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Vendor managed inventory living a dream, or easily satisfied?

research into success factors of a vendor managed inventory implementation

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Award date:
2005

Link to publication

4353

Vendor Managed Inventory

living a dream, or easily satisfied?

APPENDICES
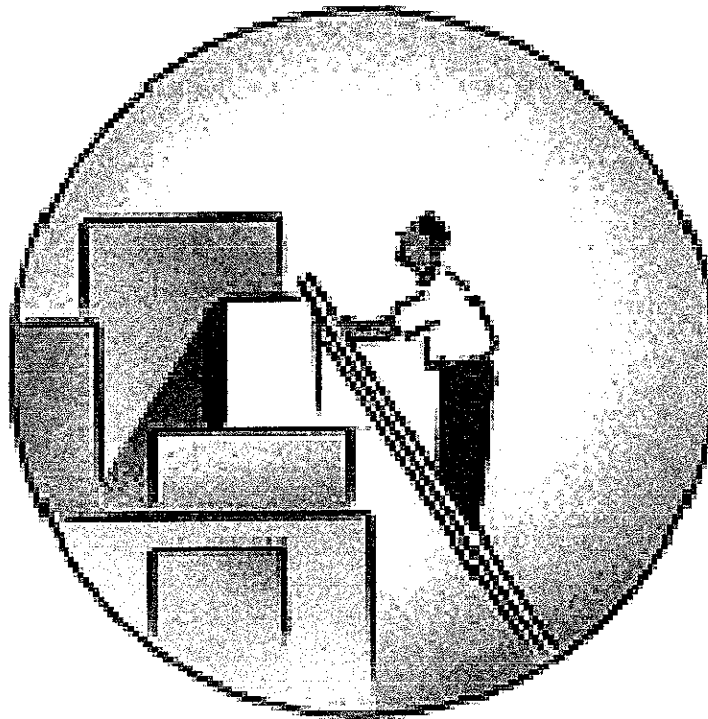
Research into success factors of a Vendor Managed Inventory implementation

Marloes Claassen
November 2005

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TU/e technische universiteit eindhoven

Vendor Managed Inventory, living a dream or easily satisfied?

Research into success factors of a Vendor Managed Inventory implementation

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Literature review

This part will contain all appendices used for literature review.

Appendix I Collaborative Process Innovation tools

The tools elaborated on here are:
- Advance demand information
- Collaborative planning forecasting and replenishment
- Continuous replenishment planning
- Demand Chain Management
- Efficient consumer response
- Electronic data interchange
- Every day low cost
- Just in time
- Lean manufacturing
- Point of sale
- Vendor managed inventory

Advance demand information

Advance demand information concentrates on establishing a relation between a supplier and a customer in which orders are passed through the supply chain as soon as they reach a certain level of certainty. This way, suppliers are better able to plan production and do not need as much buffer capacity. In business to business relations, retailers may share their forecasts with the supplier. Consequently, this information may serve as an action to reserve capacity, and hence the supplier can devise a probability structure to estimate their conversion into customer orders. Vendor managed inventory environments is a typical example, but also collaborative planning forecasting and control is a good example (Tan, (2002)).

Collaborative planning forecasting and replenishment

According to the voluntary inter-industry commerce standards (VICS), collaborative planning forecasting and replenishment is a business practice that combines the intelligence of multiple trading partners in the planning and fulfillment of customer demand. CPFR links sales and marketing best practices. Examples of best practices are category management to supply chain planning and execution processes to increase availability while reducing inventory, transportation and logistics costs. A detailed description of the concepts is depicted in figure 1.1, in which the block arrows show the collaborative part of the cooperation between a retailer and a manufacturer. When attention is paid to the different focus areas of the different actors, it shows that a few ideas are already mentioned in the context of other tools. For instance, category management was already mentioned as one of the core practices of Efficient consumer response. Vendor managed inventory and joint managed inventory were used as inspiration to create the CPFR tool. Van Goor et al. (2002) even claim that the only new aspect to the concept of CPFR is the collaborative forecasting.

CPFR originated around 1990 in the United States and is implemented by various, mainly large companies since. Originally CPFR was designed for the consumer packaged industry, but the automotive embraced the concept as well. The CPFR initiative has been driven by Wal-Mart. After a successful pilot between Wal-Mart and Warner Lambert, a VICS subcommittee was established to develop the proposed CPFR standard for the industries mentioned above. A survey about the state of CPFR conducted in 2003 by Retail Systems Alert Advisory, is recommended.[1]

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[1] http://www.retailsystems.com/Advisory/CPFRsurveyanalysis.pdf Last checked on 19-09-2005.

The benefits from CPFR are improved forecast accuracy and operational efficiency.
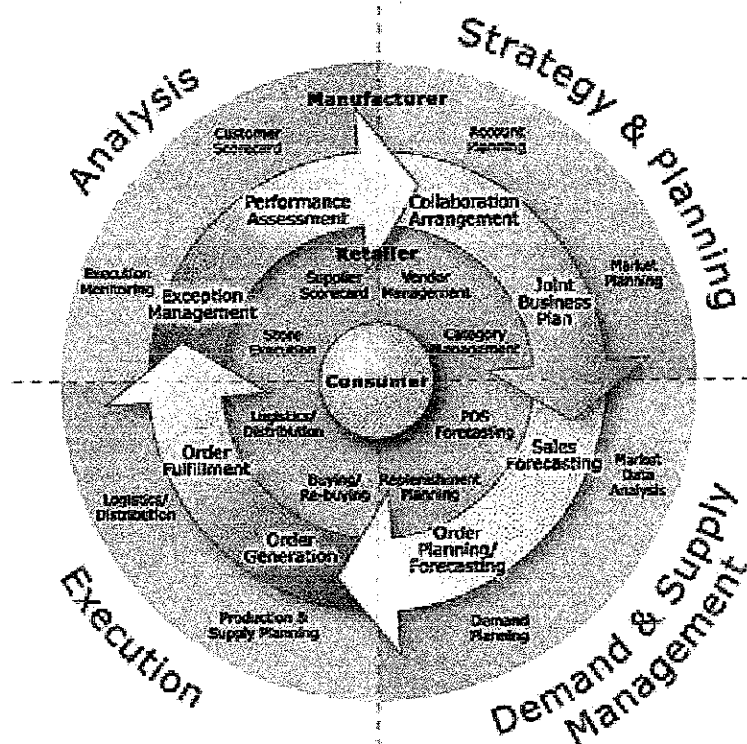

Figure 1: Collaborative planning forecasting and replenishment

Continuous replenishment planning

Continuous replenishment planning (CRP) represents inter-organizational coupling, in which firms interconnect their business processes with those of suppliers and customers by using advanced information technologies. The inter-organizational coupling enables firms to benefit from increased control over environmental uncertainty without vertical integration. It is also used to establish stronger channel relationships between up-stream and down-stream firms in the value chain (Clark and Lee (2000). Furthermore Clark and Lee (2000) claim that CRP is a vendor-managed inventory program that completely eliminates the need for product orders in the channel. Instead of orders, retailers transmit data to the manufacturer on retail warehouse inventory levels and retail sales at their stores. Using this data, the manufacturer determines what products to ship to the retailers' warehouses in order to maintain mutually acceptable retailer inventory and stock out levels.

This concept originated because of a shift from vertical integration towards outsourcing. The shift from vertical integration towards outsourcing could be explained by the development of information technology capabilities. Buying was preferred over producing because the uncertainty surrounding a transaction, which increases the transaction costs, could be migrated by the superior capabilities of information technology. One of the early adapters of CRP is Procter & Gamble, who implemented the concept, supported by EDI and an every day low costs pricing strategy discussed in paragraph 1.2.10.

The concept of continuous replenishment planning is mainly adopted by the retail industry. The retail industry is really suited for continuous replenishment, because most products have a limited storage life, which implies that low inventory levels are preferred. CRP tries to avoid stock points at the interface of two companies and tries to develop a continuous flow. Therefore every product sold is registered, and once a day (or even more often) the exact amount of products sold are delivered at the store. (Clark and Lee (2000))

One of the consequences of implementing CRP is that the retailer becomes very dependent on the supplier. However, the supplier can only deliver on time when he gets the demand information as

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soon as possible. Therefore the supplier becomes equally dependent on the retailer. This mutual interdependence argues for a more intense cooperation. So a restriction for implementing CRP is a strategic relationship between both actors.

