Universidade de Aveiro Departamento de Economia, Gestão e Engenharia Industrial
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NORMALIZAÇÃO NO CONTEXTO MULTINACIONAL: ESTUDO DUMA EMPRESA DE CALÇADO

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Projeto apresentado à Universidade de Aveiro para cumprimento dos requisitos necessários à obtenção do grau de Mestre em Engenharia e Gestão Industrial, realizada sob a orientação científica da Professora Doutora Ana Moura, Professora Auxiliar do Departamento de Economia, Gestão e Engenharia Industrial da Universidade de Aveiro

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Palavras-Chave

Internacionalização, normalização, produção, calçado, Indústria

Resumo

O presente trabalho foi realizado com o intuito de divulgar quais os assuntos de interesse aquando do estudo de métodos para melhorar a transição do desenvolvimento de produto para a produção em massa. Ao fazê-lo pretende ao mesmo tempo provar que através dos processos de normalização é possível uma mais rápida e fácil deslocação para mercados internacionais e consequentemente alcançar vantagem competitiva nesses mesmos mercados de condições distintas do mercado nacional. Para tal uma análise qualitativa de uma empresa no ramo do calçado foi tida em consideração para melhor entender as dificuldades no contexto multinacional de uma empresa de produção. No final uma potencial melhoria do processo é apresentada, enquadrada nas condições atuais do mercado de calçado.

keywords Internationalization, manufacturing, standardization, footwear, Industry

abstract

The project in hands was developed in order to distinguish which topics can be of interest when studying methods for improvement on the link between R&D and the manufacturing process. Doing so, it also aims to prove that through standardization processes it is possible a fastest and smoother dislocation to international markets and, consequently, achieve competitive advantages in those same markets with different conditions from the home market. To do so, a qualitative analysis of a company in the footwear business was taken into consideration to better understand the difficulties in the multinational context of a manufacturing company. To finalize, a potential improvement of the process is presented, framed in the current conditions of the footwear industry.

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Introduction

Internationalization is a reality deeply accepted in all major industries worldwide. Even in a safe scenario of good local market conditions sooner or later first movers of each industry will overcome competition by simply exploring other markets and absorbing know-how, enabling brand awareness or just by cost saving due to lower labour costs or getting closer to raw material sources. In Industries where time to market is of extreme importance, as it is the case of fashion industry, enabling processes to be standardized and having a common guideline independently of the host country, facilitates the accomplishment of the deadlines and consequently enables better results in terms of time to market that will result in its turn in satisfied customers and more market share. The problem arises when building the bridge between product development and manufacturing process, in a multinational firm where the group production units are embedded in distinct cultural contexts and need to be aligned.

In this context, it is intended to approach the importance of standardization to align the development process in the manufacturing stage, for that a case study allowed to highlight some principles asserted by authors and connect it to real facts and problems of a manufacturing company in a multinational framework.

A case study is an empirical investigation that studies a contemporary phenomenon in a real context, especially when there is a thin line between the phenomenon and the context itself; it deals with a situation in which many variables of interest may be present; is assured by many evidence sources; and needs a prior development of theoretical prepositions in order to guide the data collection and analysis (Barañano, 2004). Facing a context where existing theoretical perspectives lack empirical foundations, this project exhibits a descriptive and exploratory case study that allows the understanding of the current situation and its reasons, with the goal of identifying the factors that contribute for the existing context in the company subject to the case study (Eisenhardt, 1989) and to present a possible solution. The case study method goes meets the ideology defended by Yin (2003), it consists in an empirical investigation that studied an existing and relevant phenomenon in its real context.

The current investigation was possible during an internship in a footwear company and in its technical departments in the various units of the group located in Asia and Europe.

With this project it is intended to clarify the following points:

1. Which factors should be considered on preparation for manufacturing?
2. How can the company minimize the negative factors?
3. What are the proposed solutions?

Once the topics of interest are established, a research approach was outlined in two essential parts:

1st Part: Conceptual framework

- Development of the theoretical propositions that guided the selection and analysis of the necessary data needed to build up a review in the real context

2nd Part: Case Study

- Industry and company description and characterization
- Problem analysis.

1st Part - Conceptual Framework

Chapter I – Adapting and standardizing processes for international Transfer

Standardization vs. Adaptation

In a constantly changing world companies that strive to survive the competitive market conditions are being faced with the challenge of leaving their domestic markets, when firms globalize their operations, the establishment of manufacturing plants abroad is inevitable and the main factor that has influenced the first movers in several industries from some years till this day, has been the labor costs. With this approach other questions rise, when considering manufacturing processes. In this context, Grant and Gregory (1997) propose two polar approaches of technology transfer to the international market, namely standardization and adaptation. Gaither (1996) describes a manufacturing strategy as the selection of product types, production processes and equipment, the organization of production layout, the allocation of resources to the process itself and to the functional departments, the design of product capacity, and the acquisition of raw material sources. In a related way, and as Grant and Gregory (1997) described, a manufacturing process is any repetitive system for producing a product, including the people, equipment, material inputs, procedures and software in that system. A manufacturing company rises in its home market and thrives due to its core competencies and acquired experience throughout the years, together with this experience and knowledge, market needs constantly bring more challenges that make the company and the industry itself grow. In an international point of view, where the plot changes in terms of culture, people, habits, politics, etc. the question rises in a strategic decision of whether the process should be transferred without modification or adapted in some way for transfer. Grant and Gregory (1997) defend that cloning a manufacturing process (transfer a process without modification) can avoid reengineering costs by keeping a standard throughout a global network of operations. Cloning however requires a manufacturing process that can be transferred without adaptation to fit conditions for which was not originally intended (robustness), and this may not allow the exploitation of benefits from local factors of production. A palpable option is to make significant and analyzed changes of some aspects of the manufacturing process resorting to adaptation, such will allow the transferor to take both advantage of the local characteristics and facilitate the transfer process.

The problems involved in the transfer of manufacturing processes have been discussed in the literature, Vernon (1996) emphasized his approach on the forces of innovation and demand, he concluded that firms would either vertically integrate to overcome supply problems, or choose products which had more transferable characteristics. In a wider economic perspective, Mason (1981) identified market size and growth, labor and capital costs, range of technology available and prospect of technology obsolescence as variables affecting technology choice for transfer. It is necessary to differentiate between characteristics of the process that relate with host conditions, such as labor costs and market, and those that affect the activity itself of process transferring, such as dependence on *know-how* difficult to transfer.

In a deeper analysis on the option for adapting to improve fit with local conditions, literature suggests some relevant factors. These combined with the standardization process analyzed further ahead on this work might give a perspective in how combining adaptation and standardization characteristics may bring great benefits for the international transfer process. Pack(1981) focuses on labor substitution, identifying appropriate technology as that which maximizes output and employment simultaneously, but such approach can be considered too narrow when assessing a manufacturing process or choosing a location. For that other factors like suppliers and resources, government, competitive and environmental considerations, labor, site attractiveness, taxes and financing or transportation, should be consider by managers.

The analysis so far has been considering adaptation from a home perspective, but many authors shifted the burden of adaptation to the host country, they defend that the recipient is best placed to adapt the transferred process to match its strengths and weaknesses.

When studying the subject in hands and, as it was mentioned before, the movement is typically made to cheaper labor countries, normally less developed countries (LDC's). The simplicity of some Japanese management techniques and their low capital investment requirement makes them ideal for the less developed countries, requiring mainly training. However some remarks are considered by authors to antagonize this position and refer that workers in LCDs lack inherent housekeeping tendencies, capability in tool making and quality measurement, they are also seen as culturally averse to assuming responsibilities and have no initiative for troubleshooting. Considering this and the need of straight and responsible attitude to enable good performance from the well organized Japanese methods, these are perhaps not appropriate for LDCs, requiring either adaptation of the methods or extensive training, and infrastructure and capability building at the host site. Apart from the factual evidence of the reasons affecting manufacturing process adaptation, barriers to transfer like, lack of host managerial *know-how*, lack of infrastructure, poor IPR protection, governmental requirements, and local commercial habits may be reason enough for failure in transfer.

As mentioned before the choice to transfer would fall in “products which had more transferable characteristics”, the same line of thought can be made for the manufacturing process, the greater or lesser extent in which the factors so far mentioned will affect the manufacturing process will depend of the manufacturing process itself, the sensibility of a process to any of the mentioned factors gives an indication of its ‘robustness’ that together with ‘appropriateness’ are two constructs which pertain to fit with local conditions (Grant and Gregory, 1997). The appropriateness of a manufacturing process is defined as its degree of fit with local conditions, i.e. the demands of the manufacturing process match the country characteristics or capabilities of the host firm, while the robustness can be used to describe a process that can be transferred un-adapted to fit conditions that were not intended for in its original form. In a simplified approach, a robust process can be transferred to any environment without adaptation, and will fit the local conditions. As it also happens with appropriateness, it is likely that a manufacturing process will only be robust to certain factors, and will be sensitive to others. An analogy can be found in Spender (1989) he states that "a strategy is better when it can be pursued under environmental conditions that differ from those which the strategist assumed. This is a measure of its robustness”. From this analogy one could conclude that a manufacturing process can be intentionally designed to be robust to any set of conditions, in order to improve the efficacy with which it could be transferred to a new location, enabling the transferor with a flexible manufacturing process that would give immediate competitive advantage when moving to new environments different from the original site. With this consideration, a manufacturing process may need to be adapted to facilitate its transmission and assimilation, as host-dependent characteristics were accounted previously, factors influencing adaptation to improve ease of transfer are more clearly identified in the literature. "Skilled labor" and "repairmen" are issues to be of concern to transferors (Vernon, 1966). It is important to distinguish between standardized skill and process-specific, experiential skill, so called issues of transferability due to their influence in process transfer.

From an analysis on several independent studies on firms that took the internationalization of operations path, neither standardization nor adaptation characterizes the firm's international decision, rather a mixture of both extremes in different degrees, depending on the industry or the process itself.

Standardization

Some authors describe standardization as the ability to realize in practice, immediately as well as in the long run, a set of methods and conditions that make possible repeat high performances; Standardization refers to unavoidable organization infrastructure. It enhances operational efficiency in ways recognized and unrecognized.

