RESEARCH REPORT

QUALITY CONTROL MEETS LOGISTICS

Does it add value to set up a quality control service for a logistical concept such as ‘Bundling at the Source’ and how could it be organized?

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FINAL THESIS
Research report

‘QUALITY CONTROL MEETS LOGISTICS’

DOES IT ADD VALUE TO SET UP A QUALITY CONTROL SERVICE FOR A LOGISTICAL PLATFORM SUCH AS ‘BUNDLING AT THE SOURCE’ AND HOW COULD IT BE ORGANIZED?

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All material found in this research report is original, when secondary information is used this is stated in the source list or included in the appendix.
PREFACE

Here before you, you have my final assignment for the Amsterdam Fashion Institute for the International Fashion & Management program. I can honestly say that I have grown and developed after all the challenges presented by the AMFI in the last four years.

During my internship I was already introduced to the world of quality control and am very happy and thankful that I was given this opportunity to broaden my knowledge on this important subject together with an aspect that the fashion industry would not be able to exist without, logistics. This report is the result of exploring the possibilities in interlinking the two industries.

My experience in making my graduation project was made extra special considering the fact that I could spend it in the wonderful city Hong Kong. This would of course not have been possible if it was not for the following people; Willem-Jan Drost from Bundling at the Source and Euretco, Chris van Veldhuizen and all the wonderful people at Tigers who welcomed me with open arms and Henny Jordaan for all his flexibility and guidance during my graduation project.

This report would not have been possible if it was not for all the cooperation of all the companies and Industry experts that were willing to share there valuable knowledge with me so hereby I would like to thank everyone that took a part and helped me in my research. However I would like to specially thank Benoit Aubet and Chris Koeleman at AQM who took the time and effort to broaden my view of the world of quality control.

Shona Lisa Pratt.

Amsterdam, June 2013
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Bundling at the Source, a Dutch Fashion industry initiative, strives to make transport flows more efficient in cost and handling by using serviced warehouses based in Hong Kong and China. The pick and pack operations are moved to these warehouses and are therefore closer to the production source, saving money in diverse ways. Parties involved are Euretco, Modint, Ewals and Tigers. Tigers is the operational logistic party in China and Hong Kong. There are warehouses located in Yantian port Shenzhen, Hong Kong and Shanghai. Yantian is a BLP-Bonded Logistic Park, in Shanghai the warehouses are General Warehouses. Yantian’s added services are pick and pack and bundling on store level. Shanghai has garment on a hanger, quality control and pick and pack as added services.

Quality is conformity to requirements not goodness, as quoted by Crosby. The term quality control includes Quality management, the organization within the company and quality control in the terms of inspections. The main goal of quality control is to assure the quality of the products required. There are different moments and phases to implement quality control, the start up phase, Initial Production Check, Final Random Inspection/Pre-Shipme nt Inspection. Quality control is used to reach, maintain and assure the desired level of quality and to comply with the law and health safety requirements. When quality control is not approved there are multiple options but it is usually the responsibility of the supplier to solve it. There are two types of costs when it comes to quality control, the costs to assure the quality of the products and the costs that come when the product is not up to standards. The added value of quality control is in the assurance of the value and quality that the buyer is willing to pay for.

The third party Quality Control Service providers analyzed in this report are Quality Inspection companies, Buying Offices and Logistic Service providers. The Quality Inspection companies mainly provide the same services against prices that are alike, however they have their own extra services they offer. The Buying Office analyzed in this report, offers the total program of quality control, however only to their clients. The quality inspection that the Logistic Service providers offer differ depending on how much they have invested in the service offered and where there focus point lies.

The way that the quality control in buying companies are organized very much depends on the size of the company and what garments they supply. The results differ between in-sourcing the quality control, outsourcing it to a third party, the supplier of the goods or the whole process is outsourced to the buying agencies of the company. The interest in the quality control service provided by a Logistic Service provider is definitely present. However for a lot of brands the interest in the service depends on the price and the quality of quality inspection that they can offer. According to both Logistic Service providers who offer quality control service it is definitely an added value service.

Based on the findings in this research report the answer to the main question would be yes, it does add value to set up a quality control service for a logistical concept such as Bundling at the source. It could be organized by different quality control service providers, either one of the Quality Inspection companies could conduct the inspections for the clients who request it at Bundling at the Source in the form of a
contracted partnership. Bundling at the source could also use the services offered by Tigers in the Shanghai warehouse. The options for inspection in the factories and in the Shanghai General Warehouses are there. It is a different case for the warehouse in Yantian Bonded Logistic Park as there is momentarily no quality control service offered there. This could be adjusted were there to be a different way of handling the goods or conducting the quality control at the Bonded Logistic Park. Which leads us to the question ‘how should the quality control service for the logistic platform of Bundling at the source be organized?’ Which will be answered in the Final Product.
INTRODUCTION

In the current market multiple companies from diverse industries tend to encounter a fork in the road, either specialise or branch out. When specialising the company’s focus on their strong suit, when branching out they offer value-adding services to broaden their range. Both strategies are used to attract more customers and to create more revenue. This research report is about offering a value added service, to be precise a quality control service offered by a Logistic Service provider.

To understand my research motive I need to tell you a bit about ‘Bundling at the Source’. The logistical innovative program ‘Bundling at the Source’ a Dutch fashion industry initiative, strives to make transport flows more efficient in cost and handling. They have developed a logistic service platform based in Hong Kong and China that bundles and handles goods sourced and produced there to ship to the Netherlands. The goods are made shop ready in the China and Hong Kong Warehouses to deliver straight to the retailer, saving costs and increasing efficiency and margin for the participating companies and decreasing the amount of deliveries to stores, therewith the carbon footprint of the transport of goods.

To attract as many companies to participate in the initiative, Bundling at the Source has decided to offer value added services to the logistic platform. One way of doing so is adding quality control as an extra service. But before Bundling at the Source can do this a few questions need to be answered: What is the best way to offer such a service? Does it in fact add value? And what is quality control exactly? Out of these questions arises my main question:

DOES IT ADD VALUE TO SET UP A QUALITY CONTROL SERVICE FOR A LOGISTICAL PLATFORM SUCH AS ‘BUNDLING AT THE SOURCE’ AND HOW COULD IT BE ORGANIZED?

The goal of this research is to give ‘Bundling at the Source’ the advice if it indeed does add value by setting up a quality control service for a logistic platform, and if so, what ways there are to do it. Besides the branch relevance being in the fact that Bundling at the Source is a branch wide initiative, it is also possible for other companies with or without logistic platforms to set up a quality control service based on this research report.

By answering these four sub questions stated below, I hope to have gained enough information to answer the main question and to sustain the advice that will be given.

1. WHAT IS THE CURRENT ORGANISATION OF THE LOGISTIC PLATFORM OF ‘BUNDLING AT THE SOURCE’?
2. WHAT IS QUALITY CONTROL?
3. WHAT TYPES OF QUALITY CONTROL SERVICE PROVIDERS ARE THERE?
4. IS THERE AN INTEREST IN A QUALITY CONTROL SERVICE OFFERED BY A LOGISTICAL SERVICE PROVIDER IN THE CURRENT MARKET?

The structure of this research report is based on the sub questions above as they also serve as chapters. All research in this report is mainly qualitative as the

1 www.dinalog.nl/20113069D - Projectplan Bundelen bij de bron-1.pdf – accessed on 25.02.13
information is reliant on the information provided by certain companies and industry experts, which cannot be attained by qualitative research.

The methodology used to answer the main and sub questions stated above is mostly primary and partly secondary information. The primary information has been attained through interviews with Industry experts, email inquiries of companies and company or warehouse visits. These have all been documented in the appendix. The secondary information has been attained through literature, earlier research conducted on ‘Bundling at the Source’, PowerPoint presentations supplied by the companies analysed in the research report and Industry experts and internet sources which are all stated in the source list. All sub questions have been answered by a combination of the two.

The limitations in the objects of research lies in that it is hard to get information from companies as most companies are reluctant in giving information. The research object in question is very much reliant on information that needs to be provided by companies, as it is very industry related. Because it is very industry related it is not always possible to use secondary information, thus dependant on the information provided by companies and industry experts.

The structure of the report has been chosen according to a logical order, which is the same order as the sub questions stated above. The report starts with the first sub question, which is ‘WHAT IS THE CURRENT ORGANISATION OF THE LOGISTIC PLATFORM OF ‘BUNDLING AT THE SOURCE?’’ Besides that it is important to know the current situation of ‘Bundling at the Source’ considering that the quality control service will take place there, the advise given is reliant on the situation described in this chapter so the earlier the reader is familiar with the situation the better the understanding of the research report will be.

