EV}}{n-k}} = \frac{0,1176}{0,0005} = 227,10$$

If we make the distribution about the F, knowing that for a α=0,05 (significance about 5%, that means a probability of 95%) the value is 1,96.
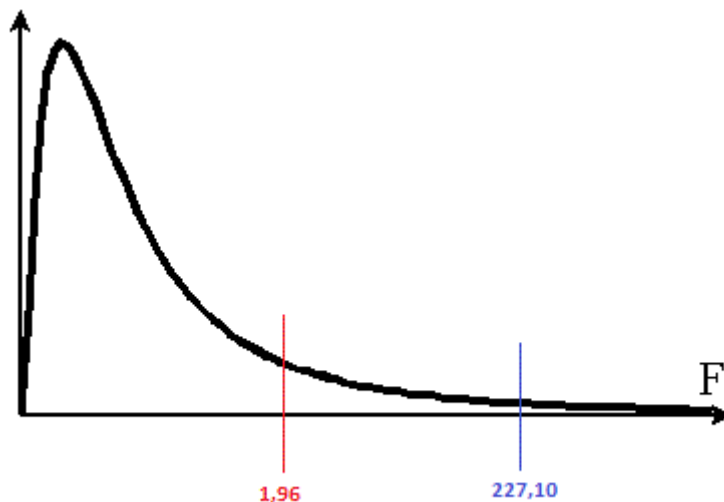
Graph 18: Information from the annual reports of Nokia. Graph made it for us

So, clearly, the model is statistically significant, so the model is correctly specified.

Finally, we should calculate the confidence intervals with a 5% of significance that means a 95% of probability. The confidence interval for eurostoxx is [-3,85≤Var%Eurostoxx≤3,74]=0,95 and the confidence interval for Nokia is [-0,052≤Var%Nokia≤0,048]=0,95. In both cases, mean that the variation in % with a 95% of probability should be between the two values. Also we have to add, that those values are very concentrate, as the graph of the regression function show us.

ANALYSIS OF BALANCE SHEET

The attached tables show the assets, equity and debts of Nokia during the analysed period: 2008-2011. There are also calculations of the ratios analysed.

As we can see, within the assets of Nokia the major assets are "current assets" because generally represent between 60 and 70% of the total assets of the Finnish company. If you look at the graph below, we can see clearly that for the last four years the trend of the company has been having less assets. If you look at the table, we can see that while the "current assets" remain more or less, the company has divested many of its fixed assets on the balance sheet had.
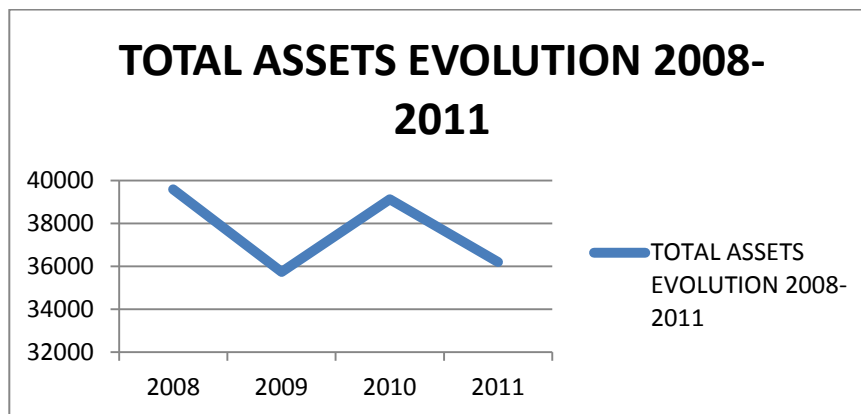
Graph 19: Information from the annual reports of Nokia. Graph made it for us

In "current assets", the most important item of the assets of the company, the most important assets are "Account Receivable and prepaid expenses", which represent approximately 35% of the total assets of the company.

If we analyse the equity of the company, we can see that comprise it two items: "Capital and reserves" and "non-controlling interests," where "Capital and reserves" are the most important items of the equity of the company. As shown in the graph below, the equity of the company has a clear negative trend, lessened by an increase in capital and reserves in 2010, maybe for a possible increase in capital or endowment of benefits to reserves.
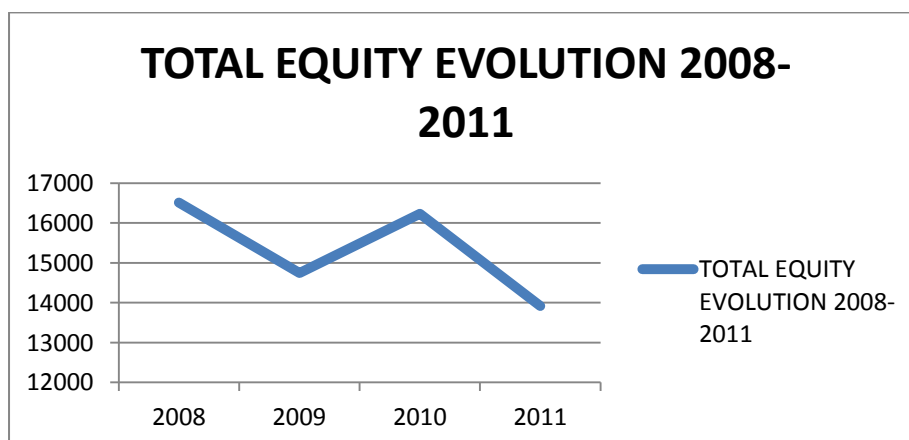
Graph 20: Information from the annual reports of Nokia. Graph made it for us

As for the debts of the company, most debts Nokia has are short-term debt, less than one year. As we see, however, during the last years Nokia is able to reduce its short-term debt over total debt, which gives it more time in case of any difficulties (note that in 2008 the short-term debt represent 88% of total debts while in 2011 represent 78%). Among the short-term debt, the item "Accrued expenses and other liabilities" is the most important, representing about 30% of short-term debts of Nokia.

As shown in the graph below, Nokia's total debt decreased in 2009 by almost 10% compared to 2008, and increases again in the following year.
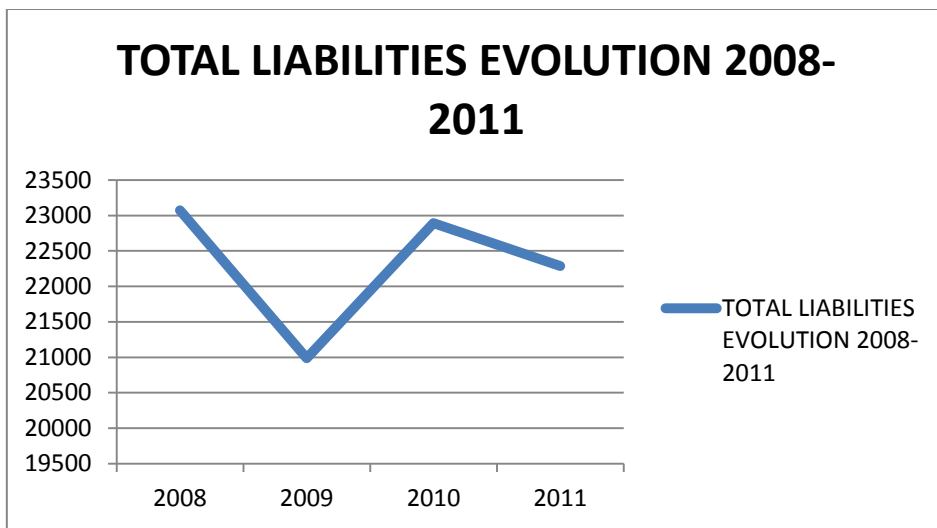
Graph 21: Information from the annual reports of Nokia. Graph made it for us

EVOLUTION OF NET SALES

Through the next graph we are going to analyze the risk of Nokia regarding the evolution of its net sales.
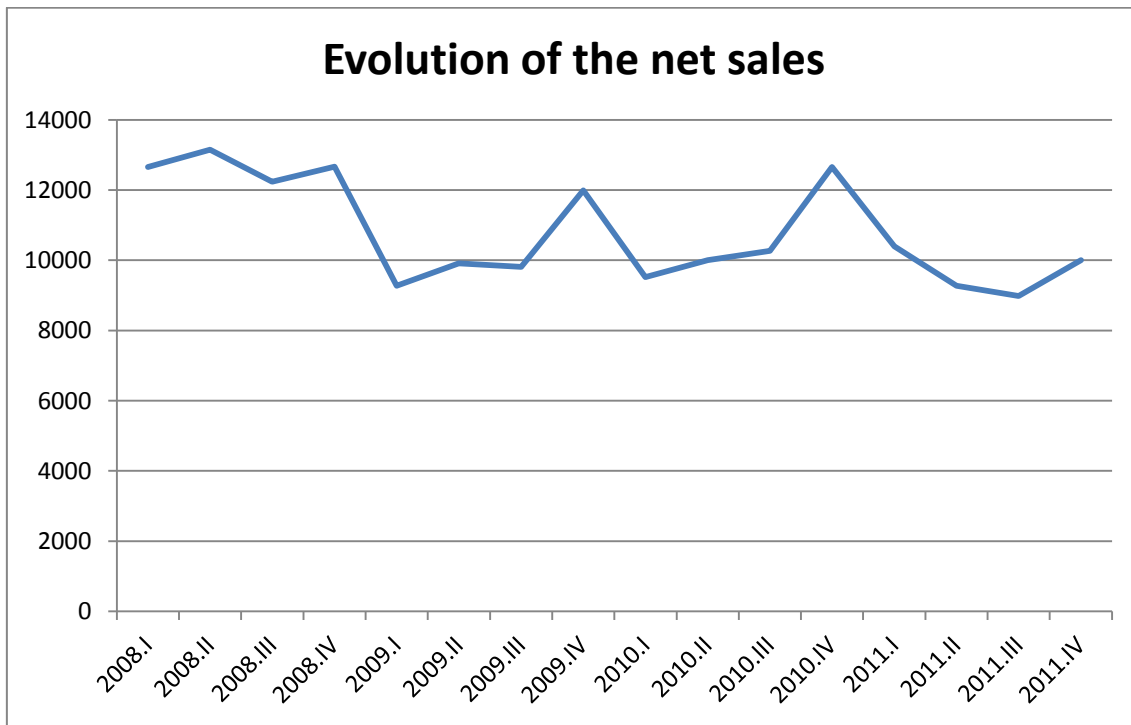
As we can observe, the main conclusion is that the net sales of Nokia has decreased around a 21% during the last four years, also, is important take into account that the sales functions has a seasonal component due to the fact that there is always an increase of the net sales the last quarter of the year. We can associate this increase with the Christmas period, because of the products that Nokia offers are mainly consumer goods which are more consumed in this season of the year. Despite of this seasonal component, the evolution of net sales has clearly a negative trend.

A way to avoid the risk in sales is to set a profitable price for the company, but in the case of Nokia, the firm is guided by the strong competition. These risks, either individually or together, could adversely affect our business, sales, profitability, results of operations, financial condition, market share, brand, reputation and share price from time to time.

The goal of Nokia is to introduce and bring to market quantities of attractive, competitively priced Nokia products with Windows Phone that receive broad market acceptance and are positively differentiated from competitors' products, both outside and within the Windows Phone ecosystem are subject to certain risks and uncertainties, which could, either individually or together, significantly impair our ability to compete effectively in the smartphone market. If Nokia is not successful in the smartphone market, its business would become more dependent on sales in the feature phone market, which is, especially at lower price points, an increasingly commoditized and intensely competitive market, with substantially lower growth potential, prices and profitability compared to the smartphone market. Recently, smartphones

of other manufactures, particularly Android-based smartphones, are reaching lower price points, which is increasingly reducing the addressable market and lowering the price points for feature phones and may adversely affect the phone business of Nokia

The company may not be able to make Nokia products with Windows Phone a competitive choice for consumers unless, together with Microsoft, they successfully encourage and support a competitive and profitable global ecosystem for Windows Phone smartphones that achieves sufficient scale, value and attractiveness to all market participants.

Beyond the risk observed through the evolution of the net sales, Nokia take into account in its annual report some risk which could affect its activity, they are the following ones.

MARKET RISK

o   Foreign exchange risk: Nokia operates globally and is thus exposed to foreign ex-change risk arising from various currencies. Foreign currency denominated assets and liabilities together with foreign currency denominated cash flows from highly probable or probable purchases and sales contribute to foreign exchange exposure. These transaction exposures are managed against various local currencies because of Nokia's substantial production and sales outside the Euro zone. According to the foreign exchange policy guidelines of the Group, which remains the same as in the previous year, material transaction foreign exchange exposures are hedged unless hedging would be uneconomical due to market liquidity and/or hedging cost. Exposures are defined using nominal values of the transactions. Exposures are mainly hedged with derivative financial instruments such as forward foreign exchange contracts and foreign exchange options. The majority of financial instruments hedging foreign exchange risk have duration of less than a year. The Group does not hedge forecasted foreign currency cash flows beyond two years. Since Nokia has subsidiaries outside the Euro zone, the euro-denominated value of the shareholders' equity of Nokia is also exposed to fluctuations in exchange rates. Equity changes resulting from movements in foreign exchange rates are shown as a translation difference in the Group consolidation.

Nokia uses, from time to time, forward foreign exchange contracts, foreign exchange options and foreign currency denominated loans to hedge its equity exposure arising from foreign net investments.

o   Interest rate risk: The Group is exposed to interest rate risk either through market value fluctuations of balance sheet items or through changes in interest income or expenses. Interest rate risk mainly arises through interest bearing liabilities and assets. Estimated

future changes in cash flows and balance sheet structure also expose the Group to interest rate risk. The objective of Interest rate risk management is to manage uncertainty caused by fluctuations in interest rates and minimize net long-term debt funding costs.

The interest rate exposure of the Group is monitored and managed centrally. Nokia uses the Value-at-Risk (VaR) methodology complemented by selective shock sensitivity analyses to assess and measure the interest rate risk of interest-bearing assets, interest-bearing liabilities and related derivatives, which together create the Group's interest rate exposure.

o <u>Value-at-risk</u>: Nokia uses the Value-at-Risk (VaR) methodology to assess the Group exposures to foreign exchange (FX), interest rate, and equity risks. The VaR gives estimates of potential fair value losses in market risk sensitive instruments as a result of adverse changes in specified market factors, at a specified confidence level over a defined holding period.

In Nokia, the FX VaR is calculated with the Monte Carlo method which simulates random values for exchange rates in which the Group has exposures and takes the non-linear price function of certain FX derivative instruments into account. The variance-covariance methodology is used to assess and measure the interest rate risk and equity price risk.

The VaR is determined by using volatilities and correlations of rates and prices estimated from a one-year sample of historical market data, at 95% confidence level, using a one-month holding period. To put more weight on recent market conditions, an exponentially weighted moving average is performed on the data with an appropriate decay factor.

This model implies that within a one-month period, the potential loss will not exceed the VaR estimate in 95% of possible outcomes. In the remaining 5% of possible outcomes, the potential loss will be at minimum equal to the VaR figure, and on average substantially higher.

CREDIT RISK

Credit risk refers to the risk that a counter party will default on its contractual obligations resulting in financial loss to the Group. Credit risk arises from bank and cash, fixed income and money-market investments, derivative financial instruments, loans Receivable as well as credit exposures to customers, including outstanding receivables, financial guarantees and committed transactions. Credit risk is managed separately for business related and financial credit exposures.

o <u>Financial credit risk</u>: financial instruments contain an element of risk of loss resulting from counterparties being unable to meet their obligations. This risk is measured and monitored centrally by Treasury. Nokia manages financial credit risk actively by limiting its counterparties to a sufficient number of major banks and financial institutions and monitoring the credit worthiness and exposure sizes continuously as well as through entering into netting arrangements (which gives Nokia the right to off set in the event that the counterparty would not be able to fulfill the obligations) with all major counterparties and collateral agreements (which require counterparties to post collateral against derivative receivables) with certain counterparties. Nokia's investment decisions are based on strict creditworthiness and maturity criteria as defined in the Treasury Policy and Operating Principles. As result of this investment policy approach and active management of outstanding investment exposures, Nokia has not been subject to any material credit losses in its financial investments.

SHORT TERM

FINANCIAL RATIOS

A ratio is the relationship between two magnitudes that have a certain relationship, which allows a comparison explanatory. With the calculation of the ratios is achieved a synthetic indicator that summarizes information on the financial situation of the company.

Within its uses, financial ratios allow to analyze the ability of the company to settle debts in a way solvent and within the time limits previously fixed with suppliers and creditors.

The most important financial ratios we have calculated in the case of Nokia for the years 2008-2011 are:

ACID-TEST

This ratio indicates the ability of the company to settle its short-term debts without running the risk of default.

Its formula is: (Current Assets-Inventories) / Current Liabilities.

The results of this ratio for the years 2008-2011 can be seen in the table attached. The graph below shows the evolution over the years:
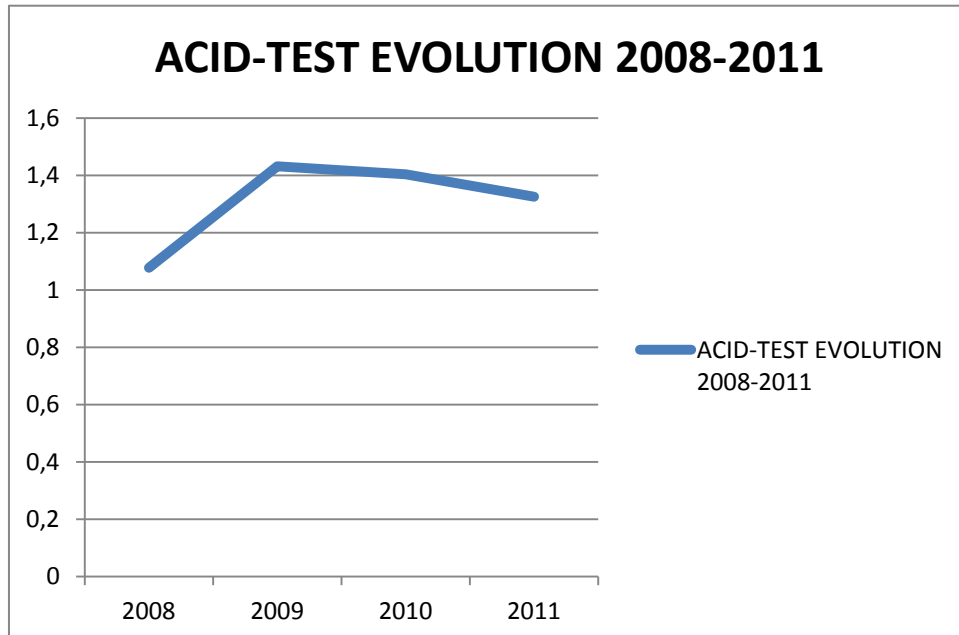
Graph 23: Information from the annual reports of Nokia. Graph made it for us.

To avoid liquidity constraints, the value of the ratio must be close to 1, because if it is lower there is a manifest risk of default because with the resources in the short term, the company can not pay its short term debts. If the value of the ratio is greater than 1 means that there is excess liquidity, ie the company's non-performing assets.

As we can see, for the last four years the value of the ratio is in the range of 1 and 2, peaking in 2009. We can say, then, that Nokia has no immediate liquidity problems, it has enough resources to short-term in order to satisfy their most immediate debts.

LIQUIDITY RATIO

Its formula is Current Assets / Current Liabilities, and also shows the liquidity situation of the treasury of the company, but not as immediate way as the acid-test. Is also known as "working capital ratio" or "ratio of short-term solvency."

The results for each of the four years analyzed can be seen in the accompanying table. The following graph shows the evolution over the years analyzed:
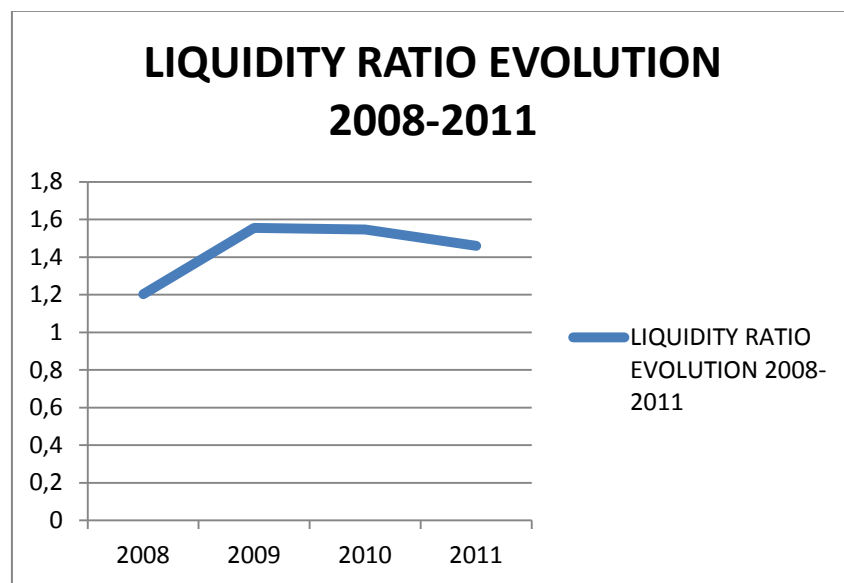
Graph 24: Information from the annual reports of Nokia. Graph made it for us.

To get away from suspension of payments risk, the optimal value of the ratio would be greater than 1 and close to 2. As we can see, for each of the years the value of this ratio is greater than 1, so that Nokia has no liquidity problems, it has enough short-term resources to be able to settle all their debts in the short term. Its highest value it reaches in 2009.

RATIO OF LONG-TERM SOLVENCY

This ratio relates all investments (Total assets) to total debt of the company (Total liabilities). Its formula is thus: Total Assets / Total Liabilities, and measures the total capacity of the company to address their debts. The optimal value must be greater than 1 and close to 2 to be calmer. Below 1 there is a clear risk of bankruptcy of the company as it has no enough resources to settle all its debts. It is therefore one of the most important ratios.

As we can see from the results the attached table, the value of the ratio is in all the years very close to 1.70, so Nokia has sufficient capacity and resources to be able to satisfy its total debt.

RATIO OF DISPONIBILITY

It shows the proportion of short-term debt that could be settled with cash accounts of the company (banks and cash).

Its formula is: Total cash and other liquid assets / Current Liabilities

The results for each of the years analyzed are in the table attached. The optimal value is relative and depends on the type of business and economic sector, but different authors fixed around 0.3-0.4. Overall, against lower the value, the more difficulty the company will have to satisfyt their immediate payments, and against higher, more security will be at risk of default, but will have some unprofitable assets (so bank balances hardly bring cash income).

The following graph shows the evolution in the period under review:
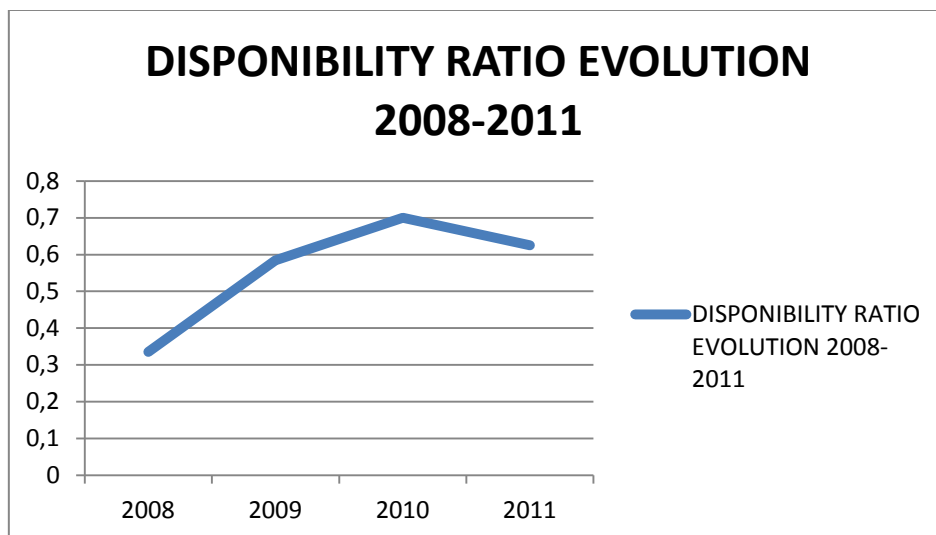
Graph 25: Information from the annual reports of Nokia. Graph made it for us.

In the first year it is in the value theoretically advocated by some authors. However, in the following years is passed these limits, result of an increase in cash and a decrease in current liabilities. However, as stated above, the optimal value is relative and depends on the type of business and industry.

RATIO OF AUTONOMY

Its formula is: Equity / Total Liabilities, and showing the relationship of equity to total debts of the company. Is used to check the quality of financing of the company in the sense of dependence on external financing.

The optimal value is not well defined, but it could be set a value for guidance in the range of 0.8-1.5, considering that the company enjoys more financial autonomy the higher the value.

As shown in the table attached, for all the years analyzed the value of the ratio is in the range of 0.6 to 0.75. We can see that the company does not enjoy much autonomy because is financed mainly through borrowing.

QUALITY RATIO OF DEBT

Its formula is: Current Liabilities / Total Liabilities, and indicates the proportion of the debts of the business that are required in the short term. Against lower the ratio, higher quality will be its debt, considering that against bigger the payment term of the debts of the companymore operating margin and ability to pay will have.

As we can see, in all the years the value of the ratio is very high, ie, most Nokia debts are short-term debts. This is wrong and is risky, because less operating margin and ability to pay will have Nokia in case it goes through problems.

DEBT RATIO

Its formula is: Total Liabilities / (Total Liabilities + Total Equity) and shows that the extent that the company's total funding depend on borrowing. As we can see, in all the years the value of this ratio is close to 0.6, which means that the company finances more than half from debt, not from its own resources, which may involve a problem in cases of difficult times.

LEVERAGE RATIO

 Its formula is: Total Assets/Equity or (Total Liabilities + Total Equity)/Total Equity, and it's a way to show how the company has distributed its capital funding between its own resources and external resources (debt), and indicates the extent to which the company has been financed with equity.

 For the four years analyzed, the value of its ratio is in the range 2,39-2,60 (you can see the values in the table attached), with a clear increasing trend. Clearly, the company is more financed by debt than by its own resources.

CASH CYCLE

The Cash cycle is a metric that expresses the length of time, in days, that it takes for a company to convert resource inputs into cash flows. The cash conversion cycle attempts to measure the amount of time each net input is tied up in the production and sales process before it is converted into cash through sales to customers. This metric looks at the amount of time needed to sell inventory, the amount of time needed to collect receivables and the length of time the company is afforded to pay its bills without incurring penalties. It is thus a measure of the liquidity risk entailed by growth. In the next table, there is the cash cycle of Nokia of the last four years.

	2008	2009	2010	2011
Average period cash	68,8972589	71,6124585	65,9813646	69,2441605
Average period payment	42,3805556	23,1634615	54,3137805	49,2482927
Cash cycle	26,5167034	48,448997	11,6675841	19,9958678

*the data is measure in days. Table 4: Information from the annual reports of Nokia. Table made it for us

Regarding to the evolution of the cash cycle of Nokia we can observe that it has decrease since 2008 almost a 25%, the dropped is explained by the increase of the average period payment, which in 2011 was a 14% higher than in 2008. Moreover, the accounts receivables have been reduced over the years. Now, we're going to explain with more detail the evolution each year.

About the fiscal year 2009, we can say that the cash cycle has increase due to the fact that the APP has been reduced. The reduction was mainly due for the increment of the purchases, which grew a 73%[15]. Also, the accounts receivables were lower than in the previous year. These two factors increased the days that Nokia needed to convert the inputs into cash flows.

In 2010, the situation improved because the firm in only 12 days approximately was able to turn raw materials into cash. The purchases, were reduced 47,4 percentage points and also the sales increased 3,56%. However, there was an increment in the accounts payables too, which grew more or less a 19%. Is important stand out the reduced cash cycle in 2010, which is the best one for the company during the four years analyzed.

Taking into account the last year, we can observe that the days of the cash cycle has increased again. The increase was mainly due to the reduction in sales in a 8,9%.

---

[15] Annex 3: there are a graphs which shows the evolution of the accounts receivables, payables, sales and purchases during 2008 and 2011

Once analyzed the cash conversion cycle, we can explain the short-term risk of Nokia regarding the liquidity.

The reduction of the accounts receivables shows a great situation for the company about liquidity refers, because it means that the proportion of sales on credit has been reduced. As the sales on credit are lower, the company has less risk, because the major parts of the sales are paid immediately.

Liquidity risk[16] is defined as financial distress or extraordinary high financing costs arising due to a shortage of liquid funds in a situation where business conditions unexpectedly deteriorate and require financing. Transactional liquidity risk is defined as the risk of executing a financial transaction below fair market value, or not being able to execute the transaction at all, within a specific period of time.

The objective of liquidity risk management is to maintain sufficient liquidity, and to ensure that it is available fast enough without endangering its value, in order to avoid uncertainty related to financial distress at all times. Nokia guarantees a sufficient liquidity at all times by efficient cash management and by investing in short-term liquid interest bearing securities. The transactional liquidity risk is minimized by entering transactions where proper two-way quotes can be obtained from the market.

---

[16] This information has been subtracted of the annual report of 2011

ROE

The ROE means Return on equity, which is a financial measure to evaluate the profitability of the company. It is calculated by Net Income (Earnings after tax) divided by equities; and that means the return that will get the shareholders from the company. To calculate the ROE we have to use the Net Income from 31/12/x and the Equities from the 1/1/x. If we do that with our data we get the following results:

	2008	2009	2010	2011
Net income 31/12	3988	260	1343	-1488
Equity 1/1	17338	16510	14749	16231
ROE	0,230015	0,01574803	0,09105702	-0,09167642

Table 5: Information from the annual reports of Nokia. Table made it for us.

As you can see, the ROE has a negative trend, and year by year the ROE is lower except in 2010 that ROE increase a little bit higher. However, is better and easy to see in the following graph:
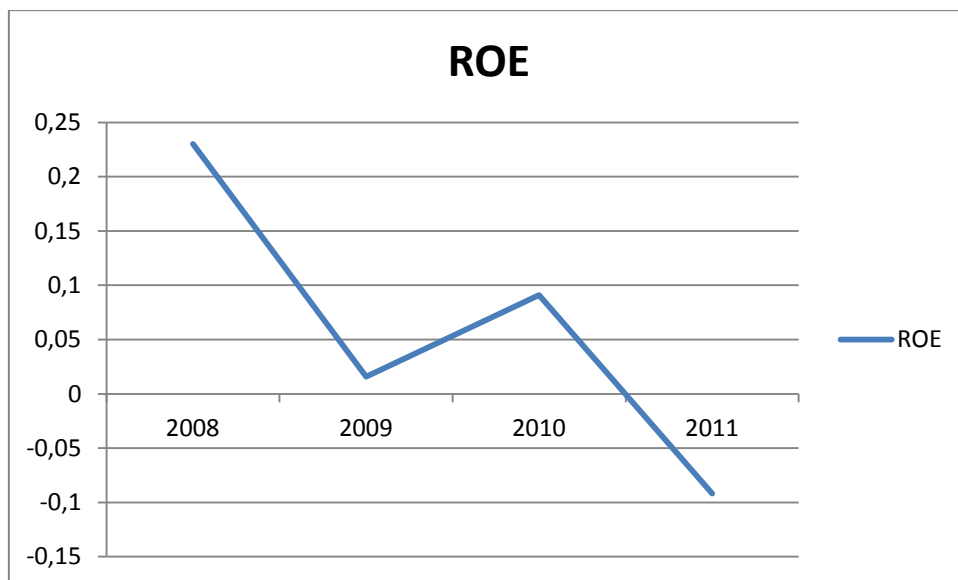
Graph 26: Information from the annual reports of Nokia. Graph made it for us.