According to the DIN German Institute for Standardization, company standards have the greatest positive effect on businesses. When it comes to the relationship with suppliers and customers, however, industry-wide standards are the main instruments used to lower transaction costs and assert market power over suppliers and customers. Industry-wide standards play a vital role in the increasingly globalized world. 84% of the company's surveyed on the *Economic benefits of standardization Study* from the German Institute use European and International Standards as part of their export strategy. With this small example it is notable the recurrence of companies to standards in order to better perform in an international context.

With the goal of providing the general public with information on important technical and organizational features, standards usually describe a consensus on technical and organizational solutions for products, services, systems and processes. They help create interoperable products, define equal requirements for production processes, set comparable quality criteria or stipulate systems for the management. Standards facilitate and instigate understanding, interoperability and compatibility raising the bar of high level of quality for products and services. Standards enable and improve the flow of information and management along the value chain, therefore being of particular importance for the competitiveness of an industry that is very focused on exports. Standardization allows both, facilitating the transfer of knowledge and the opening of markets.

In what concerns innovation, standards enhance the capability of companies for products, services and management by creating objective and internationally recognized parameters for business activity. Besides this promotion for innovation, standards also enhance competition. Their application is voluntary and therefore does not restricts technological progress, this voluntary nature of the application of standards creates an attractive mixture of flexibility and legal certainty that also provides for standards to be regularly checked and updated. Throughout the years it has been shown that new technical standards often create foundation to the development of new technologies. This way standardization also helps to make knowledge about technology transparent and overall available. Ultimately standardization may determine the positions in competition. Even though everyone has the means of participating, the early joiners are often better able to assert their interests and technologies. The original purpose and strength of standardization is to create preconditions for economic success and Innovation thus standardization reaches its natural limits when it begins to deprive technology and management from the freedom which fuels innovation.

Finally, the vast complexity in cooperating and the huge amount of standards require the several international organizations to relate closely in order to better serve and promote free world trade. Between other standardizing organizations here are highlighted the most influent ones: the International Organization for Standardization (ISO), International Electrotechnical Commission (IEC), International Telecommunication Union (ITU) are the three largest and most well-established organizations with more than 50 years of existence. These three organizations together comprise the World Standards Cooperation (WSC). In a regional point of view can be identified the European CEN (European Standards Organization), European Committee for Electrotechnical Standardization (CENELEC) and European Telecommunications Standards Institute (ETSI), only standards created by these mentioned organizations are recognized as European standards.

The acceptance of standardization as a major tool for internationalization is therefore a reality for multinational businesses. Process standardization can by itself, and with the correct control, define the success of a company outside its home market, however to take the most efficiency and effectiveness out of the production process an appropriate control system is also recommended. A coordination system of an organization may include the organizational structure, the relationships between functional departments and last but not least, managing of human resources effectively. In international business it is of key importance the involvement and coordination of the headquarters, especially in controlling the use of technology and for the importance of keeping with the quality standards.

Chapter II - System integration of product design and manufacturing

Concurrent Engineering

Competition nowadays requires companies to offer both innovation and low cost simultaneously to costumers, to do so time must be compressed. Firms late to market are likely to incur opportunity costs, such as reduced market share and loss of margin in their pricing. With this scenario in consideration some Industries targeted compressing product development cycles as one of the most important references for improvement.

In order to develop products faster and cheaper and to consequently regain global competitiveness (Hartley, 1992), many American manufacturers implemented what they called concurrent engineering (CE). CE focuses on designing products in a more integrated way, bringing as many downstream considerations as possible (manufacturability, maintainability, testability, customer needs, etc.) into early stage decision making (Clark, Chew and Fujimoto, 1992) what becomes essential when understanding that most costs although expended at later steps, are committed at early ones.

CE is a broad concept focusing on work going simultaneously along a number of dimensions either it being integrating different components or subsystems of the product, upstream and downstream stages of the development process or the work of different functions.

Process concurrency is associated with product development project performance. Some studies give an emphasis on cross-functional integration which can be achieved through teams, matrix organizations, design standards, better communication systems, reward structures and top management leadership (Griffin and Hauser, 1996).

Much of the theory of CE can be traced back to the central organizational issue of differentiation and integration. Though there are variations on the theme, the main question is to bring together what has been divided as organizations increasing size and complexity and tend to differentiate. With this growing in size and differentiation, products become more complex and are divided into smaller pieces designed by a number of specialist groups and manufactured by a separate set of groups. In mass production a chief engineer no longer develops the design and manufacturing process of the entire product, instead, a group of people coming from different backgrounds, knowledge and experience from different departments take the decision. Tasks of uncertainty and high in interdependence, cannot be effectively coordinated merely through plans and hierarchy. Here CE offers methods for integrating the knowledge of various functional departments so that a previously sequential process is adapted or completely transformed into an integrated set of equivalent, simultaneous exchanges.

Predictors of design-manufacturing system integration include a combination of features associated with both organic and mechanistic organization designs (Burns and Stalker, 1961). The first one, design, which are effective in rapidly changing environments and where task demands are fluid and uncertain, are characterized by few rules and standard procedures, broad role descriptions, empowered employees, and mostly horizontal communication. The second organization design, the mechanistic, in its turn can be effective when the environment is stable and tasks are routine and programmable, it is characterized by extensive rules and standardized procedures, a clear division of highly specialized labor, a strict chain of command, and primarily vertical communications.

As in any case for success, implementation of measures like CE need a strong backbone from the organization side. Customer's satisfaction in cost, demand are the company's goals, but in order to avoid jeopardizing quality and revenues, department coordination, production process control, headquarters involvement (core of the business) and the attention for local factors are of great importance, interrelation defended by Gaither (1996), figure

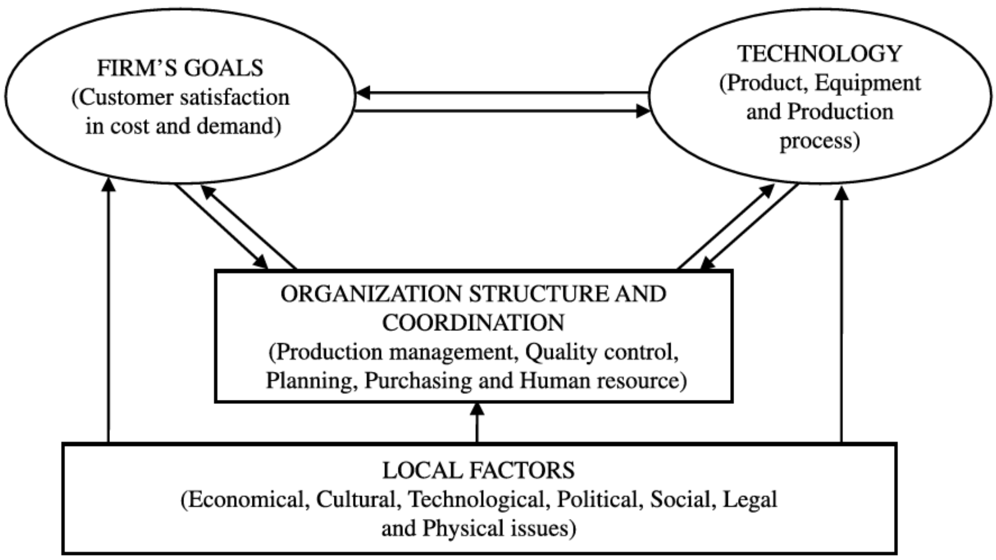

Figure 1- Interrelation of technology, firm´s goals, structure and local factors (Source: Gaither, 1996)

2nd Part - Case Study

This thesis follows a qualitative methodology, according to which exposes the facts related to the process of preparation for production that can be seen as a second product development stage in the production phase. This work was based on the ongoing traineeship on the different units of a major shoemaking company. More specifically the technical departments, this way it was possible to be close to the process and have better insight on the process itself and to understand where people had more concerns, the potential causes of the problems and conflicts and also have their feedback in where they believed the change would make the difference for the best.

Eisenhardt (1989) highlights the applicability of the case study methodology in the following contexts: Circumstances where little information is known relatively to a certain phenomenon that is being subjected to analysis; in initial stages of research on a new area of investigation; in the process analysis of longitudinal changes; and in cases where the existing theoretical perspectives are shown as incipient and inadequate or have a lack of empirical support.

Considering the last context identified by the author, it was applied a descriptive-exploratory case study approach. This method allows obtaining a holistic versus reductionist perspective of a phenomenon, process or series of events, where the capacity of the researcher is of capital importance (Gummesson, 2000).

Following the theoretical framework that guided the data collection and analysis, in this second part it is exposed the company's case study. For anonymity reasons the company hereinafter will be referred as Company X.

In the next chapters, it is important to highlight the importance of chapter III and IV the first one because understanding the shoe industry and its constant growth throughout time will enable the reader to get a perspective on how important it is for Company X to keep its own growth and cope with the market demands. The second one, chapter IV-description of the company, is fundamental to understand the shoe making process to this company as a whole, to better follow the details and characteristics of the development in the production phase. The possibility of following several projects in the different units of the group allowed the better understanding of the business and the potential impact that culture can have in the realization of a process conducted in different countries.

A significant part of the internship was characterized by the close contact with the technical department and consequently with the product engineering preparation (PEP) flow. Even with the constant change of this flow through the years the ongoing flow had a great deal of flaws, the turning point for the people involved and off course for the group itself ended up to be when the strengths of this flow stopped to have the added value that they once had. This way on chapter V it is exposed the existing flow. Chapter VI, the problem analysis of the current process and in chapter VII a possible development in order to bring better results.

Chapter III - The shoe Industry

Footwear Industry Worldwide

World footwear manufacturing is notorious for its pursuit of so called "cheap" labour. In the 1960's Japan was the main source of supply of low cost footwear. Low labour costs, supplies of leather and a tradition of shoemaking made Japan the launch pad for the Far East shoe manufacturing industry, the industry then moved to Taiwan as labour costs in Japan grew, then to South Korea and some years after to Indonesia and Thailand.

While Indonesia and Thailand were coping with the economic problems of the late 90's, China was liberating its economic policies. Taiwan Chinese entrepreneurs were looking for a new manufacturing base and Hong Kong became a new capitalistic part of China. Operating through Hong Kong for political reasons, the Taiwanese industrialists set up shoe factories on the Chinese mainland, where labour was plentiful and cheap. This, together with China´s high capacities installed, infrastructure, and component supply industry left China emerging as the dominant player.