Demand chain management

In November of 1973, Ito-Yokado Group (IY) entered into an agreement with U.S.-based 7- Eleven, Inc. (formerly The Southland Corp.) to introduce the convenience store concept. Initially, the product mix was based on the fastest-selling supermarket items and items that would be consumed within one hour of their purchase. However, consumers demanded something new and store performance was showing it. The majority of merchandise in stock was not being sold and the cost for carrying this dead stock was enormous. Realizing that demand is constantly changing, the company began to think like the consumer. A manual system was developed that could identify specific customer needs at the local store level and anticipate the impact of their sales. In addition, this "demand information" was communicated throughout the franchise. In 1975, a decision was made to automate this system and enable the online exchange of order information between stores and suppliers. The outcome was remarkably faster moving merchandise, resulting in a 40% decrease in stock, and streamlined logistics.

DCM's core competency is the continual alignment of products and services to match ever-changing customer demand. The principles of Demand Chain Management complement traditional supply chain management efficiencies by optimizing the demand chain from consumer to individual store to distribution center(s) to corporate headquarters and continuing on into the supply chain.

The bottom line benefits of demand chain management include increased profitability, revenue and daily sales and reduced inventory, lost sales, waste and write-offs. In today's environment, this translates into increased profits, operating capital and a tremendous competitive advantage.[2]

When suffering from highly volatile demand, long lead times for product development, and short product life cycles, customer demand forecasting becomes quite important. Having better insight into demand not only leads to better operational efficiencies, but also helps ensure maximum ability to increase demand through more informed promotion, pricing, merchandizing and other activities. Demand chain is a leading driver that helps to create the efficiencies in operations, procurement, and supply chain. Squeezing penny savings here and there from procuring components via more efficient supply chain management is useless if a bad demand forecast leads the company to make more products than needed and then run inventory costs that overwhelm any SCM savings.

DCM is a process of viewing and analyzing the most recent and accurate data available product by product, customer by customer, with granular data all the way down to the individual sales account level. Add to that an ability to create "what if" scenarios and to collaborate across business departments on these scenarios, and then the predictions of demand become more timely, more accurate and more powerful than ever before. Demand-driven strategies rely on fast turnover cycles, low inventories and quick response of the supply network as well as real visibility across the supply chain (Cassivi et al., (2004)).

This concept is not a wide spread phenomenon, probably because it only offers a line of thought, without providing clear acts. Furthermore it is likely that companies who actually use this tool use another name, because this concept is quit similar to the ideas used in other concepts.

Efficient consumer response

The concept of efficient consumer response is mainly used in the grocery industry. It originated in 1992 in the United States. The three pillars of ECR are:

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[2] www.dcmsolutions.com Last checked on 19-09-2005.

- Providing consumer value.
- Removing costs that do not add value.
- Maximizing value and minimizing inefficiency throughout the supply chain.

To implement ECR, distributors and suppliers are making fundamental changes in their business processes using high tech technology tools. Their goals are clear:

- Provide consumers with the products and services they want.
- Reduce inventory.
- Eliminate paper transactions.
- Streamline product flow.

The ECR movement is a voluntary and an industry wide effort. It is not narrowly focused on one particular aspect of the grocery industry, but rather its goal is to raise the performance levels across the entire industry. Although it is extremely unusual for an industry as a whole to perform a self-examination of its processes and procedures, recommend improvements and adopt those recommendations, this is exactly what is happening under ECR. It should also be noted that the concept is so compelling from a business perspective that ECR is not only underway in the United States, where the movement started, but also in Canada, Europe, Australia and parts of South America.

Although an unusual occurrence, it is not without precedent. Prior to ECR was an industry wide effort by U.S. general merchandise retailers called Quick Response (QR). QR focused on shortening the retail order cycle: the total time elapsed from the point merchandise is recognized as needed to the time it arrives at the store.

ECR builds on QR techniques but addresses a much wider scope of issues. Not only is the order cycle addressed, but so is a wide variety of business processes involving new product introductions, item assortments and promotions. The key enabling methods are similar however. ECR uses technology to improve every step of the cycle (or business process), which results in making every step faster and more accurate. ECR also uses collaborative relationships in which any combination of retailer, wholesaler, broker or manufacturer works together to eliminate inefficiencies and reduce costs by looking at the net benefits for all players in the relationship. The idea is that true efficiency comes only when overall costs are reduced for all the parties in the relationship.

The ultimate goal is to drive the order cycle and all the other business processes with point-of-sale data and other consumer-oriented data, giving an accurate read on consumer demand. This data is passed by way of EDI to the manufacturer so products can be made in quantities based on actual consumer demand, and then distributed to the end consumer in the most efficient manner - hence Efficient Consumer Response.[3]

Electronic data interchange

EDI is the computer-to-computer exchange of structured information, by agreed message standards, from one computer application to another by electronic means and with a minimum of human intervention. It is used in business to business relationships.

Despite being relatively unheralded, in this era of technologies such as XML services, and the internet, EDI is still the engine behind 95% of all electronic commerce transactions in the world. However the alternative intranet is used more and more. Intranet is a site (like internet) which can be used for sharing information. The difference with a common internet site is that companies/individuals who are not involved in managing the supply chain, are denied access.[4]

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[3] Food Marketing Institute
[4] http://encyclopedia.thefreedictionary.com Last checked on 19-09-2005.

Organizations that send documents to each other are referred to as "trading partners" in EDI terminology. The trading partners agree on the specific information to be transmitted and how it should be used. The most common use of EDI is for continuously sharing customer demand information with supplier(s), which shortens the reaction time of the supplier(s). Most research about EDI arrived at the same conclusion, EDI has a positive influence on the accuracy and the speed of processes, compared to non electronic data-interchange. Research even shows that EDI could be a competitive advantage.

It is important to notice the difference between EDI and POS. EDI is used for the exchange of information between two players, instead of all actors within the supply chain. Furthermore, EDI is used for all kinds of other information besides demand information. And the demand information does not necessarily have to be the end customer's demand. EDI is often used as a support tool for the concepts just-in-time, continuous replenishment planning and vendor managed inventory.

Every day low cost

Proctor and Gamble was the first company to adapt the concept of every day low costs in the fall of 1991. The major reason was the fact that the high number of promotions made consumers buy from deal to deal, which had a destructive impact on brand loyalty.

Another reason for using EDLC was to reduce forward buying. Promotional deals have been widely used by retail firms since the 1970's, during which the combination of high inflation, relatively low-interest costs, and promotional discounts made the economics of forward buying very attractive for retail firms. Retailers typically purchased products from manufacturers during the promotional period and kept them in their warehouses to sell later at high prices. Retailers had become dependent on forward buying as an important source of profits, and had emphasized "buying for profit" rather than "selling for profit". However, reliance on promotional programs resulted in high demand, artificially created by forward buying and increased inventory levels in retail warehouses. The combination of promotional pricing and forward buying increased channel lead times and exaggerated demand variations, creating dramatic inefficiencies in the channel (Lee et al., (1999)).

The concept of every day low costs tries to avoid the high-low buying and selling structure. Instead it offers retailers an average purchase price. Cambell Soup Company (Cachon and Fisher, 1997) offered retailers an average price equal to the average price paid, using the traditional pricing structure, including all discounts realized through forward buying. This created a win-win situation, which created the opportunity to further optimize the supply chain.

The concept of every day low costs is often implemented to support another concept like continuous replenishment planning, or efficient consumer response. A concept that is almost entirely the same to every day low cost is every day low price. Because of the large overlap this concept will not be presented separately.