In this graph, you can see clearly the negative trend of ROE. This negative trend is because the company is getting year by year lower profits and in 2011 the profits are negative, for this reason the ROE is negative too. The sales and profitability of the company depends directly from the development of the mobile and fixed communications industry in numerous diverse markets, as well as, on general economic conditions globally and locally. So we have to take into account that Europe is suffering the highest crisis never seen and also we have to take into account that Nokia take a bad decision when we decide to not produce touchpad screen. The last reason is the ones that make the drop of the sales of the company; so, the drop of the profitability.

However, we can decompose the ROE as DU PONT made the margin ratio, the turnover and the leverage. So, we can calculate the formula like this:

$$ROE = \frac{Net\ income_{31/12}}{Equities_{1/1}} = \frac{Net\ income_{31/12}}{Revenues_{31/12}} * \frac{Revenues_{31/12}}{Assets_{1/1}} * \frac{Assets_{1/1}}{Equities_{1/1}}$$

ROE=Margin ratio*Turnover Ratio*Leverage Ratio

If we calculate all this ratios to calculate the ROE we obtain the following values:

	2008	2009	2010	2011
Margin ratio	0,0786433	0,00634394	0,0316402	-0,03849039
Turnover ratio	1,34870608	1,03542014	1,18769937	0,98813997
Leverage ratio	2,16858923	2,39745609	2,42307953	2,41038753
ROE	**0,230015**	**0,01574803**	**0,09105702**	**-0,09167642**

Table 6: Information from the annual reports of Nokia. Table made it for us.

As you can see, the margin ratio is very low in the four years, so that means that the company for each product that sell obtain a low profit, even in 2011 the margin ratio is negative, due to the loses of the company in this period.

The turnovers have great values, and measure how quickly the inventories are sold in the company. In this case, Nokia has a good turnover, due to they sell the inventories very rapidly.

The leverage ratio is a general term for any technique to multiply gains and loses. In our case, the values are quite high, however the values are not dangerous due to are lower 3.

As you can observe, all the value ratios and also the ROE have a negative trend, however in all the cases in 2010 go up a little bit and then drop a lot in 2011.

So, if we multiply all this ratios we will obtain the ROE that is the same calculated before. The ROE has a negative trend due to the negative trend of the sales. We have to take into account that the sales of Nokia are dropping a lot during the last 5 years. This decrease in sales is due to the bad decision took by Nokia to not produce touchscreen mobile phones; this issue make that the people don't want the Nokia smartphones, and the Nokia mobiles; also we have to add the increase of competence of Apple and Samsung that they have a higher bargaining power in the market.

COMPARISON ROE

First of all is important take into consideration that the ROE of Nokia in 2011 is difficult to compare with the rest of companies of the EUROSTOXX because the return on equities of this year is the only one negative. However we have tried to analyzed, regarding the other firms, why the value is negative. We have only made the comparison with the following firms, because are the only ones that currently we have information.

2011	ROE	Margin	Turnover	Leverage
Bayer	13,10%	0,068	0,709	2,726
BASF	24,35%	0,084	1,201	2,410
LVMH	17,80%	0,130	0,630	2,160
BMW	18,10%	0,071	0,558	4,554
Nokia	-9,17%	-0,038	0,980	2,400
Telefónica	22,77%	0,090	0,480	4,700
Inditex	30,29%	0,141	1,400	1,530
Iberdrola	9,17%	0,091	0,330	2,920
WV	24,94%	0,090	0,628	4,010
Repsol	8,44%	0,084	0,778	2,603
Danone	14,24%	0,086	0,689	2,380
Siemens	19,50%	0,084	0,705	3,306
Nestlé	19,92%	0,149	0,749	1,783

Table 7: Information from the annual reports of Nokia. Table made it for us.

As we have said before, Nokia is the only firm with a negative ROE, for this reason, we're going to analyze the DU PONT method to understand better which is the main factor that explain the negative value.

2011	ROE	Margin	Turnover	Leverage
MEAN	16,42%	0,09	0,76	2,88
MAX.	30,29%	0,15	1,40	4,70
MíN	-9,17%	-0,04	0,33	1,53

Table 8: Information from the annual reports of Nokia. Table made it for us.

Regarding the margin, in the case of Nokia not only is below the mean but also has the minimum value of the margins analyzed, it means that Nokia is the company which receives the lowest profit for each product it sell, because has losses for each unit sold. The firms with a highest value of ROE are Inditex and BASF which margin ratio is above and very close to the average. On the contrary, the companies with a low value of the margin ratio have a ROE below the mean, is the case for example of Bayer. Hence, one factor that explains the high value of ROE is a high margin ratio.

About the turnover ratio, the mean is 0.76. Despite of Nokia has a turnover ratio above the average as the firms with the highest companies because the inventories are sold quickly, it doesn't compensate the low value of the margin ratio. One more time, Inditex is the firm with the highest turnover ratio and Iberdrola with the lowest one, which is reflected in their respective ROE.

Taking into account the leverage ratio, again Nokia is below the mean as the companies with the highest values of ROE (Inditex and BASF) but on the contrary, there are some firms such as Telefónica or Volkswagen with a high values of leverage and at the same time high values of ROE. So it means that each company has an optimum value of leverage.

We can conclude that the negative value of the Nokia's ROE in 2011 is caused mainly by the negative margin ratio. However, each company is different and there are not an optimum values for all of them. This fact is easy to observe in the table because for example Inditex, which is the best firm regarding the ROE has the highest margin and turnover ratio and the lowest leverage but Volkswagen has a margin ratio close to the mean, turnover ratio above the average and one of the highest values about the leverage ratio concerns and is a company with a high ROE too.

ROE BEFORE TAX

The Return On Equities before taxes (ROEbt) is a measure that shows the profitability of a company, in the same way that the usual ROE, but perhaps its use is better, since it does not take into account the impact of the tax system of the country where the company is installed. For example, the tax rate that a company pays in Ireland is not the same as pays a Spanish company, which may can give misconceptions about the "true" profitability of a company. For that reason, if we remove the impact of taxes, the comparison between different companies to see which is most profitable is more accurate. The ROE before tax from 2008 to 2011 are:

	2008	2009	2010	2011
ROE BEFORE TAXES	0,2866536	0,0582677	0,12333511	-0,073809

Table 9: Information from the annual reports of Nokia. Table made it for us.

If we represent a graph:
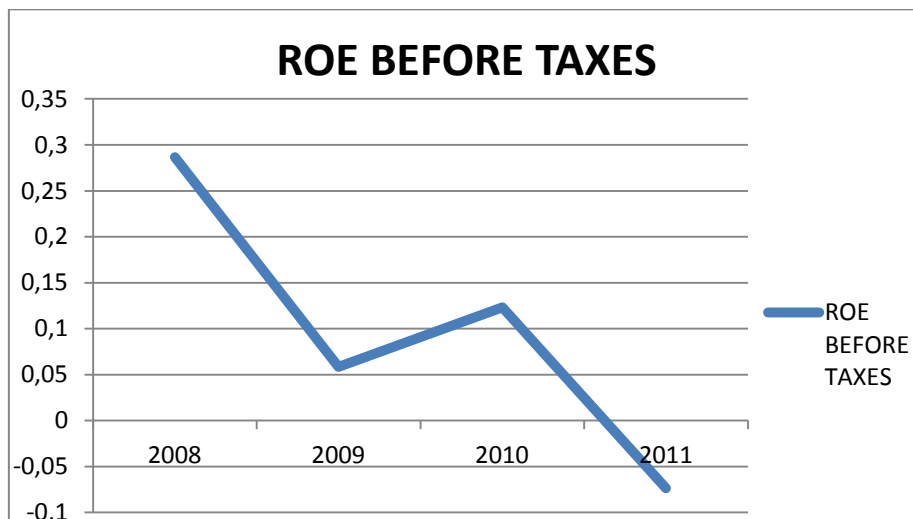
As shown in the table and the graph, the profitability of Nokia falls clearly going in just four years from a 28% to a -7,3% approximately, perfect image of the already well-known and commented decline of Nokia during the last years. As we can observe, this can be because the Earnings Before Taxes and the Net Income clearly falls (except a small increase in 2010) till the fact that Nokia will end up having losses in 2011.

The mathematical formula of ROEbt is Earnings Before Taxes (EBT) / Equities. We see, then, as the profitability of a company depends "really" on the Net Income the company has, on the Tax Rate to pay and on the equities it has. Let's going to observe, then, the Net Income, the real tax rate and the equities that the company has had during each of the years and we will be able to see the evolution of its profitability. In 2008, Nokia has a 28,66% of ROEbt. In the following year, the Earnings Before Taxes falls from 4970 to 962, while the Net Income falls from 3988 to 260 euros (a -90.97%) and the real tax rate goes from 21% to almost 72%, perhaps because in 2009 Nokia could not deduce so much expenses to pay a lower effective tax rate. As a consequence, so, the numerator of the equation clearly falls.

For the profitability be maintained more or less constant, the equities of the company should decrease roughly the same percentage as the earnings before taxes falls, so that more or less give the same euros of earnings before taxes per unit of equity. However, the company's equity decreased from 2008 to 2009 from 17338 euros to 16510 euros (a -4.77%). As we can see, Nokia's net profit falls much more than the equity, which makes Nokia ROEbt decrease from 28'66% to 5,82%. From 2009 to 2010, the Earnings Before Taxes increases from 962 to 1886 euros, while the net income increases from 260 to 1343 (a 416%). The real tax rate is situated in 24%, while the equities of Nokia go from being 16510 to 14479 euros (-12.30%). This makes the Nokia ROEbt increase from 5,82% to 12,33 %. In 2011, however, for the reasons explained in the first work, and in which we will not go into detail, Nokia has losses (-1488 euros), which makes that, obviously, in this year, Nokia not be profitable.

The next graph shows the evolution of the Earnings Before Taxes and the Equities of Nokia during the period 2008-2011:
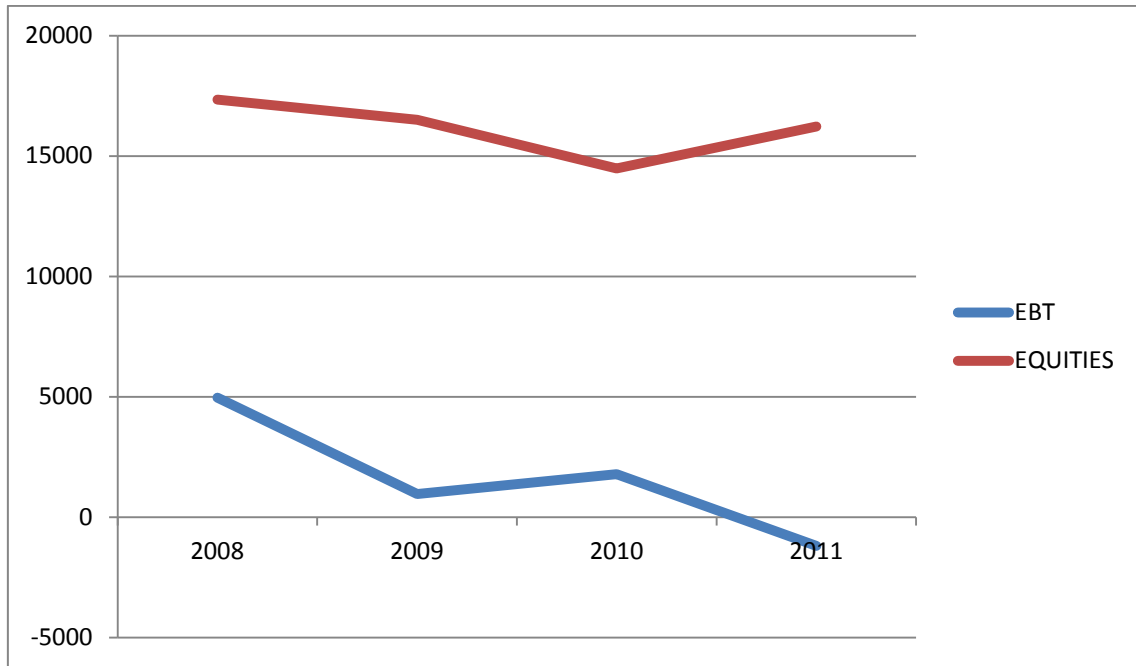
Graph 28: Information from the annual reports of Nokia. Graph made it for us.

COMPARISON BETWEEN ROE AND ROEbt: THE IMPACT OF TAXES

If we use the ROE as a measure of profitability and especially to compare the profitability that can offer different companies we are incurring an error. The net income between two companies can be very different just for paying taxes. For example, Company A may have a EBT of EUR 1000, but for the country in which it operates and the tax system to which it is hosted, pays 700 euros of taxes, so that would give a Net Income of $ 300, and that Company B has a EBT $ 500, but for the country where it is installed, pays 100 euros of taxes, so you would have a Net Income of 400 euros. So, having the same equities, Company B "would be more profitable" than Company A. But to what extent is this true?, How much is real? So it's better when comparing which company is more profitable to remove the fiscal impact of the benefits (ROEbt).

In fact, we have only to look at the ROE and ROEbt of our company. As we can see, the ROEbt is significantly higher than the ROE, which is obvious.
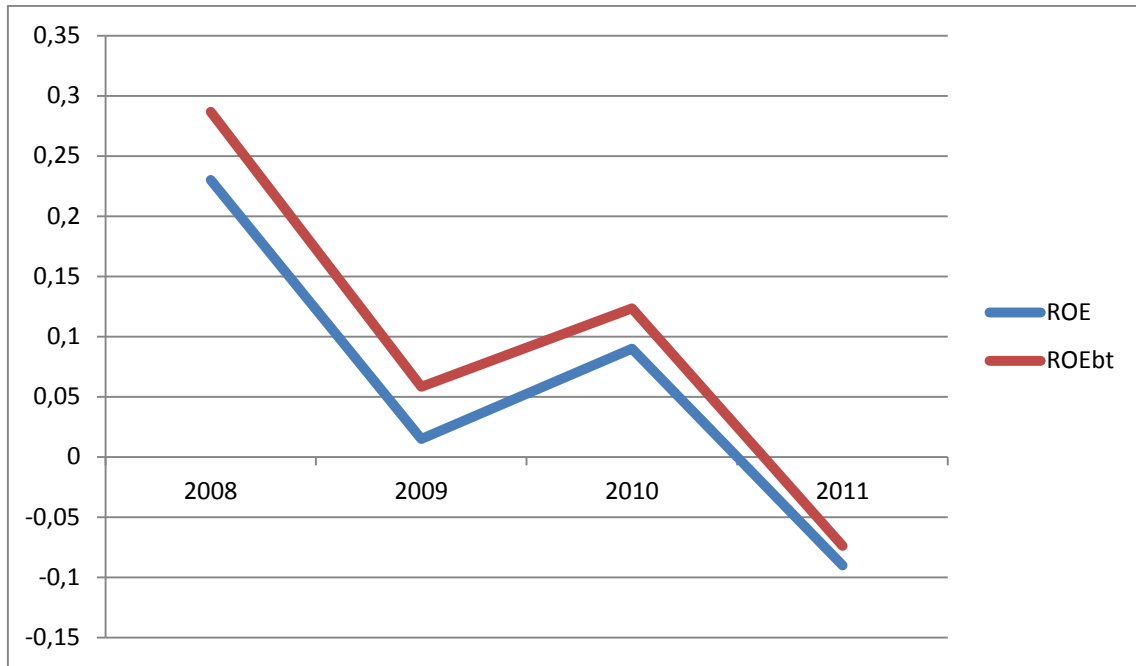
Graph 29: Information from the annual reports of Nokia. Graph made it for us.

ROA

In order to compute the ROA (return on assets) we need to calculate the relationship between the earning before interest and taxes (EBIT) and the revenues at the end of the year and the relationship between revenues, at the end of the year too, and assets at the beginning. We have obtained the following ones values:

	2008	2009	2010	2011
1. EBIT/Revenues	0,74145139	0,965791528	0,841963907	1,01200238
2. Revenues/Assets	1,348706083	1,03542014	1,187699368	0,988139969

Table 8: Information from the annual reports of Nokia. Table made it for us.

Analyzing these values, we can observe that the EBIT/revenues ratio has increase a 36.57%, mainly because the EBIT and the revenues have decreased 121.6% and 23.76% respectively during the last four years. Is spectacular the fall of the EBIT over the last years, it shows the precarious situation of Nokia because of the sales has been reduced due to the fact that the strong competition in the mobile industry has weakened the Finnish company. One of the reasons of this drop is that Nokia take long time to bet in the touch screen, this fact strengthened their competitors.

Multiplying these two ratios we obtain the ROA:

$$ROA = \frac{\text{EBIT } 31/12}{\text{Revenues } 31/12} * \frac{\text{Revenues } 31/12}{\text{Assets } 1/1}$$

Hence, the value of ROA is the ratio between EBIT at the end of the year and Assets at the beginning. The values that we've obtained are the followings:

	2008	2009	2010	2011
ROA	0,132077981	0,030241019	0,05792154	-0,02742632

Table 9: Information from the annual reports of Nokia. Table made it for us.

Through this graph, we can observe that the ROA of Nokia has a negative trend over the last four years; despite of a little increase in 2010, the ROA has decreased 120.7%
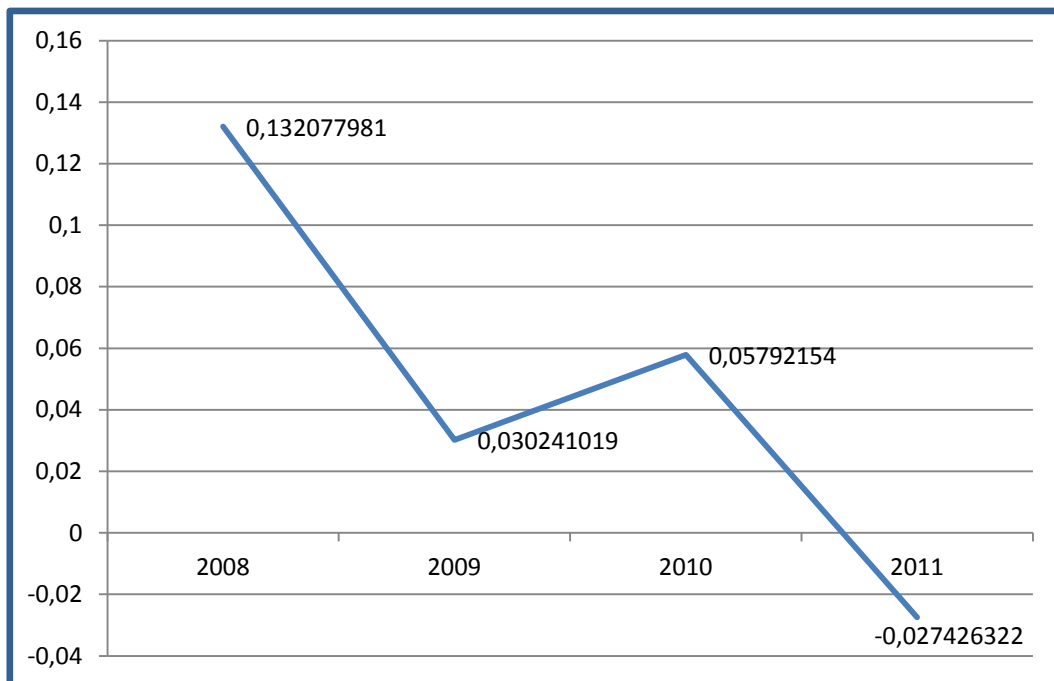
Graph 30: Information from the annual reports of Nokia. Graph made it for us.

ROA is an indicator of how profitable a company is relative to its total assets. ROA gives an idea as to how efficient management is at using its assets to generate earnings. Hence, Nokia is economically unprofitable.

The negative ROA means that Nokia may not be able to sustain their operations overtime, because the company is investing a high amount of capital into its production while simultaneously receiving little income.

So, we can explain the negative trend of the ROA due to the reduction of the EBIT, in a 121.6% because the assets have remained more or less constants because over the last four years, only have increased a 4%.

COMPARISON BETWEEN ROA AND ROEbt: THE IMPACT OF DEBT

If we compare the ROA and ROEbt we can see the impact of the company's debt on profitability. The formula for ROA includes in the numerator the EBIT (Earning Before Interest and Taxes), while the mathematical formula of ROEbt includes in the numerator the EBT (Earning Before Taxes). The difference between the two numerators is, then, the interest, the difference between interests that the company sees as income, e.g. Share of results of Associated companies, and interests that the company has to pay for debts incurred.

In 2008, the first of our analysis, the ROA is 13.2%, while the ROEbt is 28,66%. In the numerator of the ROA we find an EBIT of EUR 4966, and in the numerator of the ROEbt a EBT of EUR 4970, due to a positive difference of 4 between Share of results of Associated companies (Revenues) of 6 and Financial income and expenses (expenses) of -2. We see, then, as the EBIT and the EBT are very similar in 2008. However, in that year, the denominator of both equations is very different. The assets in 2007, that we used for the calculation of ROA 2008 is 37599 euros, while the equity of the company in 2007, that we used for the calculation of ROEbt 2008, is 17338 euros. That is, we can see that in that year Nokia is funded mostly by foreign debt and not by equity (Nokia is funded 54% by external debt), which causes the equity return regardless of taxes is greater than the return by assets.

In 2009, the ROA is 3.02%, while the ROEbt is 5,83 %. In that year, the EBIT is 1197 euros, while the EBT is 962 euros, resulting from a difference between revenue and expenditure by interests of 235 euros. The assets of Nokia in 2008, that we used for the calculation of ROA, is 39582 euros, while the equities of the company in 2008, which we used for the calculation of ROEbt 2009, is 16510 euro. We see, then, like most Nokia activities are financed through external borrowing (Nokia is funded by 58% through external debt). The heavy reliance on debt for funding causes the denominator of both profitability measures differs quite.

In 2010, the EBIT and the EBT of EBT again increase, with the EBIT of Euro 2070 and the EBT of 1786 euros. This, in principle, should give a ROEbt and a ROA higher than in 2009. The assets of 2009, that we have used to calculate the and a ROA of 2010, are of 35738 euros, while the equities of the same year, which we used for the calculation a ROEbt 2010 is 14749 euros. In this case, the assets of Nokia continue to fund more or less at the same percentage from external debt (58%). In 2010, the ROA is 5.79% and the ROEbt is 12,33%.

Finally, in 2011, the last of our analysis, the EBIT is -1073 euros, while the EBT is -1198 euros, as a result of a negative difference between revenues and expenses by EUR -125 by interests. Due to the negative sign of both results, return on assets and on equity will obviously be negative in both cases. The assets of the company in 2010, which we used for the calculation of ROA in 2011, are 39123 euros, while the equities is 16231 euros. We can see that this year most Nokia activities are financed from external borrowing (58%).
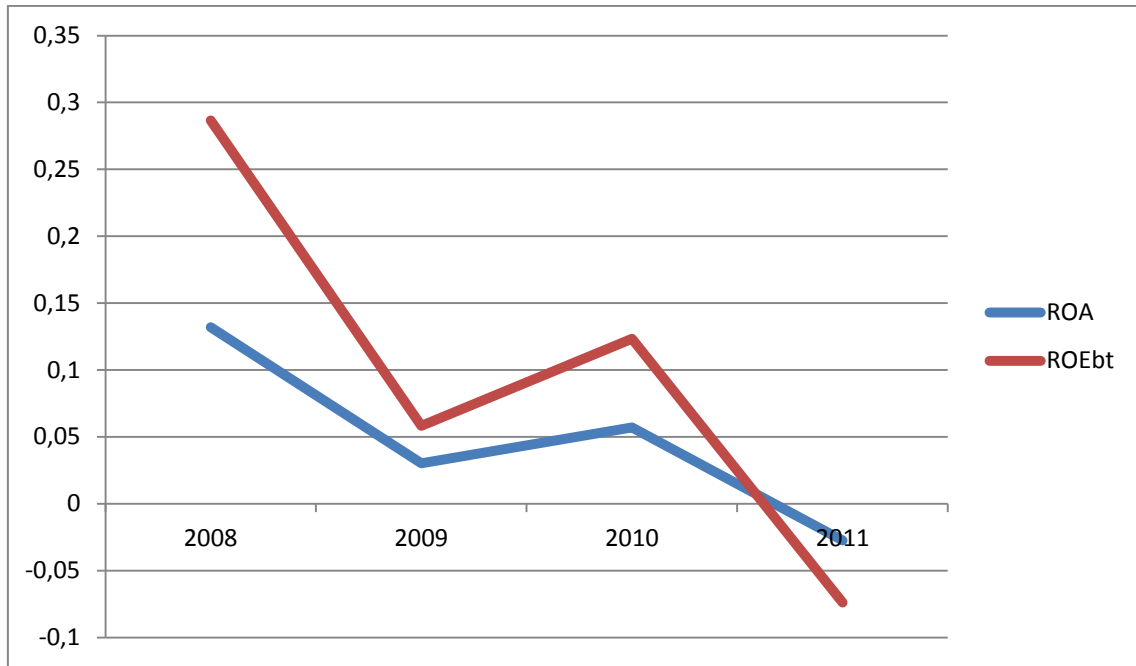
Graph 31: Information from the annual reports of Nokia. Graph made it for us.

We can observe that ROEbt and ROA follow more or less the same way, have the same trend.

VALUE ADDED

Regarding the value added of a company, is the sum of the EBITDA and the salaries paid by the firm.

In the table we can see the salaries of Nokia of the period 2008-2011 and the EBITDA of this period of time.

	2008	2009	2010	2011
Salaries	5615	5658	5808	6284
EBITDA	4970	962	1786	-1198

Table 10: Information from the annual reports of Nokia. Table made it for us.

The salaries of Nokia have been increased more or less a 12%, but is important take into account that the number of employees has increased too, in 2011 the average number of workers was 134.171 and in 2008 121.723. So, despite of the negative results in the EBIT and EBITDA, the company hasn't chosen to dismiss employees.

About the EBITDA, as the EBIT, has a negative trend over the last four years, in 2011, the earnings before interest, taxes, depreciation and amortization was a 124% lower than in 2008.

So, taken into consideration the evolution of these values, we can conclude that the Valued added of Nokia has decreased. Let's go to check it.

Value added
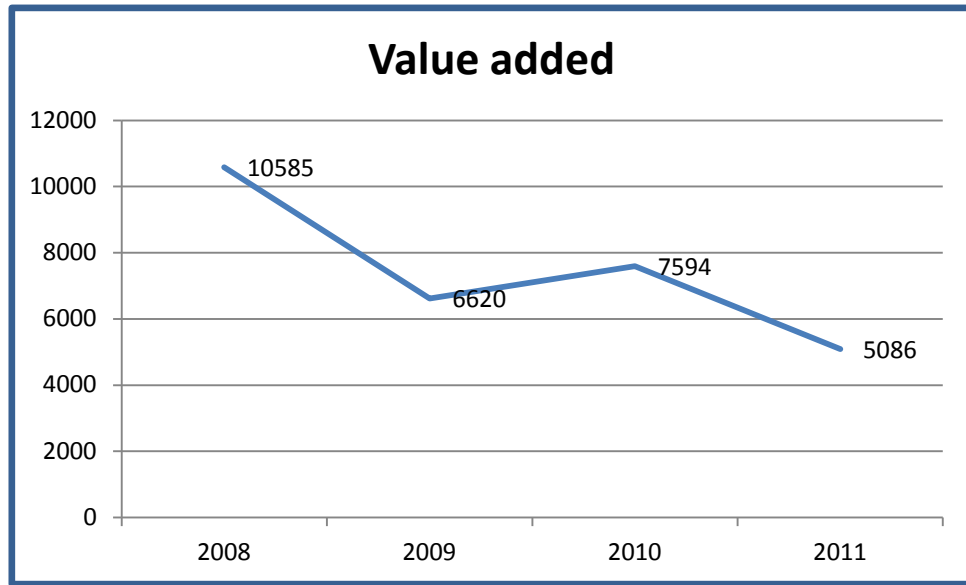
Graph 32: Information from the annual reports of Nokia. Graph made it for us.

As became visible, the valued added of Nokia has been reduced a 51.9% due to the reduction of the EBITDA.

Calculating the ratio between the Salaries and the EBITDA we can know for each monetary unit of margin how the company has spent on wages.

	2008	2009	2010	2011
$\dfrac{Salaries}{EBITDA}$	1,129778672	5,881496881	3,251959686	-5,24540902

Table 11: Information from the annual reports of Nokia. Table made it for us.

Therefore, in 2011 Nokia spent 6.36 monetary units less than in 2008 for each monetary unit it receives from the margin.

J BANK SENSIBILITY

If we want to calculate the bank sensibility "j" we should use the following formula assuming that (e=0,49%[17]):

$$ROE_{BT} = ROA + (ROA - e)\frac{Liabilities}{Equities} - j * \left(\frac{Liabilities}{Equities}\right)^2$$

The values that we get if we use this formula are:

|	2008	2009	2010	2011
j	0,07374871	0,02995386	0,0036561	0,00072407

Table 12: Information from the annual reports of Nokia. Table made it for us.