The APICAPS 2012 YEARBOOK on the World footwear Industry analysis worldwide production, consumption, exports and Imports. Due to its annual publications it keeps track of the changes in the last decade regarding prices, geographic patterns and product mix. It also has detailed information of each country's profile with respect to footwear. It is a great tool to better understand the market and the latest report available provides the following information.

In 2010 worldwide production of footwear reached ten billion pairs in 2010, it is estimated to have reached twenty one billion pairs in 2011 and the growth is predicted to be kept. Asia, also for the reasons mentioned before continues to be the powerhouse of the footwear industry, its overall share is close to 90%. Most of the big brand companies have factories in Asia, the labour costs alone explain a lot. In the world's top ten producers, seven are Asian countries and China alone produces more than 60% of the world total (Annex A, Figure 1). Brazil is the only non-Asian country among the leading five producers and Italy, the European representative barely makes it into the list with 1% of the world share. Turkey and Iran complete the list (Annex A, Table 1).

Inevitably, the geography of footwear consumption is a lot less concentrated than production, this is easily explained since it follows population and wealth distribution. Even so, Asia's share is 47% immediately followed by Europe and North America. The other continents together just reach the 15% threshold (Annex B – Figure 2). On its own, China is the largest world's market in what regards quantity (China population is around 1 348 million people), buying close to 16% of the pairs of shoes sold worldwide, relegating USA, that traditionally held the top position to a second place (population of 312 million). India closes the group of markets that consume more than 2 000 million pairs of shoes a year (Annex B - Table 2).

As the world leading continent in production, it would make sense, also considering the big brands of shoes have production units in Asian countries, that exports would be concentrated in Asia, 84% of the world total (Annex C, Figure 3). China alone sells almost three out of every four pairs of shoes exported worldwide and USA is its main market. The second position is taken by China's special administrative area of Hong Kong. Vietnam, Indonesia and Thailand complete the group of 5 Asian countries in the top 10 table (Annex C, Table 3). The other five top exporters are European, led by Italy.

As a continent, Europe leads the ranking of world importers, followed by North America (Annex D, Figure 4). However, after reaching a maximum of 44% in 2008, its share of the world total has been declining for the last three years. At the other end of the table, Africa's imports have been growing steadily over the last decade. Seven out of the 10 top importers are located in Europe that is the destination of 40% of the world imports (Annex D, Table 4), a quick reference to what was mentioned before that all major brands have units in Asian countries, so importations would naturally fall in North America and Europe. Individually, the USA is the leader in footwear imports (Annex B, Table 2), importing almost one out of every four pairs traded internationally, even if its share has declined the past years.

World footwear trade keeps its strong upward trend. In 2011 a new record was set with total world exports for the first time above 100 billion US dollars, up 15% from the year of 2010. The number of pairs exported reaching almost 14 billion (Annex E, Chart 1). Over the last decade, the quantity exported nearly doubled and an impressive rise in value of 143% was recorded.

Prices have also been going up. In 2011 the average export price worldwide reached 7.39 USD (Annex E, Chart 2), slightly higher than the previous maximum of 7.31 USD reached in 2008. Over the decade this represents an increase of 27%.

Asia as concluded before is the dominant force of footwear exports with Europe being a distant second. Asia has increased its share of the world total over the last decade, both in terms of volume (from 78% to 84%) and value (from 49% to 57%). Over the same time period the opposite happened to Europe, its share of the world exports decreased 5% both in terms of volume and value. The other continents represent small fractions of the world trade.

As most relevant exporters, Asia and Europe, are distinctively far in terms of market positioning. Asia, as usual, represents the lowest export price, among all continents, in 2011 it was still the only continent with an average price below 5 USD, close to five times less the average price charged by Europe(Annex F, Chart 3). Europe keeps charging the highest average price in the world but also pays the highest average price in terms of imports (Annex F, Table 5) .

Considering exports have been analysed by continent and external trade statistics are compiled at national levels, the following chart will help to understand better the part of continent's exports that actually leaves the continent.

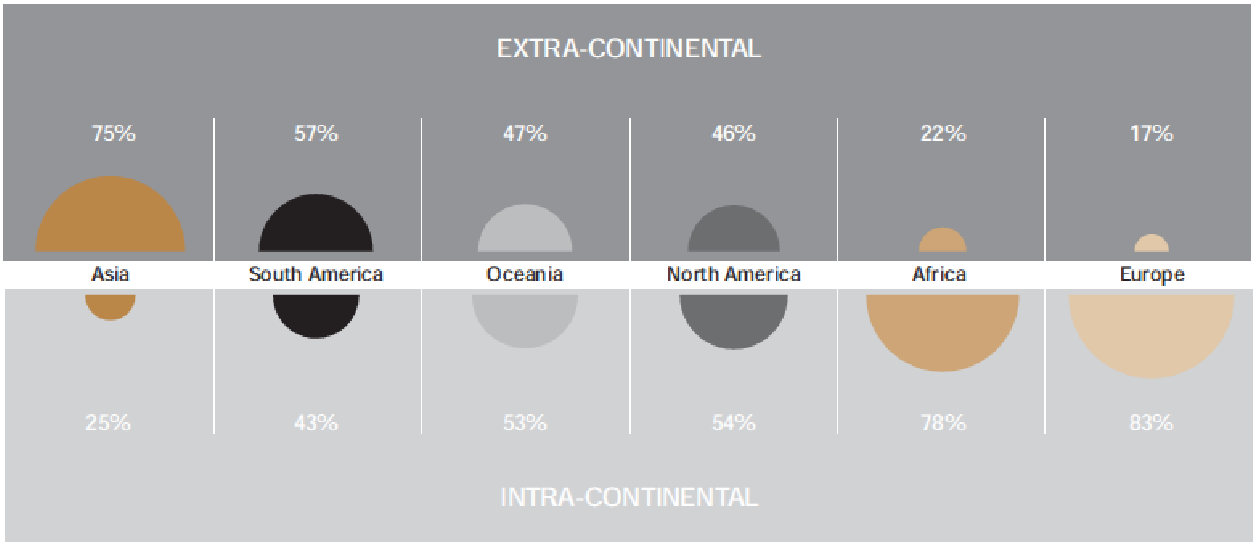

Figure 2 - Intra-continental and extra-continental exports by Value (Source: APICAPS Yearbook 2012)

It is also of great importance to understand the industry in terms of product. The different kinds of footwear correspond to different prices and allow in a certain way to understand the values of exports and imports seen so far. Leather Footwear's share has been declining throughout the years and, in terms of value, represent, for the first time, only half of the world exports. This decline has been compensated by marginal gains in every other type of footwear. Rubber and plastic footwear particularly, in terms of volume already represents 56% of the total (Annex G, Chart 4).

The product mixes of the different countries, and their different levels of price, explain why China dominance in terms of market is less accentuated that in terms of quantity. Even so, China represents 38% of the value of all footwear exported worldwide with Hong Kong, Indonesia, Vietnam and India completing the list of Asian countries among the top 15 exporters (Annex G, Table 6). Apart from Brazil that occupies the last place, the other countries joining the list are European, led by Italy, they together correspond to 31% of world Exports.

Italy, Portugal and France charge the highest average export prices, at the other end of this scale is China that exports at an average price of 4 USD.

From the 15 largest exporters list, seven out of nine are also among the top 15 importers of footwear, explaining Europe's relevance in world imports (Annex H, Table 7). Leading the top importers by value and with a significant margin is the USA, with a share that is more than two and a half times Germany, the number two ranked.

In a special remark to leather type footwear, considering that it is the main product of the company in analysis in this project, as it was mentioned before, the numbers have been falling the last decade. Exports of leather from Asia have reduced by approximately 12%, in Europe this decrease is even more notable as it started the decade exporting almost 60% when now is down to 38%. This numbers can be explained by the upward trend of the leather average price this past decade and with great significance in North America by 45% and Oceania up to 200% increase.

China and Italy are the top two exporters of leather footwear, but from all the analysis so far it is fair to conclude that in China is due to quantities and Italy in terms of value. This is a clear result of divergence in price strategies, while Italy export leather shoes at an average price of 60 USD, China only charges 12 USD, see table 1.

	Country	USD (millions)	Share	Pairs (millions)	Share	Average Price
1	China	10 854	21.2%	891	40.4%	$12.18
2	Italy	8 413	16.4%	138	6.2%	$61.01
3	Hong Kong	3 750	7.3%	173	7.8%	$21.72
4	Germany	2 554	5.0%	65	3.0%	$39.10
5	Vietnam	2 444	4.8%	74	3.3%	$33.06
6	Indonesia	2 199	4.3%	129	5.9%	$17.00
7	Belgium	2 051	4.0%	59	2.7%	$34.88
8	Portugal	1 824	3.6%	46	2.1%	$39.24
9	Spain	1 758	3.4%	42	1.9%	$42.02
10	Netherlands	1 696	3.3%	46	2.1%	$36.94

Table 1- Top 10 exporters of Leather Footwear 2011 (Source: APICAPS Yearbook 2012)

In a final note of the industry, despite global economic weakness during much of the five-year period to 2013, revenue for the Global footwear manufacturing industry has grown at an average rate of 4.2% per year to $113.6 billion. According to an industry analyst Nikoleta Panteva, "Global per capita income has trended upward, supporting consumer purchases of shoes in the long term". Moreover, demand from emerging purchasing power and the expanding number of affluent shoppers in the BRIC nations (Brazil, Russia, India and China) have supported industry growth during the past five years. This, coupled with recovering demand in the United States will push industry revenue to grow 7.3% in 2013.

In the five years to 2018, the global footwear manufacturing industry is forecast to perform even better than it did during the past five years. Rebounding developed countries will generate more demand for footwear, pushing revenue up in the in incoming years. As both Europe and the United States slowly recover from their recessions, revenue will also strengthen to show growth in the next two years. Profit will also expand as consumers increasingly seek out luxury footwear, which carries a high price tag.

The Industry in Portugal

Portugal is among the top 10 footwear exporters for every category of footwear except rubber & plastic and Textile. The Portuguese footwear industry is located in the north of the country and is organized in two main regions, the towns of Felgueiras and Guimarães, on the one hand, and Feira, São João da Madeira and Oliveira de Azeméis, on the other. In 2011, Portuguese exports increased 21% in value where France, Germany, Spain and the Netherlands are its main markets.