The second chapter and sub questions dives in to the world of quality control, the goal is to answer the question ‘WHAT IS QUALITY CONTROL?’. In order to understand the research report you need to know a thing or two about quality control. In this chapter the definition of quality control as well as how it is organized and why it is used will be discussed. At the end of this chapter you will know enough about quality control to understand the two following chapters.

The third chapter and sub question concentrates on ‘WHAT TYPES OF QUALITY CONTROL SERVICE PROVIDERS ARE THERE?’’ In order to answer the part of the main question concerning how it could be organized it is important to know what the possibilities are on the current market. The main third party Quality Control Service providers are analyzed in this chapter by researching what services are offered against what price. This information is necessary to be given before the fourth and final chapter to be able to fully understand it.

The fourth and final chapter and sub questions is ‘IS THERE AN INTEREST IN A QUALITY CONTROL SERVICE OFFERED BY A LOGISTIC SERVICE PROVIDER IN THE CURRENT MARKET?’ The part of the main question if it adds value cannot be answered without researching if there is actually an interest in such a service. In this chapter buying companies will be asked how they currently organize their quality control as well as if they are interested in having that service provided by a Logistic Service provider. Besides the buying companies we shall also look at Logistic service providers who already offer a quality control service and there experiences in doing so.
1. WHAT IS THE CURRENT ORGANISATION OF THE LOGISTIC PLATFORM OF ‘BUNDLING AT THE SOURCE?’

In this part of the research report I shall elaborate on the current organisation of the logistic activities and the concept of Bundling at the Source. I will demonstrate the long-term operations that take place as well as the operations that take place in the warehouses. Besides the operative side of Bundling at the source, I shall also look into the terms and regulations needed to be able to operate such an organisation. The information you will find in this chapter will be based on earlier research executed in account of Bundling at the source and my own case study.

1.1 WHAT IS BUNDLING AT THE SOURCE AND WHO DOES WHAT?

The logistical innovative program ‘Bundling at the Source’ a Dutch Fashion industry initiative, strives to make transport flows more efficient in cost and handling. They have developed serviced warehouses based in Hong Kong and China to move the pick and pack operations now based in The Netherlands to a location closer to source. The goods are made shop ready and bundled on shop level to deliver straight to the retailer, saving costs and increasing efficiency and margin for the participating companies.

The parties involved are the following. Intres B.V, which has most recently merged together with and is now operating under the name of Euretco B.V is one of the biggest non-food retail-service organisations in the Netherlands. Euretco B.V works together with approximately 2,400 entrepreneurs in retail in the segments of Fashion, Sports, Home & Living and Media. Modint is the branch organisation for the Fashion, Interior, Carpet and Textile industry in the Netherlands. With 750 companies as members they provide information and services that are relevant for the Industry. Bundling at the source is an initiative made in cooperation of the two organisations named above. Ewals who is the logistic partner in the process of Bundling at the source works together with Tigers, who is the logistic service provider who provides all the warehouses and pick and pack services used by Bundling at the source in China and Hong Kong.

Bundling at the source momentarily provides their services for the segments of Women’s wear, Children’s wear, Men’s wear, Sportswear and Lingerie for the garment retail market.

1.2 HOW IS THE LOGISTIC ORGANIZATION OF BUNDLING AT THE SOURCE?

As mentioned in the prior paragraph, the pick and pack operations and other services provided to make the products shop ready usually take place in The Netherlands but are moved closer to the source of production.

Below you can see an overview of the situation that usually takes place in the Fashion supply chain.

2 http://www.euretco.com/over-euretco/ - accesses on 27.04.13

As you can see in the overview above, the pick and packing as well as the making shop ready operations takes place in The Netherlands. In the overview below you can see the situation as Bundling at the source operates currently. Products produced in multiple factories are transported to the same warehouse to make the products shop ready, including the pick and pack operation which now takes place in China instead of The Netherlands. Not only does this organisation save costs in labour and warehousing, it also gives the possibility to bundle the products saving kilometres driven in The Netherlands.

In order to be able to offer the added service operations in China, Bundling at the Source can only operate under the INCO term FCA- free carrier whereas most buyers buy the INCO term FOB- free on board. Under the terms of FCA the supplier carries the responsibility until delivery at the warehouse giving the freight forwarder the liberty of handling the goods until the next transfer point. In the case of FOB the supplier would be responsible for transferring the goods at the named port of shipment, meaning the freight forwarder would not be allowed to handle the goods making it impossible to offer the added service operations in China.

1.3 WHERE ARE THE LOGISTIC WAREHOUSES LOCATED AND WHAT KIND OF WAREHOUSES ARE THEY?

Bundling at the source operates in total from three locations, Shenzhen, Shanghai and Hong Kong. Hong Kong is not really in use at the moment so we wont elaborate on that. The reason for Bundling at the source to operate from these locations has to
do with the strategic location considering the garment production in China. The production of garments in the past mostly took place in the south of China. Due to economic developments most of the garment production in China has moved towards the North of China making Shanghai strategically interesting.

The warehouse located in Shenzhen Yantian Port is a BLP- Bonded Logistics Park. BLP’s are independent enclosed zones set up within the planning areas of the FTZ-Free Trade Zone or special ports adjacent to the FTZ. A FTZ is known as a territory outside of the customs territory and inside the borders of the country. So when the warehouse is a BLP, the goods that are stored there are technically already exported. The benefits of a BLP is that you can execute the added value services on the products to be exported and can bundle the products supplied by multiple suppliers and export them as one shipment, which is very important for Bundling at the source as the buyer of the products can use the warehouse as a distribution center. Besides that it is possible to make use of the export VAT refund in the fastest way possible. Because the goods in the warehouse are seen as exported, in the case of defects found during a quality control you would have to officially export them back to the supplier in China, which is not efficient in costs.

The warehouses used in Shanghai are General Warehouses, a General Warehouse is a domestic warehouse that is not used generally for international export but is used for value added services. So it has no restrictions in terms with customs. An advantage would be the flexibility and the lower costs compared to other warehouses. Export is possible but only by one supplier at a time, so the bundling project cannot be used to its ultimate use, this would be a disadvantage.

1.4 HOW ARE THE VALUE ADDED SERVICES ORGANIZED IN THE WAREHOUSE?

In order to find out how the pick and pack operations were executed I went on a guided visit to the warehouse in Shenzhen, Yantian Port. During this visit an order from Livera lingerie had come in and was right in the middle of the pick and packing operation. The order had come from one supplier and was not going to be bundled amongst multiple suppliers. The goods were picked and packed per store delivery and had been made shop ready by the supplier. In this paragraph I will explain the steps takes to complete a pick and pack operation. The information you find in this paragraph is based on that experience. Later in the paragraph I will elaborate on the services offered at the Shanghai platform.

1.4.1 THE OPERATIONS AT THE WAREHOUSE IN SHENZHEN.

Livera mainly transports the products in units. That means that the products are packed together in colours and packed per size pack. The order being handled today

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6 Mr. Given Fung, Logistic Manager BATS, Tigers, Interviewed on 26.04.13 (see appx 1)
consists out of 2200 units. The units are supplied by the supplier on hangers but transported in boxes. The units are packaged per polybag.

When the carton is opened they first check to see if the amount of units in the box is correct according to the packing list supplied by the supplier and this eventually is compared to the P.O. supplied by the buyer. It is possible for there to be some difference as long as the difference is not too big and if there is a shortage in one box and too much in the other this compensates the shortage. If there is a shortage of goods they inform the buyer. On the product pieces and unit packaging a barcode is made and placed, this is provided by the supplier. The barcode on the product gives the product information and the unit barcode gives the quantity and content information. The content of the boxes and barcodes are checked at the warehouse, this is done by a random sampling inspection, not for the whole load. The inspection percentage is ± 13%. The boxes delivered by the supplier need to fit in the eventual shipping box, this is also checked upon arrival. When boxes or the packaging of goods are damaged it is the responsibility of the forwarder to make pictures and report this to the buyer, then to replace the broken packaging before forwarding the goods to the next destination.