---

[17] Economista.es 15/05/2013

This mean that the "j" bank sensibility is not very high because the debt ratio is not too high, and the banks determine that is not dangerous borrow money to Nokia. However the bank is not taking into account the drop of sales. The value that we get from 2011 it's not reliable and it is because the ROE and ROA are negative, so this sensibility didn't reflect well in case of negative values. And if we represent those values with a graph:
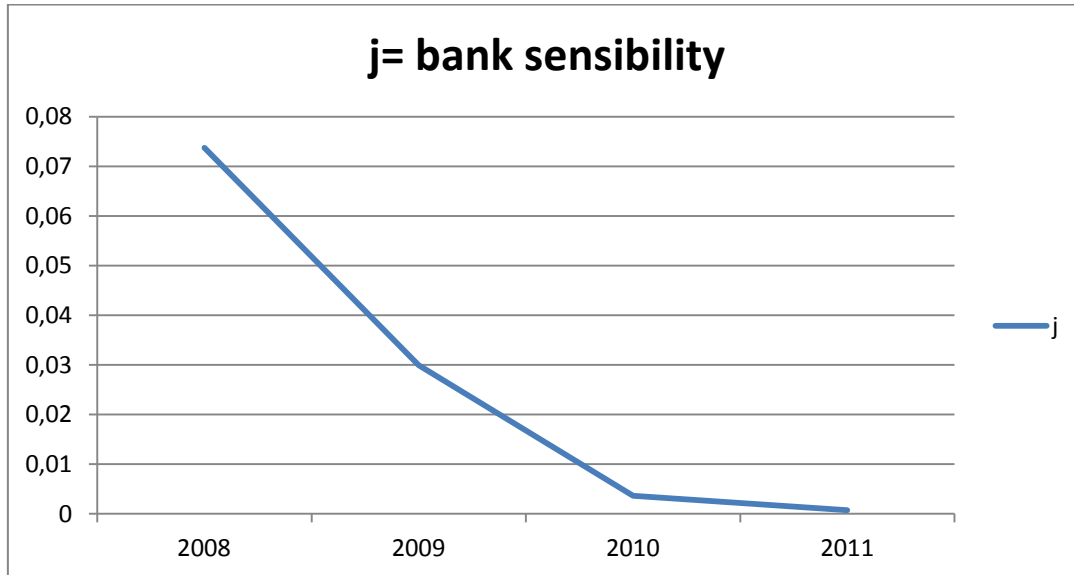
Graph 33: Information from the annual reports of Nokia. Graph made it for us.

Here we can see a clearly negative trend, however doesn't represent the reality, because the debt ratio is higher every year and the profits of the company are dropping, and that means that in a long term maybe the company cannot pay the bonds or loans. However, as we can see in the reports we observe that our company demands few loans because the company is financed by bonds.

As we have the j we can calculate the k value, taking into account that k is constant and doesn't represent the real life.

$$k = e + \frac{liabilities}{equities} * j$$

So, if we use this formula we get the following values:

	2008	2009	2010	2011
k	0,09108195	0,04332967	0,00878004	0,00580979

Table 13: Information from the annual reports of Nokia. Table made it for us.

The interest percentage has a negative trend and it's not real because the debt ratio increase, and the company is getting more loses every time, so that means that maybe in a long term the company cannot pay the loans. The interest percentage is too small and the percentage of 2011 is not reliable due to the formula doesn't work if we have negative values. So if we make the graph
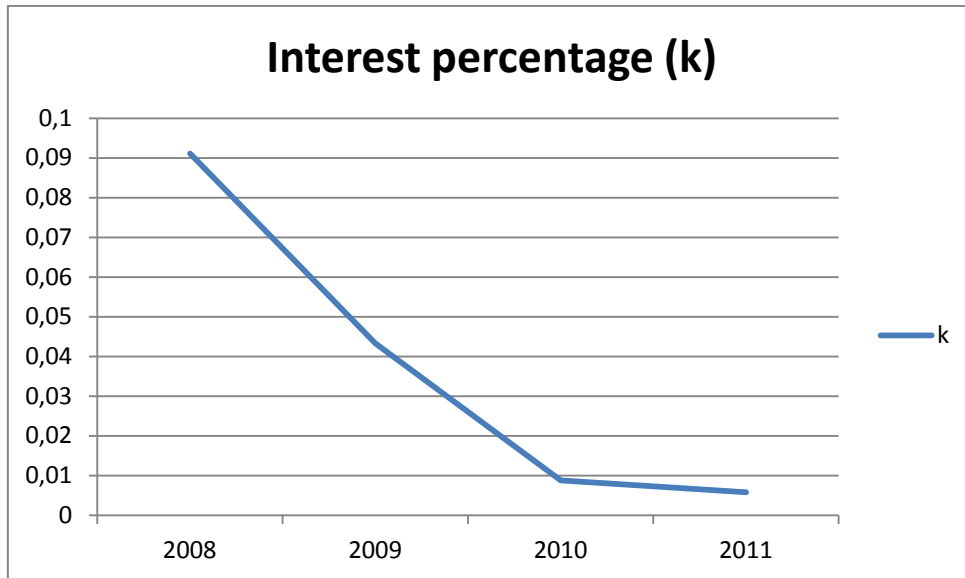
Graph 34: Information from the annual reports of Nokia. Graph made it for us.

Some of this drop is due to the crisis the banks decrease a lot the interest percentage, however for Nokia each year is smaller, and this has no sense, due to the increase in debt ratio and the decrease of sales.

OPTIMAL LEVERAGE

We can calculate the optimal value of the leverage ratio (liabilities/equities) differentiating it respects the ROE before taxes as we can see in the following formula.

$$\frac{\partial ROE\ Before\ Taxes}{\partial \frac{liabilities}{equities}} = 0 + (ROA - e) * 1 - 2j * \frac{liabilities}{equities}$$

We should equal to 0 in order to get the maximum or the minimum value.

Therefore, solving the equation $\frac{ROA-E}{2j}$ we can know which the optimal value for the leverage ratio is. After that, we need to calculate the second derivative in order to know if the value is the maximum ones.

$$\frac{\partial ROE\ Before\ Taxes}{\partial \frac{liabilities}{equities}} = 0 - 2j < 0$$

As the values of j are positive, the -2j always will be negative, and all the values are maximums.

The results come from these equations are the followings:

	2008	2009	2010	2011
J	0,07374871	0,02995386	0,0036561	0,00072407

ROA	0,13207798	0,03024102	0,05792154	-0,02742632
Euribor	0,0049	0,0049	0,0049	0,0049
Optimal leverage	0,86223865	0,42300096	7,25111563	-22,3225492
Real leverage	2,16858923	2,39745609	2,42307953	2,41038753

Table 14: Information from the annual reports of Nokia. Table made it for us.

In 2008 and 2009, the optimal leverage is less than the real ones. It means that the company had obtained a higher ROE before taxes if it had depended less on external financing.

In order to get the higher value of ROE before taxes in 2010, the optimum value of leverage is very large, the company had had to get into debt so much.

Makes no sense the optimal leverage for 2011 because the ROA is negative, the firms only get into debt when the value of ROA is higher than the value of k and in 2011 the value of the k is 0,0058.

These show again the bad situation of Nokia regarding the profitability.

RISK vs PROFITABILITY

The enterprise search the maximum profitability as it is possible. To compare the risk with the profitability in the short term we have to look the ROA values from 2011 to 2008, the cash cycle and the Working Capital ratio from the same years. If we do that we can take the following table:

	2008	**2009**	**2010**	**2011**
ROA= EBIT/ASSETS	0,13207798	0,03024102	0,05792154	-0,02742632
Cassets/Cliabilities	1,20216163	1,55471425	1,54760547	1,459241
Cash cycle	0,07365751	0,13458055	0,03240996	0,05554408

Table 15: Information from the annual reports of Nokia. Table made it for us.

The first thing that we can see is that all the values are positive except the value of ROA 2011. The working capital ratio is higher than one, and that means that the current assets is higher than the current liabilities, and the company could pay all this debts in case of dilution. However, the values of ROA decrease year by year and this is due to the sales. If we make a graph representing the ROA, CAssets/CLiabilities and the Cash Cycle we get:
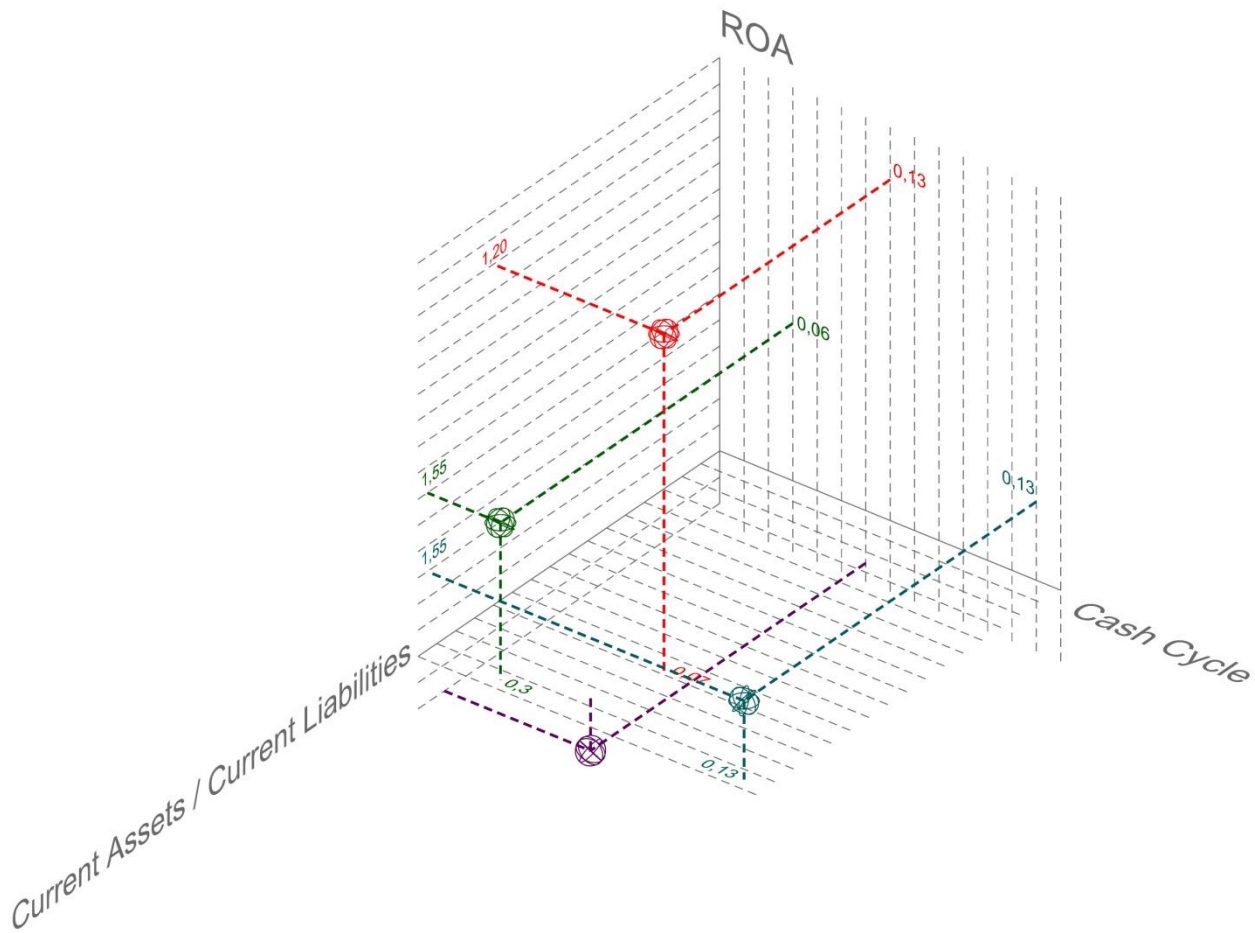
Graph 35: Information from the annual reports of Nokia. Graph made it for us.

As we can see here, the value of 2011 has no sense because the ROA is negative, however Nokia has all the values in the ideal situation that is all the values positive and in the case of the solvency ratio higher than one, although the 2011 the ROA is negative. But here we can see that we are in the first quadrant.

GROWTH RATE (g)

We need to calculate the growth rate of the net income to know if the company has a negative trend or a positive trend. If we calculate the growth rate we use the following formula:

$$g = \frac{Net\ income_x - Net\ income_{x-1}}{Net\ income_{x-1}}$$

And if we compute the growth rate with this formula we will obtain the following values:

	2008	2009	2010	2011
g (growth)	-0,40848413	-0,93480441	4,16538462	-2,10796724

Table 16: Information from the annual reports of Nokia. Table made it for us

As you can see the company presents a negative growth and that means that the sales are decreasing year by year, only in 2010 the growth increase significatively. If we make the graph we can see better the evolution of the growth.
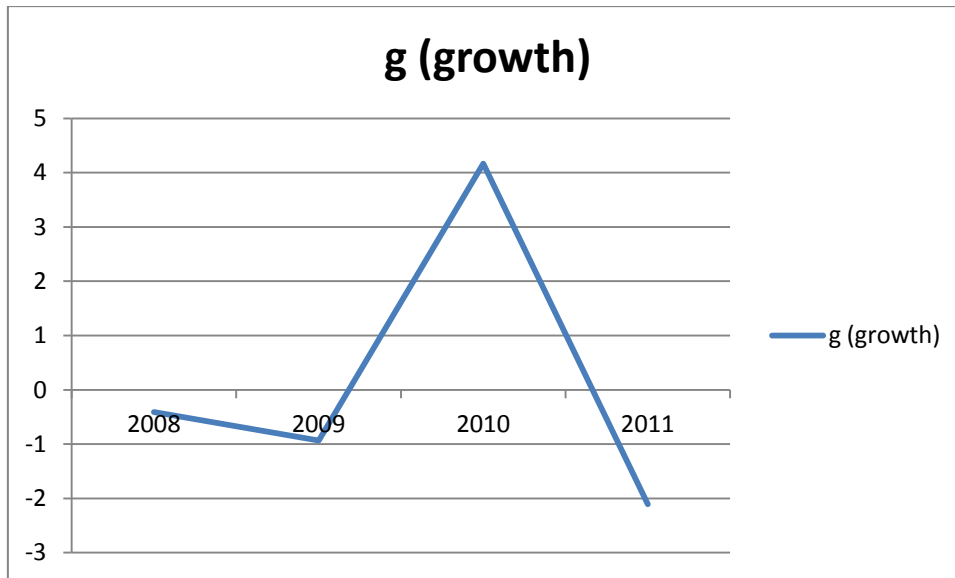
Graph 36: Information from the annual reports of Nokia. Graph made it for us.

Here in this graph we can see perfectly, that the company has not a constant growth, the company grows, and then decrease, it is quite crazy. This is a symptom that the company doesn't know what they shall do. The company cannot forecast the future, because hasn't got any pattern the series is completely random, so it is difficult to know where we will be in one year.

VALUE OF THE COMPANY (PRICE)

To determine the value of the company with Gordon and Shapiro method, we need to know the dividends distributed by the firm, the interest and the growth rate. To calculate we use the following formula:

$$Price = \frac{Dividends}{(\frac{1}{PER}) - g}$$

However as we've seen before the only growth that is significant is the growth of 2010 because the other ones are negative values. Although if we calculate the values, the only value that is not significant is the price of 2010 because is a negative price. We can see better in a table:

	2008	2009	2010	2011
Price	3224,77069	1560,17679	-364,908059	365,8473667

Table 17: Information from the annual reports of Nokia. Table made it for us

The price values are express in millions. The value of the firm is decreasing equally that the sales are decreasing. However, in 2010 the value of the price is negative because the interest is lower than the growth, so unfortunately any of this value is significant because in 2010 the

growth rate is higher than the interest rate, then in the other cases the growth are negatives. So, we don't make a graph showing the evolution of the value of the company because has no sense, due to the values are not significant.

EPS (EARNINGS PER SHARE)

We need to calculate the earnings per share of all the years in order to calculate the PER. The formula to calculate the EPS is:

$$EPS = \frac{Earnings}{Number\ of\ shares}$$

If we calculate the EPS for the four years we can see the following values:

	2008	2009	2010	2011
EPS=Earnings/Shares	1,07	0,24	0,5	-0,31

Table 18: Information from the annual reports of Nokia. Table made it for us.

If we see this values, the value of 2011 is negative due to the company is getting loses. The values are decreasing except in 2010 that increase a little bit due to the earnings increase a little bit. The evolution is represented the following graph:
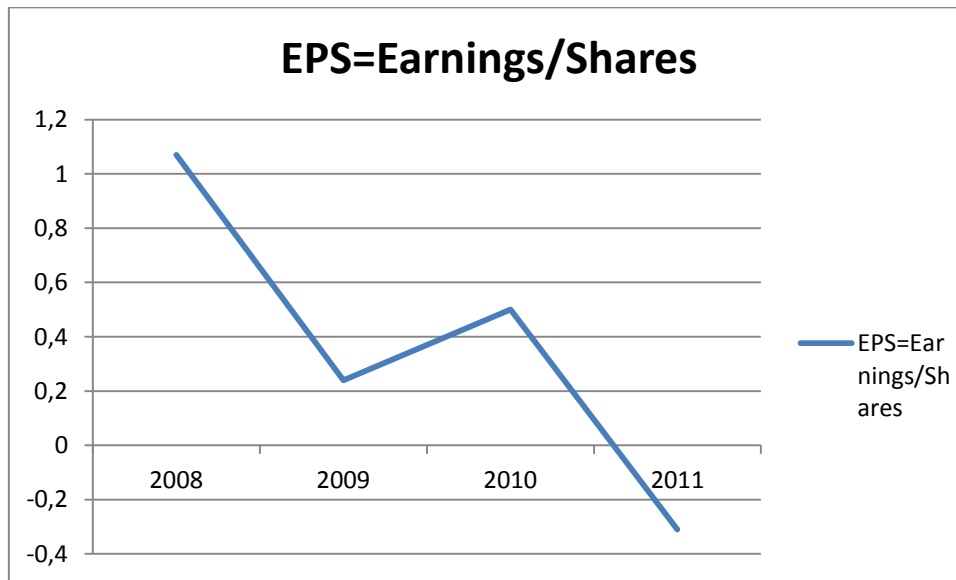
Graph 36: Information from the annual reports of Nokia. Graph made it for us.

This graph represents a decrease of Earnings per shares; however this decrease is due to the decrease of sales analyzed before.

PER

We need to calculate the PER to evaluate the relation between the price and the benefits obtained. In order to calculate the PER we should use the following formula.

$$PER = \frac{Average\ share\ price}{EPS}$$

But the price of the shares is took by the average of all the stock price during the year, however for 2011 as EPS is negative the PER is not significant, however we calculate the values of PER in the following table:

	2008	2009	2010	2011
PER	15,9065421	39,4583333	16,6	-16,48387097

Table 19: Information from the annual reports of Nokia. Table made it for us.

So, with these values we can calculate the value of the company. In 2011 has no sense too, because the PER value is negative and it is due to the EPS is negative due to the loses of the company.

CONCLUSION

Nokia few years ago was a success company but nowadays and due to some incorrect decisions made it and also the high competence that exist in this industry have done the loss of the leadership.

Now, Nokia is taken some acts to change the situation like changes in the strategy of Nokia Siemens Network, taking more customers and bet on Research and Development in Location and Commerce Business, and the least but not the last become the mobile phone of the managers because of the agreement with Microsoft Phone that could create a synergy between the computer and the mobile industry. So, the managers could modify any document in every device and refresh the document. Also we have to add, that Nokia is improving the mobile phones to the customers increasing the screen and improving others features, and making better apps like navigation or maps apps.

The most important area is Devices and Services that represents more or less a 61% over the total net sales. And as you can see in the Devices and Services analysis the net sales drop a lot and it is because Nokia has been ousted by multinational giants like Apple or Samsung, who have bet more on innovation and have known to adapt to the needs of its customers.

We must take into account, although the Europe market decrease a little bit, the Asia and Pacific increase a little bit too, however this is not represented in all the businesses. For example in Location and Commerce the area which increase quite a lot is Greater China however Location and Commerce has only the 3% of the net sales make that this area doesn't increase in the whole industry.

We want to add, that Location and Commerce is a business that is growing, however has loses due to the high investment in research and development that the area has the first years. So, what we want to say is that in few years where Location and Commerce will be in mature face the investment in research and development will be lower and the sales if nowadays is increasing a 63% due to the increase of demand, Nokia could obtain a lot of profits with this business. Nokia prefer to have loses today making research and development in order to be the leader in this area and take a lot of profits. We have to take into account, that nowadays the 85% of the cars that have navigation system have the Nokia Navigation system with the Nokia maps.

Related with the long term risk, Nokia present risk because the stock price of Nokia shares and the evolution of the sales (21%) drop a lot during the period analyzed due to the global crisis and also the increase of the competence due to Samsung and Apple are increasing their market share quite a lot due to the new smartphones with touchscreens. And here is when Nokia taught a bad decision because Nokia don't want to produce smartphones with touchscreens due to the Japanese people doesn't like. However, the market tendencies were more touchscreens and less touchpad; so, the mobile sales and smartphones sales drop and consequently the people didn't like and didn't buy any mobile because were not in tendency. So clearly both concepts have a negative trend showing a risky situation, isn't possible avoid it setting a profitable price of Nokia.

Related with the short term risk, Nokia doesn't present risk, due to all the financial ratios are between the correct values. Therefore it means that in the short term the firm doesn't present risk, but in the long term present a high risk.

And from the profitability issue, we can say that the company nowadays is not profitable. The clear decreasing of sales (21%) makes that during the years all the financial profitable measures are worse year by year until 2011. In 2011 the company starts getting loses, and that makes that all the financial profitable ratios have no sense due to the company is not profitable.

We think that Nokia should raise again their objectives and make a plan of what they want to achieve. Nokia needs to have a good image like 7 years ago, because now the people are not taking into account the existence of Nokia. The firm should care the Devices and Services area because is the highest business of Nokia.

BIBLIOGRAPHY

NOKIA ANNUAL REPORT:

ANNUAL ACCOUNTS

http://i.nokia.com/blob/view/-/1161018/data/2/-/Request-Nokia-in-2011-pdf.pdf

http://i.nokia.com/blob/view/-/165250/data/5/-/Request-Nokia-in-2010-pdf.pdf

http://i.nokia.com/blob/view/-/165248/data/5/-/Request-Nokia-in-2009-pdf.pdf

http://i.nokia.com/blob/view/-/165246/data/5/-/Request-Nokia-in-2008-pdf.pdf

FORM 20-F

http://i.nokia.com/blob/view/-/1964348/data/2/-/form20-f-11-pdf.pdf

http://i.nokia.com/blob/view/-/165234/data/5/-/form20-f-10-pdf.pdf

http://i.nokia.com/blob/view/-/165248/data/5/-/Request-Nokia-in-2009-pdf.pdf

http://i.nokia.com/blob/view/-/165246/data/5/-/Request-Nokia-in-2008-pdf.pdf

OTHER WEBSITES:

http://www.nokiasiemensnetworks.com/

http://www.navteq.com/

http://press.nokia.com/

www.eleconomista.es (4/04/2013)

http://es.finance.yahoo.com/q?s=NOA3.DE (4/04/2013)

DATABASE

AMADEUS (Analyse Major Databases from European Sources)

Microsoft Excel

	Nombre participada	País	Accionistas	
			Directo (%)	Total (%)
1.	DOPPLR OY	FI	100.00	100.00
2.	LIMITED LIABILITY COMPANY NOKIA	RU	100.00	100.00
4.	NOKATUS INSURANCE COMPANY LIMITED	IE	100.00	100.00
5.	NOKIA (CHINA) INVESTMENT CO., LTD.	CN	100.00	100.00
6.	NOKIA (SCHWEIZ) AG	CH	100.00	100.00
7.	NOKIA DANMARK A/S	DK	100.00	100.00
14.	NOKIA SIEMENS NETWORKS HELLAS S.A.	GR	100.00	100.00
15.	NOKIA SLOVAKIA, S.R.O. V LIKVIDACII	SK	100.00	100.00
18.	NOKIA UK HOLDINGS LIMITED	GB	100.00	100.00
19.	NOKIA VENTURE HOLDING B.V.	NL	100.00	100.00
20.	NORTH EUROPEAN REINSURANCE COMPANY LIMITED	IE	100.00	100.00
21.	OZ COMMUNICATIONS CO	CA	100.00	100.00
22.	PLAZES AG	CH	100.00	100.00
23.	SCALADO AB	SE	100.00	100.00
24.	SMARTERPHONE AS	NO	100.00	100.00
25.	NOKIA AUSTRALIA PTY LIMITED	AU	-	100.00
	SYMBIAN LIMITED	GB	-	100.00
30.	NOKIA (IRELAND) LIMITED	IE	WO	WO
31.	SYMBIAN SOFTWARE LIMITED	GB	WO	WO
32.	BEIJING NOKIA MOBILE TELECOMMUNICATIONS CO., LTD.	CN	MO	n.a.
33.	ENPOCKET INC.	US	MO	n.a.
34.	INTELLISYNC CORPORATION	US	MO	n.a.
35.	LOUDEYE CORP.	US	MO	n.a.
36.	NOKIA	US	MO	n.a.
37.	NOKIA ARGENTINA S.A.	AR	MO	n.a.
38.	NOKIA CHILE S.A.	CL	MO	n.a.
39.	NOKIA COLOMBIA S A	CO	MO	n.a.
40.	NOKIA FRANCE SA	FR	MO	n.a.
41.	NOKIA HOLDING, INC.	US	MO	n.a.
43.	NOKIA JAPAN CO.,LTD.	JP	MO	n.a.
44.	NOKIA POLAND SP. Z O.O.	PL	MO	n.a.
45.	NOKIA PRODUCTS LIMITED	CA	MO	n.a.

46.	**NOVARRA, INC.**	US	MO	n.a.	
47.	**VERTU AMERICAS INC**	US	MO	n.a.	
49.	**NOKIA SIEMENS NETWORKS FRANCE**	FR	-	50.00	
53.	INDAGON OY	FI	20.00	n.a.	
54.	**NOKSEL CELIK BORU SANAYI A S**	TR	20.00	n.a.	
55.	**VERTU CORPORATION LIMITED**	GB	10.00	n.a.	
56.	**DRAGONWAVE INC**	CA	5.30	n.a.	
57.	**EKOKEM OY AB**	FI	1.90	n.a.	
58.	**NOKIA CZECH REPUBLIC, S.R.O.**	CZ	1.00	n.a.	
59.	**NOKIA FINLAND OY**	FI	-	n.a.	
60.	NOKIA SALES INTERNATIONAL OY	FI	-	n.a.	
61.	**NOKIA SIEMENS NETWORKS MAGYARORSZÁG KORLÁTOLT FELELOSSÉGU TÁRSASÁG**	HU	-	n.a.	
62.	**OBOPAY, INC.**	US	-	n.a.	
63.	VERTU HOLDINGS OY	FI	-	n.a.	

	Name	Coun- try	Direct (%)	Total (%)
	Global Ultimate Owner:			
	NOKIA OYJ	FI		
	Ultimately owned subsidiaries:			
1.	DOPPLR OY	FI	100.00	100.00
2.	**LIMITED LIABILITY COMPANY NOKIA**	RU	100.00	100.00
3.	**NAVTEQ CORPORATION**	US	100.00	100.00
	NAVKEY	AR	100.00	100.00
	PIXELACTIVE INC.	US	100.00	100.00
	NAVTEQ SERVICES GMBH	DE	-	100.00
	DDG GESELLSCHAFT FÜR VERKEHRSDATEN MBH	DE	100.00	100.00
	MAP NETWORK, INC., THE	US	MO	n.a.
	NAVTEQ NORTH AMERICA, LLC	US	MO	n.a.
	NOKIA LOCATION & COMMERCE	US	MO	n.a.
	NAVTEQ AMERICA HOLDINGS B.V.	NL	100.00	100.00
	NAVTEQ HOLDINGS B.V.	NL	100.00	100.00
	NAVTEQ SOLUTIONS, S. DE R.L. DE C.V.	MX	MO	n.a.
	TRAFFIC.COM	US	MO	n.a.
4.	**NOKATUS INSURANCE COMPANY LIMITED**	IE	100.00	100.00
5.	**NOKIA (CHINA) INVESTMENT CO., LTD.**	CN	100.00	100.00
	NOKIA TELECOMMUNICATIONS LTD.	CN	79.40	n.a.

	BEIJING NOKIA HANGXING COMMUNICATION SYSTEM CO., LTD.	CN	69.00	n.a.
6.	NOKIA (SCHWEIZ) AG	CH	100.00	100.00
7.	**NOKIA DANMARK A/S**	DK	100.00	100.00
8.	NOKIA FINANCE INTERNATIONAL BV	NL	100.00	100.00
	NOKIA CROATIA D.O.O.	HR	100.00	100.00
	NOKIA CZECH REPUBLIC, S.R.O.	CZ	99.00	n.a.
	NOKIA MÉXICO, S.A. DE C.V.	MX	MO	n.a.
	NOKIA SERVICIOS, S.A. DE C.V.	MX	MO	n.a.
	NOKIA SIEMENS NETWORKS PERU S.A.	PE	MO	n.a.
9.	**NOKIA GMBH**	DE	100.00	100.00
	NOKIA TECHNOLOGY GMBH	DE	100.00	100.00
	NOKIA UNTERSTÜTZUNGS-GESELLSCHAFT MBH	DE	100.00	100.00
10.	**NOKIA GMBH**	DE	100.00	100.00
11.	**NOKIA INDIA PVT. LTD.**	IN	100.00	100.00
12.	**NOKIA KOMAROM LIMITED LIABILITY COMPANY NOKIA KOMAROM LTD.**	HU	100.00	100.00
	This company has some subsidiaries but none of them are ultimately owned by NOKIA OYJ (FI).			
13.	**NOKIA ROMANIA SRL**	RO	100.00	100.00
14.	**NOKIA SIEMENS NETWORKS HELLAS S.A.**	GR	100.00	100.00
15.	NOKIA SLOVAKIA, S.R.O. V LIKVIDACII	SK	100.00	100.00
16.	NOKIA SPAIN S.A.U.	n.a.	100.00	100.00
17.	NOKIA TMC CO.,LTD.	KR	100.00	100.00
18.	**NOKIA UK HOLDINGS LIMITED**	GB	100.00	100.00
	NOKIA R&D (UK) LIMITED	GB	100.00	100.00
	SYMBIAN LIMITED	GB	>50.00	>50.00
	NOKIA UK LIMITED	GB	100.00	100.00
	NOVARRA EUROPE LIMITED	GB	100.00	100.00
19.	NOKIA VENTURE HOLDING B.V.	NL	100.00	100.00
20.	**NORTH EUROPEAN REINSURANCE COMPANY LIMITED**	IE	100.00	100.00
21.	**OZ COMMUNICATIONS CO**	CA	100.00	100.00
22.	**PLAZES AG**	CH	100.00	100.00
23.	**SCALADO AB**	SE	100.00	100.00
	SCALADO HONG KONG LTD	HK	100.00	100.00
	SCALADO INC	US	100.00	100.00
	SCALADO JAPAN K.K.	JP	100.00	100.00
	SCALADO PERSONAL AB	SE	100.00	100.00
	SCALADO EUROPE SPRL	BE	85.00	n.a.