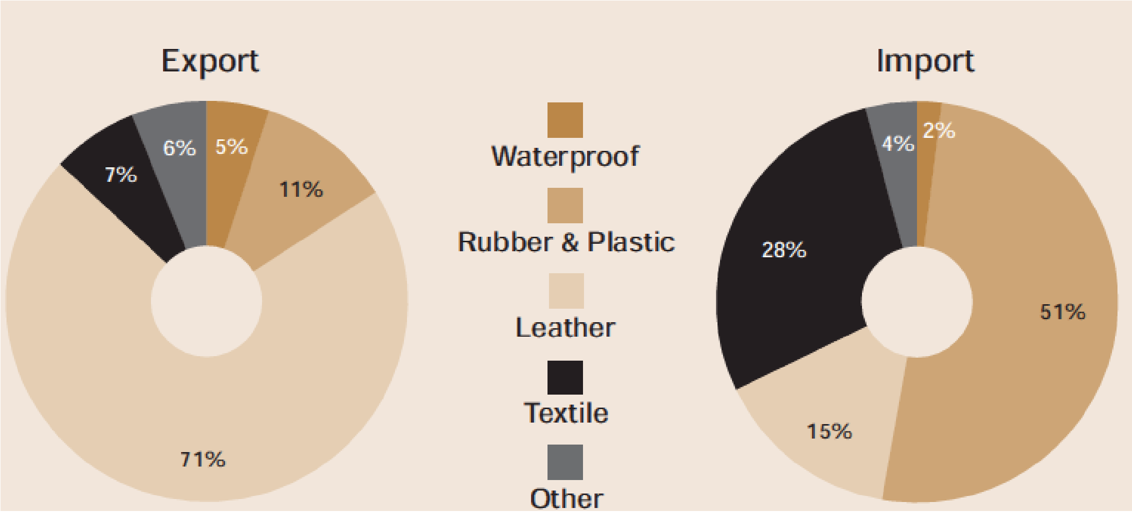

Figure 3-- Types of footwear traded - quantity 2011 (Source: APICAPS Yearbook 2012)

As a result of a deliberate strategy aimed at redirecting the footwear industry to higher value-added niches, Portuguese footwear exports have begun to rise. Portugal is now ranked eighth in the world for exports of leather footwear. The average price of USD $32 reflects the degree of appreciation that Portuguese footwear has earned in International Markets. The relative price index of exports/imports since 2001 has grown by 65%, which confirms a good level of international specialization.

The Portuguese industry has managed to survive the competition of low-cost prices from China by playing on its competitive edge in terms of its proximity to European markets, adding value by providing and efficient service. This ability to respond quickly to small orders has become a differentiating factor in the face of competition from countries with cheaper manpower.

Chapter IV – Characterization of the company

History, Heritage, Values and Principles

It all started in 1963, from humble origins in a single factory building. Company X soon began to grow, fusing innovative technology, European design and traditional craftsmanship with a profound understanding of the human foot and how it works. The company begins shoe production with 40 workers.

Historical landmarks

Year	Event
1974	Internationalization begins with the production of uppers in Brazil in accordance with the company´s instructions
1980	The first high-tech production equipment called Desma is installed. This lays the foundation for the development of the most advanced, high-tech production methods in the shoe industry worldwide.
1982	In co-operation with an international industrial group, production under license is set up in Japan. The company develops a production plant, robots, etc. Ten years later, annual production exceeds the 1 million pair mark.
1984	In order to help secure stable, expanding production, a new factory is established in Portugal. The 1,200 employees in Portugal produce 18,000 pairs of shoes every day.
1990	After several years of having been represented by a distributor in the US market, the company establishes a wholly-owned subsidiary company.
1991	The company establishes in Indonesia as the first company´s Asian based unit due to growth in sales as well as increased European cost levels. Initially build as an upper factory to supply the injection sites in Denmark and Portugal.
1993	Company X establishes as a joint venture in Thailand
1998	A new factory in Slovakia opens
1999	Opens its own tannery in Thailand.
2001	Company X takes over a major Dutch beam house, Tannery Holland, to ensure the company's supply of wet blue for its own production.
2005	Opens the first factory in China. The new factory is the group's largest and most advanced factory so far with a production capacity of 1 million pairs of shoes a year.
2008	A tannery in China is opened as the largest single investment in the history of the company.

Table 2 - Company X's Historical Marks (Source: Own Elaboration)

Company X is one of the few shoe manufacturers that has survived and prospered in an ever-changing world. For 48 years, it has been the Company's aim to produce high quality, casual comfort shoes with optimum fit. No wonder that customers all over the globe are as passionate about wearing the brand's shoes as the brand also is about making them. A family owned, financially robust company, it has no need to make short-term decisions, save on material or compromise on quality. Because they know that to deliver perfect quality they need to control every single aspect of their business.

The Company's designers develop the collections, the Company's owned tanneries produce the leather, and their owned factories make the shoes sold in their own shops across the world and at the world's leading retailers. All of which makes this company unique in the global shoe industry. The company has one overriding ambition for the future – to continue to deliver the high quality products that their customers want.

Figure 4- Company X's Values (Source: Intranet)

Company X is guided by the respect for its heritage, the call for innovation, the quest for excellence, the dedication to care, and most of all, passion.

Because of the respect and value of their *heritage*, it bases work on quality craftsmanship. Conventions are challenged, strive for uniqueness, encourage change and make room for individual creativity to drive *innovation*. The bar is constantly raised and it thrives to deliver the highest achievable quality in the company's quest for *excellence*. It *cares* about creating and maintaining strong, positive relationships with all colleagues, partners, customers and the societies in which lives and works. Company X acts with integrity and respects and encourages diversity. It is a *passionate* organization, filled with people who are passionate and build their work on what they love to do.

The Company X's Managing Board has created and articulated a set of Leadership Principles, which present a framework for the collective leadership of the company. These principles will be built into performance appraisals, succession planning, talent management programs, training activities and all other aspects of the daily business. The five Principles are:

- Sense making
- Visioning
- Executing
- Relating
- Accountability

From Hide to High Street

At Company X, there is the belief in controlling the processes and checking the products down to the smallest detail. This is possible because – as probably the world's only major shoe company – owns and controls the whole shoemaking process from hide to High Street. From design and leather craftsmanship to production, quality testing and sales, it controls every step of the shoemaking process, ensuring the high quality.

Design

It all begins at the Design Centre. Company X designers search for inspiration from many sources. The pure nature surrounding the Design Centre itself is always the starting point. Fashion, art, architecture, cars – inspiration can come from anywhere. But the consistent dedication to Scandinavian design and the company's heritage is unique to all the shoes. No shoe ever leaves the Design Centre without first being checked for lightness, softness, flexibility, comfort and fit.

Product Development

Company X constantly challenges the boundaries of comfort, innovative shoe design and the market's best quality. This requires uncompromising product development in which every detail from design to production is carefully planned and monitored. Gifted shoemakers and engineers are responsible for converting the innovative ideas of designers into fully specified prototypes.

The product development units in Denmark and Portugal supply tanneries and shoe factories with detailed instructions on how to produce materials and shoes that live up the high standards and consumers' expectations.

Making Leather

The most important raw material is first-class leather. This is why Company X owns and operates state-of-the-art tanneries in Europe and in Asia, as well as its own leather development and design center. It also provides quality leather to other high-end brands in the leather goods industry. The Company X Leather Group is one of the world's largest manufacturers of quality leather – approximately half of our leather production is sold to other companies and brands.

Making Shoes

Quality, comfort and style are the hallmarks of the Brand's shoes. The production technology is unique to the business. After having been stitched by thousands of meticulous craftsmen in the factories, the shoe upper is placed in a mold, where the sole is fused directly to the upper under heat and high pressure. With over 20,000,000 pairs of shoes sold each year, effective distribution to the markets is vital. Production of shoes is done both in Europe and Asia - close to most of the company's main markets.

The fully integrated supply chain ensures that the different distribution partners and Company X's own stores receive deliveries where and when needed. The global distribution system also supports the increasing demands for rapid delivery to online shoppers. Every day thousands of consumers enter one of 1,100 stores of the Group or 14,000 other selling points across the world. Success depends on their experience in the stores. You never get a second chance to make a first impression. Finding the right shoe with the right fit is crucial. Trained staff in the stores always aims to pick the perfect pair of shoes for the customer.

Chapter V - Product Engineering Procedure

Establishing and operating optimum conditions and methods is a clearly recognized efficiency enhancing effect in standardization. The ability to successfully transfer techniques, processes and practices reduces the risks of losses that often occur when such transitions take place. Being able to create mass production from a single sample, to proliferate single improvements and institutionalize them into larger and positive changes are examples of effects of standardization that sometimes are not that plain or easy to recognize.

With production Units in Asia and Europe, the constant rise on transportation prices is becoming more and more of a concern and delivering the product in time has a major repercussion in the customer´s satisfaction and the confidence on the brand. In shoe Industry in particular, there is also the seasonal factor, the customer is not interested in having in their shops winter boots only in the middle of the winter. In the actual Product Engineering Procedure (PEP) some of these concerns are already being worked on, but a need for a bigger change instead of small adjustments is essential. Having that in mind and also following a trend from the big players on the market, the strategy of the company has shifted, and significant changes are being considered in order to reduce time to market and transportation costs without compromising the high quality standards of the brand. But this has considerable associated risks, and this is where standardization can have a fundamental role in mitigating those effects.

A quick walkthrough the development concept of the company before the stage that most matters on this study, the Launch time, i.e., after product design release and before ramp-up to full-scale production.

The R&D as it was already explained on the company's profile is divided into Denmark and Portugal, in the headquarters, designers start working on a season a year and a half before. Then constructors (CAD/CAM technicians) in Portugal take the drawings and create the 2D with the help of the CAD/CAM software that will later result in the first physical sample of the shoe made by skilled and experienced shoemakers. At this stage hundreds of standards of construction are taken in account, both general shoe making standards and Company X specifics, considering already the upstream points of detailed specifications and of the manufacturing system. R&D Portugal gathers all the data necessary for the Handover to the several production units. From this point on starts the subject of focus of this study, the Product development from the technical department of each unit, go from one shoe to mass production.