Just in time

This technique was first adopted by Toyota Motor Corporation of Japan as part of its Toyota Production Systems (TPS). Japanese corporations could not afford large amounts of land to warehouse finished products and parts. In 1950 Toyota solved this problem by implementing JIT. JIT could be referred to as a management philosophy aimed at eliminating waste from every aspect of manufacturing and its related activities. The term JIT refers to producing only what is needed, when it is needed, in just the amount needed (Suzaki (1987)). It is a set of techniques to improve the return on investment of a business by reducing in-process inventory and its associated costs. The process is driven by a series of signals, or Kanban, that tells production processes to make the next part.

The result for Toyota was a factory that became the envy of the industrialized world. the just in time philosophy has been widely applied in other segments of the supply chain in several types of industries.

Just in time not only increases the return on investment, but also improves customer satisfaction by shorter lead times and a more flexible supply chain. A flexible supply chain provides opportunities to shift the customer order decoupling point upstream the supply chain, which gives the possibility to make products on customer demand without the requirement of long lead times. Disadvantages of just in time are the increase of costs for set up times, and that the process becomes more sensitive to problems, because these cannot be compensated by safety stocks.

When implementing JIT, it is important to have long-term relationships to be sure the right quality is delivered on time. Because there is no slack left within the process, the whole production would have to be stopped when a supplier does not deliver the components.

Lean manufacturing

The concept of lean thinking was just like JIT first implemented by Toyota, but the concept became known all over the world through the book "The machine that changed the world" (Womack and Jones (1990)).Lean Manufacturing can be summarized in five principles: precisely specify *value*, by specific product, identify the *value stream* for each product, make value *flow* without interruptions, let the customer *pull* value from the producer, and pursue *perfection* (Womack and Jones (1996)). Lean manufacturing is about banishing waste, the concept has a broader view than the just-in-time concept, because it does not only try to optimize the process, but the product as well.

To make full use of the concept, it has to be used during the design phase as well. The basic idea is to reduce the cost systematically, throughout the product and production process, by means of series of engineering reviews. The crucial insight is that most costs are assigned when a product is designed. Often an engineer will specify familiar, safe materials and processes rather than inexpensive efficient ones. Implementing lean manufacturing contains always weighing project risk against financial risk. An often-used tool for evaluating the product design is quality function deployment, also known as the house of quality. Quality Function Deployment (QFD) is a systematic method for tying product and service design decisions directly to customer wants and needs.

The results that may be expected when implementing lean manufacturing is a product, which is exactly according to customer wishes, nothing more and nothing less, and an efficient production process. Because there are no slacks at all, the work in process would decrease dramatically, the lead time will be improved, because the batch sizes will be smaller. Inventory costs will decrease. Furthermore the material costs will decrease, because conscious decisions are made about the product design.

Point of sale

Point of sale (POS) was initiated by Microsoft, NCR Corporation, Epson and Fujitsu-ICL and first released in 1996. The term is often used in connection with hardware and software for checkouts. POS systems started as UPC/EAN barcode reader systems, and have evolved into fully computerized cash register systems. The main goal of POS is making the supply chain more transparent. The availability of customer demand information through the whole supply chain implies the following, based on a simulation (Baan et al. (2003)):

Amplification ratio
The amplification ratio indicates the extent of oscillation of the demand. The higher the amplification ratio, the harder it will be for a supplier to forecast, and plan production. The amplification ratio will

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decrease when using POS, because of a decrease in the Bullwhip effect[5]. In the normal situation the producer bases his forecasts on the consumer demand and adds a safety margin to make sure he will be able to deliver. Then the supplier will base his forecasting on the producers' demand and also adds a safety margin. So there will be a safety margin added twice. In the new situation using POS this will not be the case because both the supplier and the producer will base their forecasting on the customer demand, so a safety margin is only added once. Furthermore, without POS, the supplier received customer demand combined over several days, because the manufacturer ordered in batches. This also made the amplification ratio increase.

Suppliers delivery delay and order fulfillment ratio
Implementing POS, results in eliminating delays and distortions in the information suppliers need to plan production and capacity. Therefore the suppliers delivery delay will decrease. However, when the concept is not executed consequently, this will lead to disadvantages. Suppliers will not calculate for the safety margin the manufacturer still adds to his part of the demand. Therefore the order is more likely to be late, or not delivered at all because of an increased chance of a stock out. When implementing POS, all actors must therefore be aware that communication about uncertainty, and safety margins/stocks is important to perform according to target.

Work In Process (WIP)
The level of WIP will decrease because of a better planning of production at the supplier. Next to this the WIP level improves, because one safety margin in the chain has become obsolete.

Inventory
There will be a decrease in the level of inventory at the producer. Because the supplier bases his forecast on the customers' demand the surplus of products in the supply chain, due to over estimating demand, will disappear .

Vendor managed inventory

The final concept under discussion is vendor managed inventory (VMI). VMI originated around 1980 with mass merchants and "big box" stores that demanded vendors to shoulder the responsibility for monitoring sales and the subsequent reorder process. Today, VMI has spread to other industries, including the automotive and hospital categories. When implementing VMI, the supplier becomes responsible for managing the inventory at the customers' site. This means that there will no longer be any orders. With VMI it is not necessary that the supplier actually owns the stock, but in many situations this will be the case. VMI assumes a complete and honest data exchange. Examples of data that has to be known with the supplier are:
> Inventory level
> Expected demand or planned production schedules
> Promotional activities
Insight into this information provides a lot of advantages. For instance, the supplier is able to better align his own production. Less uncertainty about expected demand exists at the supplier, which decreases the bullwhip effect. And a final advantage for the supplier is a decrease in emergency orders, which results in a more stable production and transport planning. Advantages for the customer are the fact that when implemented and executed right, there are always just enough products available, so the service level increases. Next to this the lead-time will be reduced. Also customers do not have to manage the actual purchasing of the products anymore, which results in a decrease in administrative costs. Finally for the supply chain as a whole, the inventory level will be reduced.

The concept of VMI is also known as supplier managed inventory, supplier managed and owned inventory, joint managed inventory and co-managed inventory.

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[5] Fransoo and Wouters (1999) Measuring the Bullwhip Effect in a Supply Chain

Appendix II: Definitions of Collaborative Process Innovation tools

Table 1: definitions of CPI tools

Collaborative process innovation tool	Definitions	Source
Collaborative Planning Forecasting and Replenishment (CPFR)	Retailers share data from retail scanners with manufacturers instantaneously, often over the internet, and enter into inventory replenishment agreements. Manufacturers and retailers use the data to forecast sales and jointly tailer orders and deliveries. Via scan-based trading, manufacturers also receive instantaneous information on products on retailers' shelves until the products are sold, which frees up the retailers' capital.	Martinez and Stewart. (2003)
	CPFR is a business practice that combines the intelligence of multiple trading partners in the planning and fulfillment of customer demand. CPFR links sales and marketing best practices, such as category management, to supply chain planning and execution processes to increase availability while reducing inventory, transportation and logistics costs.	Voluntary Interindustry Commerce Standards (VICS) (2004)
	CPFR engages the manufacturer and the retailer into exchanging marketplace information in order to come up with a customer-specific plan that can substantially reduce inventory.	Andraski (2002)
Efficient consumer response (ECR)	ECR initiatives emphasize information sharing and collaboration between grocers and their suppliers. Retailers work with suppliers to select the optimal mix of products to display on store shelves. To replenish store shelves, retailers inform suppliers as soon as goods leave a store which helps suppliers to better manage store inventory. New products are jointly developed by manufacturers and retailers to improve the chances of product success.	Martinez and Stewart. (2003)
	In a nutshell, ECR focuses on the supply chain, that is, the consumer value delivering flows of product and information between suppliers and retailers, and efficiency gains in store assortment, promotions, new product introductions and product replenishment.	Barrat and Oliveira (2001) Harris et al. (1999) Kotzab (1999)
	Collaboration between companies in the supply chain with the common goal, to satisfy the customer. This must be the key to seamless supply chains, which can serve the customer efficiently. ECR can be divided into four focus areas, category management, logistics, auxiliary techniques and integration	ECR the Netherlands (web-page)
	The focus of ECR and CPFR lies in vertical channel integration to achieve some of the efficiencies of coordinated systems without ownership.	Barratt and Oliveira (2001)