24.	**SMARTERPHONE AS**	NO	100.00	100.00
25.	NOKIA AUSTRALIA PTY LIMITED	AU	-	100.00
26.	NOKIA INC.	US	-	100.00
	QT SOFTWARE INC	US	MO	n.a.
27.	**NOKIA ITALIA S.P.A.**	IT	-	100.00
28.	**NOKIA UK LIMITED**	GB	-	100.00
29.	**SYMBIAN LIMITED**	GB	-	100.00
30.	**NOKIA (IRELAND) LIMITED**	IE	WO	WO
31.	**SYMBIAN SOFTWARE LIMITED**	GB	WO	WO
32.	**BEIJING NOKIA MOBILE TELECOMMUNICATIONS CO., LTD.**	CN	MO	n.a.
33.	**ENPOCKET INC.**	US	MO	n.a.
34.	**INTELLISYNC CORPORATION**	US	MO	n.a.
35.	**LOUDEYE CORP.**	US	MO	n.a.
36.	**NOKIA**	US	MO	n.a.
37.	NOKIA ARGENTINA S.A.	AR	MO	n.a.
38.	**NOKIA CHILE S.A.**	CL	MO	n.a.
39.	**NOKIA COLOMBIA S A**	CO	MO	n.a.
40.	**NOKIA FRANCE SA**	FR	MO	n.a.
41.	NOKIA HOLDING, INC.	US	MO	n.a.
	NOKIA INC.	US	MO	n.a.
42.	**NOKIA INC**	US	MO	n.a.
43.	**NOKIA JAPAN CO.,LTD.**	JP	MO	n.a.
44.	**NOKIA POLAND SP. Z O.O.**	PL	MO	n.a.
45.	**NOKIA PRODUCTS LIMITED**	CA	MO	n.a.
	VIPAERO IRELAND LIMITED	IE	WO	WO
46.	**NOVARRA, INC.**	US	MO	n.a.
47.	**VERTU AMERICAS INC**	US	MO	n.a.
48.	**NOKIA CZECH REPUBLIC, S.R.O.**	CZ	1.00	n.a.

Here we put a legend that explains the possible options in Direct percentage column:

Source indicates:	Corresponds to:
WO (for "wholly owned")	>= 98.-%
MO (for "majority owned")	>= 50.01%
JO (for "jointly owned")	= 50.00%
NG (for "negligible")	<= 0.01%
CQP1	50% + 1 share
BR	Branch

Table 20: Information from the annual reports of Nokia. Table made it for us.

ANNEX 2: CLIENTS

LOCATION AND COMMERCE CLIENTS

Those ones that I will show you are from Nokia Platform Location:

Those ones that I will show you are from NAVTEQ®.

NOKIA SIEMENS NETWORK

In Nokia Siemens Network we find the following customers:

ANNEX 3: MARKET RISK

2008 ANALYSIS

We search all the information about the values of 2008 of Nokia[18] and Eurostoxx 50[19]. All these data we want to analyze in terms of variance in percentage that is calculated like $\frac{Final\ value - initial\ value}{initial\ value} * 100$. With all these data we calculate some statistics, some measures to analyze the information.

The graph comparing the variance in terms of percentage between Nokia and Eurostoxx is the next one:
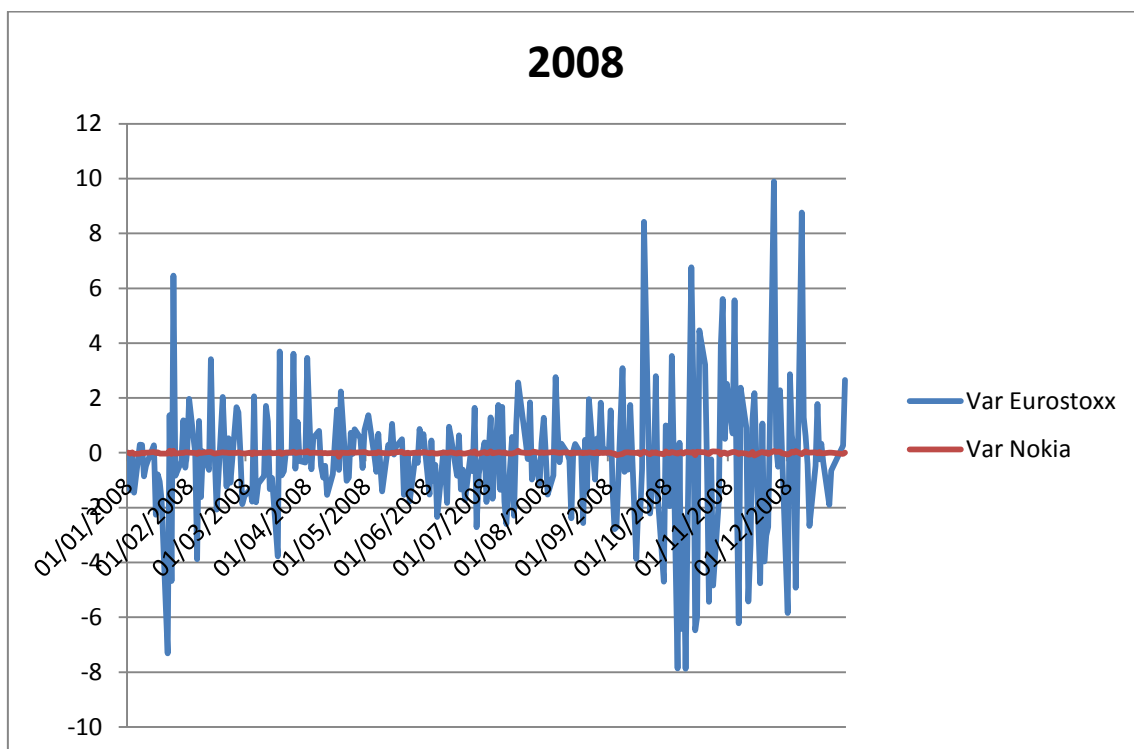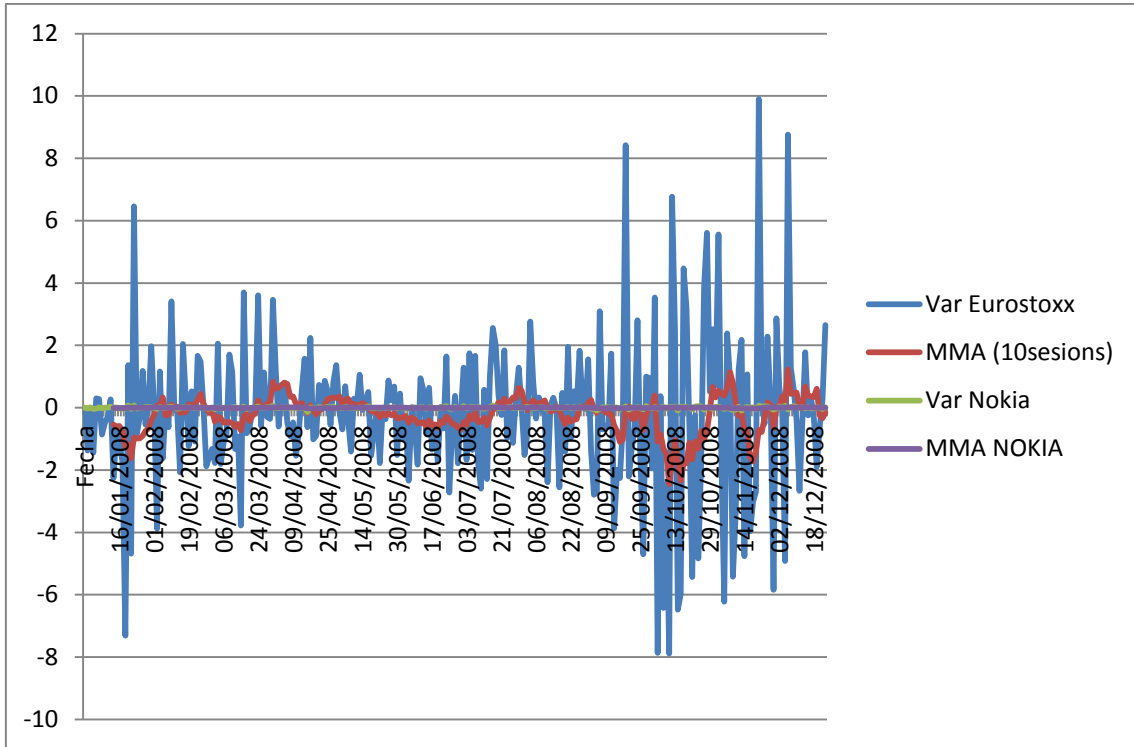

Graph 37: Information from the annual reports of Nokia. Graph made it for us.

As you can see, the variation of Eurostoxx is very high and Nokia is lower, but this is because the Eurostoxx value is much higher than Nokia and it is normal that the variation will be higher too.

To smooth a little bit the data we calculate the moving average with a k=10 sessions and we could obtain the following graphs for Nokia and for Eurostoxx.

---

[18]http://es.finance.yahoo.com/q?s=NOA3.DE searched 8th April of 2013
[19]http://www.eleconomista.es/indice/EUROSTOXX-50 searched 8th April of 2013
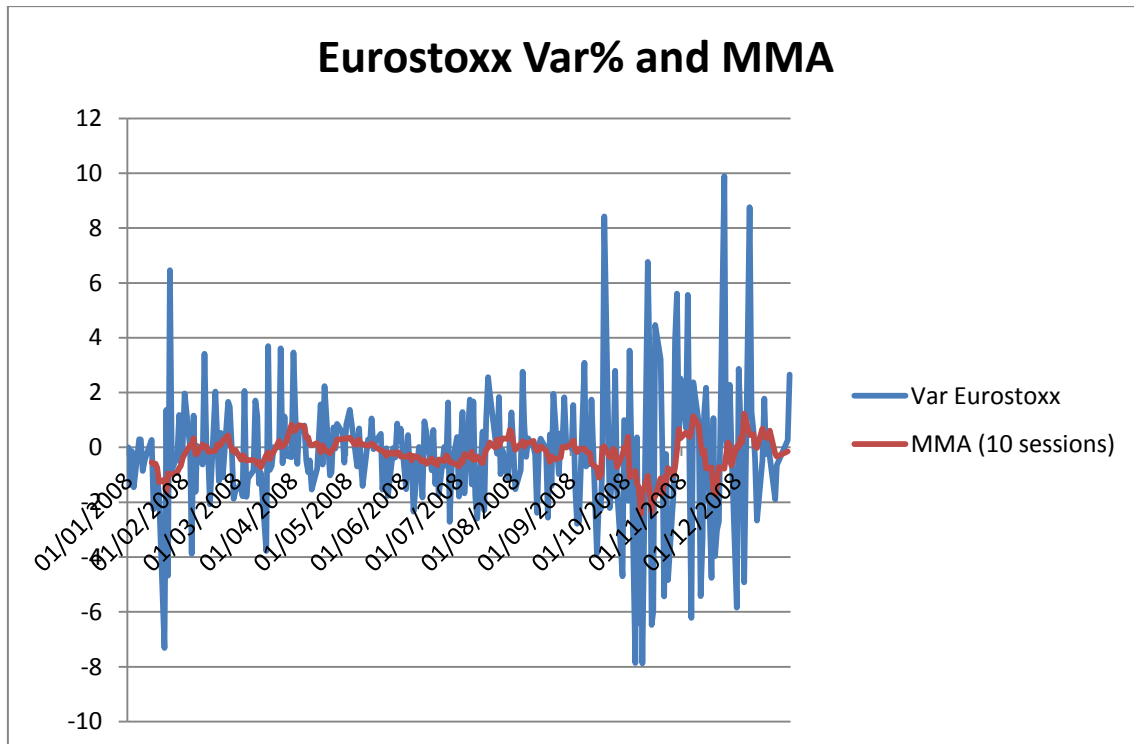
Graph 38: Information from the annual reports of Nokia. Graph made it for us.

However, here we cannot appreciate the variance and the moving average of Nokia due to the higher values in variation of Eurostoxx. For this reason, we separate the data and we make to graphs, one for Nokia and their moving average and other one for Eurostoxx and their moving average.
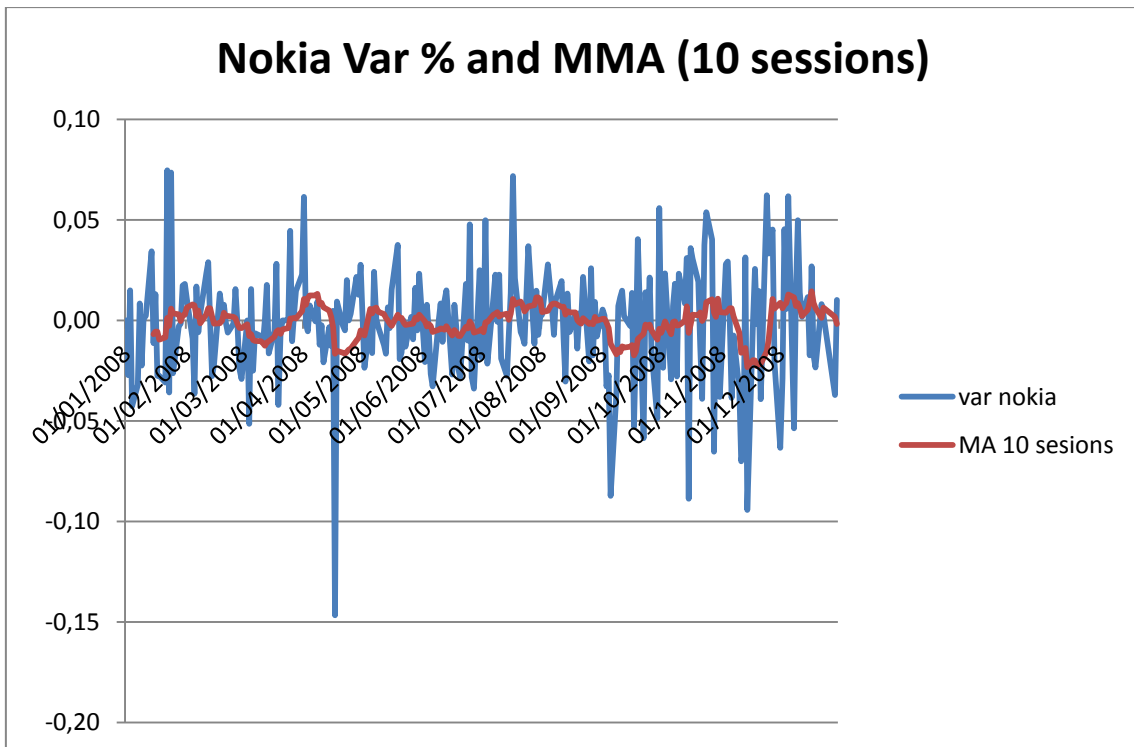
Graph 39: Information from the annual reports of Nokia. Graph made it for us.

Here you can see, that if we make the moving average the data is smoothing and also in comparison with Eurostoxx we can see that the absolute variation is lower than the Eurostoxx. (See Y-Axis the values are quite lower in Nokia than in Eurostoxx).

Graph 40: Information from the annual reports of Nokia. Graph made it for us.

Here the data as you can see is quite smooth than the first one. Now, we want to analyze all this information with some instruments, and to do that firstly we need to measure the descriptive analysis of the data and secondly an econometrician analysis. From the descriptive analysis we can calculate the following measures:

The first measure that we need to calculate is the variation coefficient and to do that we need to compute the average and the standard deviation. The value of the variation coefficient for Nokia is -23,14 and for Eurostoxx 50 is -11,06; so, as you can see the volatility is higher for Nokia than for Eurostoxx and that means that if you invest in Nokia you have more probability that tomorrow the value of the shares will decrease in more proportion than the Eurostoxx.

The second measure that we need to compute is the negative semi variance on average and that means, which probability I have, to obtain values below the average. In both cases, are quite similar and a little bit higher, in the case of Eurostoxx the probability to obtain values below the average is a 25% while in Nokia is about 24,86%. So, as you can see is quite similar and quite high, this measures allows us to know if tomorrow I will lose money or not because if you have a probability of 75% it means that 1 of 4 situations I will obtain value below the average, but in 3 of 4 situations I will obtain value above the average.

The third measure that we need to compute is the interest receives it by investors, to do that we compute the daily interest and the annual interest for both values (Eurostoxx and Nokia). In both cases the daily interest is negative, so we don't include here. This is because this year

the sales drop a lot due to the crisis and the bad decision of don't produce touchscreen. In crisis both values fall down.

From the econometrician analysis we can calculate the following measures:

Our econometrical model is $Var\ (Nokia) = \beta_1 + \beta_2 X_2 + u_i$ while X_2 is the Var (Eurostoxx), in this specific case the model is $Var\ (Nokia) = -0,0003 + 0,0042 X_2 + u_i$. The Beta that shows us the lineal estimation about Nokia and Eurostoxx, in this case the $\beta = 0,0042$ is a positive slope and that means that the regression is positive but is quite small. If we make a graph about the regression function we can see this slope in red.
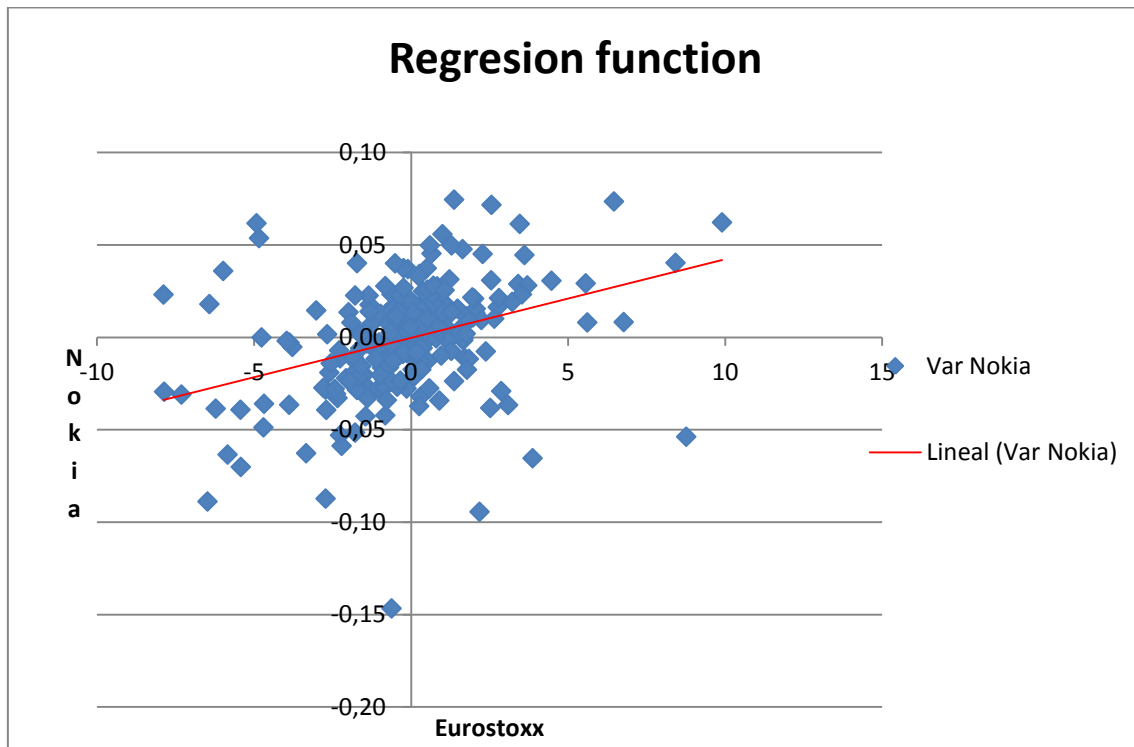
Graph 41: Information from the annual reports of Nokia. Graph made it for us.

Here we can see a lot of outliers and those ones could affect to the determination coefficient. The determination coefficient about this econometrician model is 0,1286. As you can see, is very small and that means that if I increase a 10% the values of Nokia I would obtain an increase of 1,286% in Eurostoxx values; so it's the same as said that only a 12,86% of the independent variables are explained by the model.

As everybody knows, to compare models is better to use the adjusted coefficient ($\bar{R}^2$) due to if I increase an independent variable the coefficient is not affected while in R^2 suppose an increase and in this case is equal to $\bar{R}^2 = 0,1252$.

Now, we want to see if the model is statistically significant and to evaluate I need to compute the F- test.

$$F_{(K-1,N-K)} = F_{(2,256)} = \frac{\frac{\sum(\hat{Y}_i - \bar{Y})^2}{K-1}}{\frac{\sum ei^2}{N-K}} = \frac{\frac{EV}{k-1}}{\frac{\overline{EV}}{n-k}} = \frac{0,0269}{0,0007} = 37,65$$

If we make the distribution about the F, knowing that for a α=0,05 (significance about 5%, that means a probability of 95%) the value is 1,96.
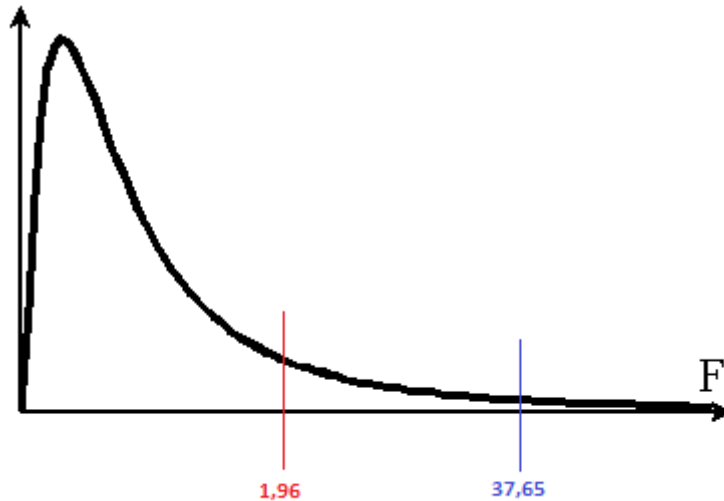
Graph 42: Information from the annual reports of Nokia. Graph made it for us.

So, clearly, the model is statistically significant, so the model is correctly specified.

Finally, we should calculate the confidence intervals with a 5% of significance that means a 95% of probability. The confidence interval for eurostoxx is [-5,03≤Var%Eurostoxx≤4,60]=0,95 and the confidence interval for Nokia is [-0,058≤Var%Nokia≤0,055]=0,95. In both cases, mean that the variation in % with a 95% of probability should be between the two values.

2009 ANALYSIS

We search all the information about the values of 2009 of Nokia[20] and Eurostoxx 50[21]. All these data we want to analyze in terms of variance in percentage that is calculated like $\frac{Final\ value - initial\ value}{initial\ value} * 100$. With all these data we calculate some statistics, some measures to analyze the information.

The graph comparing the variance in terms of percentage between Nokia and Eurostoxx is the next one:
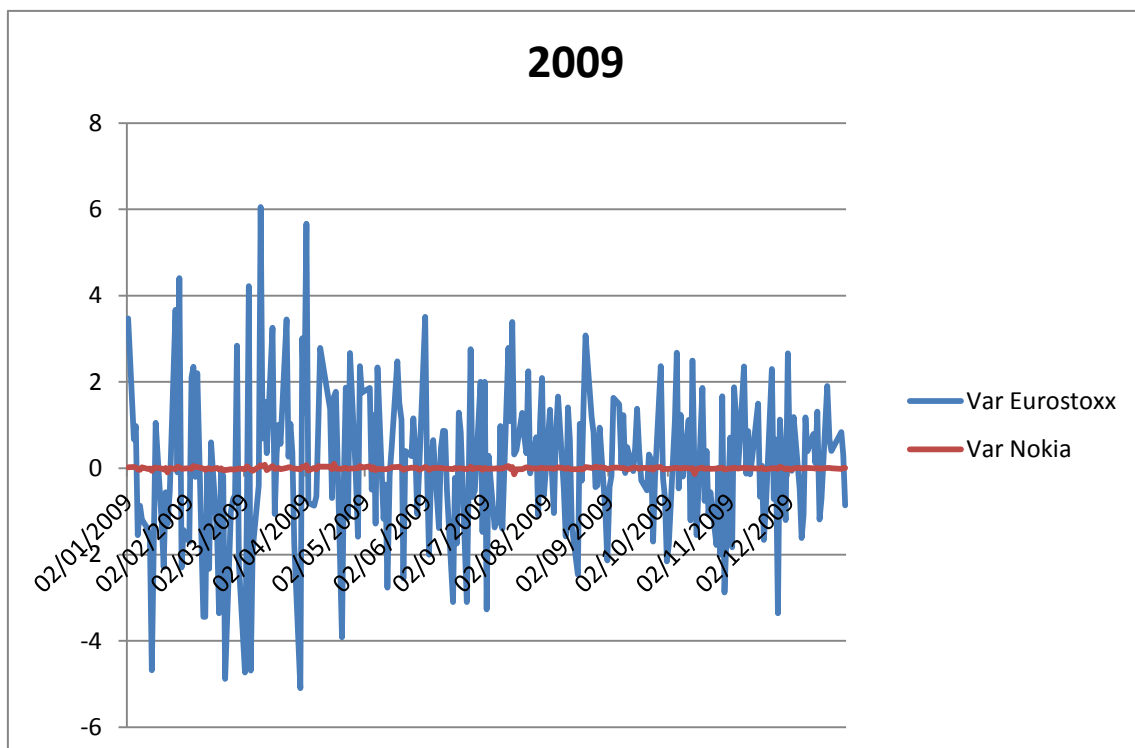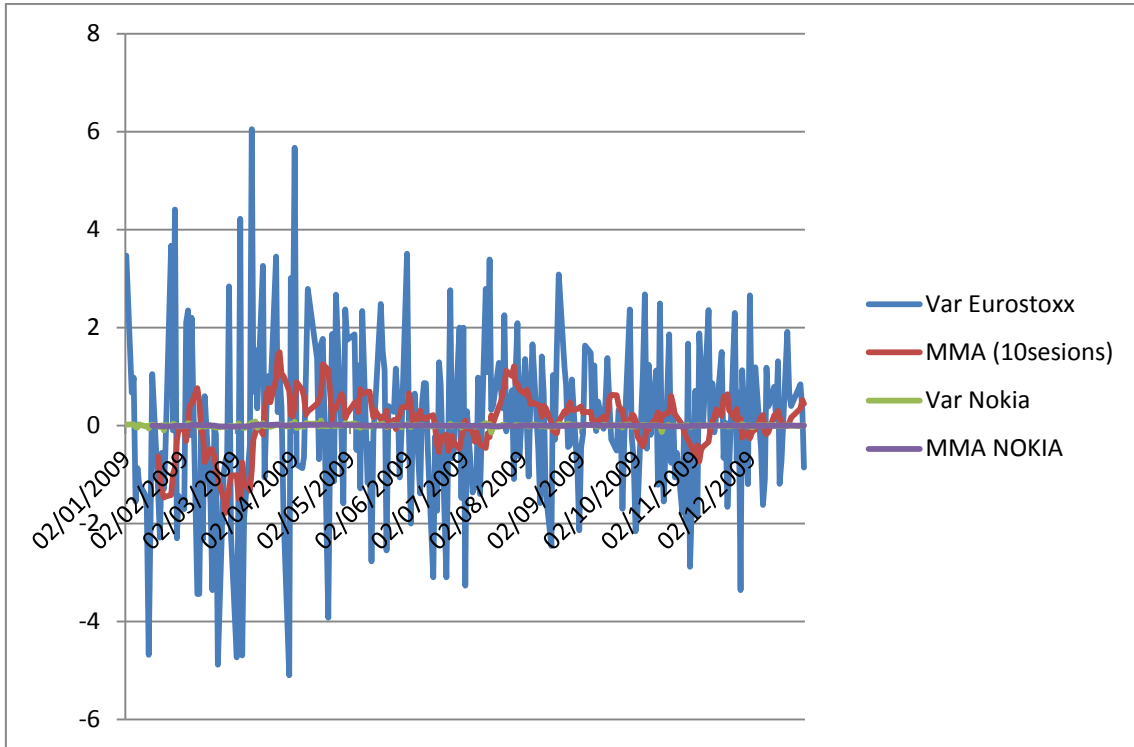

Graph 43: Information from the annual reports of Nokia. Graph made it for us.

As you can see, the variation of Eurostoxx is very high and Nokia is lower, but this is because the Eurostoxx value is much higher than Nokia and it is normal that the variation will be higher too. As you can see, the variation is higher than the previous year.

To smooth a little bit the data we calculate the moving average with a k=10 sessions and we could obtain the following graphs for Nokia and for Eurostoxx.
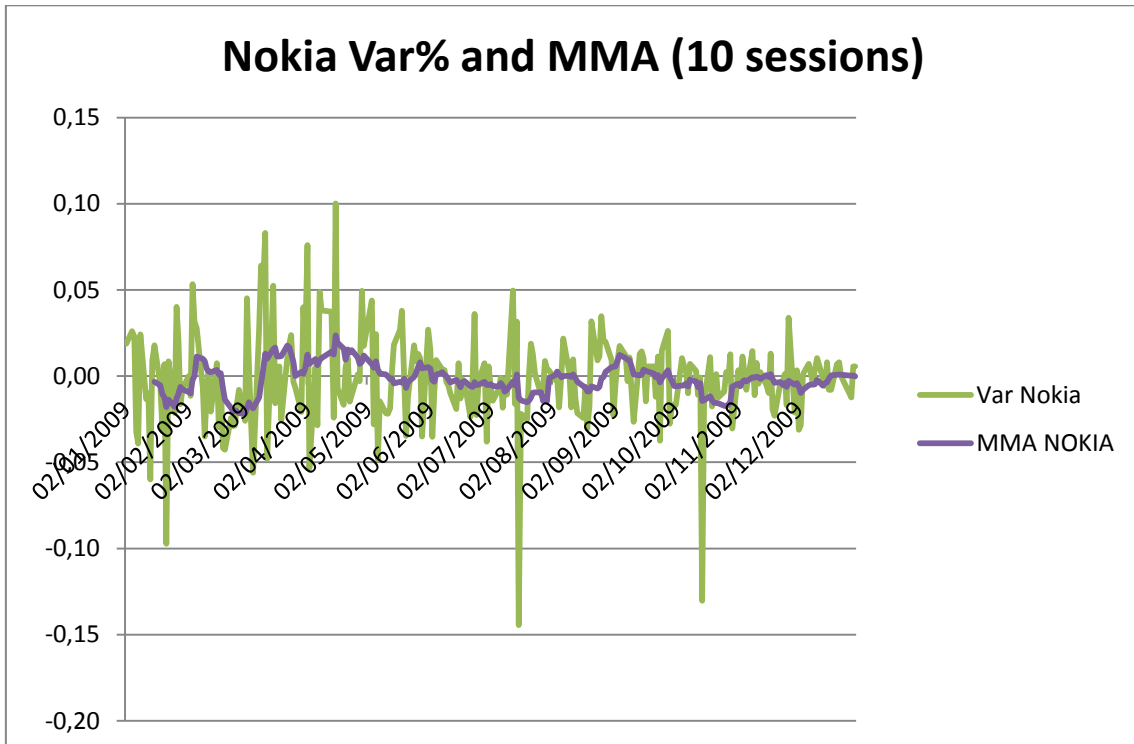
---

[20]http://es.finance.yahoo.com/q?s=NOA3.DE searched 8th April of 2013
[21]http://www.eleconomista.es/indice/EUROSTOXX-50 searched 8th April of 2013

Graph 44: Information from the annual reports of Nokia. Graph made it for us.