The goods are then picked according to the list of orders per retailer that has been supplied by the buyer of the goods. It is important to strategically pack the boxes after picking them leaving as little space left as possible. There are two reasons for this. The first is so that the boxes don’t sink in when other boxes are placed on top. The second is that you don’t want to be shipping air. Once the boxes are packed with the goods to be transported they are given a location number, this is written on the box by hand in order not to mix up the boxes prepared. Then a barcode is made, printed and placed on the boxes over the location number that was handwritten on the boxes. The barcode contains the information of the box contents and the store destination, which is necessary for customs and makes the process of distributing the boxes easier. So in total there are three barcodes, the one on the product, the units and on the boxes.
When the boxes are complete with content, stickers and documents the boxes are taped shut with special recognizable tape. In this case the Livera tape. The reason for this is to recognize if the box has been opened after the forwarder has closed the box. Only parties with the proper documentation are aloud to open the boxes. Then the boxes are placed on transporting pallets to be loaded in to the container. This whole process takes up to 5 days. The cargo is then sent to a cross docking warehouse in the country of destination and is distributed to the stores by a transporting company.
1.4.2 THE OPERATIONS AT THE WAREHOUSE IN SHANGHAI.

Besides the pick and pack operations that are shown in the paragraph above, Shanghai also offers added services in garment on a hanger (GOH) and quality control. The quality control and GOH service offered at the warehouse takes place in a separate ‘tent’ to keep the goods dust free. The quality control service offered is limited in the way that Tigers only offers Pre Shipment Inspection upon the buyers' request. The goods are checked according to ISO 2859-1 with the AQL-II. Tigers makes clear to their clients that they are not a professional Quality Control Service provider but offer the service to help their clients. When defects are found they await further instructions from the buyer. In a chapter to come we will go in to further detail about the quality control service that Tigers offers.
Picture 3: Tables with lights for Quality Inspection.
2. WHAT IS QUALITY CONTROL?

In order to want to offer a quality control service you need to know everything there is to know about quality control. In this part of the research report I shall answer all general questions that are relevant to the research report concerning quality control in the apparel & textile industry.

2.1 WHAT IS THE DEFINITION OF QUALITY?

To answer the question ‘what is quality control?’ we need to take a step back to look at the word ‘quality’. The word ‘quality’ by itself is used daily. However quality is always in reference to something. For a word that is used so often it is misused more often than that it is used correctly. This word has a few different definitions, so let us take a look at a few:

According to the ISO 8402 quality is ‘the composite of all the characteristics, including performance, of an item, product or service, that bears in its ability to satisfy stated or implied needs’.  

Crosby on the other hand defines quality as ‘conformity to requirements not goodness’ stressing that quality can never make any sense unless it is based on what the customer wants.

And Juran defines quality as ‘fitness for use’. Which is directed more at the customer based quality definition and is focused on the quality of design, quality of conformance, availability and adequate field service.

As you can see by these three different definitions, made by two Quality Guru’s and one organisation with a focus on quality, that there is not one universal definition for the term ‘Quality’. Which is why Garvin has identified five approaches to define quality.

1. The transcendent approach – quality is absolute and universally recognisable.
2. The product-based approach – quality is a precise and measurable variable.
3. The use-based approach – quality is defined in terms of fitness for use or how well the product fulfils its intended functions.
4. The manufacturing-based approach – quality is ‘conformance to specifications’
5. The value-based approach – quality is defined in terms of costs and prices.

Of course all definitions named above are correct. However, in this research report we shall be focusing on the manufacturing-based approach defined by Garvin and we shall be viewing quality from Crosby’s definition of the word. Now that we have the word ‘quality’ defined more or less, we shall be moving on to the term ‘quality control’.

2.2 WHAT IS THE DEFINITION OF QUALITY CONTROL?

Quality control is a very broad topic and has everything to do with quality management and the quality process. The goal of quality management is to satisfy the customer by directing, controlling and coordinating the quality of the end product. The way to achieve the goal is by setting quality objectives and formulating a quality policy. The quality process is how quality management is implemented in to the organisation.

‘Quality control can be seen in two ways. One way is to see it as the total control of the quality process from a management perspective. The second way is the actual checking of the products, which can happen in multiple ways, to see if the product is conform the order and requirements of the customer’.¹¹ In this research report the focus shall be on the latter of the two descriptions.

To further define the definition of ‘quality control’ because the term is so broad, I have interviewed and researched definitions from different sources:

‘Quality control is to take a sample from that which should be delivered to your clients to check if it is conform the quality level that has been specified for your product or brand, which is described in the specifications.’— Willy Meurs, Product Manager, IVG Group.¹²

The operational techniques and activities that are used to fulfil requirements for quality. Quality control is concerned with defect detection and correction and relates to such activities as determining where, how and at what intervals inspection should take place, the collection and analysis of data relating to defects and determining what corrective action should be taken.¹³

What is done to ensure that the predefined level of quality is achieved and maintained. Note that the maintenance of quality is the critical objective once the quality level has been set.¹⁴

There are also different ways of assuring the quality in the process. Some companies implement quality assurance in the quality management process instead of only using frequent quality control. Quality assurance has a greater focus on defect

¹¹ Mr. C. Koeleman, Quality intermediate for Northern Europe, AQM Quality Control, Interviewed on 19.02.2013 (see appx. 2)

¹² Ms W. Meurs, Product Manager, IVG Group, Interviewed on 18.02.13 (see appx. 2)


prevention and getting it right the first time and needs to provide adequate confidence that the end product will fulfil the requirements. With quality assurance it starts before the development of the product. To be able to achieve this quality management needs to be deeply integrated in the process and organisation. To enable this it usually involves a number of approaches like, usage of quality systems, supplier appraisal, to ensure that only suppliers able to meet quality requirements are approved and certification from suppliers based on the standards set in BSI EN ISO 9000.

Besides quality assurance and quality control there is another way of quality implementation called TQM, which stands for total quality management. TQM is more a way of management then a control or assurance type. It is carried out that every task, the first time and every time after that aims at continuous improvement of quality.

TQM is based on three important principles

1. A focus on product improvement from the customer’s point of view.
2. A recognition that personnel at all levels share responsibility for product quality- has to do with the Japanese concept of Kaizen, or ongoing improvement, affects everyone in an organisation, at all levels.
3. Recognition of the importance of implementing a system to provide information to managers about quality processes that enable them to plan, control and evaluate.

In TQM it is also possible to implement the ‘Deming approach’ where the four step approach ‘Plan, Do, Check, Act’ is viable. And every step must be 100% completed for it to be ‘Total’.

![Deming Cycle Diagram](image)


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TQM always involves quality control and quality assurance but vice versa this is not the case. Quality control is always to be found in all quality implementations, as it is the checking process and not the quality management process behind it. In this research report we shall be focusing on the operational part called 'quality control'.

2.3 HOW IS QUALITY CONTROL ORGANIZED AND WHEN IS IT IMPLEMENTED?

Quality control takes place in different parts of the Fashion Supply Chain. To understand how quality control is organized and when it takes place it is first important to understand the Fashion Supply Chain. That is why I will shortly introduce you to it in the text below. The definition found to describe the Supply Chain is:

A network of connected and interdependent organisations mutually and cooperatively working together to control, manage, and improve the flow of materials and information from suppliers to end users. 

Here below you can see a flowchart that shows the Fashion Supply Chain, in the simplest way, and at what stages quality control is implemented. This flowchart is subject to the fact that all companies have their own way of operating their quality control.

In quality control there are two differentiations. There is quality control concerning the product requirements and specifications and quality control concerning the transport and legal requirements of the product.

*Figure 1.1- In the flow chart above you can see all different abbreviations for types of inspections, which shall be clarified later in this part of the research report. As you can see ‘P.S.I/F.R.I’ which stands for Pre-shipment inspection or Final Random Inspection is placed at two stages in the Supply Chain. This is shown because the P.S.I/ F.R.I can take place at the production place or at the warehouse and in some cases both.

The focus of the quality control concerning the product requirements and specifications lie in the development process and production phase. The responsibility in this part lies mainly with the buyer and the producer of the end goods. Quality control concerning the transport and legal requirements of the product concerns packaging, labelling and way of transport. The responsibility lies with the producer and the logistical forwarder.

Now you know a bit about the organisation of quality control and when it is implemented, we shall now have a closer look at the different phases of quality control and what needs to be organized in these phases and inspections. The phases and inspections concerning are; The start up phase, Initial Production Check, During Production Inspection, Final Random Inspection and Pre-shipment Inspection. These are the names the inspections will go by in this report but in practice they can differ per company, the same is valid for the abbreviations used in this report.

### 2.3.1 THE START UP PHASE

The start up phase entails all aspects a company needs to have done before being able to start the production and therewith the quality control. It mainly involves three things, specifications, standards and the quality manual.

**Specification:**

The definition of 'specification' is as follows:

A statement of needs or requirements to be satisfied by the procurement of external resources.  