Term	Description	Reference
	ECR is the usual term to describe the preceding initiative in the literature framed under the notion of making the whole supply chain accountable to the consumer	Fiorito et al. (1995)
	An ECR initiative thrives on creating value for the final customers through an efficient value system, and simultaneous appropriate value for the channel members involved	Tuominen (2004)
Just in time (JIT)	A system for producing and delivering the right items at the right time in the right amounts. Just-In –Time approaches just-on-time when upstream activities occur minutes or seconds before downstream activities, so single piece flow is possible. The key elements are flow, pull, standard work and tact time.	Womack and Jones (1998)
	A management philosophy aimed at eliminating waste from every aspect of manufacturing and its related activities. The term JIT refers to producing only what is needed, when it is needed, in just the amount needed.	Suzaki (1987)
Continuous Replenishment planning (CRP)	A mutual partnership that links the distributor's business plans with the manufacturer's inventory replenishment and operations	Crapser (1994)
Vendor Managed Inventory (VMI)	A move from pushing products from inventory holding areas to pulling goods onto grocery shelves based on consumer demand	Lummus and Vokurka (1999)
	Retailers transmit data on warehouse shipments or store sales to vendors, and vendors base their order quantities on this information.	Clark and Stoddard (1996)
	The degree of partnership ranges from the information sharing where the retailer helps the vendor to plan demand more efficiently, to consignment schemes where the vendor completely manages and owns the inventory until the retailer sells it.	Tyan and Wee (2003)
Demand Chain Management (DCM)	A supply chain strategy where the vendor or supplier is given the responsibility of managing the customer's stock.	Disney and Towill (2003)
	An arrangement whereby the owner of goods, the "consignor", delivers its goods to another party, the "consignee", for use or for sale by the consignee, with the proceeds of the sale being remitted to the consignor only after the actual use/sale	Fagel (1996)
	A typical VMI program involves a supplier which monitors inventory to achieve specified targets through the use of highly automated electronic messaging systems	Copacino (1993)
	The supplier makes the replenishment decision, rather than waiting for the customer to reorder the product. Anecdotal evidence suggests that a consignee may enjoy reductions in holding costs and some operational costs plus cash flow benefits	Benefield (1987)
	A recent alternative for the order-delivery process where the supplier is given both authority and responsibility to take care of the entire replenishment process.	Kaipia (2002)
	Suppliers assume the responsibility for managing inventories at customer's locations through the use of highly automated electronic messaging systems. Detailed sales and demand data are exchanged between vendors and customers, and the information is used to plan and implement product replenishment and sales strategies.	Cottrill (1997)

	A system in which a vendor continuously and automatically replenishes a trading partner's inventory.	Fraza (1998)
	DCM is defined as practice that manages and coordinates the supply chain from end-customer backwards to suppliers	Vollman et al. (2000)
Lean Manufacturing	Specifically, end-customers trigger actions up the supply chain and products and services are pulled from one link to the next based upon demand	Lummus and Vokurka (1999)
	Demand-driven strategies rely on fast turnover cycles, low inventories and quick response of the supply network as well as real visibility across the supply chain.	Cassivi et al. (2004)
	Lean Manufacturing can be summarized in five principles: precisely specify *value*, by specific product, identify the *value stream* for each product, make value *flow* without interruptions, let the customer *pull* value from the producer, and pursue *perfection*	Womac and Jones (1998)
Every day low cost (EDLC)	EDLC is a pricing policy that eliminates all (or most) promotional incentives from the manufacturing to the retailer. It is similar to EDLP (every day low price) retailing pricing strategies, which eliminate promotional pricing to customers at the retail store, but EDLC is the term used in the grocery channel to describe constant pricing policies between manufacturers and retailers or wholesalers.	Clark and Stoddard (1996)
Advance demand information (ADI)	The demand for any future period will be progressively revealed. This requires the inventory manager to follow an adaptive replenishment strategy where part of the orders is placed in anticipation of the customers' willingness to wait.	Özer (2003)
	Obtaining and sensibly using advance demand information enables companies to be more responsive to customer needs and improves inventory management. Strategies to elicit advance demand information include price incentives and/or priority service to customers who book early	Chen (2000)
Electronic data interchange (EDI)	An original equipment manufacturer, for example, places orders and updates these orders over a time window to its contract manufacturer	Stanford GSB (2001)
	Automation of channel processes to reduce costs and errors.	Clark and Stoddard (1996)
	Electronic Data Interchange is a form of InterOrganizational System (IOS) that involves direct communication links between computer systems to transmit structured data in a machine-readable format using a common communications standard	Emmelhainz (1993)
Point of sale (POS)	In an EPOS (electronic point of sale) enabled scenario, the end consumer sales are made visible to all members of the supply chain. Data is available electronically via the Internet, either directly from the retailer or via a third party, and can be used by supply chain members to generate their own forecasts. Specifically, in this strategy the end consumer sales may be used by each echelon for their own planning purposes, but each echelon still has to deliver what was ordered by their customer.	Disney et al. (2004)

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Appendix III: Results survey Peterson et al. (2005)
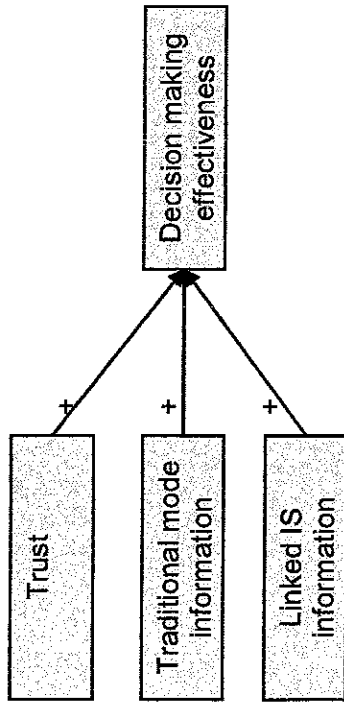
Figure 2: Tested model

Table 2:Result

Collaborative Planning Activity	Path coefficients			R^2
	Trust	Traditional information quality	Linked IS information quality	
Supplier scheduling	0,164, p=0,051	0,084, p=0,288	0,516, p=0,000	0,339
Forecasting and inventory positioning	0,232, p=0,005	0,016, p=0,842	0,464, p=0,000	0,300
Inventory visibility	0,166, p=0,035	0,181, p=0,019	0,509, p=0,000	0,384
Capacity planning	0,070, p=0,310	0,353, p=0,000	0,509, p=0,000	0,496
Post-selection supplier evaluation	0,300, p=0,001	0,256, p=0,003	0,275, p=0,001	0,289
Proposal evaluation	0,079, p=0,394	0,154, p=0,077	0,347, p=0,000	0,142
Joint goal/target setting	0,036, p=0,651	0,472, p=0,000	0,324, p=0,000	0,389
Part/material standardization	0,214, p=0,005	0,370, p=0,000	0,410, p=0,000	0,402

Case studies

This part contains all appendices used for the case studies.

Appendix IV: Structured interview

Datum:
Plaats:
Afdeling:
Gesprekspartner:
functie:

Introductie
Agenda
Doel
Achtergrond
Aanpak
Andere bedrijven

Situatie Schets
Voor hoeveel producten is het ingevoerd
Wat voor een soort producten (strategisch?)
Met hoeveel leveranciers
Zijn zij de enige leveranciers voor dat product
Welke constructie (vendor owned?)
Welke afspraken zijn er verder gemaakt
Met welk doel is het ingevoerd (verwachte voordelen)
Is er rekening gehouden met de leverancier, en zijn mogelijke voordelen
Wie heeft wie overtuigd om VMI in te voeren, en was dit lastig
Zagen beide partijen het voordeel van VMI
Hoe verliep de implementatie (verschillende stadia, leereffect van andere projecten?)