In the graph we can see that the MMA of Nokia and the Var of Nokia are the same line because the variance was more less 0 so the smother line will be quite similar. However, here we cannot appreciate the variance and the moving average of Nokia due to the higher values in variation of Eurostoxx. For this reason, we separate the data and we make to graphs, one for Nokia and their moving average and other one for Eurostoxx and their moving average.

Here you can see, that if we make the moving average the data is smoothing and also in comparison with Eurostoxx we can see that the absolute variation is lower than the Eurostoxx. (See Y-Axis the values are quite lower in Nokia than in Eurostoxx).
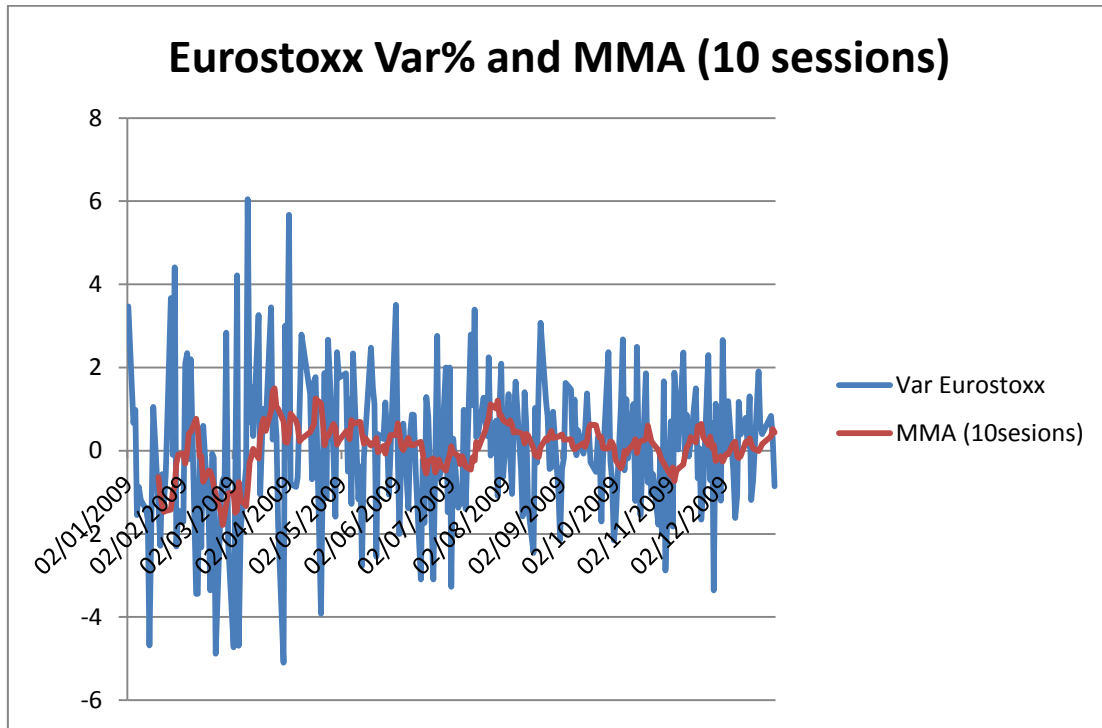
Graph 45: Information from the annual reports of Nokia. Graph made it for us.

Here the data as you can see is quite smooth than the first one and the variation of the first months are quite higher than the variation in the last months. Now, we want to analyze all this information with some instruments, and to do that firstly we need to measure the descriptive analysis of the data and secondly an econometrician analysis. From the descriptive analysis we can calculate the following measures:

The first measure that we need to calculate is the variation coefficient and to do that we need to compute the average and the standard deviation. The value of the variation coefficient for Eurostoxx is 23,17 and for Nokia 50 is -14,86; so, as you can see the volatility is higher for Eurostoxxthan for Nokia and that means that if you invest in Eurostoxxyou have more probability that tomorrow the value of the shares will decrease in more proportion than the Nokia.

The second measure that we need to compute is the negative semi variance on average and that means, which probability I have, to obtain values below the average. In both cases, are quite similar and a little bit higher, in the case of Eurostoxx the probability to obtain values below the average is a 25% while in Nokia is about 25%. So, as you can see is the same value and it is quite high, this measures allows us to know if tomorrow I will lose money or not because if you have a probability of 75% it means that 1 of 4 situations I will obtain value below the average, but in 3 of 4 situations I will obtain value above the average.

The third measure that we need to compute is the interest receives it by investors, to do that we compute the daily interest and the annual interest for both values (Eurostoxx and Nokia). In the case of Eurostoxx, have a daily interest about 7,64%. In the case of Nokia we obtain a negative. As you can see, in both cases are quite high the annual interest; in Eurostoxx the previous year the interest was negative while this year the daily interest is positive, that means a better situation and in Nokia the interest is negative, and it's because the people who invest money are losing money due to the values drop.

From the econometrician analysis we can calculate the following measures:

Our econometrical model is $Var\ (Nokia) = \beta_1 + \beta_2 X_2 + u_i$ while X_2 is the Var (Eurostoxx), in this specific case the model is $Var\ (Nokia) = -0,0024 + 0,0078 X_2 + u_i$. The Beta that shows us the lineal estimation about Nokia and Eurostoxx, in this case the $\beta = 0,0078$ is a positive slope and that means that the regression is positive but is quite small. If we make a graph about the regression function we can see this slope in red.
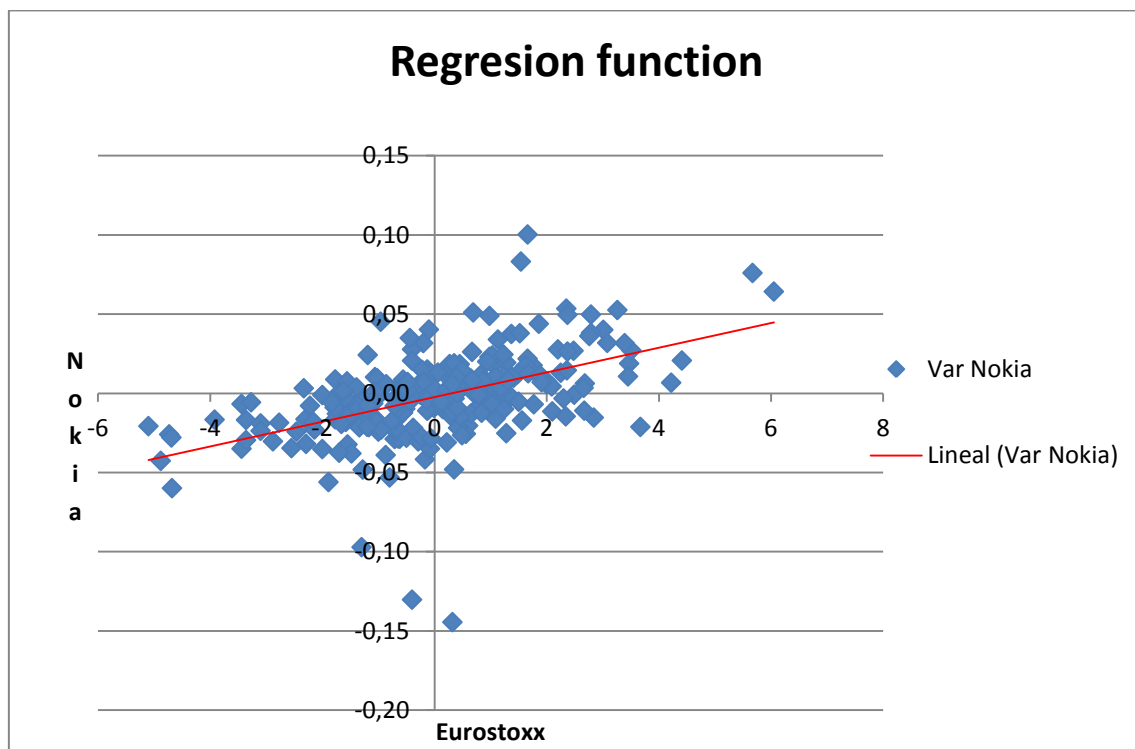
Graph 46: Information from the annual reports of Nokia. Graph made it for us.

Here we can see a lot of outliers and those ones could affect to the determination coefficient. The determination coefficient about this econometrician model is 0,2654. As you can see, is very small and that means that if I increase a 10% the values of Nokia I would obtain an increase of 2,654% in Eurostoxx values; so it's the same as said that only a 26,54% of the independent variables are explained by the model.

As everybody knows, to compare models is better to use the adjusted coefficient ($\bar{R}^2$) due to if I increase an independent variable the coefficient is not affected while in R^2 suppose an increase and in this case is equal to $\bar{R}^2 = 0,2625$.

Now, we want to see if the model is statistically significant and to evaluate I need to compute the F- test.

$$F_{(K-1,N-K)} = F_{(2,253)} = \frac{\dfrac{\sum(\hat{Y}_i - \bar{Y})^2}{K-1}}{\dfrac{\sum ei^2}{N-K}} = \frac{\dfrac{EV}{k-1}}{\dfrac{\overline{EV}}{n-k}} = \frac{0,0482}{0,0005} = 91,05$$

If we make the distribution about the F, knowing that for a α=0,05 (significance about 5%, that means a probability of 95%) the value is 1,96.
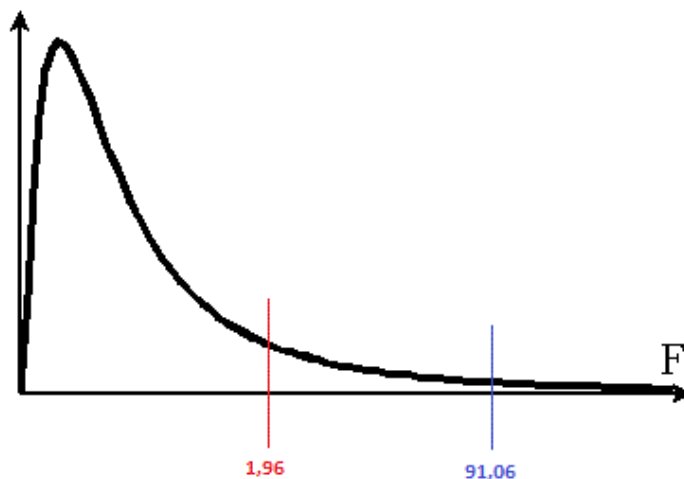
Graph 47: Information from the annual reports of Nokia. Graph made it for us.

So, clearly, the model is statistically significant, so the model is correctly specified.

Finally, we should calculate the confidence intervals with a 5% of significance that means a 95% of probability. The confidence interval for eurostoxx is [-3,46≤Var%Eurostoxx≤3,61]=0,95 and the confidence interval for Nokia is [-0,055≤Var%Nokia≤0,051]=0,95. In both cases, mean that the variation in % with a 95% of probability should be between the two values.

2010 ANALYSIS

We search all the information about the values of 2010 of Nokia[22] and Eurostoxx 50[23]. All these data we want to analyze in terms of variance in percentage that is calculated like $\frac{Final\ value - initial\ value}{initial\ value} * 100$. With all these data we calculate some statistics, some measures to analyze the information.

The graph comparing the variance in terms of percentage between Nokia and Eurostoxx is the next one:
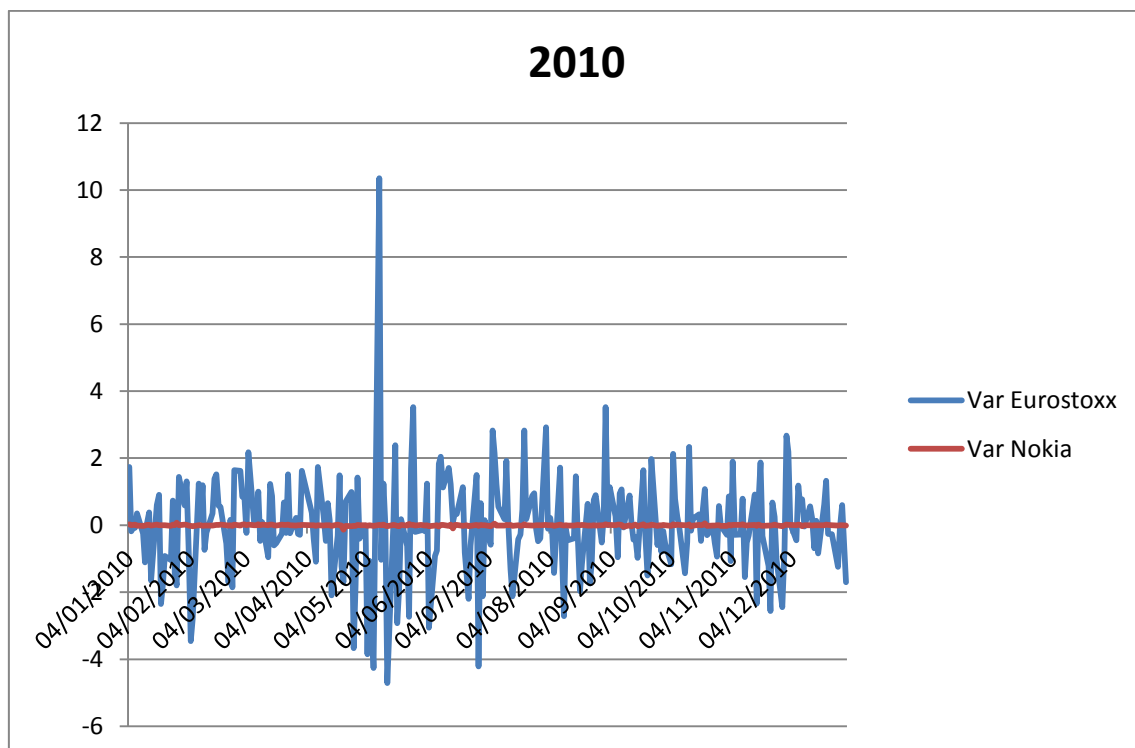
Graph 48: Information from the annual reports of Nokia. Graph made it for us.

As you can see, the variation of Eurostoxx is very high and Nokia is lower, but this is because the Eurostoxx value is much higher than Nokia and it is normal that the variation will be higher too. As you can see, the variation is higher than the previous year.

To smooth a little bit the data we calculate the moving average with a k=10 sessions and we could obtain the following graphs for Nokia and for Eurostoxx.

---

[22]http://es.finance.yahoo.com/q?s=NOA3.DE searched 8th April of 2013
[23]http://www.eleconomista.es/indice/EUROSTOXX-50 searched 8th April of 2013
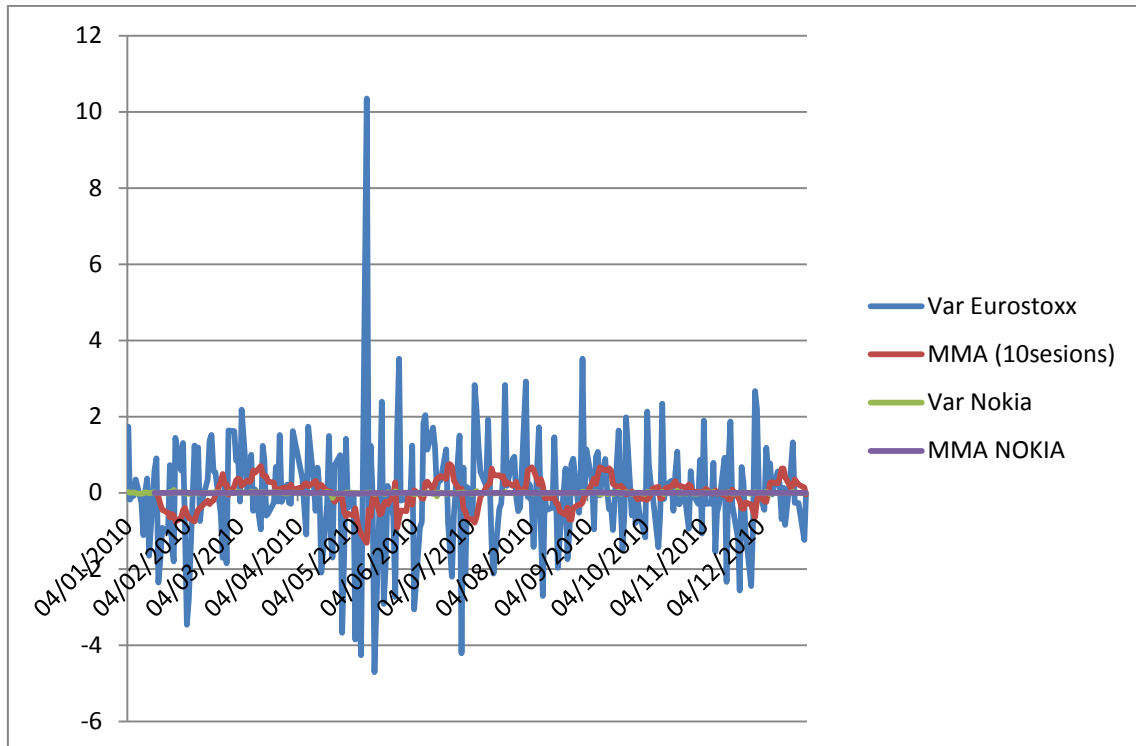
Graph 49: Information from the annual reports of Nokia. Graph made it for us.

In the graph we can see that the MMA of Nokia and the Var of Nokia are the same line because the variance was more less 0 so the smother line will be quite similar. However, here we cannot appreciate the variance and the moving average of Nokia due to the higher values in variation of Eurostoxx. For this reason, we separate the data and we make to graphs, one for Nokia and their moving average and other one for Eurostoxx and their moving average.

Here you can see, that if we make the moving average the data is smoothing and also in comparison with Eurostoxx we can see that the absolute variation is lower than the Eurostoxx. (See Y-Axis the values are quite lower in Nokia than in Eurostoxx).

Graph 51: Information from the annual reports of Nokia. Graph made it for us.

Here the data as you can see is quite smooth than the first one and the variation of the first months are quite higher than the variation in the last months. Now, we want to analyze all this information with some instruments, and to do that firstly we need to measure the descriptive analysis of the data and secondly an econometrician analysis. From the descriptive analysis we can calculate the following measures:

The first measure that we need to calculate is the variation coefficient and to do that we need to compute the average and the standard deviation. The value of the variation coefficient for Eurostoxx is -80,17 and for Nokia 50 is -8,10; so, as you can see the volatility is higher for Eurostoxx than for Nokia and that means that if you invest in Eurostoxx you have more probability that tomorrow the value of the shares will decrease in more proportion than the Nokia. If you compare this year with the previous one you can see that the Eurostoxx volatility increase too high and the Nokia volatility is reduced.

The second measure that we need to compute is the negative semi variance on average and that means, which probability I have, to obtain values below the average. In both cases, are quite similar and a little bit higher, in the case of Eurostoxx the probability to obtain values below the average is a 24,98% while in Nokia is about 25%. So, as you can see is the same value and it is quite high, this measures allows us to know if tomorrow I will lose money or not

because if you have a probability of 75% it means that 1 of 4 situations I will obtain value below the average, but in 3 of 4 situations I will obtain value above the average.

The third measure that we need to compute is the interest receives it by investors, to do that we compute the daily interest and the annual interest for both values (Eurostoxx and Nokia). In both cases the daily interest is negative, so we don't include here. As you can see, in both cases are quite high the annual interest; in Eurostoxx the previous year the interest was positive while this year the daily interest is negative, that means a worse situation and in Nokia the interest is negative, and it's because the people who invest money are losing money due to the values drop.

From the econometrician analysis we can calculate the following measures:

Our econometrical model is $Var\ (Nokia) = \beta_1 + \beta_2 X_2 + u_i$ while X_2 is the Var (Eurostoxx), in this specific case the model is $Var\ (Nokia) = -0{,}0022 + 0{,}0046 X_2 + u_i$. The Beta that shows us the lineal estimation about Nokia and Eurostoxx, in this case the $\beta = 0{,}0046$ is a positive slope and that means that the regression is positive but is quite small. If we make a graph about the regression function we can see this slope in red.
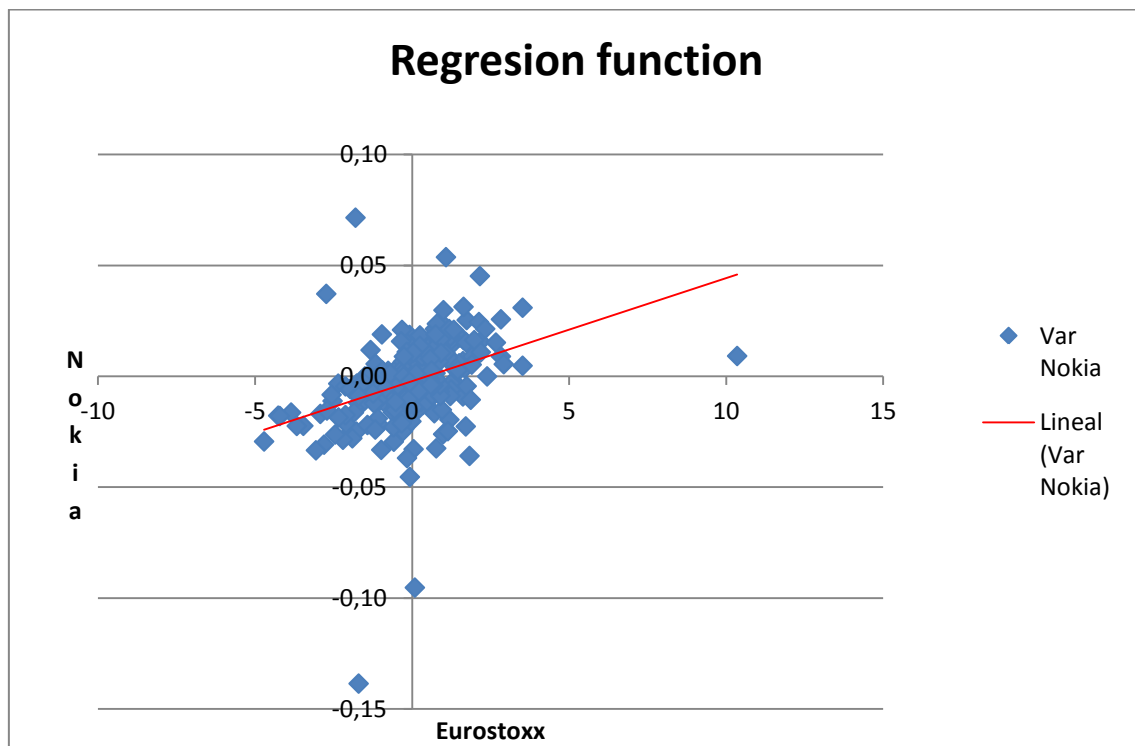
Graph 52: Information from the annual reports of Nokia. Graph made it for us.

Here we can see a lot of outliers although less than the previous periods and those ones could affect to the determination coefficient. The determination coefficient about this econometrician model is 0,1415. As you can see, is very small and that means that if I increase a 10% the values of Nokia I would obtain an increase of 1,415% in Eurostoxx values; so it's the same as said that only a 14,145% of the independent variables are explained by the model.

As everybody knows, to compare models is better to use the adjusted coefficient ($\bar{R}^2$) due to if I increase an independent variable the coefficient is not affected while in R^2 suppose an increase and in this case is equal to $\bar{R}^2 = 0,1381$.

Now, we want to see if the model is statistically significant and to evaluate I need to compute the F- test.

$$F_{(K-1,N-K)} = F_{(2,255)} = \frac{\frac{\sum(\hat{Y}_i - \bar{Y})^2}{K-1}}{\frac{\sum ei^2}{N-K}} = \frac{\frac{EV}{k-1}}{\frac{\overline{EV}}{n-k}} = \frac{0,0124}{0,0002} = 41,87$$

If we make the distribution about the F, knowing that for a α=0,05 (significance about 5%, that means a probability of 95%) the value is 1,96.
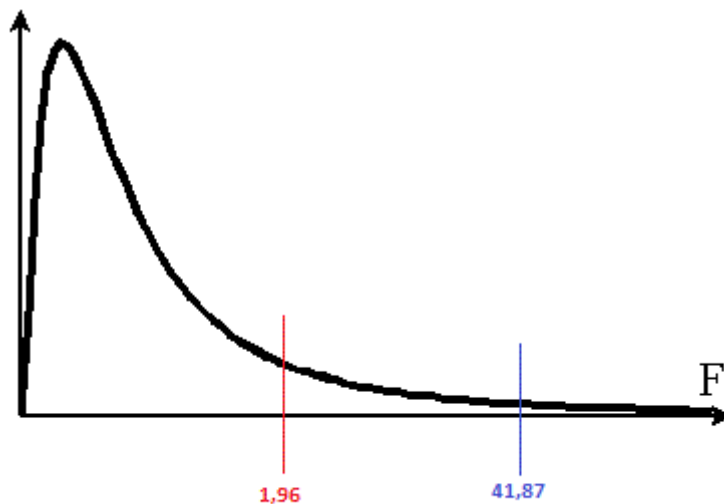
Graph 53: Information from the annual reports of Nokia. Graph made it for us.

So, clearly, the model is statistically significant, so the model is correctly specified.

Finally, we should calculate the confidence intervals with a 5% of significance that means a 95% of probability. The confidence interval for eurostoxx is [-3,01≤Var%Eurostoxx≤2,97]=0,95 and the confidence interval for Nokia is [-0,039≤Var%Nokia≤0,034]=0,95. In both cases, mean that the variation in % with a 95% of probability should be between the two values. The values in comparison with the previous years are more concentrated.

2011 ANALYSIS

We search all the information about the values of 2011 of Nokia[24] and Eurostoxx 50[25]. All these data we want to analyze in terms of variance in percentage that is calculated like $\frac{Final\ value - initial\ value}{initial\ value} * 100$. With all these data we calculate some statistics, some measures to analyze the information.

The graph comparing the variance in terms of percentage between Nokia and Eurostoxx is the next one:
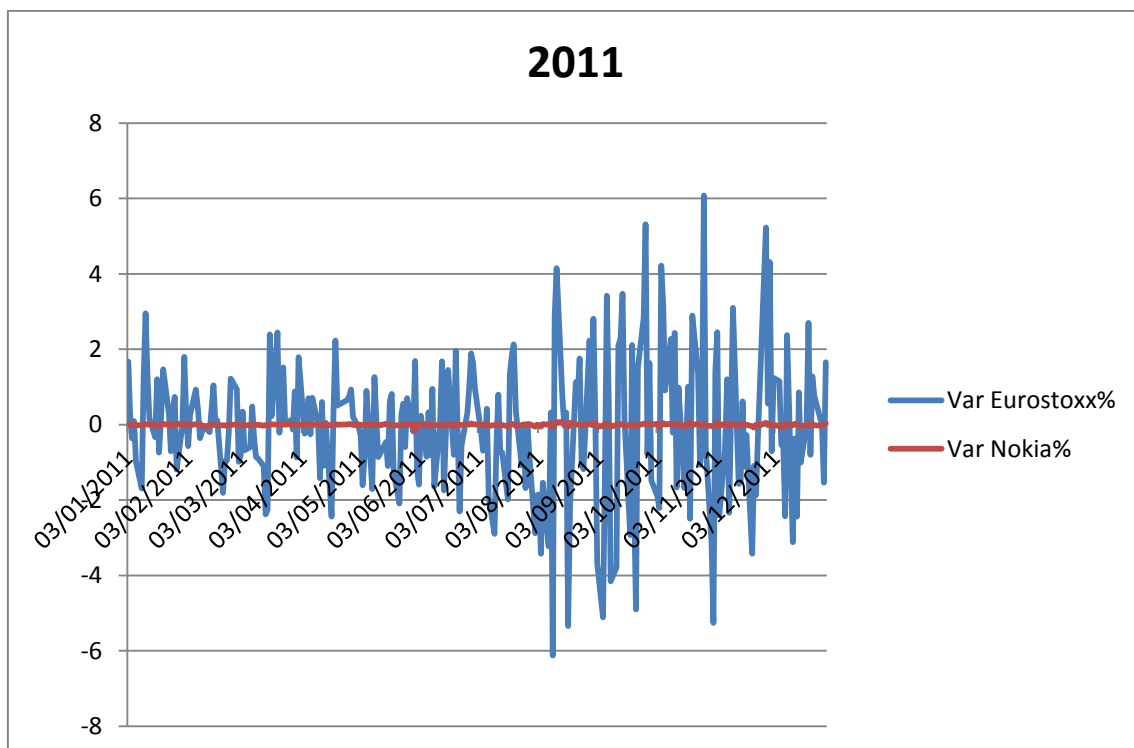
Graph 54: Information from the annual reports of Nokia. Graph made it for us.

As you can see, the variation of Eurostoxx is very high and Nokia is lower, but this is because the Eurostoxx value is much higher than Nokia and it is normal that the variation will be higher too. As you can see, the variation is higher than the previous year.

To smooth a little bit the data we calculate the moving average with a k=10 sessions and we could obtain the following graphs for Nokia and for Eurostoxx.

---

[24]http://es.finance.yahoo.com/q?s=NOA3.DE searched 8th April of 2013
[25]http://www.eleconomista.es/indice/EUROSTOXX-50 searched 8th April of 2013
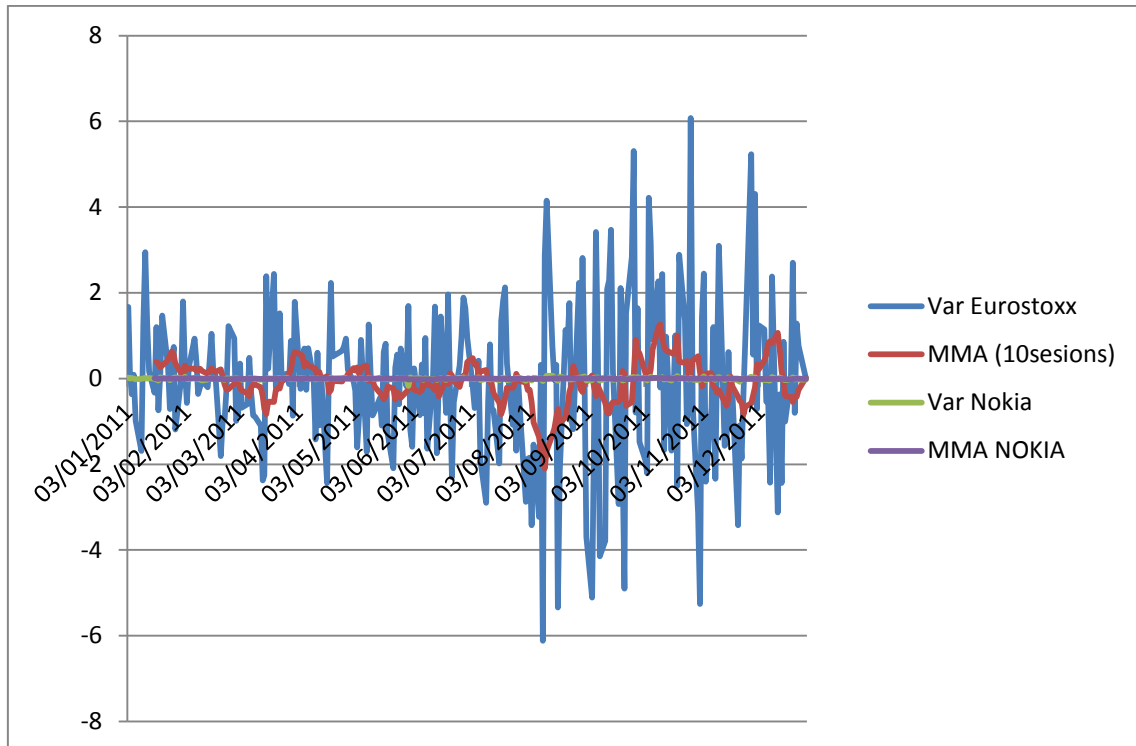
Graph 55: Information from the annual reports of Nokia. Graph made it for us.