There are two types of specifications, product specification and performance specification. In both cases it is the responsibility of the Supplier to produce a product that is according to the specifications. The product specification is based on the designer’s description that contains all functional and design requirements and is

usually stated in the production order placed by the buyer. These specifications should give enough information for the supplier to make the goods. Product specifications can be used for garments, fabrics or anything else you want to have produced. E.g. in a garment specification there is a specification of: type, shape, dimension, seams, trims, pockets, zips and finishing’s. In a fabric specification there is a specification of: fabric type, content, structure, stitch length, mass and washing.

To determine the limits of acceptability of the specifications, tolerances are applied. These are usually set in figures. E.g. a seam width is specified to be 1CM and the tolerance of that seam width is set to be 2MM. If the seam width would then turn out to be 1,5CM it could be reason for the buyer to not accept the product. When tolerances are not set in figures they can be expressed through images or descriptions.

As mentioned earlier there are also performance specifications. The buyer sets up the performance specifications. The performance specifications are set up by using certain test methods that are mainly recognized by the International organization for standardization (ISO) and determining the minimum required test results that the product needs to comply with. These minimum requirements can be standardized by the buyer or be set per product depending on the way the buyer operates.

Specification can also be done by a sample. The sample can be provided by both parties and is used best when specifying a print or a colour of a certain material. When using a sample it is easier to make changes or comment on the concerning sample however it is important that the sample is identified, labelled and in hands of both the buyer as well as the supplier.

Standards:

Like specifications, standards are set by the buyer and have to be met by the supplier who also carries the responsibility for the compliance of the products to the standards. Basically a standard is a specification that is intended for recurrent use and while every standard is a specification not every specification is a standard.

Standards cover a wide area of different aspects of product quality that needs to be stated by the buyer. These areas usually concern:
- Variety reduction: to eliminate all unnecessary variation between products and work process.
- Performance requirements: to fulfil all minimum standard requirements set by buyer concerning the performance of the product.
- Environmental requirements: that relate to matters such as pollution waste disposal and environmental nuisance.
- Codes of practice: concerning the practice of engineering and construction techniques.
- Methods of testing: to measure the values of product characteristics and behavioural standards of the product.
- Code of conduct: the behavioural aspects of people within and towards different companies.

- Shipping requirements: the way of packaging and shipping of the produced products according to the wishes of the buyer.
- Legal requirements: all requirements that a product should comply with on a national and international level in order to not brake the law set for consumer or environmental safety.

The standards are applied on different professional levels, which are company standards, trade standards, National standards and International standards. An example of an International standard would be the BS EN ISO 9000, which is a standard originally set by the British Standards Institution and through the years has been changed to be an official standard of the International Organization for Standardization and is used worldwide as a quality management system which is revised every 5 years.

All the above is usually stated in a quality manual, which has been made by the buyer that is usually based on national and international standards and of course the standards set by the company it self.

Once all this has been set up and organized within the company and clearly communicated with the supplier, the buyer is ready to start their production and therewith the quality control.

### 2.3.2 INITIAL PRODUCTION CHECK - IPC

The initial production check is an inspection that takes place before the production of the bulk begins. This is to avoid producing a lot of goods that might turnout to fail quality regulations. To assure a product fulfils quality regulations and requirements all materials used in the end product as well as the product it self has to be tested and checked.

For the materials used in the end product, like textiles and buttons for example, there are various testing methods based on global regulations for safety and durability all directed at consumer friendly usage. These tests are then performed by professional quality testing labs, which is usually outsourced to third party Quality Control Companies. Besides the check on legal and quality requirements the materials are also checked if the products fulfil design requirements set by the buyer. This to can be outsourced to third party Quality Control Inspectors or is either done by the in-house Quality Manager.

Concerning the garment check, here too tests are applied based on global regulations concerning quality, durability and safety but there is also a big focus on the garment fulfilling the design requirements and specifications. For this to be done properly a sampling process usually takes place prior to production. Samples made are usually prototypes, which are first versions of the design, fitting samples, which are made to see and adjust the fit if needed, salesman samples, which is a sample that has been made in all the materials planned to be used for production, and a pre-production sample, which usually is requested by the buyer when the salesman sample is not according to request. The pre-production sample is also used to

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20 Ms U. Ueckerman, Senior technical designer, Mexx, Interviewed on 22.03.13 (see appx.2)
execute the initial production check on, as this sample is usual produced in the same line as the bulk production. The sampling process depends on the organization of the Fashion supplying company and can differ within the industry. The same accounts for who guides the sampling process, in most cases this is either the buyer or a third party e.g. a buying office.

2.3.3 DURING PRODUCTION INSPECTION - DUPRO

The During Production Inspection is a random inspection that is executed when there is a part of the bulk finished and the rest of the products are semi-finished. E.g. The Company SGS executes their During Production Inspection when 30%-50% of the goods have been produced. 21 But this differs per company. The main reason for this check is to ensure uniform batch quality and to highlight actual or potential defects to correct them if possible. The inspection it self usually entails checking the goods according to the requirements based on measurements and visual inspection. The inspection takes place at the production facility and is executed by one or more Quality Inspectors from either a third party, an in-house Quality Inspector from the supplier or a Quality Inspector from the buyer.

2.3.4 FINAL RANDOM INSPECTION- FRI/ PRE-SHIPMENT INPSECTION - PSI

The Final Random Inspection, also known as the Pre Shipment Inspection and Final Production Inspection, is a random sampling inspection that covers a range of visual tests concerning: quality (requirements on appearance, workmanship and performance), quantity, packaging, labelling and transportation. The inspection takes place when all the goods are produced and 80% is packed and ready for shipment. 22 The samples selection used for inspection is based on a statistical random sampling technique and covers different styles, colours and sizes. A commonly used random sampling inspection method is AQL, ISO 2859-1, acceptance quality level, which is derived from a military standard 23. The accepting or declining of goods is based on the level on which the AQL is set. However the vendor rating is a big influence to how strict the final inspection is. The executor of this inspection can differ quite much. It can either be in the hands of a Quality Inspector of the buyer who is then on sight of the production facility or it can be outsourced to a third party Quality Inspector. When outsourcing the final inspection a Quality Inspection company e.g. SGS or AQM, the Logistic Forwarder given they provide a quality control service or a Buying Office can either do it. When the relationship between buyer and supplier is good and the amount of defects is to a minimum then a final inspection can turn out to be irrelevant. (To see a Final Random Inspection visualized in photographs please see appx. 3)


23 To see an overview of the ISO 2859-1, published by AQM, please see this website http://www.aqm-textile.com/quality-control-services/expertise-ISO2859.php
All the different checks together form a complete integrated quality control process. All companies have their own way of implementing the quality control process meaning some companies use all inspections in all phases and others only implement part of the inspections based on their relationship with their supplier and amount of defects that have occurred in the past.

2.4 WHY IS QUALITY CONTROL USED?

By reading the information given in this chapter there probably is an idea of why quality control is used. But just in case, the main reason for quality control to be used by companies is to reach, maintain and assure the desired quality level of the product and to comply with the law and health safety requirements. Quality control is also a type of risk management. It is a controlling system to make sure that the amount of faulty products being produced is to a minimum or non-existent. With this also comes the avoidance of waste what is being saved by not producing faulty products for instance, a waste of money, materials and time.

2.5 WHAT HAPPENS WHEN QUALITY CONTROL IS NOT APPROVED?

When produced goods are not according to requirements or are out of the set tolerances certain actions need to be taken. These actions can differ according to the situation at hand and on the moment they are discovered. The most common options taken when the produced goods are not according to requirement are the following.

The actions depend on how much they differ from the requirements, in the case of e.g. certain measurements of the garments being out of tolerance possibly effecting the sales but not severely enough to reject the goods or rework the garments, then a discount can be requested. This discount is then based on or clarified through the missed sales the buyer has to endure due to the mistake of the supplier.

When goods have minor defects e.g. the label has not been placed properly, it is still possible for the goods to be re-worked, meaning adjusted. When it is possible to fix the defect at hand this option is usually chosen for and is either executed by the supplier or when the defect is discovered later in the process when the goods have left the factory then it is also possible to have the goods re-worked elsewhere. In the case of the goods being re-worked elsewhere the costs are usually for the supplier.

When the goods are beyond acceptance the goods can be rejected and a claim is usually made. To what extent the claim is depends on agreements made between the supplier and buyer beforehand. When this situation accurse it is of course a negative situation for both the buyer as well as the supplier.

As you can see in the above given solutions it is mostly the responsibility of the supplier to solve any problems concerning the state of the produced goods.