Factoren
Informatie voorziening
Welke informatie wordt doorgegeven
Hoe vaak wordt informatie doorgegeven (vertraging)
Hoeveel aandacht wordt er besteed aan het opstellen van die informatie
(automatisch of handmatig?)
Is er van tevoren besproken welke informatie nodig is
Is er tijdens het project nog geëvalueerd of dit de juiste info was

Samenwerking
Hoeveel contact is er, en in welke vorm, en op welk management niveau
In welke mate is er vertrouwen
In welke mate is vertrouwen belangrijk
Weerhoudt vertrouwen men ervan om belangrijke informatie door te geven

Informatie verwerking
IT-systeem

Manier van doorgeven van informatie (via mail, edi, anders)
Is hierin geïnvesteerd
aantal vertaalslagen nodig
foutgevoeligheid van het systeem
gevoeligheid voor vertraging

Personeel
Is er door invoering minder personeel nodig
Training, wie wanneer en met welk doel

Bespreking Prestatie indicatoren
zie bijlage

Bespreking verdere traject
benodigde informatie
vervolg gesprekken

Resultaten

table 3: potential results of a VMI implementation

Voordeel	Opmerking
Minder fouten in gegevens	
Hechtere samenwerking	
toename in verkopen	
Beter klantspecifieke planning	
Hogere marge	
Reductie van het bullwhip effect	
toename van de nauwkeurigheid van de vraagvoorspellingen	
Afname in bestelfouten en retouren	
Betere planning van capaciteit bij de leverancier	
Afname transport kosten	
Minder stock outs	
verhoogde turn over ratio van de voorraad	
afname in planings- en bestelkosten	
toename van service levels	
Minder voorraad kosten	
kortere levertijden	

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Appendix V: Conceptual clustered matrix

Table 4: conceptual clustered matrix

	Company B	Company C	Company D & Company E	Company A	Company F
Informatie voorziening					
welke informatie wordt gedeeld	voorraadniveaus voorspellingen van de vraag productieschema, om de benodigdheden aan te geven. 1X per dag forecasts 1X per week	de vraagvoorspelling voor de komende drie maanden door het voorraadniveau en de transformaties, promotie acties Voorraadniveaus 1X per dag forecasts 1X per week	de voorraadstand de werkelijke vraag van de afgelopen dag eventuele promoties de key performance indicators met de scores van de afgelopen 7 weken verkopen en voorraadstanden 1X per dag de prestatiemetingen 2X per week gecommuniceerd overzicht van de leveringen 1X per kwartaal	werkelijke en gewenste voorraadstand de historische en voorspelde vraaggegevens de betrouwbaarheid van onze voorspellingen prestaties van de leverancier 1X per dag	geplande productieschema voor de komende 3 maanden verdere informatie over de voorraadstand regelen we zelf voorraadstanden e.d. 1X per 2 dagen forecast gemiddeld 1X per maand
beschikbaarheid	automatisch	automatisch	automatisch	automatisch	verschilt per klant: semi automatisch Nauwelijks overleg
verwerking	Voor implementatie: Welke informatie en hoe vaak Nu: Alleen overleg over veranderovoorstellen	Voor implementatie: afspraken volgens standaard contract Nu: 2X per jaar een evaluatiegesprek	Voor implementatie: overeenstemming codenummers controle of alle benodigde informatie beschikbaar was Nu: Alleen indien nodig	Voor implementatie evaluatie ontbrekende informatie (tijdens pilot) evaluatie overbodige informatie Nu: evaluatie 1X per kwartaal	
evaluatie van informatie					
Samenwerking					
contact moment	Strategisch:Alleen bij start en de jaarlijkse evaluatie Tactisch:- Operationeel: Alleen wanneer hier specifiek om gevraagd wordt.	Strategisch 2X per jaar evaluatie Tactisch: Operationeel:Belangrijke informatie wordt automatisch op operationeel niveau uitgewisseld (dagelijks of wekelijks) en	Strategisch: Tactisch/ operationeel: regelmatig contact over prestaties ten opzichte van de afgesproken targets	Strategisch: contract bespreking Tactisch: evaluaties Operationeel: uitwisselen gegevens en wanneer nodig	Strategisch: in het begin bij de onderhandelingen Tactisch:- Operationeel: via de chauffeurs

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mate van vertrouwen **belemmert de mate van** **vertrouwen de informatie** **deling**	compleet belangrijk i.v.m. enorme kosten bij out of stock situaties Nee Company B: Ontwikkelen informatie tool Nemen van aanvulbeslissingen Forecasten Klant: Informatie voorziening	wanneer de voorraad onder de limiet gezakt is, is er op maandag morgen contact Niet in bijzondere mate. Nee Leverancier: Aanvullen Company C: opstellen contract Nemen beslissingen Forecasten Klant: informatievoorziening Forecasten (slecht)	Genoeg Belangrijk i.v.m. beschikbaarheid product Nee Company E: opstellen contract Forecasten Aanvulbeslissingen nemen Company D: Prestatie monitoren informatie voorziening	Compleet belangrijk anders te veel tijd kwijt aan monitoren van prestaties Nee Leverancier: Aanvul beslissingen nemen Company A: Contract opstellen Forecasten prestaties monitoren informatie voorziening verbeterprojecten ondersteunen indien nodig	Compleet Belangrijk i.v.m. stilstand productie bij stock-outs en kwaliteit garanties Nee Company F Informatie verzamelen aanvulbeslissingen nemen. Klant: productieschema doorgeven.
contributie aan de relatie					
it-systeem					
it-systeem	Intern: SAP Extern: EDI, modem, structured email, XML messages, Elemica.	Intern: ERP Extern: aparte communicatie tool	Intern. Extern: EDI en gestructureerde email berichten.	Intern: SAP Extern: customized tool	Intern. Extern: EDI, of maandelijkse email.
investering in IT-systeem	Ja, in een customized tool voor de verwerking van informatie en klanten hebben vaak geïnvesteerd in een data collection tool	Ja, in een communicatie tool	Ja	Ja, configuratie SAP en aanschaf customized tool	Nee
aantal vertaalslagen	nauwelijks tot geen	geen	nauwelijks	niet	nauwelijks
gevoeligheid voor **vertraging**	nauwelijks	Niet	niet	nauwelijks	nauwelijks
interpretatie fouten	nauwelijks tot geen	niet	af en toe zijn er pallets zoek wat kan leiden tot verschillen	afhankelijk van de leverancier	afhankelijk van de chauffeur
Personeel					

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training/instructies				
	Alle planners hebben een software handleiding gekregen, en men kan wanneer ze er zelf niet meer uitkomen altijd gebruik maken van de helpdesk.	Geen	Personeel heeft een training gevolgd om bekend te worden met het IT systeem. Leverancier is geholpen met het verbeteren van interne processen.	Geen

Resultaten				
Minder fouten in gegevens	Ja	Nee	Nauwelijks	Nauwelijks van toepassing
Hechtere samenwerking	Ja	n.v.t. / Ja, afzet verzekerd	ja	ja / nauwelijks, maar afzet verzekerd
Toename in verkopen	Nauwelijks, maar afzet verzekerd. We hebben wel een aantal klanten verzekerd, maar de werkelijke verkopen zijn niet drastisch toegenomen.	n.v.t.	was al goed	Nee
Beter klantspecifieke planning	n.v.t	n.v.t.	n.v.t	Nauwelijks enigszins
Hogere marge	n.v.t.	Ja	Ja	Ja
Reductie van het bullwhip effect	Waarschijnlijk	Ja	n.v.t	Ja
Toename van de nauwkeurigheid van de vraagvoorspellingen	Afhankelijk of VMI met of zonder consignment stock is geïmplementeerd	Van onze klanten niet. Van onszelf wel	Ja	Op dit moment niet i.v.m. gebrek aan ervaring
Afname in bestelfouten en retouren	Ja, dit biedt meer stabiliteit	Misschien, maar niet bijzonder belangrijk	n.v.t	Geen inzicht in
Betere planning van capaciteit bij de leverancier	Dat is uiteindelijk wel de bedoeling, maar da is op dit moment nog niet gerealiseerd	Ja	n.v.t	Nog niet gerealiseerd door de te kleine schaal waarop het ingevoerd is.
Afname transport kosten	Ja	n.v.t.	n.v.t	Nog niet gerealiseerd door de te kleine schaal waarop het ingevoerd is.
Minder stock outs	was al goed	Ja	Ja	Nee
Verhoogde turn-over ratio van de voorraad	enigszins	Ja, van 13 naar 30 tot 40	Ja, inmiddels een turnover ratio van 25	Nee, voorraad van 8,6 naar 10,5 dagen voorraad
Afname in planings- en bestelkosten	n.v.t.	Ja	Ja, afname van 30% mankracht	Nog niet gerealiseerd door de te kleine schaal waarop het ingevoerd is.
Toename van service levels	Ja	Ja	Ja	Nog niet