Figure 2 shows the development process that is currently set on the company

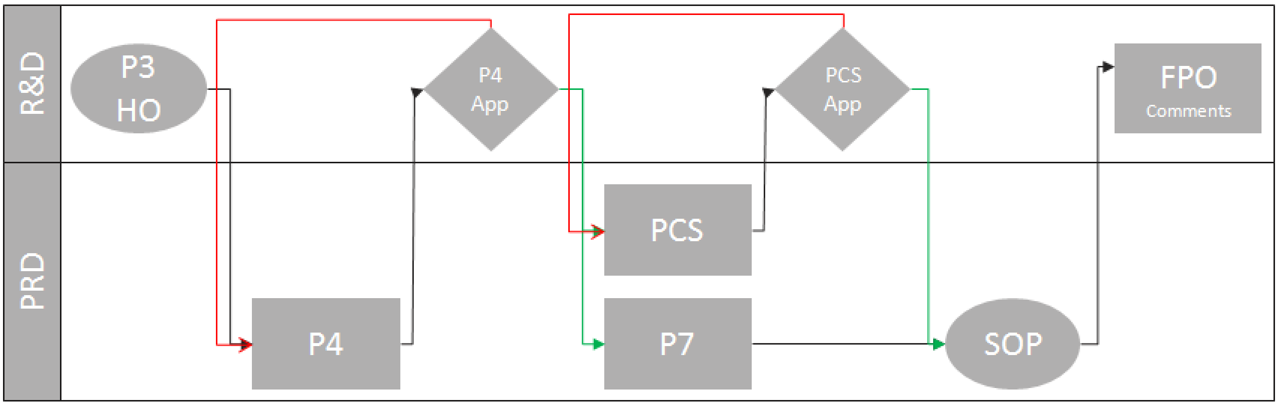

Figure 5-Current PEP of Company X (Source: own elaboration)

The shoe and all the documented content are internally designated as packages. This "packages" are both physical and digital and contain all the technical files, specifications, CAD files, etc., all the information necessary for the technical department of the production unit to recreate the shoe themselves.

The irregular order of the number that the packages are represented is due to the constant developments/changes of this flow since early years, these developments were driven by reasons as: the evolution of technology; the speed and costs of the means of transportation; the opening of borders or simply just as a mean of cost and time saving measures.

Packages purpose:

- P3 – The first official handover of an article, from the R&D department to the appointed production units, in order that the production units can start the technical production preparation included final development of materials, costing and work-study requirements in a confident and professional manner. The P3 has to contain all needed information for the production unit to make the final preparation for production.

- P4 – to ensure that the production unit has understood the requirements made upon them and that the footwear sent into R&D for approval meets the design, technical, cost requirement and fit. Package 4 technical approvals are made to give the go ahead for the final stages of production preparation to start. No production change to be accepted after P4 is signed off.
- P7 – to check the graded sizes and ensure that the upper and montage unit has understood the graded requirements made upon them and that the footwear meets graded technical requirement and cost requirement.
- PCS (product confirmation sample) - Confirm to branding department and group product development the final production sample before actual startup of upper production. Gives HQ assurance that production units can achieve the required quality standard. Bulk production has to be made exactly as delivered PCS.
- FPO – First production order is taken from production, it is the first pairs in every size after SOP (Start of production). Although production already started, this first pairs are sent for approval at R&D for detection of potential problems and fit & wear tests.

These stage-gates (Cooper, 2008) are fundamental for the follow up of the product development on the different units. By having all the units sending the shoes to headquarters and the same group of people analyzing it and making sure design, technical, cost and fit standards are being followed, the brand has a good guarantee that the shoes are being produced according to its requirements.

Hill and Jones (1998), Dunning (1993) and Ferdows (1989) among others, identified low production costs, skillful workforces, getting close to raw materials and exploiting favorable policies of the host government as the goals of a firm in setting up a manufacturing plant abroad, Company X was no exception, and initially these were the main factors for internationalization, soon enough other reasons also mentioned by these authors raised; access to new markets, market extension and getting closer to costumers.

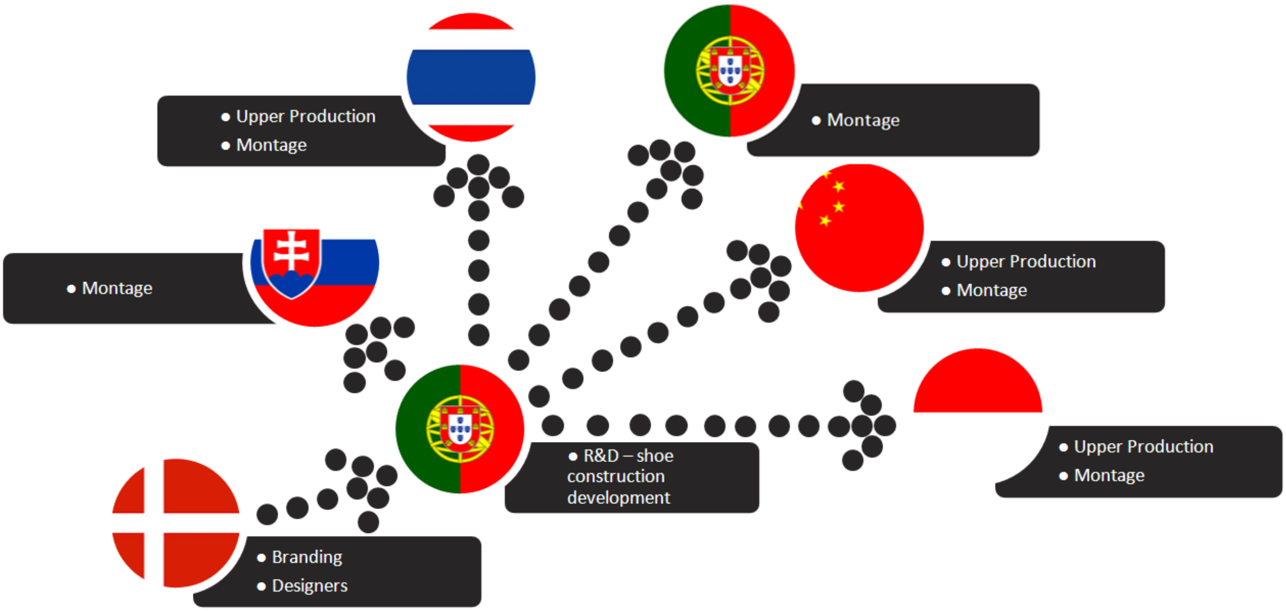

Figure 6 - Company X's Units localization and Activities (Source: Own elaboration)

With such great distances between the units and R&D, the costs associated with the constant coming and going of shoe packages start to be a point of focus of the group. And the waiting time between the shoes being sent and received deeply affects the timeframe available for bulk production startup.

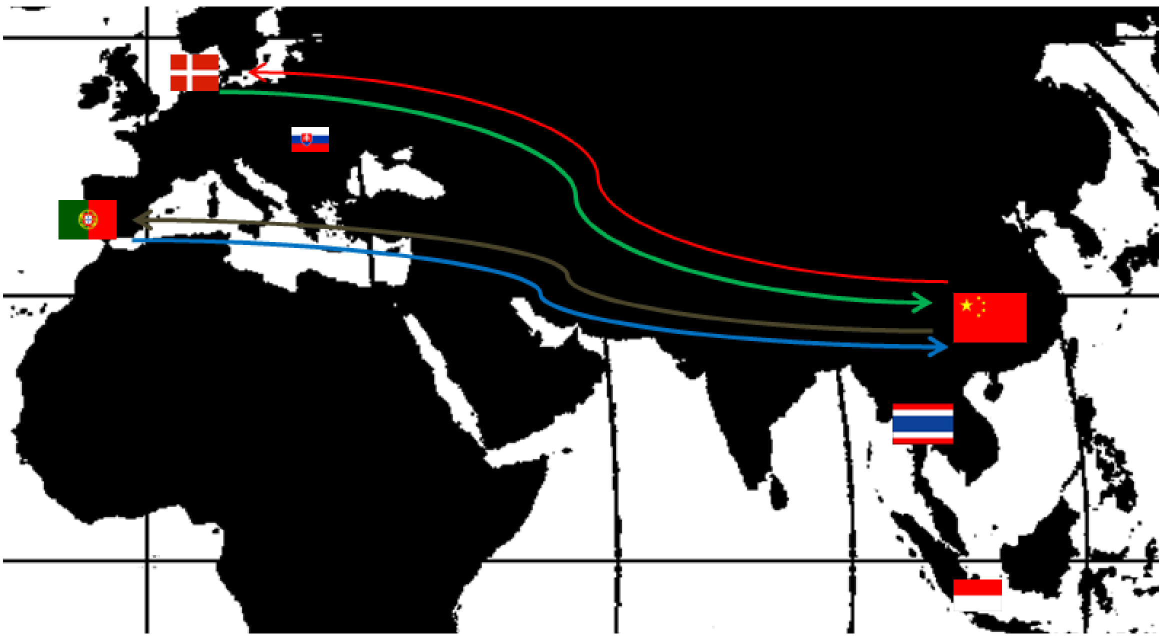

Figure 7 - - Example of Package flow between Units (Source: Own Elaboration)

Figure 7 gives an example of how, with the current PEP the packages are traveling the globe. Below a resumed explanation of the process:

1. P3 shoe is sent from Portugal (R&D) to the Unit (e.g. China) **(5 days normal courier)**
2. P3 received and creation of P4 by technical department From production unit
3. After P4 created by implementing improvements agreed according to the company standards, best fit, production friendly construction and cost saving measures on basic size it is send to R&D Portugal for Approval **(3 days if express delivery)**
4. P7 developed after P4 approved by R&D. P7 is internally approved by production unit technical department.
5. PCS shoe made by production Unit and send to Denmark (Branding) for approval. **(3 days if express delivery)**
6. PCS approved sent back to production unit so that it has a production confirmation sample to start production. **(3 days if express delivery)**

Despite the fact that many problems in product development can be traced to a lack of R&D-manufacturing coordination (Swink, 2003) few studies have actually examined the consequences of different degrees of vertical integration for R&D-manufacturing coordination. The analyses and conclusions on this study are based on actual activities by the Company X when trying to cope with this same problem and using standardization as a tool to reduce the bridge between R&D and manufacturing.