2.6 WHAT ARE THE COSTS OF QUALITY CONTROL?

There are mainly two types of costs in quality control. The costs to assure the quality of the product and the costs that comes when the quality of the product is not up to standards.
Besides the actual costs of the quality control services offered by third parties, e.g. lab tests and quality control inspections, there are other cost aspects to it. The quality management and control costs are preventive and appraisal costs. The preventive costs are always weighed up against the costs that could occur if there was no inspection process. The preventive costs hang together with the risk level. E.g. if a buyer is working with a new supplier there is a higher risk and the level of quality management, this being the quality engineering within the company of the buyer, is heightened and with this the costs of quality control. The appraisal costs are the costs for the quality inspections that take place during production and afterwards to assess the quality achieved or not by the supplier. The same example given above can be used for the appraisal costs, how higher the risk, the higher the inspection level, the higher the costs.

After the production and all quality inspections have taken place the cost of the defects and non-conformance comes. Non-conformity can take place in different ways; this can be in quality, conformance, measurement, test and packaging. When defects are found it is usually up to the client to accept, decline or have them reworked. In the case of reworking the goods and of course re-inspecting them it is a cost for the supplier. It is also a cost in the way that the supplier loses their credibility. When goods are still not according to quality standards set prior to production the buyer has the option to accept or decline. If accepted, the buyer will either have the costs of the damage of product liability or the discount given to the lesser quality goods. When declined the buyer will suffer the costs of missed turnover.

### 2.7 WHAT IS THE ADDED VALUE OF QUALITY CONTROL?

In order to describe what the added value is of quality control it is important to understand what added value work is. According to the Gemba Academy what makes work value added are the three following things:\(^{24}\)

- The customer has to be willing to pay for it.
- The ‘thing’ must be changed in some way -> when the value added work is done; the form, fit or function of the ‘thing’ is changed.
- The work must be done right the first time.

Non-value added work is the following:
When no value is added but the work must be done to approve to the customers wishes. So it’s important but hard to improve.\(^ {25}\)

The value of quality control is recognized most when it is not applied during the process, as the damage you avoid by implementing it is value in cost and image. But as stated before in this chapter, this depends on the relationship between the buyer and supplier. If the risk of defects made by the supplier is very low but the buyer persists to use a high level of quality inspection this could be seen as a waist.
To say that quality control is either an added value or not wouldn’t be the right description, It might not add value in the way of that the product must be changed in some way, but it definitely ensures the value and quality that the buyer is willing to pay for.

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\(^{24}\) [http://www.youtube.com/watch?v=SU01D-jTZcE](http://www.youtube.com/watch?v=SU01D-jTZcE) - accessed on 17.04.13

\(^{25}\) [http://www.youtube.com/watch?v=SU01D-jTZcE](http://www.youtube.com/watch?v=SU01D-jTZcE) - accessed on 17.04.13
3. WHAT TYPES OF QUALITY CONTROL SERVICE PROVIDERS ARE THERE?

In the apparel industry there are multiple Quality Control Service Providers. The service providers that shall be analyzed in this chapter are Quality Inspection Companies, a Buying Office and Logistic Service Providers who offer quality inspections as an added service. The main difference between the three is that a Quality Inspection company solely offers services concerning quality control, so this is their main service. Buying offices and Logistic Service providers offer quality control as an added service to their already existing clients, so as a company you need to be a client in order to make use of the services offered. Of course there are more Quality Control Service Providers than the three named above however the ones named are mostly used within the garment industry. In this chapter I will compare the different service providers in the areas of services offered and price. The services offered between and within the three Quality Control Service Providers can differ in quality, to determine the exact difference further research needs to be conducted. By analyzing different Quality Control Service Providers it will create a better view on the outsourcing options there are to execute and provide a quality inspection. Part of the information provided in this chapter is based on case studies, as the information offered by companies on this subject is limited.

3.1 QUALITY INSPECTION COMPANIES.

I have chosen three Quality Inspection Companies to analyze and to compare to each other. The three companies are AQM, Asia Inspection and QC Integra. All three companies provide quality inspection in China. We shall solely concentrate on the inspection services offered, as this is most relevant in this research report.

AQM

AQM is a Quality Inspection Company, which is French orientated and based in Shanghai. They started in 2007, have 160 employees and make a turnover of 3 million a year. 85% of that comes from inspections and 50% of that is brought up by the QC platforms. AQM solely provides for the textile and garment industry. 26

The inspection services provided are Initial Production Check, During Production Inspection and Final Random Inspection. Besides the factory inspections AQM also offers to set up Quality Control Platforms for clients that are used for Pre-Shipment Inspection. The Initial Production Check that AQM provides entails chemical as well as performance tests for garments and textiles. The chemical tests are outsourced to their lab in Bangladesh but they are setting up a lab in Shanghai in the near future. The During Production Inspection takes place in the production place and is done when 20-50% of the production has been carried out. The Final Random Inspection takes place when 100% of the goods are produced and 80% is packed. The Final Random Inspection can either take place at the factory or at the forwarding warehouse. The goods are then also inspected on packaging and quantity besides conformity, quality and measurements that are always checked for during inspections.

26 AQM- company visit – Mr. Benoit Aubet, Sales & Marketing manager- interviewed on 22.04.13 (see appx. 3)
All inspections are done according to the ISO 2859-1 inspection method and all reports are completed and sent to the client on the day of inspection. The prices offered by AQM for the During Production Inspection and Final Random Inspection are $300 USD per man-day, which is ± 325 pieces and is including all expenses of the QC-inspector, the test reports and access to the online services of AQM.

The QC platform that AQM offers is quite a unique service that is not offered by many other Quality Inspection Companies. There are now a total of eight platforms set up in Turkey, Bangladesh and China. AQM sets up the platform upon the clients’ request in the forwarding warehouse. The warehouse is then set up to service all the clients needs; per platform there is one manager and one assistant manager. The platform manager knows all the ins and outs of the clients’ specification and requirements, and can therefore provide optimal quality control service for the client. As mentioned, the platform is designed to fit the clients’ needs, so if the client wants to have equipment to execute performance tests or a needle-detecting machine it is all a possibility. According to AQM the biggest benefit of the QC platform is that it is in a neutral environment, so there are no influences from the production supplier, the chance of corruption is minimized and the objective view of the goods are maximized. The prices offered for a QC platform differs according to the wishes of the client. The ISO 2859-1 AQL-II inspection method is also used at the platform and reports are also issued and sent on the day of inspection.

The coverage area of AQM is Bangladesh, Cambodia, China, India, Turkey and Vietnam. AQM offers quality inspections for sportswear, children’s wear, men’s wear, women’s wear, work-wear, home interior and promotional goods. AQM also offers inspections for fashion accessories, including shoes.

AQM’s core value is to open offices with western managers and local QC inspectors who are specialized in the fashion industry, so local expertise and western communication. AQM also strives to look at the goods with buyers eyes not just the technical aspect of the garment when a QC-inspector goes to inspect a lot the QC-inspector knows all requirements by hart in order to optimize the service towards the client.

Asia Inspection

The inspection services provided by Asia Inspection are Initial Production Check, During Production Inspection, Pre-Shipment Inspection, Container Loading Check and Production Monitoring.

The Initial Production Check offered by Asia Inspection is conducted when 20% of the goods are produced. An inspection of machinery and materials used is offered. The During Production Inspection takes place when 20-80% of production is complete. The goal is to check if the production is on schedule and is according to the clients’ specification. The Pre-Shipment Inspection takes place when 80% of production is complete. Inspection is done according to the criteria of functionality, performance, durability, dimension and overall appearance. All inspections are done according to the ISO 2859-1 inspection method. Reports are in 80% of the cases completed and sent on the day of inspection. The Production Monitoring service that Asia Inspection

27 To see an example of a test report provided by a Quality Inspection company please see appx. 3.
offers puts an inspector on site during the production cycle, representing the interests of the client, to ensure production, materials, quality, schedules are at the level the client and the manufacturer initially agreed upon. During a Container Loading Check, the inspector will select boxes at random to confirm each carton bears the quantity of product ordered, the quality matches the specifications and/or approved sample provided by the client, and that all packaging material contains the correct barcodes, labeling, and packing materials. All inspections are done on production site. The prices offered by Asia Inspection are $299 USD per man-day, which are ±315 pieces for the countries China, Bangladesh, India, Thailand, Vietnam and Africa. For greater Asia the price is $399 USD per man-day.