In the graph we can see that the MMA of Nokia and the Var of Nokia are the same line because the variance was more less 0 so the smother line will be quite similar. However, here we cannot appreciate the variance and the moving average of Nokia due to the higher values in variation of Eurostoxx. For this reason, we separate the data and we make to graphs, one for Nokia and their moving average and other one for Eurostoxx and their moving average.

Here you can see, that if we make the moving average the data is smoothing and also in

comparison with Eurostoxx we can see that the absolute variation is lower than the Eurostoxx. (See Y-Axis the values are quite lower in Nokia than in Eurostoxx).

Graph 57: Information from the annual reports of Nokia. Graph made it for us.

Here the data as you can see is quite smooth than the first one and the variation of the last months are quite higher than the variation in the first months. Now, we want to analyze all this information with some instruments, and to do that firstly we need to measure the descriptive analysis of the data and secondly an econometrician analysis. From the descriptive analysis we can calculate the following measures:

The first measure that we need to calculate is the variation coefficient and to do that we need to compute the average and the standard deviation. The value of the variation coefficient for Eurostoxx is -33,85 and for Nokia 50 is -7,78; so, as you can see the volatility is higher for Eurostoxx than for Nokia and that means that if you invest in Eurostoxx you have more probability that tomorrow the value of the shares will decrease in more proportion than the Nokia. If you compare this year with the previous one you can see that the Eurostoxx volatility decrease too high and the Nokia volatility is reduced.

The second measure that we need to compute is the negative semi variance on average and that means, which probability I have, to obtain values below the average. In both cases, are quite similar and a little bit higher, in the case of Eurostoxx the probability to obtain values below the average is a 24,96% while in Nokia is about 25%. So, as you can see is the same value and it is quite high, this measures allows us to know if tomorrow I will lose money or not

because if you have a probability of 75% it means that 1 of 4 situations I will obtain value below the average, but in 3 of 4 situations I will obtain value above the average.

The third measure that we need to compute is the interest receives it by investors, to do that we compute the daily interest and the annual interest for both values (Eurostoxx and Nokia). In both cases the daily interest is negative, so we don't include here. This is because this year the sales drop a lot due to the crisis and the bad decision of don't produce touchscreen. In crisis both values fall down. In Eurostoxx the previous year the interest was negative however, this year the interest is much negative, that means a worse situation and in Nokia the interest is negative, and it's because the people who invest money are losing money due to the values drop.

From the econometrician analysis we can calculate the following measures:

Our econometrical model is $Var\,(Nokia) = \beta_1 + \beta_2 X_2 + u_i$ while X_2 is the Var (Eurostoxx), in this specific case the model is $Var\,(Nokia) = -0,0029 + 0,0068X_2 + u_i$. The Beta that shows us the lineal estimation about Nokia and Eurostoxx, in this case the $\beta = 0,0068$ is a positive slope and that means that the regression is positive but is quite small. If we make a graph about the regression function we can see this slope in red.
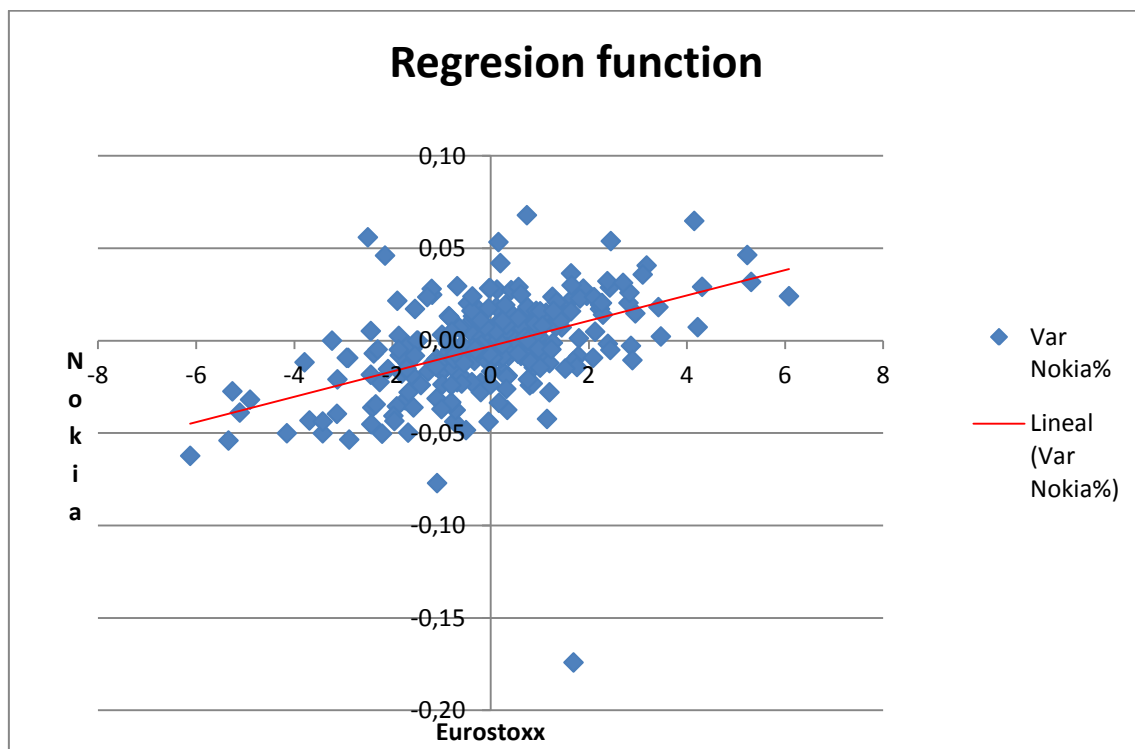
Graph 58: Information from the annual reports of Nokia. Graph made it for us.

Here we can see a lot of outliers and those ones could affect to the determination coefficient. The determination coefficient about this econometrician model is 0,2329. As you can see, is very small and that means that if I increase a 10% the values of Nokia I would obtain an increase of 2,329% in Eurostoxx values; so it's the same as said that only a 23,29% of the independent variables are explained by the model.

As everybody knows, to compare models is better to use the adjusted coefficient ($\bar{R}^2$) due to if I increase an independent variable the coefficient is not affected while in R^2 suppose an increase and in this case is equal to $\bar{R}^2 = 0,2299$.

Now, we want to see if the model is statistically significant and to evaluate I need to compute the F- test.

$$F_{(K-1,N-K)} = F_{(2,256)} = \frac{\frac{\sum(\hat{Y}_i - \bar{Y})^2}{K-1}}{\frac{\sum ei^2}{N-K}} = \frac{\frac{EV}{k-1}}{\frac{\overline{EV}}{n-k}} = \frac{0,0390}{0,0005} = 77,45$$

If we make the distribution about the F, knowing that for a α=0,05 (significance about 5%, that means a probability of 95%) the value is 1,96.
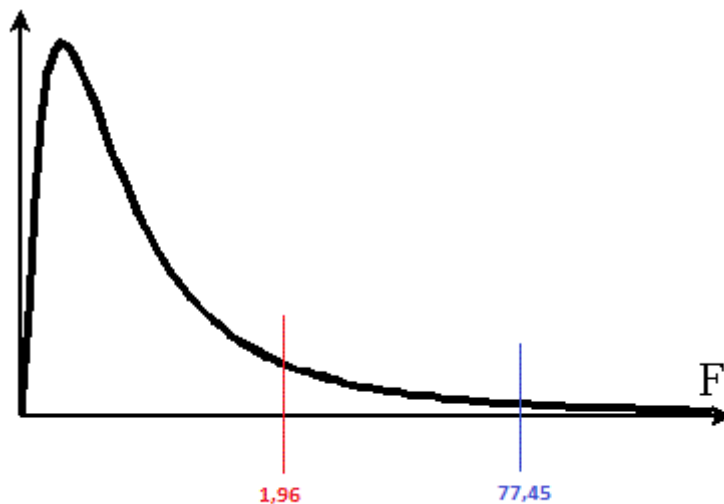
Graph 59: Information from the annual reports of Nokia. Graph made it for us.

ANNEX 4: BALANCE SHEET

	2008	%	2009	%	2010	%	2011	%
FIXED ASSETS AND OTHER NON-CURRENT ASSETS	15112	38,18%	12125	33,93%	11978	30,62%	10750	29,69%
CURRENT ASSETS:	24470	61,82%	23613	66,07%	27145	69,38%	25455	70,31%
Inventories	2533	6,40%	1865	5,22%	2523	6,45%	2330	6,44%
Accounts receivable and prepaid expenses	15117	38,19%	12875	36,03%	12347	31,56%	12223	33,76%
Total cash and other liquid assets	6820	17,23%	8873	24,83%	12275	31,38%	10902	30,11%
TOTAL ASSETS	39582	100,00%	35738	100,00%	39123	100,00%	36205	100,00%

	2008	%	2009	%	2010	%	2011	%
TOTAL EQUITY	16510	1	14749	1	16231	1	13916	1
Capital and reserves	14208	0,860569352	13088	0,887382195	14384	0,886205409	11873	0,853190572
Non-controlling interests	2302	0,139430648	1661	0,112617805	1847	0,113794591	2043	0,146809428
LONG-TERM LIABILITIES	2717	0,117761789	5801	0,276382867	5352	0,233793465	4845	0,217371798
Long-term interest-bearing liabilities	861	0,037317961	4432	0,211158226	4242	0,18530491	3969	0,1780699
Deferred tax liabilities	1787	0,07745319	1302	0,062032493	1022	0,044644417	800	0,035892144
Other long-term liabilities	69	0,002990638	66	0,003144504	88	0,003844138	76	0,003409754

CURRENT LIABILITIES	20355	0,882238211	15188	0,723617133	17540	0,766206535	17444	0,782628202
Current portion of long-term loans	13	0,000563454	44	0,002096336	116	0,005067272	357	0,016016869
Short-term borrowings	3578	0,15507975	727	0,034637191	921	0,040232396	995	0,044640854
Other financial liabilities	924	0,040048544	245	0,011672781	447	0,019526472	483	0,021669882
Account Payable	5225	0,226464979	4950	0,23583782	6101	0,266512319	5532	0,248194176
Accrued expenses and other liabilities	7023	0,304394938	6504	0,309876602	7465	0,326096453	7450	0,334245592
Provisions	3592	0,155686546	2718	0,129496403	2590	0,113139962	2627	0,117860828
TOTAL LIABILITIES	23072		20989	1	22892	1	22289	1
TOTAL EQUITY + LIABILITIES=TOTAL ASSETS	39582		35738		39123		36205	
ACID TEST	1,077720462		1,431919937		1,403762828		1,325670718	
LIQUIDITY RATIO	1,202161631		1,554714248		1,547605473		1,459241	
RATIO DE GARANTIA	1,715585992		1,702701415		1,709024987		1,624343847	
RATIO DE DISPONIBILIDAD	0,335052813		0,584211219		0,699828962		0,624971337	
RATIO DE AUTONOMIA	0,715585992		0,702701415		0,709024987		0,624343847	
RATIO DE CALIDAD DE LA DEUDA	0,882238211		0,723617133		0,766206535		0,782628202	
RATIO DE ENDEUDAMIENTO	0,582891213		0,587302031		0,585128952		0,6156332	

Capital and reserves	14208	0,860569352	13088	0,887382195	14384	0,886205409	11873	0,853190572

Non-controlling interests	2302	0,139430648	1661	0,112617805	1847	0,113794591	2043	0,146809428
LONG-TERM LIABILITIES	2717	0,117761789	5801	0,276382867	5352	0,233793465	4845	0,217371798
Long-term interest-bearing liabilities	861	0,037317961	4432	0,211158226	4242	0,18530491	3969	0,1780699
Deferred tax liabilities	1787	0,07745319	1302	0,062032493	1022	0,044644417	800	0,035892144
Other long-term liabilities	69	0,002990638	66	0,003144504	88	0,003844138	76	0,003409754
CURRENT LIABILITIES	20355	0,882238211	15188	0,723617133	17540	0,766206535	17444	0,782628202
Current portion of long-term loans	13	0,000563454	44	0,002096336	116	0,005067272	357	0,016016869
Short-term borrowings	3578	0,15507975	727	0,034637191	921	0,040232396	995	0,044640854
Other financial liabilities	924	0,040048544	245	0,011672781	447	0,019526472	483	0,021669882
Account Payable	5225	0,226464979	4950	0,23583782	6101	0,266512319	5532	0,248194176
Accrued expenses and other liabilities	7023	0,304394938	6504	0,309876602	7465	0,326096453	7450	0,334245592
Provisions	3592	0,155686546	2718	0,129496403	2590	0,113139962	2627	0,117860828
TOTAL LIABILITIES	23072		20989	1	22892	1	22289	1
TOTAL EQUITY + LIABILITIES=TOTAL ASSETS	39582		35738		39123		36205	
ACID TEST	1,077720462		1,431919937		1,403762828		1,325670718	
LIQUIDITY RATIO	1,202161631		1,554714248		1,547605473		1,459241	
RATIO DE GARANTIA	1,715585992		1,702701415		1,709024987		1,624343847	

RATIO DE DISPONIBILIDAD	0,335052813	0,584211219	0,699828962	0,624971337
RATIO DE AUTONOMIA	0,715585992	0,702701415	0,709024987	0,624343847
RATIO DE CALIDAD DE LA DEUDA	0,882238211	0,723617133	0,766206535	0,782628202
RATIO DE ENDEUDAMIENTO	0,582891213	0,587302031	0,585128952	0,6156332

Table 21: Information from the annual reports of Nokia. Table made it for us.

ANNEX 5: GRAPHS OF SHORT TERM RISK

Evolution Accounts Receivables
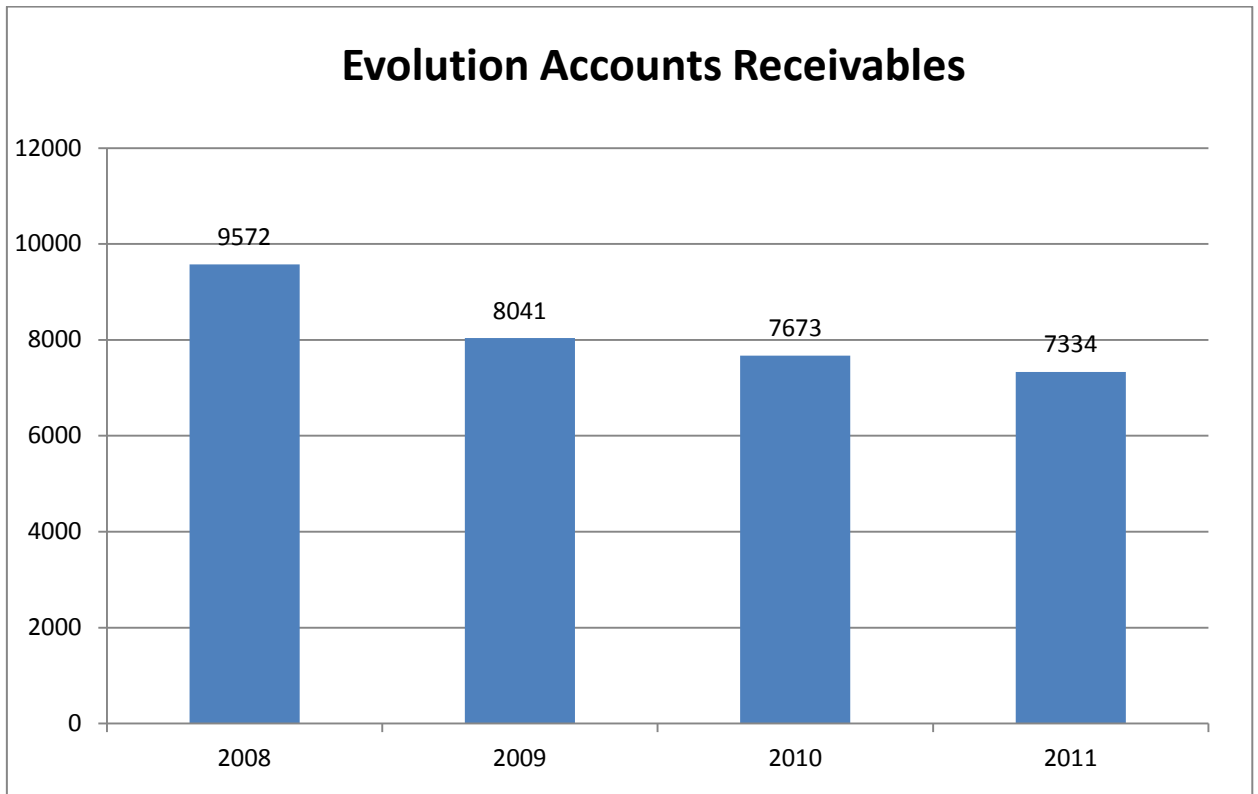
Graph 60: Information from the annual reports of Nokia. Graph made it for us.

Evolution Sales
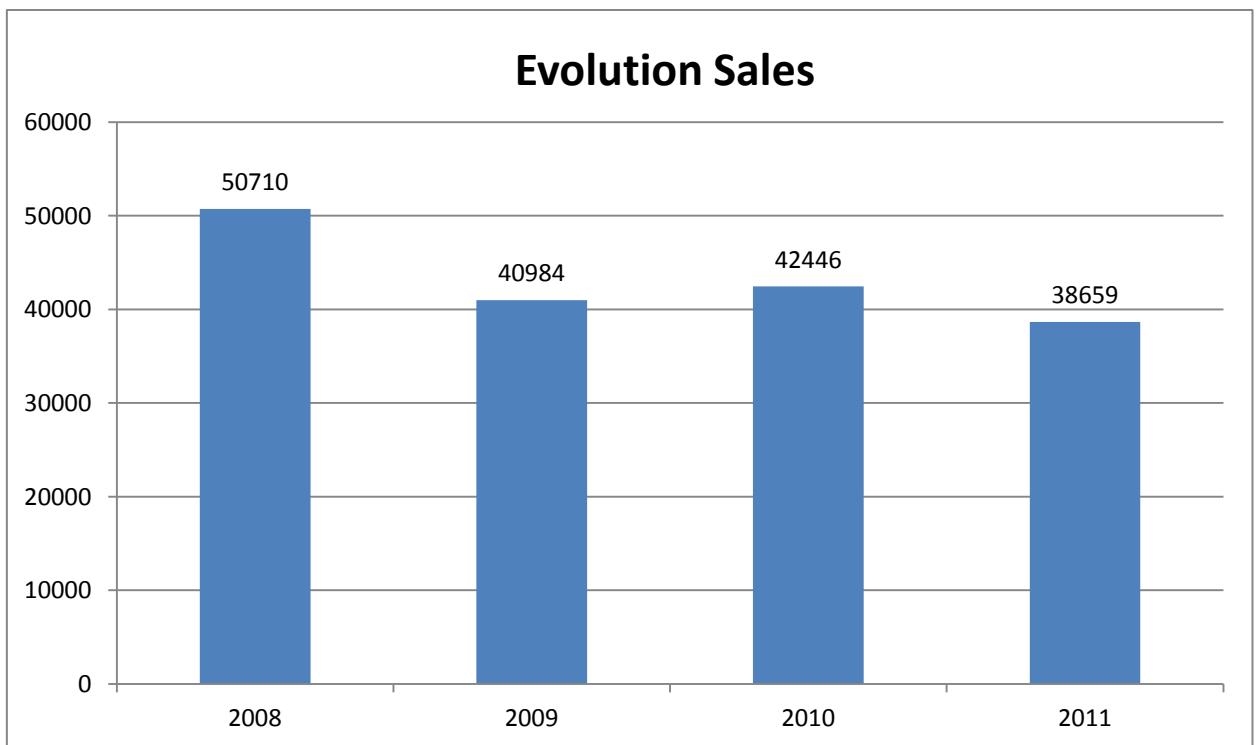
Graph 61: Information from the annual reports of Nokia. Graph made it for us.

Evolution Accounts Payables
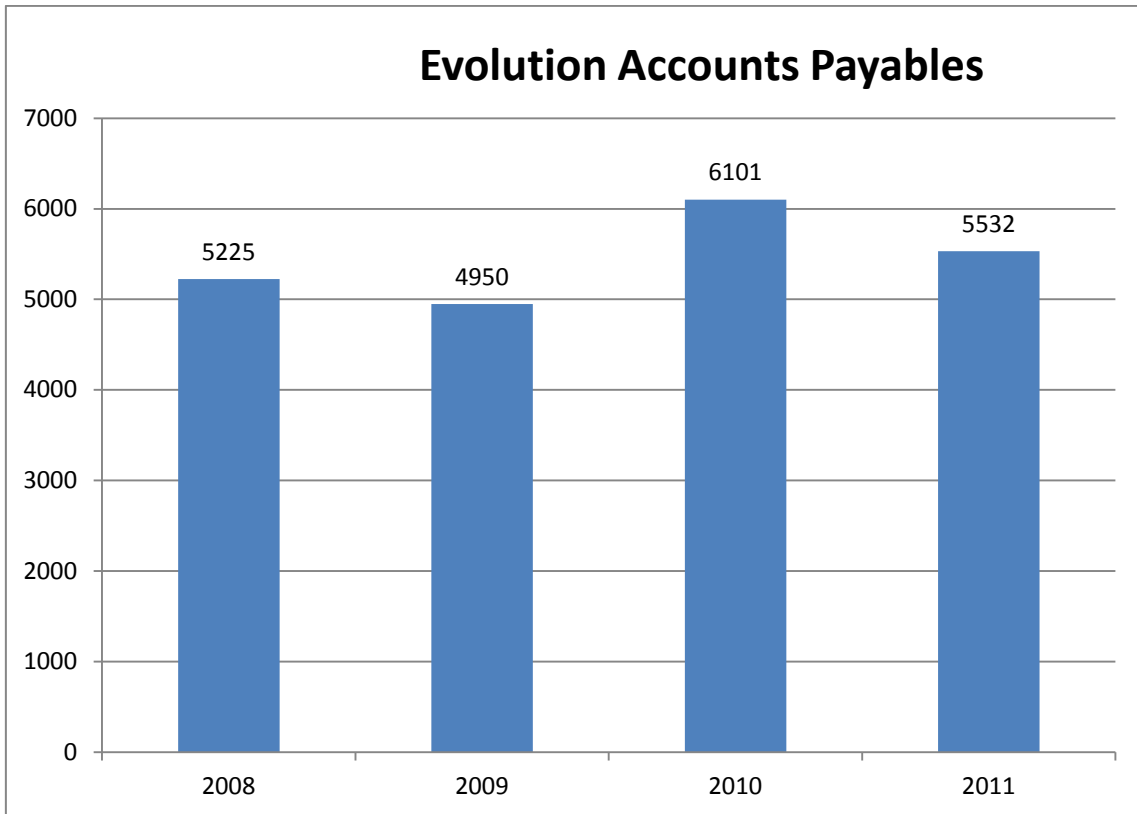
Graph 62: Information from the annual reports of Nokia. Graph made it for us.

Evolution Sales
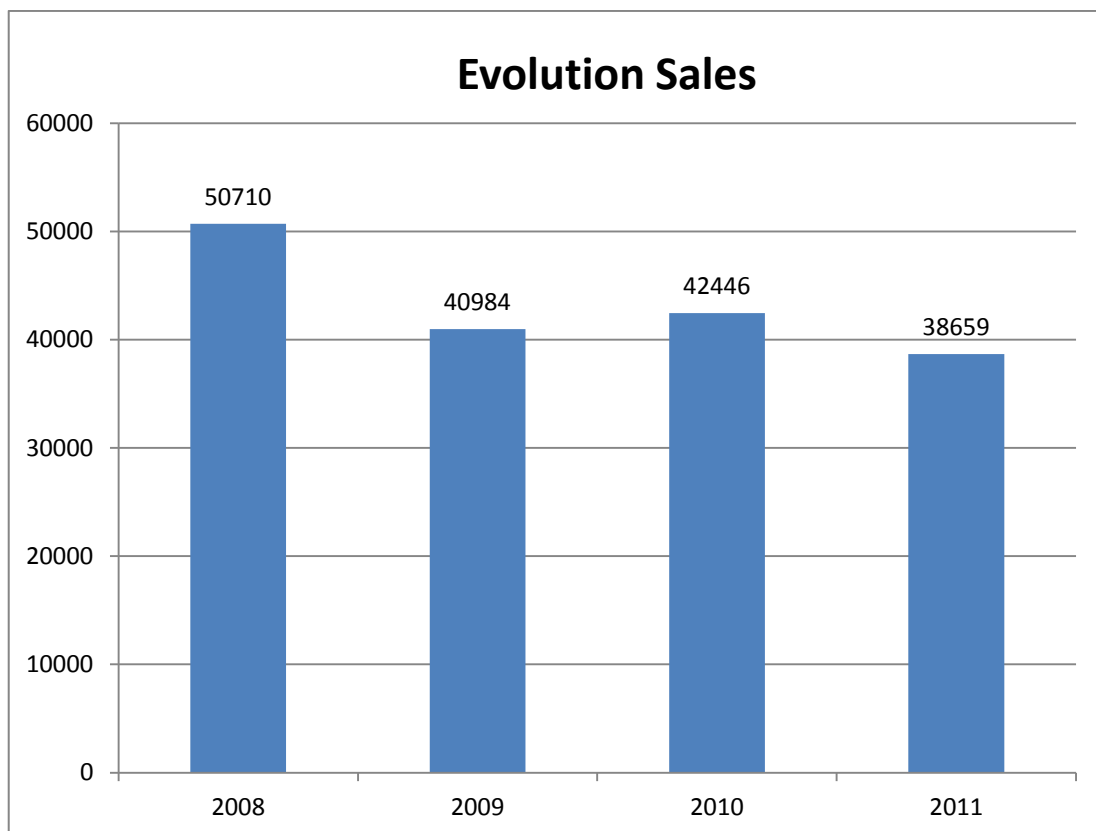
Graph 63: Information from the annual reports of Nokia. Graph made it for us.

Evolution Accounts Payables
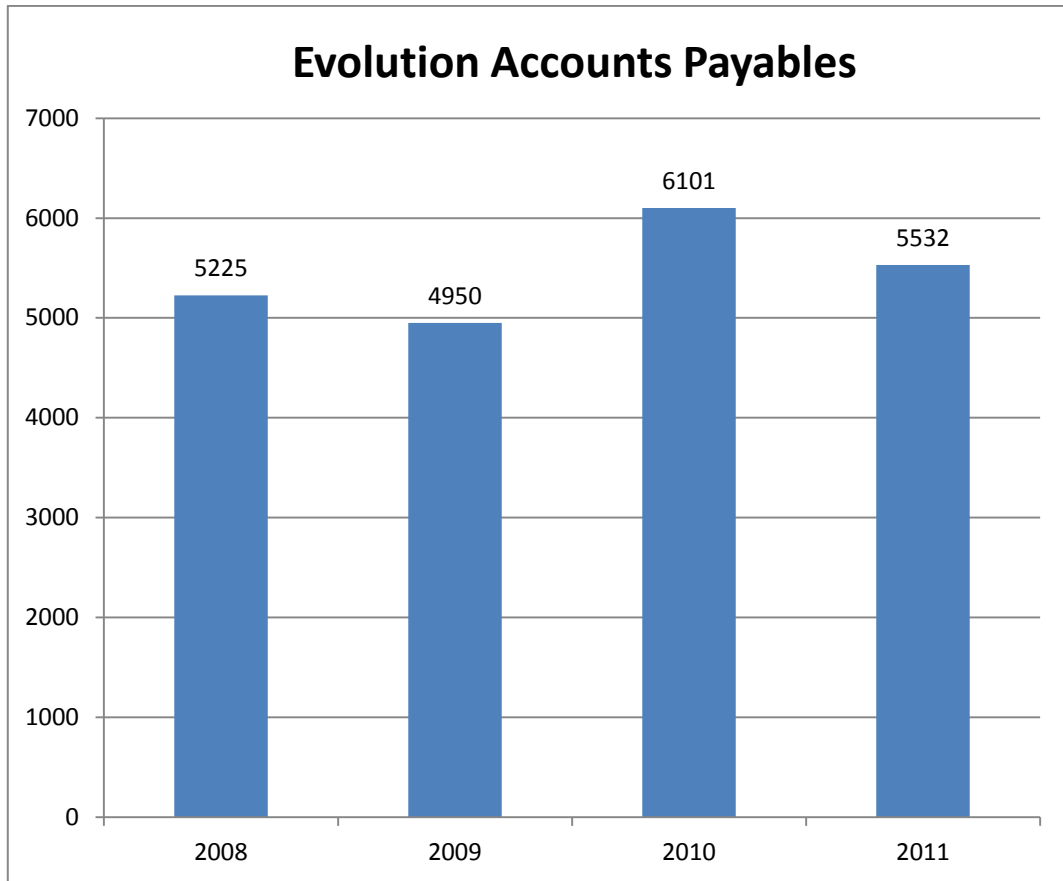
Graph 64: Information from the annual reports of Nokia. Graph made it for us.