Minder voorraad kosten	Ja. Nauwelijks merkbaar, we hebben nu wel minder spoedleveringen.	Ja, zie turnover ratio. Nee spoedleveringen gaan nog steeds even snel, maar komen na implementatie van VMI minder vaak voor.	Nee, is hetzelfde gebleven	Ja 50% reductie	n.v.t
Kortere levertijden	Nee, maar nu meer actief dan reactief	Nee maar meer actief dan reactief	Nee, schaalvoordelen zijn te klein	Levertijden waren al kort door JIT leveringen, maar zijn desondanks toch verbeterd.	Levertijden zijn nog steeds lang, omdat de meeste producten uit China geïmporteerd worden, maar nu kunnen we deze levertijden beter plannen.
reductie in personeel	n.v.t	n.v.t	n.v.t	Ja, reductie van 30%	Ja, bij de klant
Lagere handlingskosten			n.v.t	n.v.t	Ja
Implementatie					
Vraagpatroon	stabiel	sterk fluctuerend	sterk fluctuerend	stabiel	stabiel
sourcing strategy	single sourcing	multiple sourcing	single sourcing	single sourcing strategisch	single sourcing
soort product	bulk product		A-merk		commodity
afspraken	boete in out of stock situatie	4 weken voorraad aanwezig. 4 weken voorraad klaar voor transport	100% leverbetrouwbaarheid	upper and lower limit samen afgesproken	product altijd aanwezig aan de lijn.
balance of power		Onze klant heeft meeste macht zelfs zoveel dat deze onze leveranciers kan dwingen	gedeeld	Company A	de klant
initiatief	Company B	Van de klant	Company E	Company A	Company F

Survey

This part contains all appendices used for the survey.

Appendix VI: Introduction letter

TU/e technische universiteit eindhoven
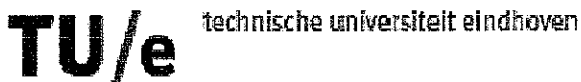
Eindhoven, 6 september 2005

Geachte heer/mevrouw,

Ketenoptimalisatie is voor veel bedrijven nog steeds een belangrijke manier om concurrentievoordeel te creëren en te behouden. Ketenoptimalisatie kan onder andere leiden tot kortere time-to-market, lagere kosten en kortere lead times.

Vendor Managed Inventory (VMI) is een specifiek voorbeeld van ketenoptimalisatie. Het is een concept waarbij de leverancier de voorraad bij de klant beheert, met als doel de totale kosten in de keten te verlagen. Het principe van VMI is dat leveranciers door hun afnemers worden voorzien van gegevens over voorraadniveaus en marktvraag. Op basis van deze gegevens kunnen leveranciers betere beslissingen nemen over voorraden en leveringen, en kan suboptimalisatie in de keten worden gereduceerd. Deze vorm van ketenoptimalisatie is ook bekend onder noemers als "Supplier Managed Inventory", "Supplier/Vendor Managed and Owned Inventory" en "Co-Managed Inventory".

In de praktijk blijkt dat VMI niet altijd oplevert wat men er tevoren van had verwacht. Vanuit de TU Eindhoven willen we middels dit onderzoek inzicht krijgen in het feitelijke succes van VMI in de praktijk, en willen we in kaart brengen welke specifieke factoren bijdragen aan het succes van VMI en in welke mate.

Om dit te onderzoeken is een vragenlijst opgesteld, waarbij zowel leveranciers als klanten gevraagd worden naar hun mening over VMI. Wanneer u als klant of als leverancier betrokken bent geweest bij een VMI project, wil ik u graag uitnodigen om mee te werken aan dit onderzoek. Het vergt ongeveer 10-15 minuten van uw tijd, en als tegenprestatie ontvangt u van ons een managementsamenvatting van de resultaten, waarmee u uw voordeel kunt doen bij toekomstige VMI projecten.

U kunt de vragenlijst starten door op de onderstaande link te klikken.

http://www.surveymonkey.com/s.asp?u=29261283344

Om de anonimiteit van uw bedrijf te waarborgen zullen de resultaten geaggregeerd worden tot op het niveau van uw bedrijfstak. Het onderzoek wordt uitgevoerd door Marloes Claassen. Wanneer u vragen heeft over dit onderzoek kunt u met haar contact opnemen via email op m.j.t.claassen@student.tue.nl of per telefoon op 040 - 247 2434.

Wij danken u bij voorbaat voor uw medewerking.

Met vriendelijke groet,

Professor Dr. A.J. van Weele

NEVI Chair Purchasing and Supply Management
Eindhoven University of Technology
Institute for Purchasing and Supply Development (IPSD)

Wanneer uw bedrijf niet betrokken is (geweest) bij een VMI project, klikt u dan op de volgende link http://ijlsite.onward.nl/tue-enquete-vmi

Verklarende woordenlijst:

Communicatie systeem:
Systemen die gebruikt worden voor het doorgeven van informatie, denk hierbij aan bijvoorbeeld EDI, web-based solutions, email etc.

IT-systeem/ informatie systeem:
Het overkoepelende systeem dat gebruikt wordt voor informatie beheer, denk hierbij aan bijvoorbeeld SAP, ERP etc.

Opslingereffect/bullwhip effect:
Doordat er een vertraging plaats vindt in het doorgeven van vraaggegevens, en doordat er onzekerheid is over de toekomstige vraag, wordt er door spelers verder upstream in de keten meer veiligheidsvoorraad aangehouden.

Toelichting NEVI:
Regelmatig ontvangt NEVI een verzoek om medewerking aan diverse (promotie-)onderzoeken. Afhankelijk van professionaliteit, betrouwbaarheid en relevantie worden deze verzoeken wel of niet ingewilligd. Hierbij staat voorop dat het mailbestand van NEVI-leden niet aan derden ter beschikking wordt gesteld; indien nodig geschiedt verzending door het NEVI kantoor in Zoetermeer.

NB Mocht u niet tot de gewenste doelgroep behoren, dan kunt u dit bericht als niet verzonden beschouwen.

Appendix VII: Results survey customer

Blok 1 van 5: Informatie

1. Wilt u aangeven in hoeverre u het eens bent met de volgende 8 stellingen

	Absoluut mee oneens			Neutraal			Absoluut mee eens	Response Average
Wij informeren onze leverancier wanneer de vraag verandert	1% (1)	4% (4)	8% (8)	13% (13)	22% (22)	30% (30)	23% (23)	5.31
Onze leverancier houdt ons volledig op de hoogte wat betreft zaken die ons bedrijf beïnvloeden	1% (1)	10% (10)	16% (16)	21% (21)	31% (31)	13% (13)	9% (9)	4.45
Onze leverancier deelt kennis over hun belangrijkste bedrijfsprocessen met ons	3% (3)	4% (4)	10% (10)	33% (33)	23% (23)	20% (20)	7% (7)	4.57
Wij wisselen informatie uit met elkaar die ons beide helpt beter te plannen	3% (3)	3% (3)	4% (4)	10% (10)	27% (27)	33% (33)	21% (21)	5.36
Wij delen informatie met elkaar over gebeurtenissen of veranderingen die invloed hebben op andere strategische partners	4% (4)	9% (9)	6% (6)	26% (26)	24% (24)	20% (20)	12% (12)	4.63
Wij stellen het werkelijke verbruik/verkoop beschikbaar aan onze leverancier	6% (6)	11% (11)	5% (5)	7% (7)	23% (23)	26% (26)	23% (23)	4.98
Wij maken voorraadstanden inzichtelijk voor onze leverancier	7% (7)	9% (9)	9% (9)	10% (10)	17% (17)	26% (26)	22% (22)	4.87
Wij geven vraagvoorspellingen door aan onze leverancier	5% (5)	6% (6)	5% (5)	9% (9)	26% (26)	22% (22)	27% (27)	5.19
							Total Respondents	101
							(skipped this question)	0