Besides the lead times in product development, purchasing plays an important role in this phase of product development as well as in production process development and improvement during the manufacturing phase (McGinnis and Vallopra, 1999, 2001). Company X has a vast number of approved suppliers (Annex I, Figure Y) that all units use for specific and strategic materials; however, units also have the liberty to go for local suppliers, in order to get either cheaper materials or just to save in shipment costs. In this case there is also a lead time associated because the new supplier's materials have to be tested and approved accordingly to the company standards. Currently the information on materials for purchasing is only available 12 weeks before the start of production due to the Merchandizing conference week and customers decision on products to the market.

Chapter VI - Problem Analysis

After this overview on the PEP on Company X, there will now be presented the main problems detected on the current flow. This analysis results from following the flow in the technical departments of the production units in China, Indonesia and Portugal, and it has contribution of several hierarchy levels, technical department manager, team leaders and technicians. No specific or standard interviews were made. The information was rather gathered in informal talks and by attending department and team meetings.

Besides the already mentioned transportation costs and times in transportation between units, there are several others, some don't directly relate to the flow.

- Communication between R&D and the units;
- Communication between departments and inside the departments
- Lack of Leadership
- Relationship between departments
- Planning issues
- Lack of information in time

In Company X and with the current flow, after P3 deliver, the communication between the technical department and the R&D is regular, either it be for upper construction issues or materials, fit and standards. Even with English as the group spoken language, the misunderstandings are very common, especially because the most used communication channel is the e-mail. This creates frustration in some elements and consequently brings demotivation. Consequences however would only be noticed in a deeper stage of the development when time was wasted and investments already made.

As a just re-established production unit Portugal, deals with more of this problems than other units. With the recently running technical department, a team was built from scratch. Technical manager is usually sent from other unit, experienced shoemakers with managing experience inside the group. But also in this case, the language and cultural barrier can have great consequences when executing even simple tasks.

Technical department is a bridge between R&D and Production, besides developing the tools and instructions in how to make the shoes for production it also arises as a problem solver when production is out running. Unfortunately Production is driven by numbers, and quantity often beats quality in their point of view. Being this a brand with focus in quality shoes it is fundamental that technical and production work together to a common goal.

Purchasing as it was mentioned in previous chapter also has an important role in the PEP success, and some decisions made without consulting or communicated to technical department may result in serious delays in the development and consequently a later start in bulk production.

In a generalized way, the results of these problems/conflicts can be resumed in two major kinds of consequences: late time to full handover to production, resulting in delays in production delivery dates and/or problems with the final product, that have particularly serious consequences in Company X, considering the high range of prices of the final product, the expectations of the costumer are equally high.

Chapter VII – Upcoming developments

The new PEP flow

To counter this ongoing problems and most important, in order to ensure the right quality at the right time, the Product Engineering Procedure of the product should be done against the Look-See Package shoe (LSP) that comes from Sale samples and is provided by R&D to Production Units. All new SKU (Stock Keeping Units) are handover (HO) to production as LSP also followed by a standard deviation report (SDR). What is different from before, right in early stages is that LSP HO is released according to LSP plan agreed between R&D and Global Production Office (the central intelligence of production), considering Mold and Last development status, Leather development status, Materials development status, technical department capacity constraints and Sale Sample production constraints. Having all of these align from the start better allows controlling the starting date of each development by organizing efficiently the priorities.

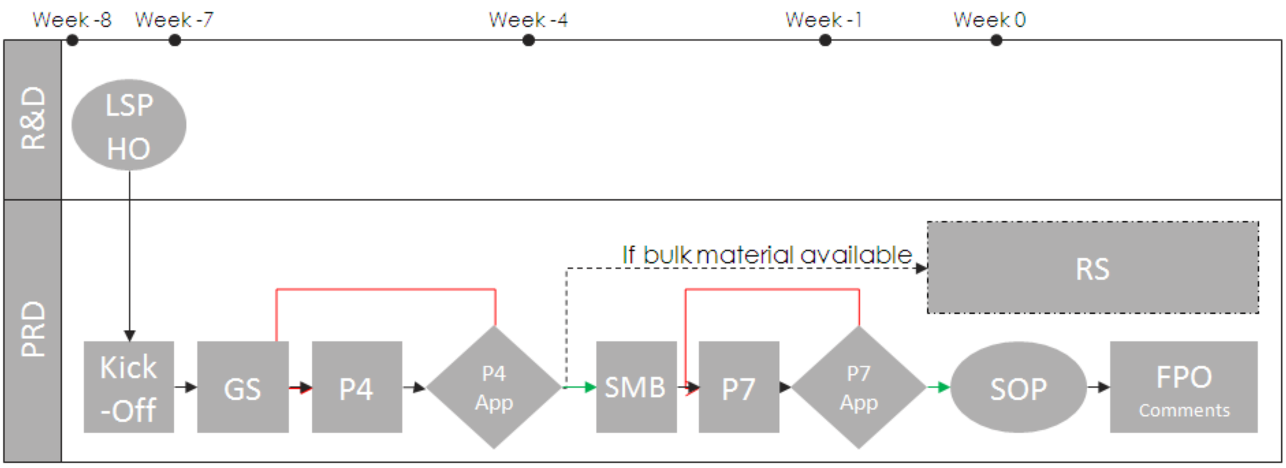

Figure 8-New improved PEP flow (Source: Own elaboration)

It is rule that all the LSP handover cannot be made later than 8 weeks before upper production start-up, giving the technical departments 8 weeks to work on PEP.

Besides all the technical documentation delivered in the LSP Handover the physical shoe and the SDR are the more relevant. The first one will be what in the end production has to reproduce in mass production in detail, the second, the SDR, is the report that follows with the shoe that will give information of any deviation from the physical shoe to what R&D really wanted. To better understand, if by the time LSP is taken from the Sales

Samples (the shoe that is shown in the conference to all buyers and market contacts) any leather development is still not finished, and R&D sends a shoe with alternative leather, on the SDR it will be mentioned that the leather on the shoe is not the final one.

As it can be immediately observed from figure 5 the involvement from R&D ceases as soon as it handovers the LSP. Also from the observation of the figure, the number of steps was incremented but the stage gates were reduced, this immediately tell us that there will be less waiting times in approval status and to countermeasure the possible outcome of this less control in upstream stages, more initial steps were created to assure that the product will have the correct development from the start.

Each step has its own purpose but always striving for a quality shoe and compliance of deadlines. It is of extreme importance the team's performance and departmental coordination, cooperation and communication to ensure the full performance of the new flow.

- LSP – Handover from shoe development from R&D to Production;
- Kick-off – this stage is divided in 3 processes
    - Product development status check Point

      Check all development status (material, last, mold and leather) related with the product handover from R&D.
    - Pre-Ground Size/BOM

      Create BOM (Bill of Materials) in SAP in order to enable logistics to initiate material ordering by the suppliers
    - Commitment for Order Release

      Order acceptance from HQ for delivery window plan

  Product development status check Point and Pre-Ground size are parallel processes necessary to support the production unit to analyze the possibility of accepting the respective orders.
- Ground Size - Check the construction of the articles handover and identify improvements according to the company Standards, best fit, production friendly construction and cost saving measures;
- Package 4 - Implement improvements agreed according to company Standards, best fit, production friendly construction and/or cost saving measures on basic size;

- **Gate A** – P4 approval – Deadline 4 weeks before upper Production Start
  The requirements of Basic Size are considered and confirmed. Within the fit approval, the product is proven to follow the company Standards and being technically feasible in production. The product engineering is concluded.

- SMB - Ensure the correct grading of the product according to the company grading rules;
- Package 7 - Check graded technical requirements and cost conditions
  - **Gate B** – P7 Approval – Deadline 1 week before Upper Production
    The requirements of Small, Medium and Big (SMB) Sizes are considered and confirmed. Within the grading and wear approval, the product is proven to follow the company Standards and being technically feasible in production in all sizes.
- FPO - Final check before startup of bulk production, to verify that all aspects of quality are in accordance with the company Quality Standards
- RS (Reference Sample) - Produce a reference shoe for production line according to LSP. Confirm the final Montage Production Sample. Visual BOM for Shop floor to ensure final product achieves the required quality standard.

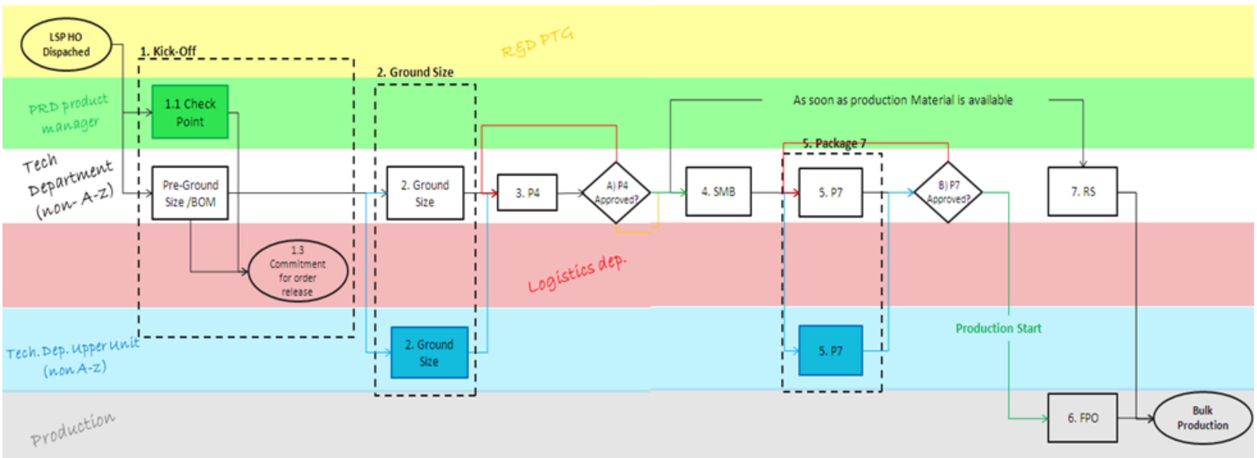

Figure 9-Inter-department involvement on New PEP flow (Source: Own elaboration)

In figure 9, besides demonstrating the involvement of each department in the new PEP flow, also presents the special case when Units don´t have upper production (Portugal and Slovakia). A “non A-Z” unit is the designation given to a unit that either doesn´t make the full shoe from the leather cutting to the shoe packing and loading or they only produce the upper that will then be shipped to the montage unit.