Evolution Purchases
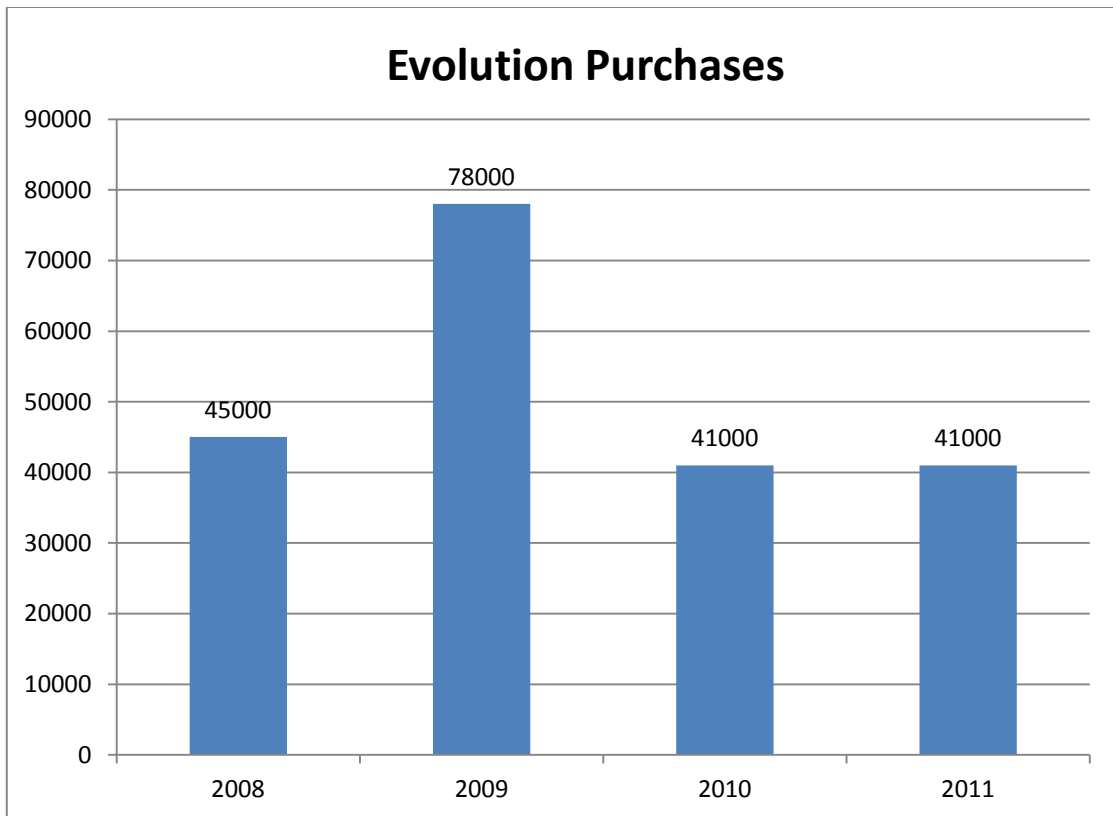
Graph 65: Information from the annual reports of Nokia. Graph made it for us.

ANNEX 6: MINUTES

MINUTE Page 1 / 2

PROGRAM

Eus Anglès 2012-2013

MEETING CODE 20130228

DATE 28/02/2013

AGENDA

Today has taken place our first meeting. First of all we have decided the guideline of the paper after to pool the information that we have found about Nokia; we have some problems because we didn't know which order follow, but finally we have arrived and agreement. Once done the index, we have discussed how long it would take carry out each section in order to do the GANTT graph. Each of us has decided to focus on a determinate section. In order to know if we are following the initial GANTT we will meet through Skype the next 3/03/2013.

The duration of the first meeting has been one hour and a half more or less.

ATTENDEES LIST

Adrián Díaz-Salazar

Elena Gigante

Mª Goretti Gracia

PRESENTATION

Document

NUM. Doc GANTT

Verde→ Elena Gigante; Azul→Adrián Diaz-Salazar; Lila→ Goretti Gràcia
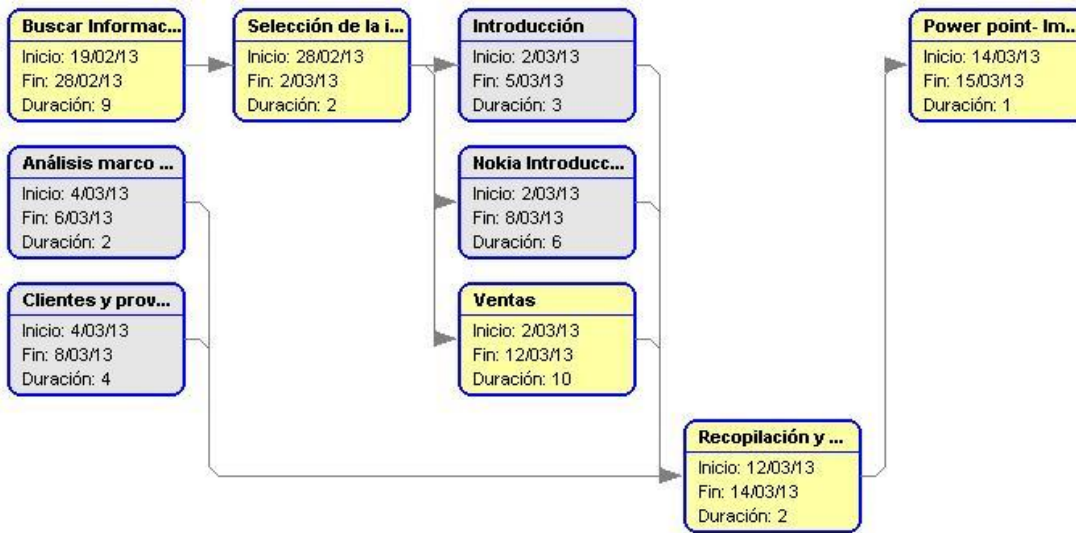
ACCOMPLISHED

REVISED APPROVED

PRESENTATION

SC_Abril 2012

Rev: 1.0

FOLLOW AND CONTROL

DATE: 28.02.2012

MINUTE Page 1 / 2

PROGRAM

Eus Anglès 2012-2013

MEETING CODE 20130305

DATE 05/03/2013

AGENDA

Today has taken place our second meeting. We organized another time all the project because we thought that we were doing not correctly. So we readapt the gantt project and we did the guideline of paper. Then we search some information in the Amadeus Basis. Once done the index, we have discussed how long it would take carry out each section in order to do the GANTT graph. In order to know if we are following the initial GANTT we will meet through Skype the next 12/03/2013.

The duration of the second meeting has been two hours more or less.

ATTENDEES LIST

Adrián Díaz-Salazar

Elena Gigante

Mª Goretti Gracia

PRESENTATION

Document

NUM. Doc GANTT

Verde→ Elena Gigante; Azul→Adrián Diaz-Salazar; Lila→ Goretti Gràcia
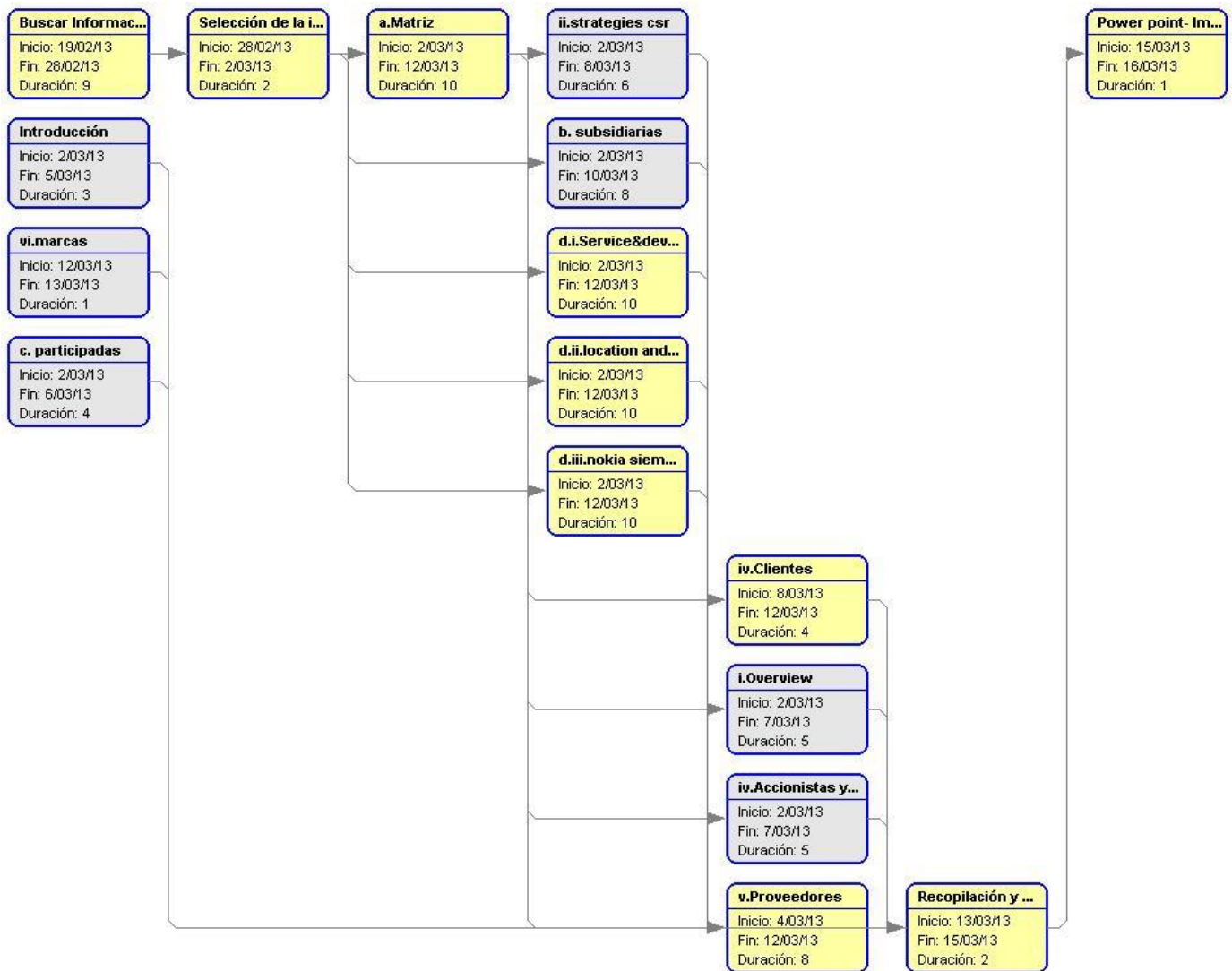
ACCOMPLISHED

REVISED APPROVED

PRESENTATION

SC_Abril 2012

Rev: 1.0

FOLLOW AND CONTROL

DATE: 05.03.2012

MINUTE Page 1 / 2

PROGRAM

Eus Anglès 2012-2013

MEETING CODE 20130311

DATE 11/03/2013

AGENDA

Today has taken place our third meeting. We have compiled the major part of the paper. We are working faster than we hope at the beginning. We have decided the structure for the paper (letter, size, graphs, etc) Also, we have reviewed the finished parts, changing the introduction, which we done when we started to do the paper because not fit with the final paper.

The duration of the second meeting has been two hours more or less.

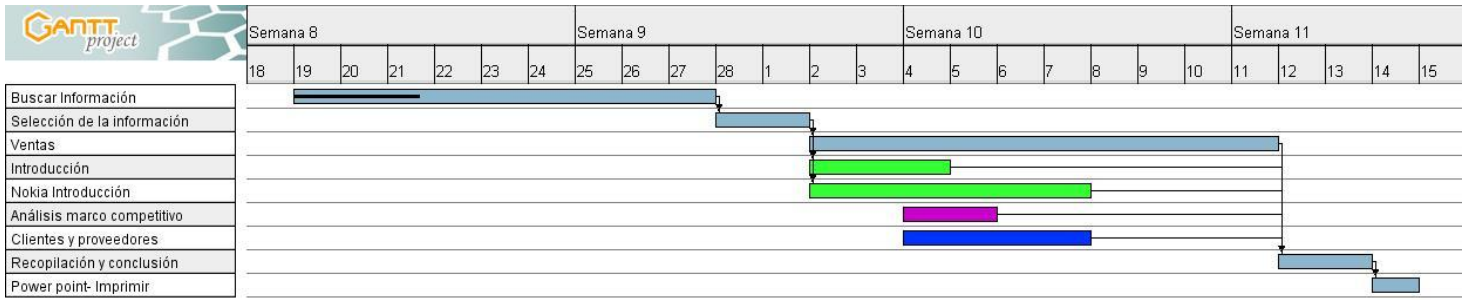**ATTENDEES LIST**

Adrián Díaz-Salazar

Elena Gigante

Mª Goretti Gracia

PRESENTATION

Document

NUM. Doc GANTT

Verde→ Elena Gigante; Azul→Adrián Diaz-Salazar; Lila→ Goretti Gràcia
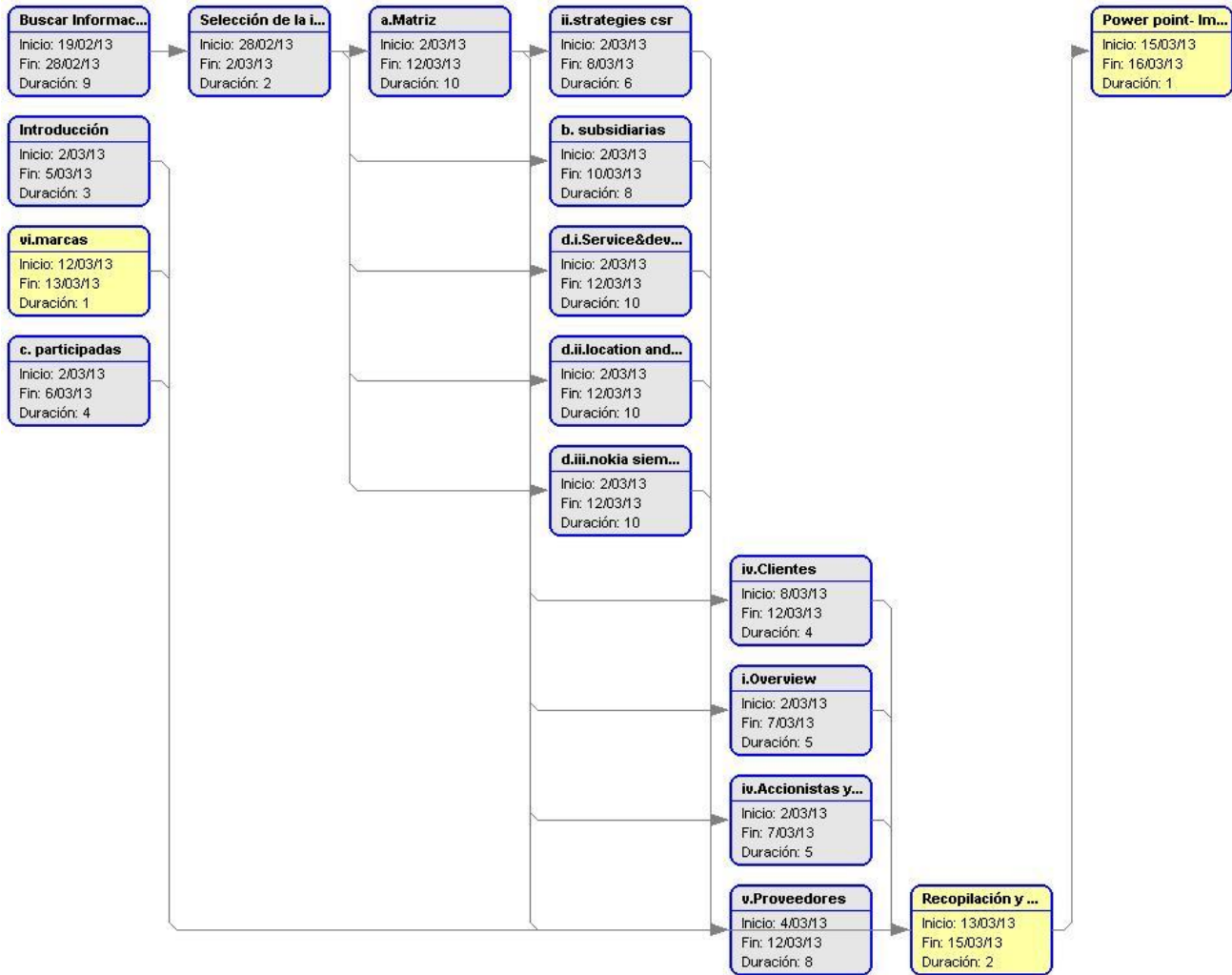
ACCOMPLISHED

REVISED APPROVED

PRESENTATION

11_March_2013

Rev: 1.0

**FOLLOW AND
CONTROL**

**DATE:
11.03.2013**

MINUTE Page 1 / 2

PROGRAM

Eus Anglès 2012-2013

MEETING CODE 20130312

DATE 12/03/2013

AGENDA

Today has taken place our fourth meeting. We have compiled the remainder individual part of the paper and we have been working together in the global part of the project, in which we have focused on the analysis of Nokia's group, talking mainly about its clients, suppliers, sales and market. After finish it, we have written the final conclusion and we have agreed to meet on Friday.

The duration of the second meeting has been six hours more or less.

ATTENDEES LIST
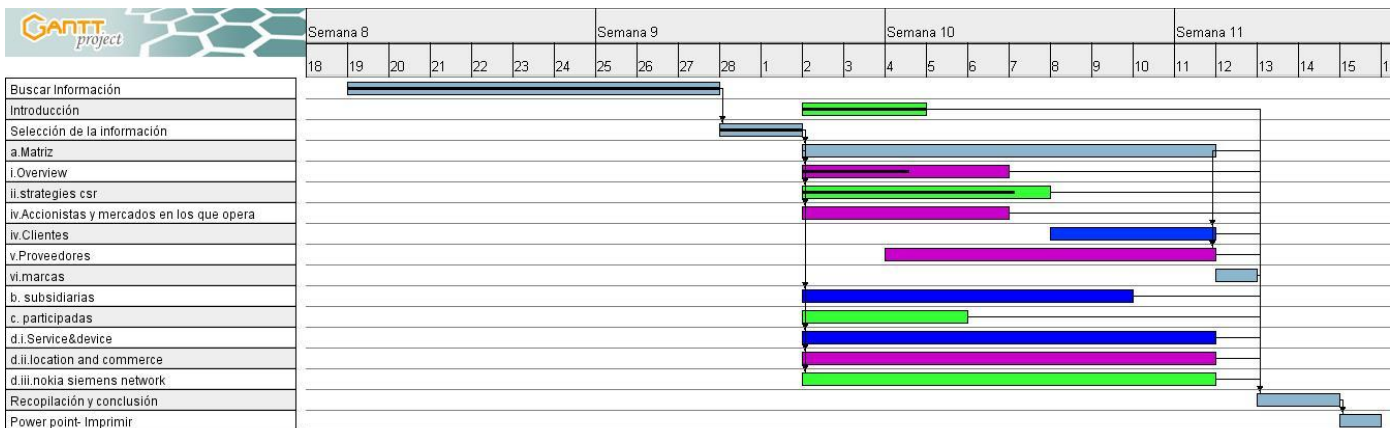
Adrián Díaz-Salazar

Elena Gigante

Mª Goretti Gracia

PRESENTATION

Document

NUM. Doc GANTT

Verde→ Elena Gigante; Azul→Adrián Diaz-Salazar; Lila→ Goretti Gràcia

Buscar Informac...
Inicio: 19/02/13
Fin: 28/02/13
Duración: 9

Selección de la i...
Inicio: 28/02/13
Fin: 2/03/13
Duración: 2

a.Matriz
Inicio: 2/03/13
Fin: 12/03/13
Duración: 10

ii.strategies csr
Inicio: 2/03/13
Fin: 8/03/13
Duración: 6

Power point- Im...
Inicio: 15/03/13
Fin: 16/03/13
Duración: 1

Introducción
Inicio: 2/03/13
Fin: 5/03/13
Duración: 3

b. subsidiarias
Inicio: 2/03/13
Fin: 10/03/13
Duración: 8

vi.marcas
Inicio: 12/03/13
Fin: 13/03/13
Duración: 1

d.i.Service&dev...
Inicio: 2/03/13
Fin: 12/03/13
Duración: 10

c. participadas
Inicio: 2/03/13
Fin: 6/03/13
Duración: 4

d.ii.location and...
Inicio: 2/03/13
Fin: 12/03/13
Duración: 10

d.iii.nokia siem...
Inicio: 2/03/13
Fin: 12/03/13
Duración: 10

iv.Clientes
Inicio: 8/03/13
Fin: 12/03/13
Duración: 4

i.Overview
Inicio: 2/03/13
Fin: 7/03/13
Duración: 5

iv.Accionistas y...
Inicio: 2/03/13
Fin: 7/03/13
Duración: 5

v.Proveedores
Inicio: 4/03/13
Fin: 12/03/13
Duración: 8

Recopilación y ...
Inicio: 13/03/13
Fin: 15/03/13
Duración: 2

ACCOMPLISHED

REVISED   APPROVED

PRESENTATION

13_March_2013

Rev: 1.0

**FOLLOW AND
CONTROL**

**DATE:
13.03.2013**

101

MINUTE Page 1 / 2

PROGRAM

Eus Anglès 2012-2013

MEETING CODE 20130315

DATE 15/03/2013

AGENDA

Today has taken place our fifth meeting and the last one. We have revised all the paper in order to do the final corrections. We have elaborated also the annexes and bibliography. Moreover we have chosen the most important information to make the presentation and we have started doing the power point. We decided that part will expose each one and finally we have printed the paper.

The duration of the last meeting has been more or less three hours.

ATTENDEES LIST
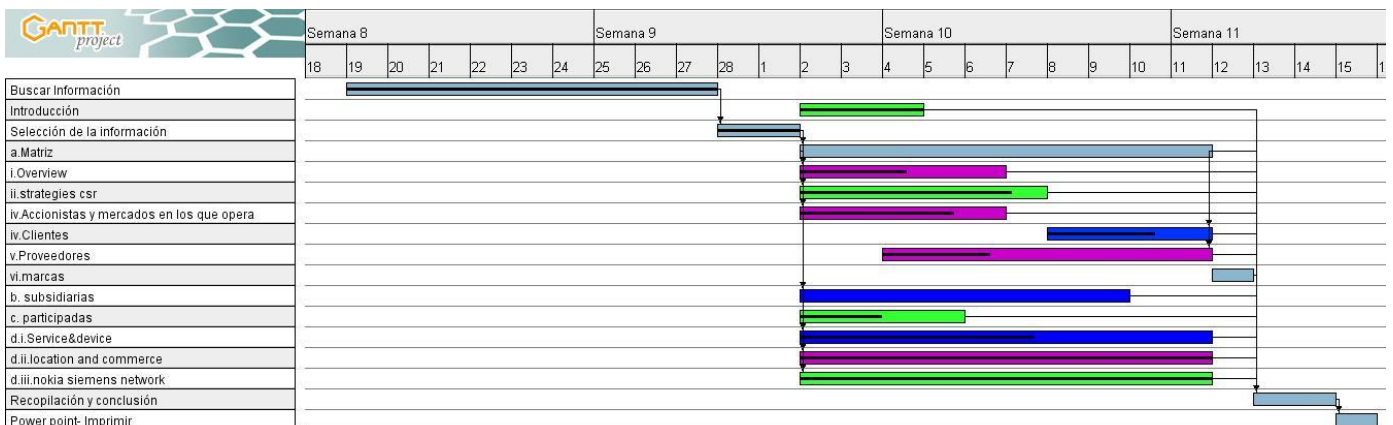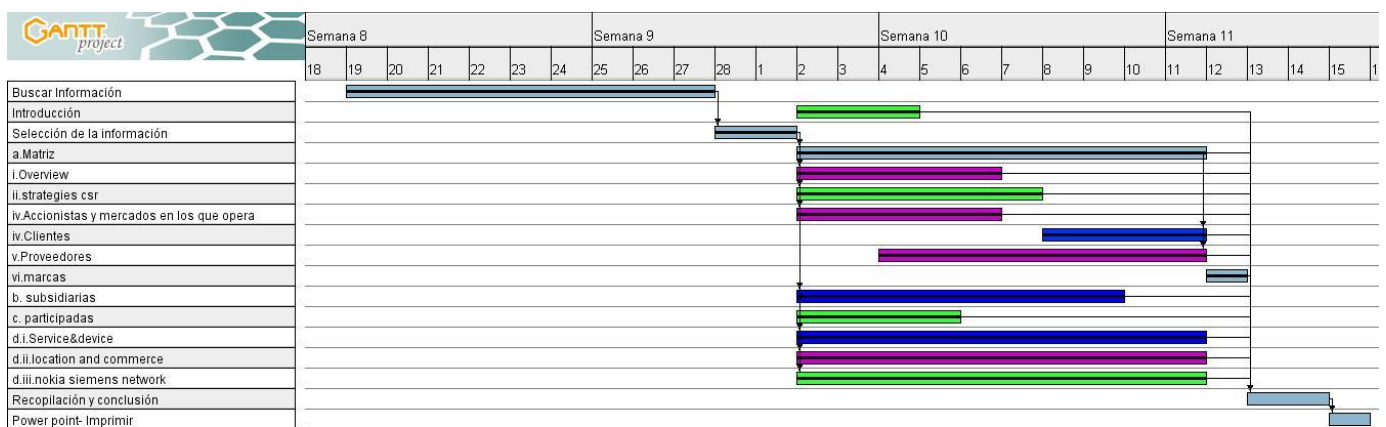
Adrián Díaz-Salazar

Elena Gigante

Mª Goretti Gracia

PRESENTATION

Document

NUM. Doc GANTT

Verde→ Elena Gigante; Azul→Adrián Diaz-Salazar; Lila→ Goretti Gràcia

Buscar Informac...
Inicio: 19/02/13
Fin: 28/02/13
Duración: 9

Selección de la i...
Inicio: 28/02/13
Fin: 2/03/13
Duración: 2

a.Matriz
Inicio: 2/03/13
Fin: 12/03/13
Duración: 10

ii.strategies csr
Inicio: 2/03/13
Fin: 8/03/13
Duración: 6

Power point- Im...
Inicio: 15/03/13
Fin: 16/03/13
Duración: 1

Introducción
Inicio: 2/03/13
Fin: 5/03/13
Duración: 3

b. subsidiarias
Inicio: 2/03/13
Fin: 10/03/13
Duración: 8

vi.marcas
Inicio: 12/03/13
Fin: 13/03/13
Duración: 1

d.i.Service&dev...
Inicio: 2/03/13
Fin: 12/03/13
Duración: 10

c. participadas
Inicio: 2/03/13
Fin: 6/03/13
Duración: 4

d.ii.location and...
Inicio: 2/03/13
Fin: 12/03/13
Duración: 10

d.iii.nokia siem...
Inicio: 2/03/13
Fin: 12/03/13
Duración: 10

iv.Clientes
Inicio: 8/03/13
Fin: 12/03/13
Duración: 4

i.Overview
Inicio: 2/03/13
Fin: 7/03/13
Duración: 5

iv.Accionistas y...
Inicio: 2/03/13
Fin: 7/03/13
Duración: 5

v.Proveedores
Inicio: 4/03/13
Fin: 12/03/13
Duración: 8

Recopilación y ...
Inicio: 13/03/13
Fin: 15/03/13
Duración: 2

ACCOMPLISHED   **REVISED   APPROVED**

PRESENTATION   **15_March_2013**

Rev: 1.0

**FOLLOW AND
CONTROL**

**DATE:
15.03.2013**

MINUTE Page 1 / 2

PROGRAM

Eus Anglès 2012-2013

MEETING CODE 20130408

DATE 08/04/2013

AGENDA

Today has taken place our first meeting of the second delivery. First of all we have decided the guideline of the paper after to pool the information that we have found about Nokia; we have some problems because we didn't know which order follow, but finally we have arrived and agreement. Once done the index, we have discussed how long it would take carry out each section in order to do the GANTT graph. Each of us has decided to focus on a determinate section. In order to know if we are following the initial GANTT we will meet through Skype the next 11/04/2013.

The duration of the first meeting has been one hour and a half more or less.