2. Wilt u aangeven in hoeverre u het eens bent met de volgende 5 stellingen

	Absoluut mee oneens			Neutraal			Absoluut mee eens	Response Average
Wij geven tijdig	1% (1)	3% (3)	13% (13)	17% (17)	29% (29)	27% (27)	10% (10)	4.91

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								Response Average
informatie aan onze leverancier								
De informatie die wij aan onze leverancier geven is nauwkeurig	2% (2)	4% (4)	8% (8)	19% (19)	27% (27)	**29% (29)**	11% (11)	**4.96**
De informatie die wij aan onze leverancier geven is compleet	3% (3)	3% (3)	13% (13)	15% (15)	**33% (33)**	27% (27)	6% (6)	**4.77**
De informatie die wij aan onze leverancier geven is betrouwbaar	1% (1)	5% (5)	7% (7)	9% (9)	28% (28)	**34% (34)**	16% (16)	**5.24**
Wij geven voldoende informatie aan onze leverancier	2% (2)	3% (3)	16% (16)	15% (15)	**27% (27)**	25% (25)	12% (12)	**4.85**
							Total Respondents	100
							(skipped this question)	1

3. Blok 2 van 5: Resources

3. Wilt u voor de volgende 12 stellingen aangeven in hoeverre u het er mee eens bent	Absoluut mee oneens			Neutraal			Absoluut mee eens	Response Average
Het communicatiesysteem dat gebruikt wordt voor VMI sluit goed aan op onze reeds bestaande IT-systemen	12% (10)	15% (13)	21% (18)	**23% (19)**	10% (8)	10% (8)	10% (8)	**3.69**
Onze IT-systemen sluiten goed aan op die van de leverancier	12% (10)	**25% (21)**	20% (17)	18% (15)	12% (10)	7% (6)	6% (5)	**3.38**
Het aantal vertaalslagen dat nodig is om onze informatie in te voeren in het systeem ivan de leverancier is beperkt	2% (2)	17% (14)	17% (14)	**29% (24)**	17% (14)	14% (12)	5% (4)	**4.02**
Het systeem dat gebruikt wordt voor de communicatie van gegevens is erg foutgevoelig	5% (4)	21% (18)	20% (17)	**35% (29)**	13% (11)	4% (3)	2% (2)	**3.50**
Het communicatiesysteem is gemakkelijk in gebruik	6% (5)	8% (7)	17% (14)	**37% (31)**	12% (10)	15% (13)	5% (4)	**4.06**

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Wij zijn tevreden over het systeem dat gebruikt wordt voor de communicatie van gegevens	7% (6)	13% (11)	12% (10)	**25% (21)**	19% (16)	19% (16)	5% (4)	4.12
Het systeem dat gebruikt wordt voor het doorgeven van gegevens is goed beveiligd	6% (5)	5% (4)	10% (8)	**31% (26)**	14% (12)	25% (21)	10% (8)	4.56
Het communicatiesysteem biedt veel extra mogelijkheden waar wij geen gebruik van maken	7% (6)	12% (10)	12% (10)	**36% (30)**	18% (15)	11% (9)	5% (4)	3.96
Ons informatie-systeem is up-to-date	5% (4)	12% (10)	14% (12)	**26% (22)**	17% (14)	18% (15)	8% (7)	4.25
We maken regelmatig gebruik van nieuwe versies voor ons IT-systeem	11% (9)	17% (14)	13% (11)	**21% (18)**	15% (13)	15% (13)	7% (6)	3.89
Het informatie-systeem van de leverancier is up-to-date	4% (3)	6% (5)	10% (8)	**45% (38)**	18% (15)	14% (12)	4% (3)	4.25
Wij gebruiken voor alle leveranciers hetzelfde systeem voor de communicatie	6% (5)	18% (15)	8% (7)	15% (13)	10% (8)	**31% (26)**	12% (10)	4.45
							Total Respondents	84
							(skipped this question)	17

4. Welk systeem gebruikt u voor de communicatie met uw leverancier?

		Response Percent	Response Total
Electronic Data Interchange (EDI)		34.9%	29
Web-based-solution		37.3%	31
Anders (namelijk)		48.2%	40
	Total Respondents		83
	(skipped this question)		18

4. Blok 3 van 5: Samenwerking

5. Wilt u aangeven in hoeverre de machtsverhouding in de relatie is veranderd na de implementatie van VMI

	De leverancier is afhankelijk van ons			De relatie is in evenwicht			Wij zijn afhankelijk van de leverancier	Response Average
Hoe was de verhouding	6% (4)	10% (7)	21% (15)	**46% (33)**	8% (6)	7% (5)	3% (2)	3.74

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tussen u en uw leverancier te definieren vóór de implementatie van VMI?							
Hoe is de verhouding tussen u en uw leverancier te definieren na de implmentatie van VMI?	3% (2)	6% (4)	11% (8)	60% (43)	14% (10)	6% (4)	1% (1)	3.99
					Total Respondents		72
					(skipped this question)		29

6. Wie betaald de voorraadkosten van uw magazijn?

		Response Percent	Response Total
Wij (regulier)		55.6%	40
Onze leverancier (consignment)		33.3%	24
View Anders (namelijk)		11.1%	8
	Total Respondents		72
	(skipped this question)		29

7. Wilt u voor de volgende stellingen aangeven in hoeverre u er mee eens bent

	Absoluut mee oneens			Neutraal			Absoluut mee eens	Response Average
Vergeleken met de ideale situatie zijn we tevreden met de prestatie van de leverancier	1% (1)	3% (2)	4% (3)	25% (18)	33% (24)	31% (22)	3% (2)	4.89
Over het algemeen zijn we erg tevreden met deze leverancier	1% (1)	3% (2)	6% (4)	21% (15)	36% (26)	29% (21)	4% (3)	4.92
Ons bedrijf is niet helemaal tevreden met de prestaties van deze leverancier	8% (6)	19% (14)	21% (15)	22% (16)	17% (12)	12% (9)	0% (0)	3.57
In vergelijking met de verwachtingen, zijn we erg tevreden over deze leverancier	1% (1)	1% (1)	14% (10)	17% (12)	36% (26)	29% (21)	1% (1)	4.78

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Wanneer er belangrijke beslissingen genomen moeten worden houdt de leverancier rekening met onze belangen	1% (1)	3% (2)	8% (6)	28% (20)	33% (24)	25% (18)	1% (1)	4.69
We kunnen er op vertrouwen dat onze leverancier correct omgaat met onze vertrouwlijke informatie	1% (1)	3% (2)	4% (3)	11% (8)	22% (16)	44% (32)	14% (10)	5.39
Voor belangrijke benodigdheden en eisen kunnen we op steun van onze leverancier rekenen	1% (1)	3% (2)	1% (1)	17% (12)	32% (23)	36% (26)	10% (7)	5.22
We zijn er van overtuigd dat de leverancier alle overeenkomsten en afspraken nakomt	1% (1)	4% (3)	14% (10)	15% (11)	22% (16)	39% (28)	4% (3)	4.86
De leverancier is niet altijd eerlijk en oprecht naar ons	11% (8)	29% (21)	12% (9)	29% (21)	10% (7)	8% (6)	0% (0)	3.22
We kunnen er op rekenen dat de leverancier zijn beloftes nakomt	1% (1)	1% (1)	8% (6)	18% (13)	26% (19)	33% (24)	11% (8)	5.11
We richten ons op lange termijn doelen in deze relatie	1% (1)	3% (2)	1% (1)	14% (10)	31% (22)	38% (27)	12% (9)	5.32
We zijn bereid om tijd en andere middelen te investeren in de relatie met deze leverancier	1% (1)	6% (4)	1% (1)	10% (7)	31% (22)	40% (29)	11% (8)	5.28
We vinden de lange termijn samenwerking met deze leverancier belangrijker dan onze winst op korte termijn	1% (1)	6% (4)	10% (7)	24% (17)	18% (13)	31% (22)	11% (8)	4.88
We zouden graag nog meer zaken doen met deze leverancier	1% (1)	3% (2)	7% (5)	40% (29)	25% (18)	19% (14)	4% (3)	4.60
Wij nemen het voor deze leverancier op wanneer buitenstaanders kritiek hebben op deze leverancier	3% (2)	4% (3)	4% (3)	33% (24)	35% (25)	18% (13)	3% (2)	4.58