The coverage area of Asia Inspection is Asia: China, Korea, Japan, Taiwan, Philippines, Indonesia, Malaysia, Vietnam, Cambodia, Thailand, Laos, Myanmar, Bangladesh, India, Sri Lanka, India, Pakistan and Turkey. And in Africa: Algeria, Botswana, Egypt, Lesotho, Madagascar, Morocco, South Africa, Swaziland and Tunisia. Asia Inspection provides quality inspections for electronics, garments, toys/gifts, house ware, industrial & construction items. 32% of the inspections are for the garment industry. The garment types provided for are children’s wear, menswear, women’s wear, sportswear and lingerie.

Asia Inspection concentrates on online service to make the contact with the clients easier and quicker. Their slogan is ‘Your eyes in the factory’ and they have multiple certificates; ISO 9001:2008, CNAS accredited and AQSIQ license.

**QC Integra**

QC Integra offers Initial Production Check, During Production Inspection, Pre-Shipment Inspection, Production Process Supervision and a Container Loading Check.

The Initial Production Check occurs during the start of the production. QC Integra carefully checks that the supplier has started the production according to the specifications that the client requested. The During Production Inspection is performed once 20% or more of the production is completed. 10% of the goods that are produced are randomly selected for inspection. The Pre-Shipment Inspection is made when 80% - 100% of the production has been finished. The client determines the amount of production they wish to have checked. Once the production run is finished, they perform a random check of the final products to determine its acceptability. QC Integra’s evaluation will be based on the ISO-2859-1 quality standards AQL-II for the garment companies. During the Production Process Supervision QC Integra’s inspectors will be in charge of monitoring the product during the whole production process. While monitoring, QC Integra will verify that the supplier is making the product according to the client’s requirements. This service includes several visits to the factory so they can supervise and inspect the production from the beginning to the end. During a Container Loading Check QC Integra makes sure that the product the supplier is loading into the container is the one requested by the client. At the same time they also check if the product has the right information and specifications. Before loading the goods they verify that the shipping container is in good condition, free of smell and/or humidity. Inspection reports can be delivered in less then 24 hours after inspection. The prices offered for the inspections start from $278 USD per man-day

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28 Elisabeth Jacober- Marketing Manager QC Integra- Interviewed on 09.05.13 (see appx.3)
with everything included. In one man-day 250 pieces can be inspected. The inspections are all executed in the factory.

QC Integra’s currently only provides inspection services in China. They operate in the textiles, tools, toys, machinery and home products industry. For the textile industry they have performed inspections for women’s, men’s, children’s, sports and lingerie wear and accessories.

The quality control personnel working at QC Integra comes from different nationalities and has extensive experience and training in the field of quality inspections. Unlike the other two Quality Inspection companies QC Integra does not have an online support system.

As you can see the services offered by the three Quality Inspection Companies are alike but slightly different in price and service offered. QC Integra and Asia Inspection offer services very much alike. AQM doesn’t offer all services that the other two parties offer but offers the service of setting up a QC platform within warehouses. Asia Inspection’s focus is on extensive online service and QC Integra places the focus on having local employees. Besides the slight difference in service offered, the companies also can differ within the quality of the service offered. To state the difference in quality further research must be conducted. To summarize the services offered by the three companies you can find an overview below.

<table>
<thead>
<tr>
<th>Inspection services China</th>
<th>AQM</th>
<th>Asia Inspection</th>
<th>QC Integra</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspection prices USD$</td>
<td>$300</td>
<td>$299</td>
<td>$278</td>
</tr>
<tr>
<td>Per man-day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount of pcs. Inspected per man-day</td>
<td>325</td>
<td>315</td>
<td>250</td>
</tr>
<tr>
<td>Inspection services offered</td>
<td>IPC DUPRO FRI QC Platform-PSI</td>
<td>IPC DUPRO PSI CLC Production-monitoring</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IPC DUPRO PSI CLC Production-monitoring</td>
<td>IPC DUPRO PSI CLC Production-monitoring</td>
<td></td>
</tr>
<tr>
<td>Value added service</td>
<td>Online support</td>
<td>Online support</td>
<td>-</td>
</tr>
</tbody>
</table>

3.2 BUYING OFFICE

The information you can find in this sub-chapter is based on the operations that take place at the GBO Buying Office and was provided by William Tjon Appian, who is the director of the company.

GBO acts as an intermediate between the supplier and buyer. They strive to be the ultimate service provider to take all concerns away from the buyer, who is their client. The service takes place from the point of sourcing and product inquiries until guiding the shipment of the produced products, and when there is a problem, the after-sales if necessary. GBO provides it’s services for women’s wear, men’s wear, children’s wear and is now working on sportswear. The offices of GBO are based in Hong Kong, China and Indonesia and there is a Sub-agent in Bangladesh.
The service that GBO offers is of course including quality control as this is a lifeline that is integrated in the production process. GBO has 8 QC-inspectors in employment that travel to the factories to conduct either a During Production Inspection or a Final Random Inspection. All inspections are done according to the ISO 2859-1 AQL-II inspection method. The inspections only take place in factories. At the GBO-office in Hong Kong there is a light box to check the colours of the garments, a weighing scale to check the weight of the material used and a crock meter for simple rubbing tests. Any other lab tests required by the clients are to be outsourced to Intertec, SGS or Hong Kong lab. The costs of these tests are sent directly to the client. GBO does not provide quality control services for everybody, only their clients as GBO finds it important to provide the whole service as a package and not as loose elements. On exception GBO might provide quality control as a separate service but only to start a relationship with a client to eventually provide the other services offered. All of GBO’s prices are based on commission; this is the same for the quality control offered. The percentages requested for the quality control service is 3%.

3.3 LOGISTIC SERVICE PROVIDERS

The logistic companies we shall be looking at in this paragraph are Tigers, who is the Logistic Service Provider of Bundling at the Source and Logisfashion, who is a Spanish Logistic Service Provider who operates and specialises in the fashion and textile industry.

Tigers offers two types of quality control services. One is outsourced to the company of ACCU inspection. They will conduct all inspections that take place in the factory, like the Initial Production Check, During Production Inspection and Final Random Inspection, and the physical and chemical lab tests on requirements of the client. ACCU also offers Cargo Loading Supervision and piece-by-piece inspection. The coverage area of ACCU is global, but extensive in China, Hong Kong and Taiwan. ACCU doesn’t specialize in one industry but does offer their quality control services within the apparel industry. Until now the clients of Tigers have not requested these services. The other type of quality control service that Tigers offers is a Pre-Shipment Inspection that is conducted according to the ISO 2859-1, AQL-II Inspection method that takes place at the General Warehouse in Shanghai. They offer this service for men’s, women’s and children’s wear and accessories. Tigers has in-house trained Quality Inspectors that have also studied the customers requirements. The goods are inspected based on the pre-production sample supplied by the customer and the manufacturing specifications and are inspected on dimension, conformity and quality. A report is then written and sent to the client within the same day of inspection. In the case that the goods have failed the quality control Tigers will await further instruction from the customer. The price that Tigers asks for this service is ±$8 USD per Quality Inspector man-hour at the platform. The amount of pieces that Tigers can inspect in one day is still unknown as it depends very much on how many defects they find within a certain amount of time. The price for the service offered of ACCU inspection is $150 USD per man-day, in one man-day ACCU Inspection can inspect ±300 pieces. The service offered depends greatly on the requirements of the customer, as the service is still growing.

29 To see an example of a test report provided by Tigers please see appx. 3
Logisfashion offers a quality control service that is a bit more extensive than the one that Tigers offers. They also offer Initial Production Check, During Production Inspection, Final Random Inspection and Pre-shipment Inspection. The physical and chemical lab tests are outsourced. Logisfashion also offers limited repairs in case of defects and the garment types that are able to be inspected is men’s, women’s, child’s, sport’s and lingerie wear and accessories. Besides the inspections that take place in the factory Logisfashion also has QC platforms set up in their General Warehouses in Shanghai and Donguang. The Final Random Inspection and the Pre-Shipment inspection are conducted by the ISO 2859-1 inspection method using AQL-II. The Inspections of the goods are based on the manufacturing specifications and the pre-production sample supplied by the customer. The goods are checked on conformity, dimension, quality and quantity, after the inspection the Inspection report is made and published online for the customer to see. The price depends very much on the needs of the customers and the quantity to be inspected but is in the price range of $250-$350 USD per man-day.

As you can see the level of Inspection service offered differs very much between the two Logistic service providers. Logisfashion has a much bigger client base and specialises in the fashion and textile industry, giving them the opportunity to offer a more extensive quality control service, however with a higher price. As Tigers is not as far as advanced with the quality service they offer, they cannot offer the same level of inspection which is visible in the price that Tigers requests for it’s services, however this does indicate that there is room for Tigers to expand their services as it is proven to be successful by Logisfashion.