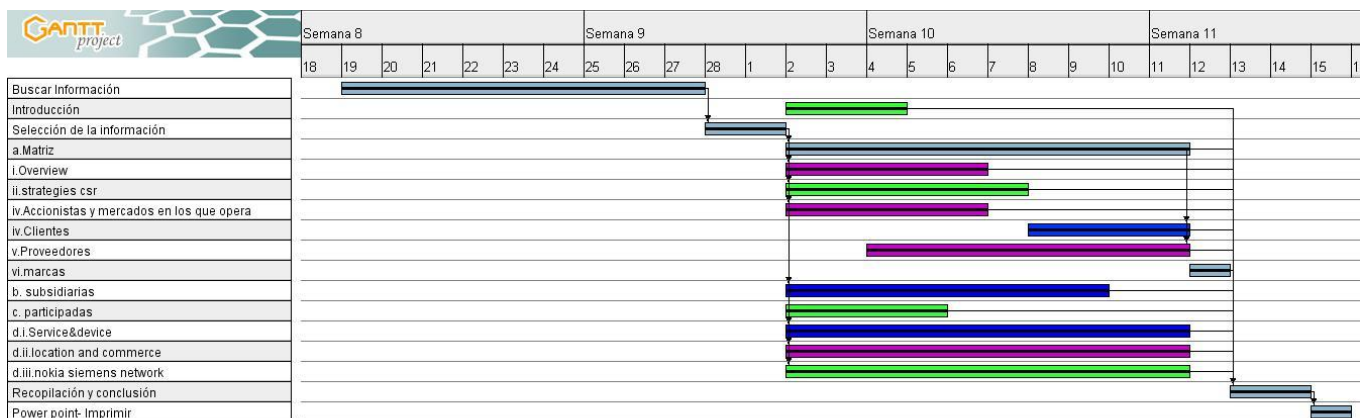**ATTENDEES LIST**
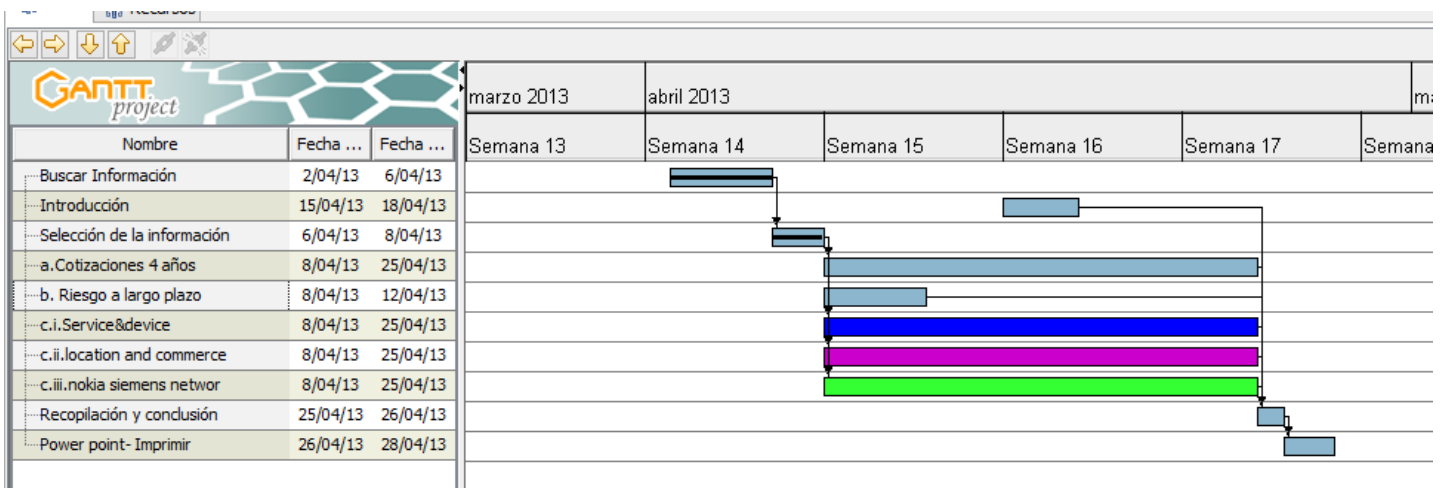
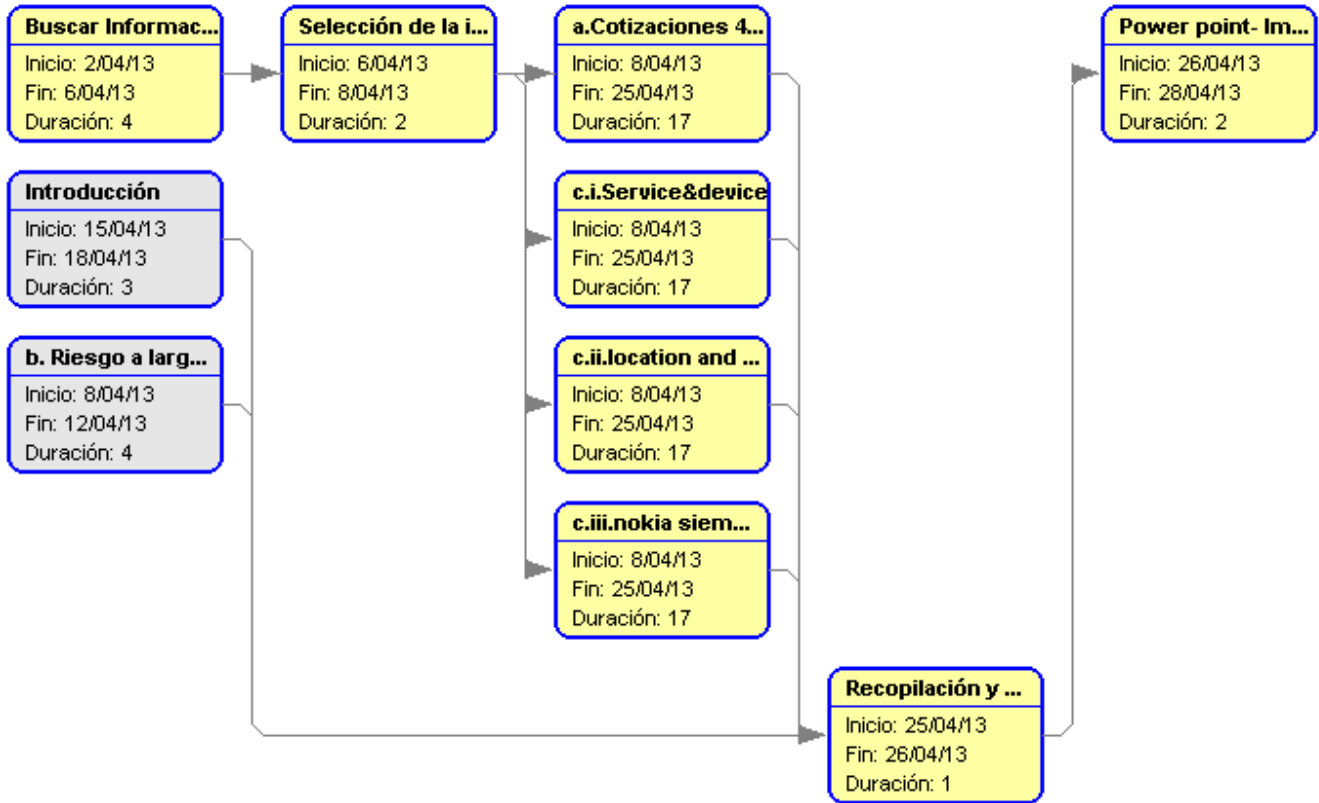Adrián Díaz-Salazar

Elena Gigante

Mª Goretti Gracia

PRESENTATION

Document

NUM. Doc GANTT

Verde→ Elena Gigante; Azul→Adrián Diaz-Salazar; Lila→ Goretti Gràcia

Buscar Informac...
Inicio: 2/04/13
Fin: 6/04/13
Duración: 4

Selección de la i...
Inicio: 6/04/13
Fin: 8/04/13
Duración: 2

a.Cotizaciones 4...
Inicio: 8/04/13
Fin: 25/04/13
Duración: 17

Power point- Im...
Inicio: 26/04/13
Fin: 28/04/13
Duración: 2

Introducción
Inicio: 15/04/13
Fin: 18/04/13
Duración: 3

c.i.Service&device
Inicio: 8/04/13
Fin: 25/04/13
Duración: 17

b. Riesgo a larg...
Inicio: 8/04/13
Fin: 12/04/13
Duración: 4

c.ii.location and ...
Inicio: 8/04/13
Fin: 25/04/13
Duración: 17

c.iii.nokia siem...
Inicio: 8/04/13
Fin: 25/04/13
Duración: 17

Recopilación y ...
Inicio: 25/04/13
Fin: 26/04/13
Duración: 1

REVISED APPROVED

ACCOMPLISHED

PRESENTATION

SC_Abril 2013

Rev: 1.0

FOLLOW AND CONTROL

DATE: 08.04.2012

MINUTE Page 1 / 2

PROGRAM

Eus Anglès 2012-2013

MEETING CODE 20130411

DATE 11/04/2013

AGENDA

Today has taken place our second meeting of the second delivery. The goal of this meeting has been answer some questions and check our individual work. Moreover, we're working faster than we hope, and consequently this let us to deepen more in some aspects. We hope to finish the paper the Friday 26th of April, hence we will meet this day again to collect all the information.
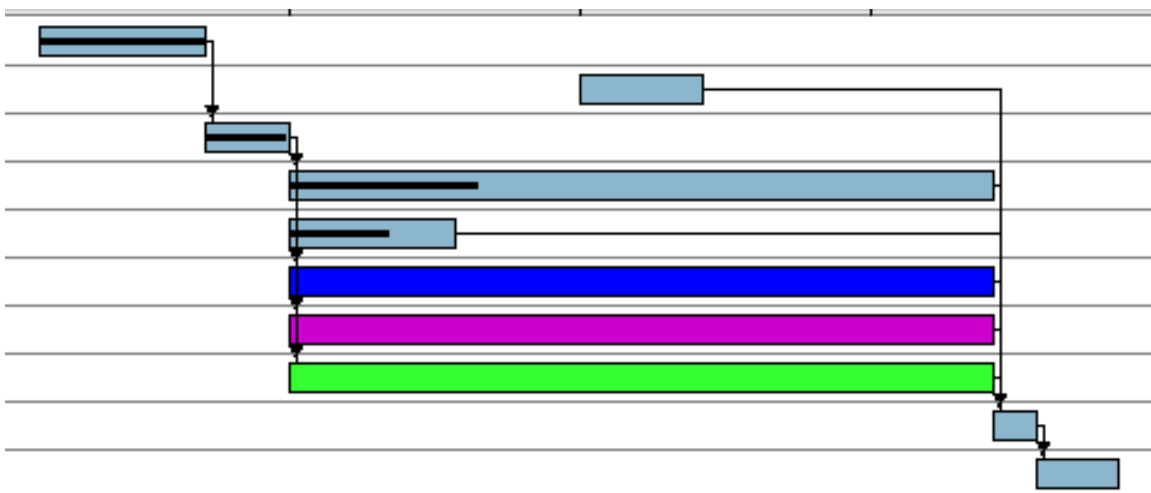
ATTENDEES LIST

Adrián Díaz-Salazar

Elena Gigante

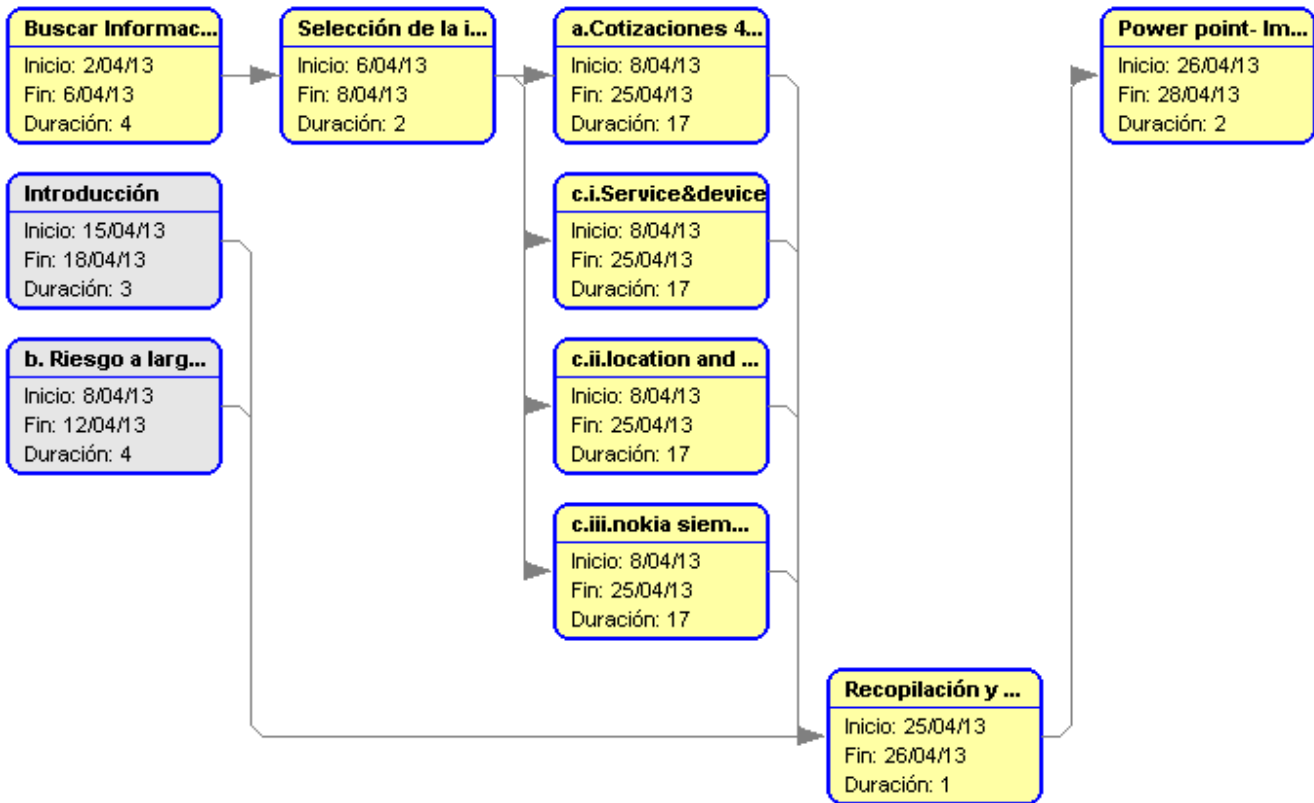Mª Goretti Gracia

PRESENTATION

Document

NUM. Doc GANTT

Verde→ Elena Gigante; Azul→Adrián Diaz-Salazar; Lila→ Goretti Gràcia

ACCOMPLISHED   **REVISED   APPROVED**

PRESENTATION

SC_Abril 2013

Rev: 1.0

FOLLOW AND CONTROL

DATE: 11.04.2013

MINUTE Page 1 / 2

PROGRAM

Eus Anglès 2012-2013

MEETING CODE 20130426

DATE 26/04/2013

AGENDA

Today has taken place our third meeting of the second delivery. Each of us has finished their part of the paper, we have collect all the information, we have elaborated the index and the biography, also, we have decided the structure of the presentation and we have chosen the most important information to make it and we have started doing the power point.

The duration of the last meeting has been around 1hour and a half.
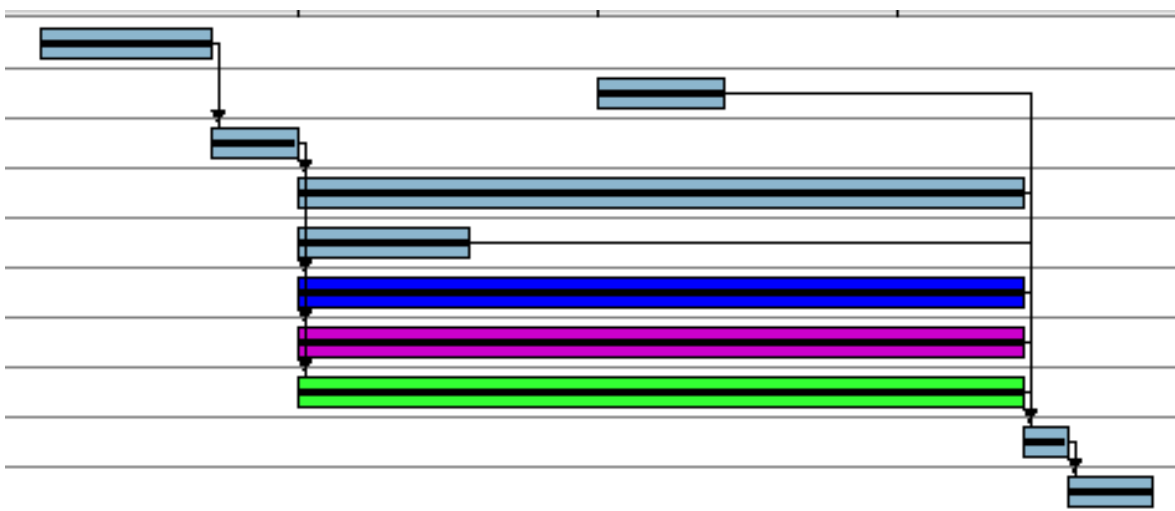
ATTENDEES LIST

Adrián Díaz-Salazar

Elena Gigante

Mª Goretti Gracia

PRESENTATION

Document

NUM. Doc GANTT

108

Verde→ Elena Gigante; Azul→Adrián Diaz-Salazar; Lila→ Goretti Gràcia
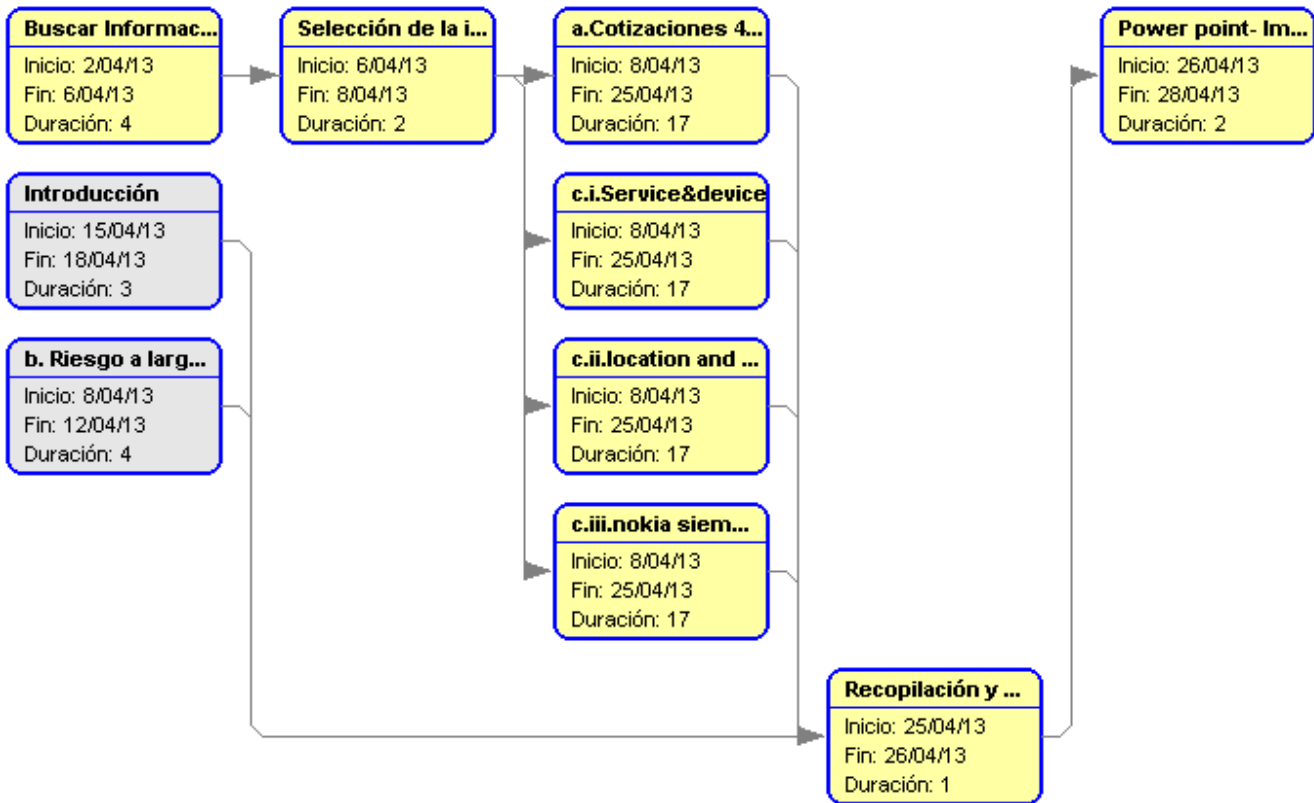
ACCOMPLISHED   **REVISED   APPROVED**

PRESENTATION

**SC_Abril
2013**

Rev: 1.0

**FOLLOW AND
CONTROL**

**DATE:
26.04.2013**

109

MINUTE Page 1 / 2

PROGRAM

Eus Anglès 2012-2013

MEETING CODE 20130513

DATE 13/05/2013

AGENDA

Today has taken place our first meeting of the third delivery. We defined all the tasks that we should do. We have collect all the information, we have elaborated the index, and we decide which part will do each member. The duration of the last meeting has been around 1hour and a half.

ATTENDEES LIST

Adrián Díaz-Salazar

Elena Gigante

Mª Goretti Gracia

PRESENTATION

Document

NUM. Doc GANTT

Buscar Información	13/05/13	15/05/13	
Introducción	15/05/13	18/05/13	
Selección de la información	15/05/13	16/05/13	
a.ROE	16/05/13	21/05/13	
b. ROE BEFORE TAX	16/05/13	21/05/13	
c.ROA	16/05/13	21/05/13	
d. REAL TAX	16/05/13	21/05/13	
e. VALUE ADDED	16/05/13	21/05/13	
f. BANK SENSIBILITY "J"	16/05/13	21/05/13	
Recopilación y conclusión	21/05/13	22/05/13	
Power point- Imprimir	22/05/13	24/05/13	

Verde→ Elena Gigante; Azul→Adrián Diaz-Salazar; Lila→ Goretti Gràcia

Buscar Informac...
Inicio: 13/05/13
Fin: 15/05/13
Duración: 2

Selección de la i...
Inicio: 15/05/13
Fin: 16/05/13
Duración: 1

a.ROE
Inicio: 16/05/13
Fin: 21/05/13
Duración: 5

Power point- Im...
Inicio: 22/05/13
Fin: 24/05/13
Duración: 2

Introducción
Inicio: 15/05/13
Fin: 18/05/13
Duración: 3

b. ROE BEFORE ...
Inicio: 16/05/13
Fin: 21/05/13
Duración: 5

c.ROA
Inicio: 16/05/13
Fin: 21/05/13
Duración: 5

d. REAL TAX
Inicio: 16/05/13
Fin: 21/05/13
Duración: 5

e. VALUE ADDED
Inicio: 16/05/13
Fin: 21/05/13
Duración: 5

f. BANK SENSIBIL...
Inicio: 16/05/13
Fin: 21/05/13
Duración: 5

Recopilación y ...
Inicio: 21/05/13
Fin: 22/05/13
Duración: 1

ACCOMPLISHED

REVISED   APPROVED

PRESENTATION

SC_May 2013

Rev: 1.0

FOLLOW AND CONTROL

DATE: 13.05.2013

MINUTE Page 1 / 2

PROGRAM

Eus Anglès 2012-2013

MEETING CODE 20130520

DATE 20/05/2013

AGENDA

Today has taken place our second meeting of the third delivery. As we have been worked hard, we have already finished the ROE, ROA, bank sensibility and the value added, hence when we finished the Real tax and the ROE before tax we will print it and made the power point.
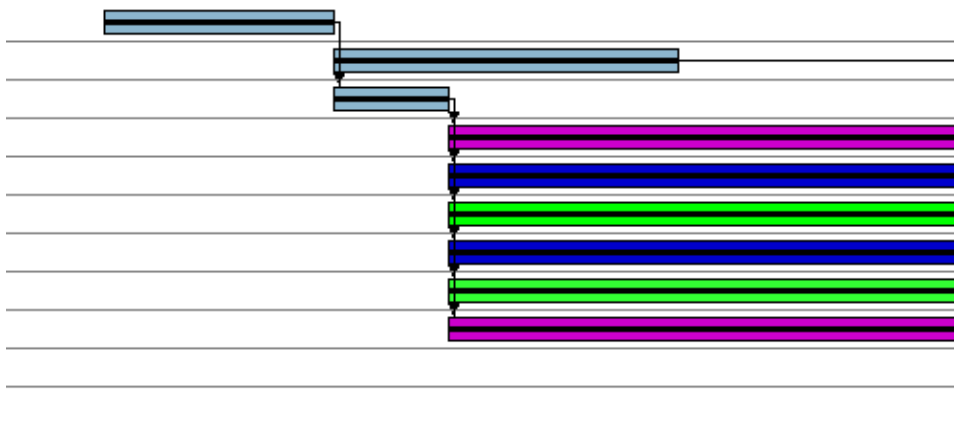
The duration of the meeting has been more or less 3 hours because we have checked that all the calculations were correct.
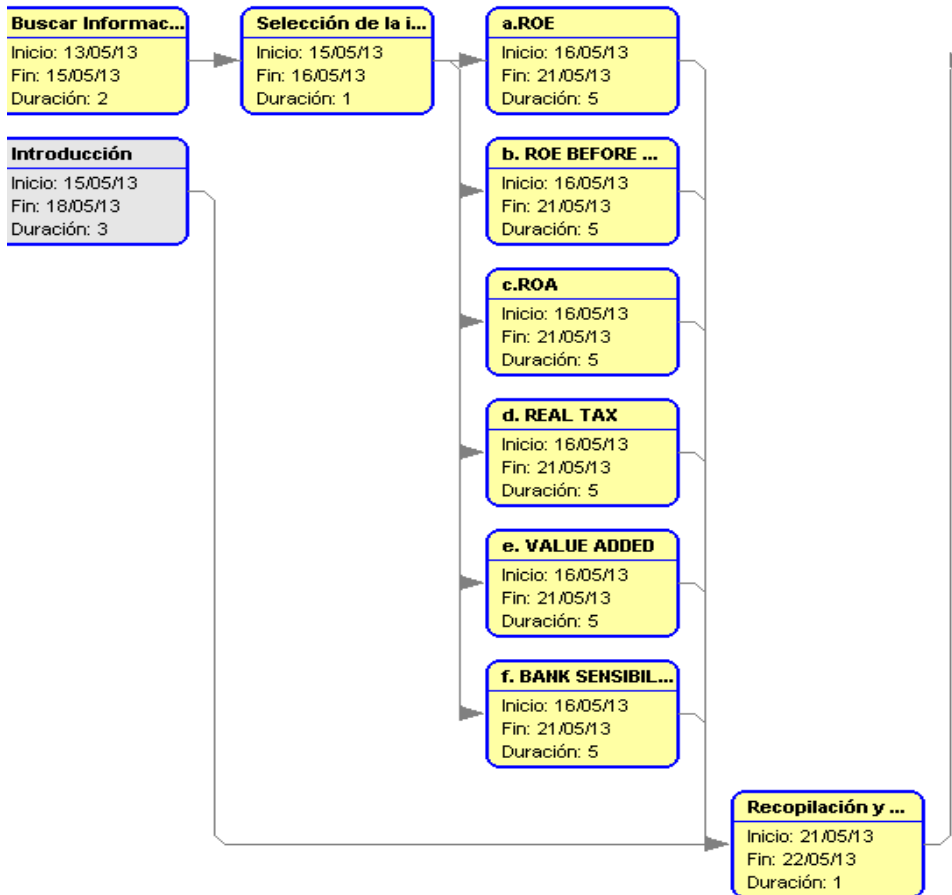
ATTENDEES LIST

PRESENTATION

Document

NUM DOC GANTT

Verde→ Elena Gigante; Azul→Adrián Diaz-Salazar; Lila→ Goretti Gràcia

ACCOMPLISHED   **REVISED**   **APPROVED**

PRESENTATION   **SC_May 2013**

                                                                  Rev: 1.0

FOLLOW AND CONTROL

                                                                  DATE: 20.05.2013

MINUTE Page 1 / 2

PROGRAM

Eus Anglès 2012-2013

MEETING CODE 20130523

DATE 23/05/2013

AGENDA

Today has taken place our third meeting of the third delivery. As we have expected in the last session, we have finished the project earlier than the expected, because we have already finished the ROE before tax and the Real tax, so we have can collect all the information, organize it, print it and prepare the power point.

As is the last meeting of the project, we have put in common our impressions in order to improve for future projects.

The duration of the meeting has been around 4hours and a half.
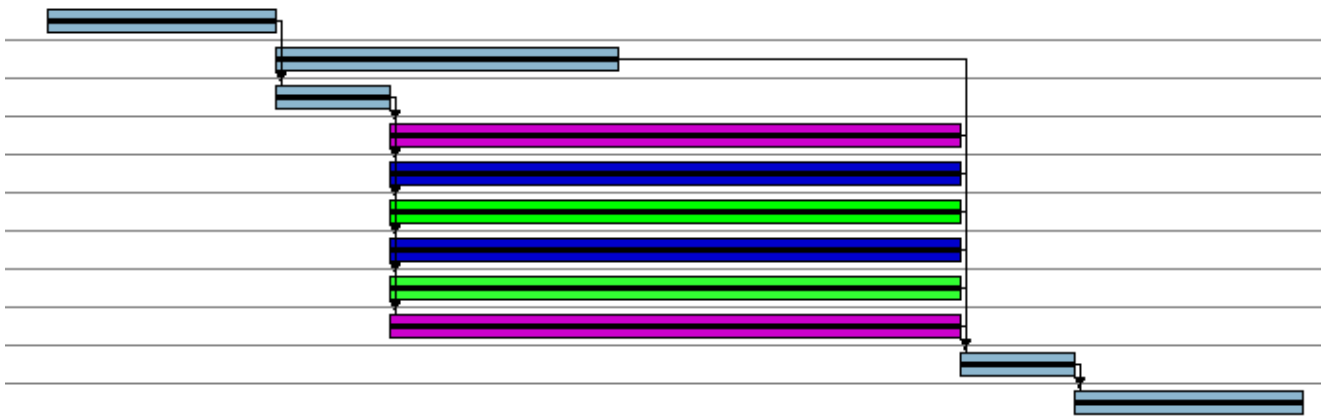
ATTENDEES LIST

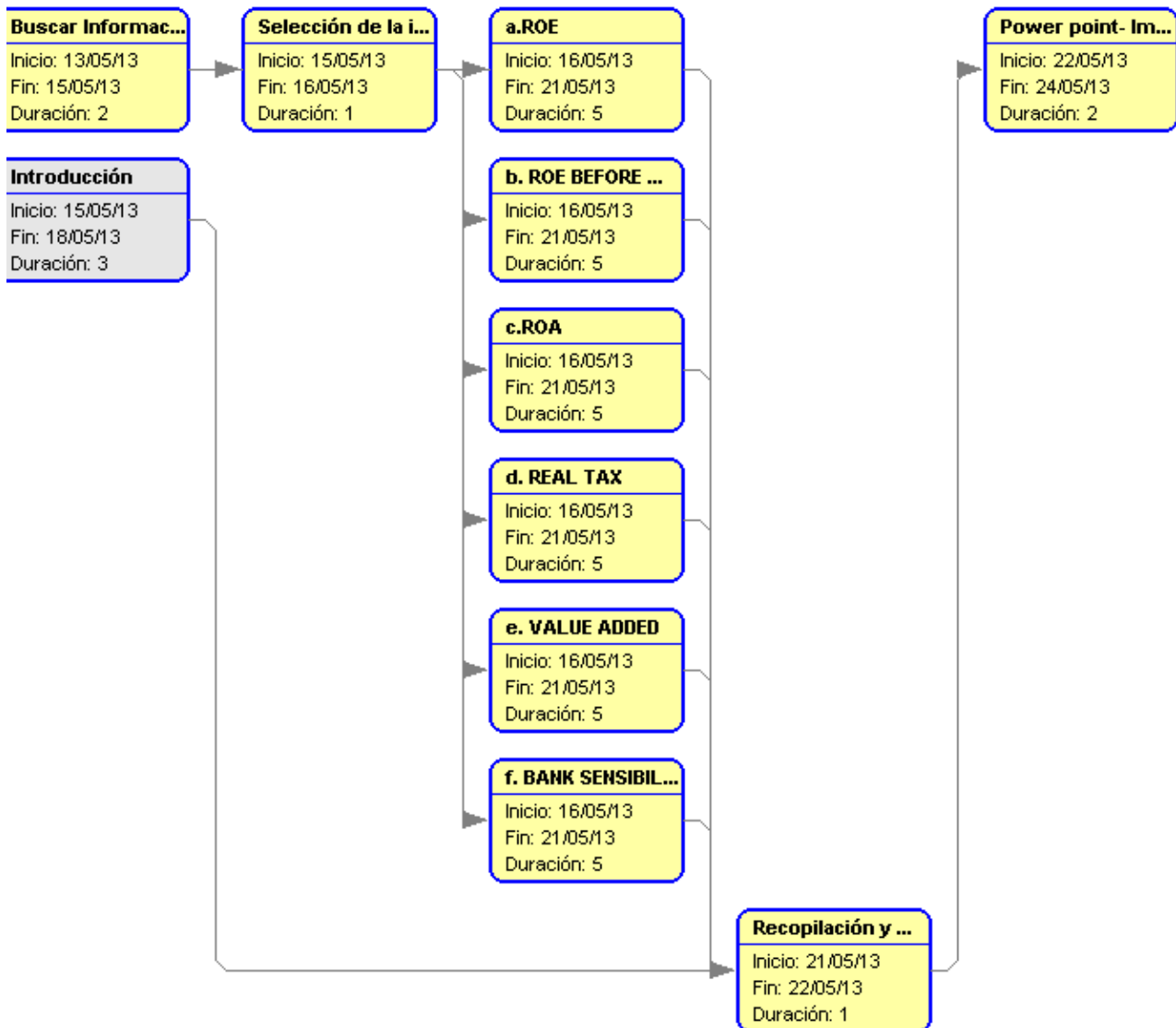Adrián Díaz-Salazar

Elena Gigante

Mª Goretti Gracia

PRESENTATION

Document

NUM. Doc GANTT

Verde→ Elena Gigante; Azul→Adrián Diaz-Salazar; Lila→ Goretti Gràcia

ACCOMPLISHED   **REVISED   APPROVED**

PRESENTATION

SC_May 2013

Rev: 1.0

FOLLOW AND CONTROL

DATE: 23.05.2013