A direct consequence of this new flow is attributing more responsibility to each unit, since the approval gates are all with internal responsibilities. The consequences of failing to deliver the right product will be fully of the production unit and also will be the financial consequences. The goal of this new flow and the standardization of the process aims to enable all units to have the same information at the right time and guarantee that no matter where two pairs of shoes are produced in the world, they will be exactly the same.

Chapter VIII - Conclusions

Understanding the variation in design to manufacturing integration is important because of the high costs associated with the product designs that are not well integrated with manufacturing. The base of the concept deals with extent to which the product and manufacturing system simultaneously follow principles of design for manufacturability and robust manufacturing. The way it is operationalized is at downstream points where decisions involve detailed specification of the product and the manufacturing system.

Integrating design and manufacturing in the high-velocity environments of today creates a variety of task demands that include routine and uncertain elements best managed by a mix of flexibility and standardization (Leonard-Barton, 1992). In many ways CE relates the case in hands, and although much of the literature on CE focuses on the need for organic practices, controls are necessary to provide discipline for reaching targets of time and cost. Standardization, a practice usually categorized toward the mechanistic end of the continuum, helps provide control over the development process to keep costs and production disruptions to a minimum, while enabling organization learning across product generations (Leonard-Barton, 1992). Although standardization imposes external constrains on the solution space, it can also be liberating because wells are less likely to be reinvented and creative problem solving and interpersonal exchanges can focus in higher order issues saving time and money (Ward, Liker, Sobek and Cristiano, 1995). In this sense, standardization and documentation fit modern quality philosophies like those of Deming (1992) that defended that checking and improving quality in process as work is originally done rather finding and fixing problems in later stages.

It is also of great importance to the success of the new implementation an attention to change management. Build awareness around the need for change and creating a desire among employees. Communications should be designed to share the right messages at the right time.

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Annex

Annex A

Figure 2- Distribution of Footwear Production by Continent - quantity 2011 (Source: APICAPS Yearbook 2012)

	Country	Pairs (millions)	World Share
1	China	12 887	60.5%
2	India	2 209	10.4%
3	Brazil	819	3.8%
4	Vietnam	804	3.8%
5	Indonesia	700	3.3%
6	Pakistan	298	1.4%
7	Bangladesh	276	1.3%
8	Mexico	253	1.2%
9	Thailand	244	1.2%
10	Italy	207	1.0%

Table 2 - Top 10 footwear producers by country (source: APPICAPS yearbook, 2012)

Annex B

Figure 3 - Distribution of Footwear Consumption by Continent - quantities 2011 (source: APPICAPS yearbook, 2012)

	Country	Pairs (millions)	World Share
1	China	2 761	15.9%
2	USA	2 248	12.9%
3	India	2 202	12.7%
4	Brazil	740	4.3%
5	Japan	697	4.0%
6	Indonesia	526	3.0%
7	Germany	429	2.5%
8	France	424	2.4%
9	United Kingdom	372	2.1%
10	Italy	336	1.9%

Table 3-Top 10 Footwear Consumers - quantity 2011 (Source: APICAPS Yearbook 2012)

Annex C

Figure 4-Distribution of Footwear Exports by Continent of Origin - quantity 2011 (Source: APICAPS Yearbook 2012)

	Country	Pairs (millions)	World Share
1	China	10 170	73.1%
2	Hong Kong	362	2.6%
3	Vietnam	316	2.3%
4	Italy	229	1.7%
5	Belgium	207	1.5%
6	Indonesia	206	1.5%
7	Germany	194	1.4%
8	Netherlands	143	1.0%
9	Thailand	141	1.0%
10	Spain	130	0.9%

Table 3 - Top 10 footwear exporters - Quantity 2011 (Source APICAPS Yearbook 2012)

Annex D

Figure 5-Distribution of Footwear Imports by Continent of Destination - quantity 2011 (Souce APICAPS Yearbook 2012)

	Country	Pairs (millions)	World Share
1	USA	2 302	22.4%
2	Japan	619	6.0%
3	Germany	593	5.8%
4	France	480	4.7%
5	United Kingdom	455	4.4%
6	Hong Kong	425	4.1%
7	Italy	358	3.5%
8	Spain	354	3.4%
9	Russian Fed.	256	2.5%
10	Netherlands	245	2.4%

Table 4 - Top 10 Footwear Importers - quantity 2011 (Source APICAPS Yearbook 2012)

Annex E

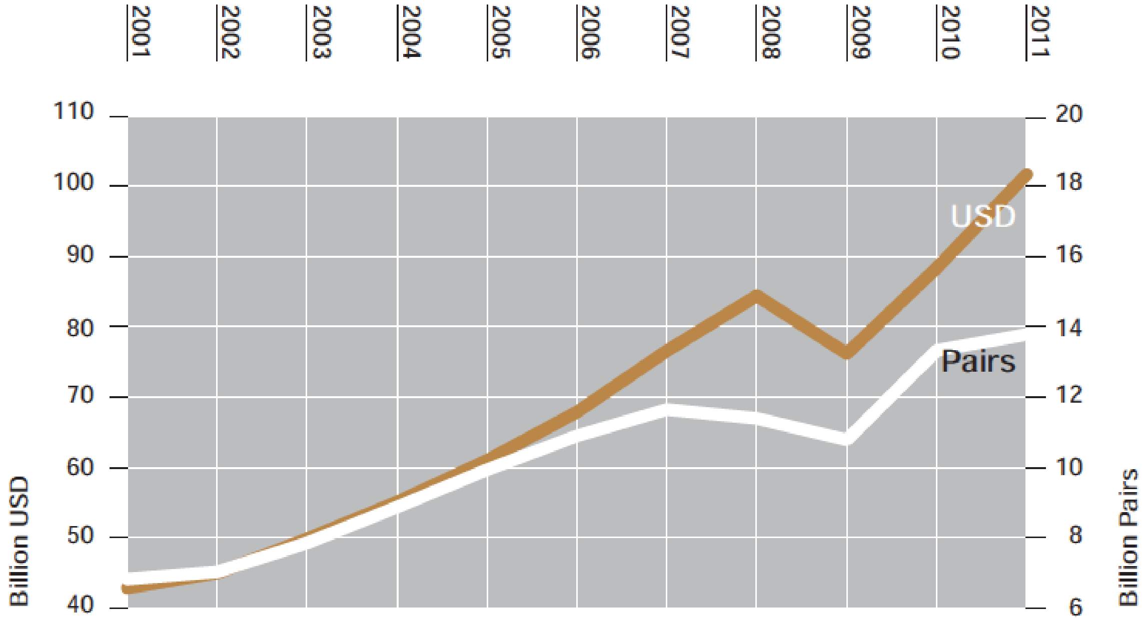

Chart 1-World Footwear Exports 2001-2011 (Source: APICAPS Yearbook 2012)

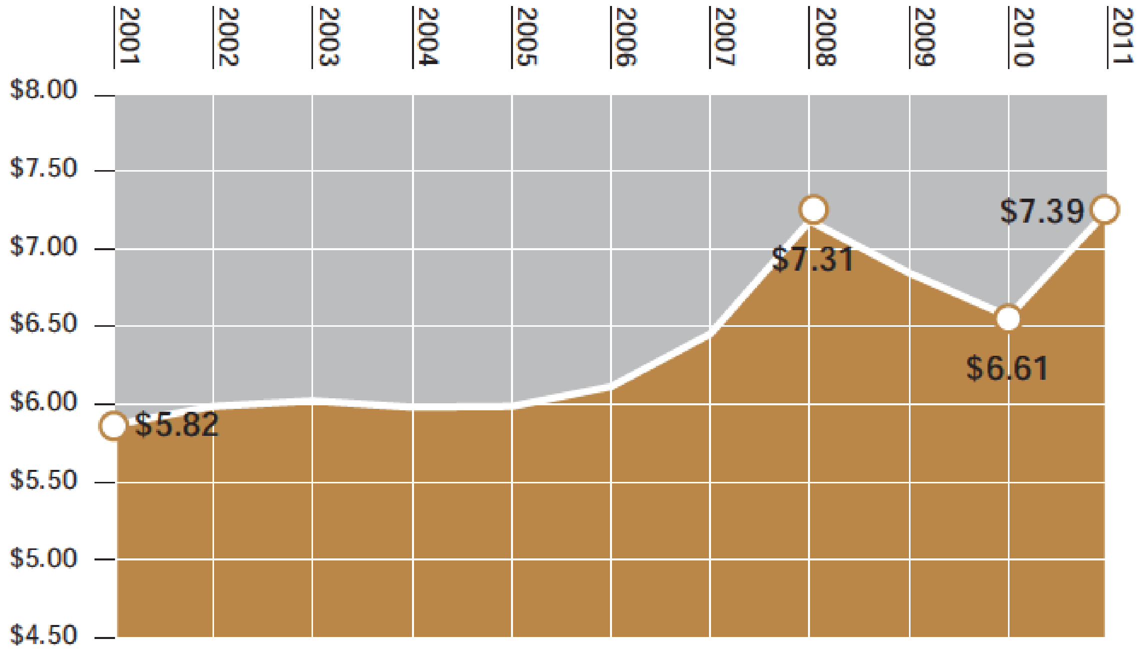

Chart 2 - World Footwear Exports Price 2001-2011 (Source: APICAPS Yearbook 2012)