<table>
<thead>
<tr>
<th>Inspection services China</th>
<th>Outsourced Tigers</th>
<th>Insourced Tigers at platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspection prices USD$</td>
<td>ACCU</td>
<td>$150</td>
</tr>
<tr>
<td>Per man-day</td>
<td></td>
<td>$64</td>
</tr>
<tr>
<td>Amount of pcs. Inspected per man-day</td>
<td>±300</td>
<td>-</td>
</tr>
<tr>
<td>Inspection services offered</td>
<td>IPC</td>
<td>PSI</td>
</tr>
<tr>
<td></td>
<td>DUPRO</td>
<td></td>
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<tr>
<td></td>
<td>FPI</td>
<td></td>
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<td></td>
<td>CLS</td>
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</tbody>
</table>

Logisfashion also offers Initial Production Check, During Production Inspection, Final Random Inspection and Pre-shipment Inspection. The physical and chemical lab tests are outsourced. Logisfashion also offers limited repairs in case of defects and the garment types that are able to be inspected is men’s, women’s, child’s, sport’s and lingerie wear and accessories. Besides the inspections that take place in the factory Logisfashion also has QC platforms set up in their General Warehouses in Shanghai and Donguang. The Final Random Inspection and the Pre-Shipment inspection are conducted by the ISO 2859-1 inspection method using AQL-II. The Inspections of the goods are based on the manufacturing specifications and the pre-production sample supplied by the customer. The goods are checked on conformity, dimension, quality and quantity, after the inspection the Inspection report is made and published online for the customer to see. The price depends very much on the needs of the customers and the quantity to be inspected but is in the price range of $250-$350 USD per man-day.

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4. IS THERE AN INTEREST IN A QUALITY CONTROL SERVICE OFFERED BY A LOGISTIC SERVICE PROVIDER IN THE CURRENT MARKET?

In order to answer the question if it adds value to add a quality control service to a logistic platform such as Bundling at the Source it is important to know if there is an interest in it. We shall first look at a case study of multiple garment companies to see how they currently execute their quality control and what their interests are in such a service. We shall also look at the point of view of the Logistic Service Provider Tigers and Logisfashion, who already provide a quality control service\(^{30}\). In general companies are not so keen on giving their information, so please keep in mind that the resources are limited and to create a proper general view on this subject further research must be conducted.

4.1 HOW DO GARMENT COMPANIES EXECUTE THEIR QUALITY CONTROL?

To answer this question I have asked a few garment companies within my reach to give out this information. The following companies who have participated in my research are including Bundling at the Source clients. The following companies are; Chicco, Ready To Fish, Mexx, Sapph, Intersport and S.Oliver.

Chicco is a cross category brand that focuses on the market of baby care, including children’s and baby apparel. That is what our focus will be set on. Anouk de Graaf, R&D manager at Chicco, gave the information concerning the quality control at Chicco.

The quality inspections executed are the following. The Initial Production Check, which is, tested on the products in the terms of chemical tests, so on the fabric and the dyeing contents and performance tests. The During Production Inspection is done randomly based on a visual and conformance check. The Initial Production Check and During Production Inspection are done randomly, so not for every order that is produced. The Final Random Inspection, which always takes place, is done according to the ISO 2859-1 inspection method with the AQL level set on 2.5 as major defect. In the case of a critical defect found within the lot then all is rejected. The three inspections named above are all executed by their in-house Quality Control department, which consists out of 4 people. The Pre-Shipment Inspection is executed in the China warehouse and executed by their logistic forwarder, Schenker. Chicco trains the inspection team of Schenker, they report back to Chicco in case of defects.

\(^{30}\) Please see appx. 3 for all information used in this chapter.
MEXX

Mexx is a Dutch Fashion company who supplies men’s, women’s and children’s wear and accessories. Ute Uekermann, who is a Senior Technical designer at Mexx, gave the information considering the quality control.

The whole quality control that takes place prior to shipment is executed by and the responsibility of their agencies. Official documents are kept on a shared drive for Mexx to be viewed in cases of doubts or issues. When the goods arrive at the company warehouse in The Netherlands the goods are inspected according to the ISO 2859-1 inspection method, the level of which cannot be revealed. The quality control department of Mexx then goes to the warehouse to inspect the goods. Mexx uses a thorough supplier manual with all rules and regulations as in material standards and AQL standards. The supplier manual is made available to all suppliers. This way they ensure their quality standards to be executed by other parties.

Sapph is a Dutch lingerie brand that has become very successful over the last few years in the Dutch market. They supply ladies underwear and ladies swimwear. The information has been given by Janet Wu, the Senior Technical merchandiser and was provided by Nina v Eck and Tirsa Dijkstra who are currently interning at the company.

The quality control department at Sapph exists out of two people who are based in the Hong Kong office. One is the technical merchandiser and the other an official Quality Control Manager. The Initial Production Check and the During Production Inspection doesn’t really take place very often but is inspected through a sampling system. But when it does the in-house team of Sapph executes it. The Final Random Inspection always takes place in the factory and is done using the ISO 2859-1 inspection method AQL-level 2.5; the in-house team of Sapph does this as well. The quality manual used by Sapph is not developed to its full potential and a lot is determined by the expertise of the quality control team and depends on the approval of the buying teams in the Netherlands.

READY TO FISH

Ready To Fish is a Dutch fashion brand that targets a niche market on an international scale and supplies women’s wear. Willy Meurs, The Senior Product manager at Ready to fish has given the information considering the quality control. The information given below is also based on my own personal experiences during my internship at Ready to Fish.

The fabric supplier, who supplies a test report of the fabrics considering, does the Initial Production Check. The supplier conducts the During Production Inspection, and the quality of the products is monitored strictly through a sampling procedure. The product Manager does the Final Random Inspection upon arrival in the warehouse in The Netherlands. The Final Random Inspection is done by a random
sampling inspection and is checked for conformity, measurements and visual defects and quality. There is no fixed AQL but is determined by the product manager.

S.Oliver is from origin a German fashion and lifestyle company that supplies women’s, men’s and children’s wear and accessories all over the globe. Sylvia Mamon, who is a QA manager at S.Oliver, provided the information below.

At S.Oliver During Production Inspections and Final Random Inspection are executed by their own QA department, the QA manager is in charge of the QA department and monitors all staff including QA’s, Technical team, Chemical consultant and road QC-inspectors in China. The suppliers also establish their own checks. The During Production Inspection is done randomly and is checked for colour, quality and measurements. The amount depends on the amount that has been produced and that is finished. During the Final Random Inspection the AQL level 2.5 inspection method is conducted. All inspections take place in the factory.

Intersport is a sports retailer that has 80 stores in The Netherlands and 5300 stores worldwide. Stella Zhu, the Sourcing and Quality Director and Shelly Huang, the Sourcing and Quality Coordinator have provided the information you see shown below.

For the chemical tests of the materials used, Intersport asks their suppliers to follow the related regulations and laws. To show that the materials are according to the laws and regulations the supplier delivers a test report made by a third party test lab. Intersport also has their own lab to double check the physical performance of the fabrics. The quality control team of Intersport conducts the During Production Inspection as well as the Final Random Inspection; both take place within the factory. The During Production Inspection is done according to random sampling and based on the amount of finished products the amount inspected is determined. For the Final Random Inspection the inspection method ISO 2859- AQL-II is used. The level set by Intersport is 2.5 for major defects. Besides the inspections that are conducted by Intersport it is also obligatory for the factory to conduct their own inspections. To assure the production goes smoothly a pre-production meeting takes place between the QA team and the supplier. The quality control team exists out of 30 employees and they conduct the in-factory inspections. The QA team is responsible for looking at the quality issues from development to shipment.
4.2 ARE THE GARMENT COMPANIES NAMED ABOVE INTERESTED IN A QUALITY CONTROL SERVICE PROVIDED BY A LOGISTIC SERVICE PROVIDER?

As you can see above there are a lot of different ways of organising the way the quality control inspections are conducted. I asked all the companies named above the question that is stated for this paragraph. Of course all answers were diverse but in general most of the answers leaned towards that they would be interested.

At Chicco they already outsource their Final Random Inspection to their Logistic Service Provider. Ready to Fish, which is a smaller company compared to the rest definitely saw it as an interesting prospect due to the lack of possibilities to send people to the factories to inspect the goods in the manufacturing countries. Sapph states that it would be very price dependant seeing as they momentarily conduct the inspections themselves. The price offered by the Logistic Service Provider would have to be considerably lower than the costs they have now for them to be interested. Intersport shared the same opinion as Sapph, however Intersport also believes that the quality of their quality control will be at a higher level. At Mexx it would be dependant on if the Logistic Service Provider can provide inspectors with the required expertise. But for garments like children wear, where quality control plays a very critical and important role, they would rather leave that up to a professional Quality Control Company. S.Oliver has decided globally to organize the quality control inspection internally and in general will not consider outsourcing to third party businesses, however depending on market developments this could be an interesting option.

4.3 WHAT IS THE EXPERIENCE OF THE LOGISTIC SERVICE PROVIDERS CONCERNING THE INTEREST IN THE QUALITY CONTROL SERVICE OFFERED BY THEM?

We shall be looking at the experiences and point of views from two different Logistic Service Providers, who also provide quality control as an added service. First we shall look at Tigers point of view and experience and then at Logisfashion’s.

TIGERS

As mentioned in an earlier chapter Tigers offers a quality control service. They offer two types. One is offered and executed by Tigers themselves in the Shanghai warehouse the other is in cooperation with a third party Quality Control Company called ACCU inspection. They offer Initial Production Check, During Production Inspection and Final Random Inspection, all in the factory. Further details concerning the quality control services offered by Tigers and ACCU has been discussed in chapter 3. At the moment the client base for the quality control for the Pre-Shipment Inspection offered at the warehouse is less then 10%, which are all garment companies. The client base of Tigers is ±70% garment companies for all services offered. Michael Tung, who is in higher management at Tigers in Hong Kong, believes that with more marketing of their quality control service they could reach a larger client base. Due to the low prices that Tigers offers for their Pre-Shipment Inspection at the warehouse in Shanghai he believes that the service offered is perfect for medium sized garment companies who have a high vendor rating and therefore do not expect any major defects, so why spend so much money when it is not necessary. The reason why it is not appealing to large garment companies is because they usually have their quality control organized internally and the damage
that they would risk by not executing extensive quality control would be larger. There is no plan for the future to offer factory visits, but to rather keep offering it in a centralized warehouse. To visit the factories throughout China would be too costly. Hanson Hung, who is a Logistic Manager at Tigers based in Shanghai, experienced a client that requested Pre-Shipment Inspection for their new suppliers. The inspection offered by Tigers was along side extensive quality inspections that took place in the factory. The clients requested the service offered by Tigers as an extra safeguard as the expectations of the new suppliers were not high. The results of the inspection matched the expectations of the clients and a lot of defects were found to be unacceptable. Making the service offered by Tigers a very much-valued one by the client in this case. According to Hanson the quality control service offered definitely adds value, ‘by offering more solutions to clients instead of just living on buy-sell freight margins are much needed in our business today’

LOGISFASHION

Logisfashion offers added services all aimed to provide for the fashion and textile industry, among which is a quality control service that is a key service at Logisfashion. Logisfashion employs 450 textile inspectors to be able to conduct inspections in the factory or in the warehouse. The inspections offered are Initial Production Check, During Production Inspection and Final Random Inspection. Logisfashion also offers laboratory tests to check the fabric and material qualities. Unlike Tigers, Logisfashion has quite a big client base interested and using the quality control service, 60-70% of Logisfashions’ clients who manufacture in Asia according to Juan Manzanedo, the CEO of Logisfashion. The remaining clientele either do not use quality control or execute it themselves internally. As you can imagine Logisfashion see the quality control service as a value adding service with more than the half of the clients using the service.
5. CONCLUSION

The main question asked in this research report is ‘DOES IT ADD VALUE TO SET UP A QUALITY CONTROL SERVICE FOR A LOGISTICAL PLATFORM SUCH AS ‘BUNDLING AT THE SOURCE’ AND HOW COULD IT BE ORGANIZED?’’. It is time to give a well-grounded answer to this question.

The main questions asked in this chapter can be divided into four parts, as following is underlined; ‘Does it add value to set up a quality control service for a logistical concept such as Bundling at the Source and how could it be organized?’ In order to answer the main question I have researched and answered the different parts of the main question.

The ‘does it add value’ part of the main question is answered in the third chapter where the sub question ‘Is there an interest in a quality control service offered by a Logistic Service Provider in the current market?’ is answered. The added value in this case is determined by the demand of companies on the current market and the experience of the Logistic Service Providers who currently offer such a service. The interest in the quality control service provided by a Logistic Service Provider is definitely present as is shown in the case of Chicco, whom has their Final Random Inspection conducted by their logistic forwarder. However for a lot of brands the interest in the service depends on the price and the quality of quality inspection that they can offer. According to both Logistic Service Providers who offer quality control service it is definitely an added value service. The one Logistic Service Provider, Logisfashion, has considerably more clients than the other Logistic Service Provider, Tigers. Logisfashion only concentrates on the garment industry whereas Tigers has 70% garment companies as their client base. Tigers offers their Quality Control service to less than 10% and only Pre-Shipment Inspection, Logisfashion offers their quality control services to 60-70% of their clients, this is including all services. Tigers believes that the low percentage is due to lack of marketing. Logisfashions high percentage and the confirmed interest of the companies prove that offering a QC service can be successful and thus can add value.

The ‘quality control service’ part of the main question is researched in the first chapter ‘What is quality control?’ in order to give the reader the full knowledge needed to understand quality control and this research report. Quality control is a broad term, which includes quality management, the management of quality within companies and quality control as in inspections. Quality control is used to reach, maintain and assure the desired level of quality and to comply with the law and health safety requirements. The most used types of Inspections are Initial Production Check, During Production Check, Final Random Inspection and Pre-shipment Inspection.

The third part of the main question ‘Bundling at the Source’ is researched in the second chapter ‘what is the current organisation of the logistic platform of ‘Bundling at the Source?’”. In order to be able to know if it is possible for there to be a quality control service the reader needs to know the surroundings the quality control service will take place in. Bundling at the Source strives to make transport flows more efficient in cost and handling. They have developed serviced warehouses based in Hong Kong and China to move the pick and pack operations now based in The Netherlands to a location closer to source saving money on labour costs amongst
other things. Parties involved are Euretco, Modint, Ewals and Tigers. Tigers is the operational logistic forwarder in China and Hong Kong. There are warehouses located in Yantian port Shenzhen, Hong Kong and Shanghai. Yantian is a Bonded Logistics Park in Shanghai the warehouses are General Warehouses. The Bonded Logistics Park is very useful for the Bundling at the Source project because you can buy from multiple suppliers and export them as one shipment and conduct added value warehouse services. With a General Warehouse you can offer added value warehouse services you just cant export multiple suppliers as one shipment. Yantian added services are pick and pack and bundling on store level. Shanghai has GOH, quality control and pick and pack services.

The fourth part of the main question ‘how could it be organized?’ is answered in the fourth and final chapter ‘what types of quality control service providers are there?’. In this chapter I research the different Quality Control Service Providers, the services they offer and the prices asked. There are multiple types of third party Quality Control Service Providers. The focus in this report is on Quality Inspection Companies, Buying Offices and Logistic Service Providers. The Quality Inspection Companies mainly provide the same services against prices that are alike, however they have their own extra services they offer. The Buying Office, GBO offers the total program of quality control, however only to their clients, so it would not be possible to only use their quality control services. The quality inspection that the Logistic Service Providers offer differ depending on how much they have invested in the service offered and where there focus point lies. Logisfashion has a big client base that is interested and the Tigers less so. However the prices known from Tigers are much lower than the prices asked by Logisfashion and the Quality Inspection Companies.

So to conclude and directly answer the main question ‘Does it add value to set up a quality control service for a logistical concept such as Bundling at the Source and how could it be organized?’ based on the findings in this research report the answer would be yes, it does add value to set up a quality control service for a logistical concept such as Bundling at the source. It could be organized by different Quality Control Service Providers, either one of the Quality Inspection Companies could conduct the inspections for the clients who request it at Bundling at the Source in the form of a contracted partnership. Bundling at the Source could also use the services offered by Tigers in the Shanghai warehouse. So the options for inspection in the factories and in the Shanghai General Warehouses are there. It is a different case for the warehouse in Yantian Bonded Logistic Park, Shenzhen as there is momentarily no quality control service offered there. This could be adjusted were there to be a different way of handling the goods or conducting the quality control at the Bonded Logistic Park. Which leads us to the question ‘how should the quality control service for the logistic platform of Bundling at the Source be organized?’
SOURCE LIST

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