Annex F

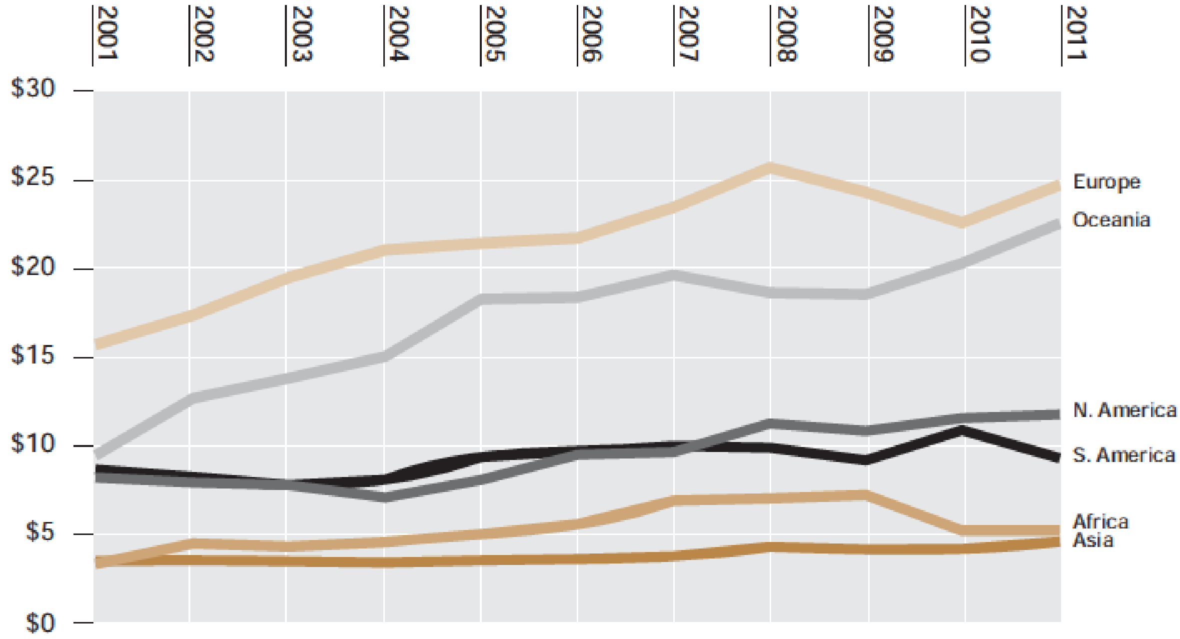

Chart 3 - Average Export Price by Continent 2001-2011 (Source: APICAPS Yearbook 2012)

Continent	USD (millions)	Share	Pairs (millions)	Share	Average Price
Europe	51 351	49.4%	4 078	39.6%	$12.63
North America	27 990	26.9%	2 736	26.6%	$10.23
Asia	17 899	17.2%	2 205	21.4%	$8.12
South America	3 053	2.9%	382	3.7%	$7.99
Africa	2 108	2.0%	724	7.0%	$2.91
Oceania	1 629	1.6%	167	1.6%	$9.75

Table 5- Imports by Continent 2011 (Source: APICAPS Yearbook 2012)

Annex G

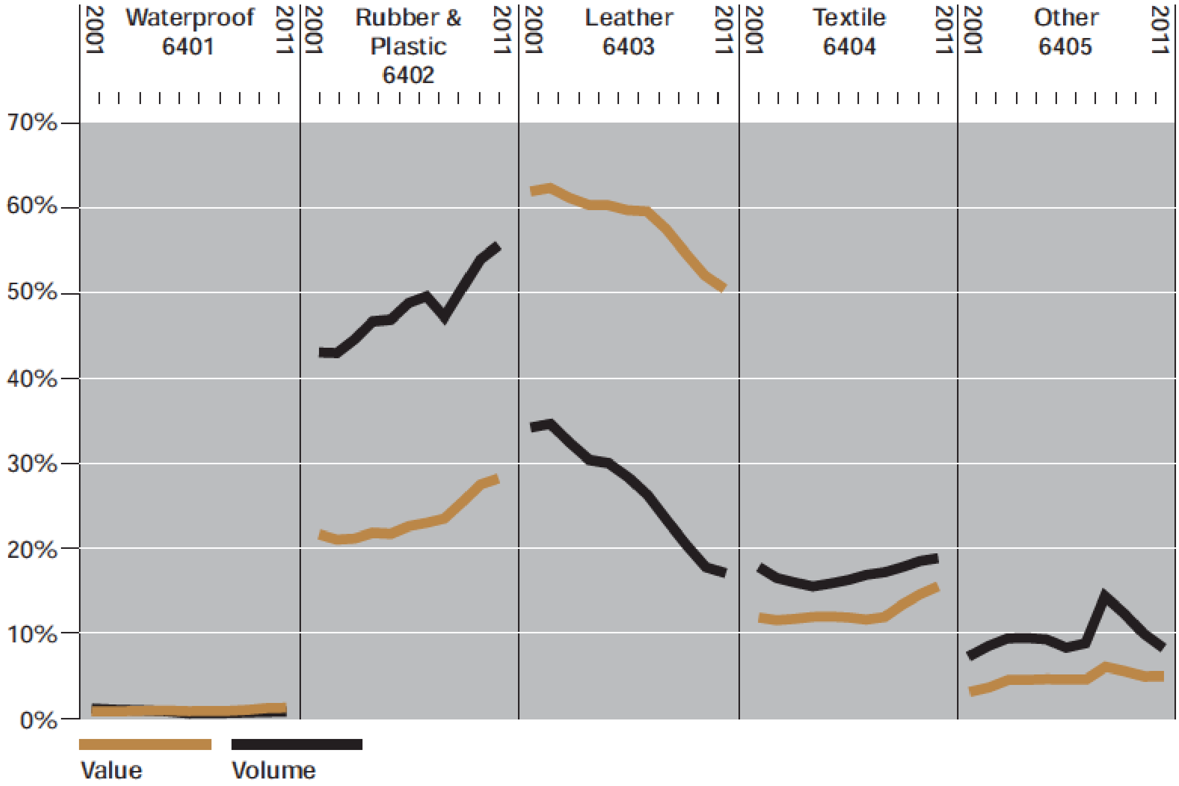

Chart 4-Share of Exports by type of footwear 2001-2011 (Source: APICAPS Yearbook 2012

Rank	Country	USD (millions)	World Share	Average Price
1	China	39 374	38.3%	$3.87
2	Italy	10 376	10.1%	$45.32
3	Hong Kong	5 317	5.2%	$14.70
4	Vietnam	5 123	5.0%	$16.20
5	Germany	4 392	4.3%	$22.66
6	Belgium	4 172	4.1%	$20.16
7	Indonesia	3 227	3.1%	$15.65
8	Netherlands	2 933	2.9%	$20.55
9	Spain	2 870	2.8%	$22.04
10	France	2 409	2.3%	$30.18
11	Portugal	2 091	2.0%	$32.00
12	India	1 421	1.4%	$12.61
13	United Kingdom	1 400	1.4%	$15.90
14	Romania	1 391	1.4%	$24.35
15	Brazil	1 296	1.3%	$11.47

Table 6-World Top 15 Exporters in 2011 - Value (Source: APICAPS Yearbook 2012)

Annex H

Rank	Country	USD (millions)	World Share	Average Price
1	USA	23 245	22.3%	$10.10
2	Germany	8 717	8.4%	$14.69
3	France	6 506	6.3%	$13.55
4	Italy	5 662	5.4%	$15.83
5	United Kingdom	5 169	5.0%	$11.35
6	Japan	5 062	4.9%	$8.17
7	Hong Kong	4 850	4.7%	$11.40
8	Russian Federation	3 940	3.8%	$15.39
9	Netherlands	3 465	3.3%	$14.14
10	Spain	2 977	2.9%	$8.42
11	Belgium	2 322	2.2%	$11.89
12	Canada	2 089	2.0%	$12.72
13	Austria	1 596	1.5%	$21.42
14	Rep. of Korea	1 536	1.5%	$13.29
15	Switzerland	1 402	1.3%	$18.72

Table 7-World Top 15 Importers in 2011 - Value (Source: APICAPS Yearbook 2012)

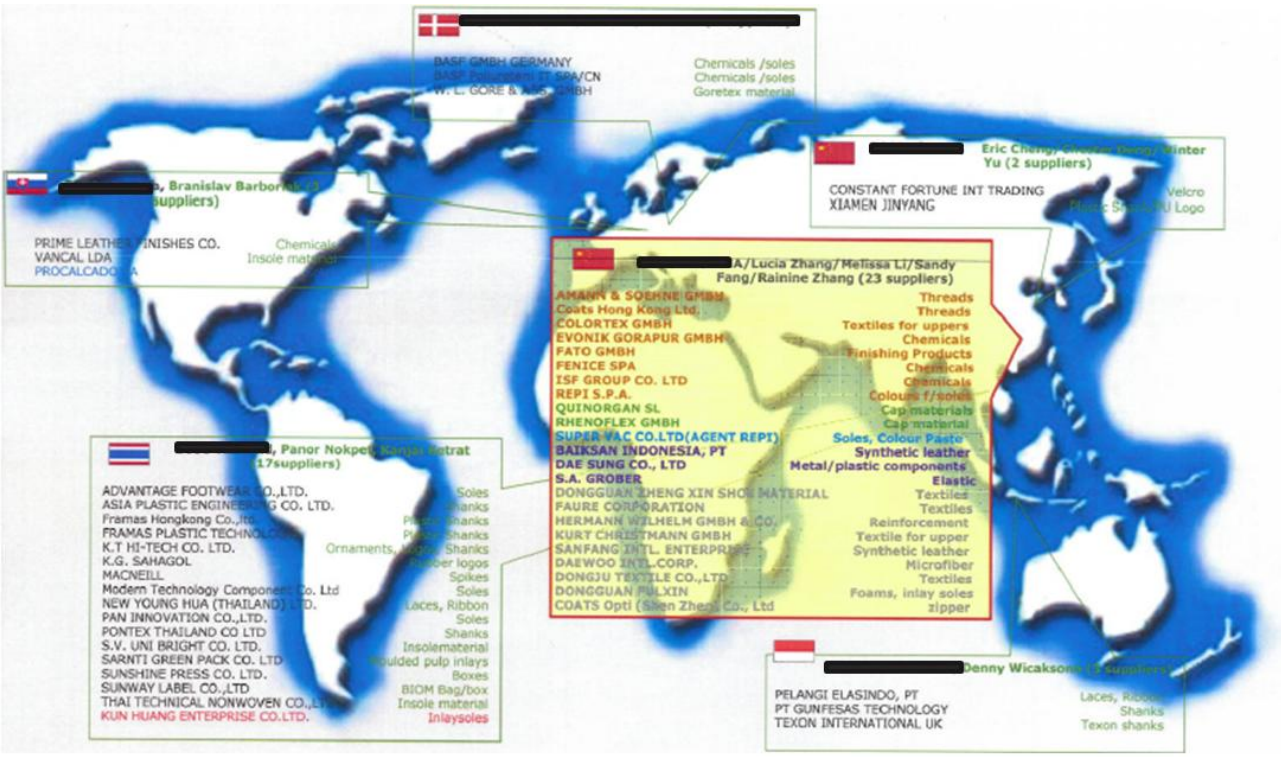

Figure 6 - Global Approved Suppliers (Source: Company X's Intranet)