27

Onze visie wat betreft de relatie komt overeen met die van de leverancier	1% (1)	1% (1)	6% (4)	28% (20)	31% (22)	31% (22)	3% (2)	4.88
Onze doelen wat betreft de relatie komen overeen met die van de leverancier	1% (1)	1% (1)	7% (5)	29% (21)	28% (20)	29% (21)	4% (3)	4.85
							Total Respondents	72
							(skipped this question)	29

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5. Untitled Page

8. Wanneer u alles in overweging neemt, wilt u voor de volgende items aangeven wat de relatieve bijdrage is van u en uw leverancier

	Extreem laag					Extreem hoog	Response Average
Uw contributie aan de relatie	1% (1)	6% (4)	15% (11)	46% (33)	28% (20)	3% (2)	4.03
De contributie van uw leverancier aan de relatie	1% (1)	1% (1)	17% (12)	48% (34)	31% (22)	1% (1)	4.10
De voordelen die uw bedrijf ontvangt van de relatie	1% (1)	3% (2)	10% (7)	42% (30)	38% (27)	6% (4)	4.30
De voordelen die uw leverancier ontvangt van de relatie	1% (1)	1% (1)	17% (12)	42% (30)	35% (25)	3% (2)	4.17
					Total Respondents		71
					(skipped this question)		30

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6. Blok 4 van 5: Het resultaat

9. Wat is de invloed van VMI op:

	Zeer negatief			Geen invloed			Zeer positief	Response Average
het totaal aantal verkochte producten?	2% (1)	0% (0)	2% (1)	60% (39)	23% (15)	8% (5)	6% (4)	4.51
de totale voorraadkosten in de keten?	2% (1)	3% (2)	3% (2)	15% (10)	38% (25)	34% (22)	5% (3)	5.06

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de accurraatheid van vraag voorspellingen?	2% (1)	2% (1)	3% (2)	48% (31)	20% (13)	25% (16)	2% (1)	4.63
het opslingereffect (ook bekend onder de naam bullwhip effect)?	2% (1)	0% (0)	8% (5)	42% (27)	28% (18)	20% (13)	2% (1)	4.60
de mate waarop we kunnen inspelen op unieke wensen van de consument	2% (1)	0% (0)	11% (7)	49% (32)	9% (6)	23% (15)	6% (4)	4.58
de relatie met de leverancier?	2% (1)	0% (0)	2% (1)	15% (10)	40% (26)	34% (22)	8% (5)	5.25
de flexibiliteit in de keten?	2% (1)	0% (0)	5% (3)	22% (14)	31% (20)	34% (22)	8% (5)	5.12
het aantal stock-outs?	2% (1)	3% (2)	3% (2)	18% (12)	38% (25)	25% (16)	11% (7)	5.06
de transportkosten?	2% (1)	2% (1)	8% (5)	42% (27)	22% (14)	23% (15)	3% (2)	4.62
het aantal fouten in gegevens zoals bijvoorbeeld voorraadstanden?	2% (1)	6% (4)	8% (5)	42% (27)	28% (18)	12% (8)	3% (2)	4.37
de servicegraad naar de klant?	2% (1)	0% (0)	2% (1)	20% (13)	35% (23)	28% (18)	14% (9)	5.26
de administratiekosten?	2% (1)	5% (3)	3% (2)	22% (14)	34% (22)	29% (19)	6% (4)	4.94
de handlingskosten?	2% (1)	2% (1)	11% (7)	28% (18)	31% (20)	23% (15)	5% (3)	4.72
							Total Respondents	65
							(skipped this question)	36

10. Wilt u aageven in hoeverre u het eens bent met de volgende 4 stellingen

	Absoluut mee oneens			Neutraal			Absoluut mee eens	Response Average
Het introduceren van VMI was een goed idee	2% (1)	0% (0)	0% (0)	15% (10)	28% (18)	25% (16)	31% (20)	5.65
VMI heeft voor mij meer voordelen dan nadelen	3% (2)	0% (0)	3% (2)	17% (11)	20% (13)	32% (21)	25% (16)	5.46
VMI heeft voor de leverancier meer voordelen dan nadelen	3% (2)	2% (1)	0% (0)	25% (16)	26% (17)	31% (20)	14% (9)	5.17
Wij ervaren evenveel voordelen van VMI als onze leverancier	3% (2)	2% (1)	6% (4)	35% (23)	23% (15)	22% (14)	9% (6)	4.75
							Total Respondents	65

29

	(skipped this question)	36

7. Blok 5 van 5: Algemeen

11. Met hoeveel leveranciers heeft u VMI geimplementeerd?

	[View] Total Respondents	61
	(skipped this question)	40

12. Van wie kwam het initiatief om VMI te implementeren?

		Response Percent	Response Total
Leverancier (sla de volgende vraag over)		11.7%	7
Onszelf		88.3%	53
	Total Respondents		60
	(skipped this question)		41

13. Wilt u aangeven welke alternatieven u overwogen heeft te implementeren in plaats van VMI?

		Response Percent	Response Total
Geen		41.1%	23
Collaborative Planning Forecasting and Replenishment (CPFR)		7.1%	4
Efficient Consumer Response (ECR)		0%	0
Just In Time (JIT)		35.7%	20
Continuous Replenishment Planning (CRP)		12.5%	7
Quick Response (QR)		17.9%	10
[View] Anders (namelijk)		14.3%	8
	Total Respondents		56
	(skipped this question)		45

14. Wilt u aangeven in hoeverre u het eens bent met de volgende 7 stellingen

	Absoluut			Neutraal			Absoluut	Response

30

	mee oneens						mee eens	Average
Wij hebben veel informatie m.b.t. voordelen, consequenties, beperkingen en alternatieven ingewonnen over VMI voordat we besloten het te implementeren	5% (3)	7% (4)	11% (7)	25% (15)	26% (16)	18% (11)	8% (5)	4.48
Wij waren bewust van de consequenties van VMI voordat we VMI daadwerkelijk geimplementeerd hebben	2% (1)	0% (0)	11% (7)	28% (17)	33% (20)	18% (11)	8% (5)	4.77
Wij hadden al veel ervaring met verbeterinitiatieven in samenwerking met andere spelers in de keten	5% (3)	8% (5)	18% (11)	20% (12)	30% (18)	13% (8)	7% (4)	4.26
Mijn bedrijf is een voorloper in het initieren van verbeterprojecten binnen de keten	5% (3)	5% (3)	11% (7)	31% (19)	18% (11)	23% (14)	7% (4)	4.48
Wij hadden al veel ervaring in nauw samenwerken met deze leverancier voor het invoeren van VMI	3% (2)	3% (2)	8% (5)	15% (9)	38% (23)	21% (13)	11% (7)	4.90
Ook wanneer het financieel minder goed gaat, houden we rekening met de voordelen van de leverancier	5% (3)	3% (2)	7% (4)	34% (21)	31% (19)	15% (9)	5% (3)	4.48
Het optimaliseren van de keten is belangrijker dan het optimaliseren van eigen succes	7% (4)	7% (4)	15% (9)	25% (15)	18% (11)	15% (9)	15% (9)	4.44
							Total Respondents	61
							(skipped this question)	40

15. Hoeveel medewerkers heeft uw bedrijf?		Response Percent	Response Total
1-20		0%	0
21-50		0%	0
51-150		16.4%	10
151-500		34.4%	21

31

meer dan 500		49.2%	30
	Total Respondents		61
	(skipped this question)		40

16. Hoe hoog was de omzet van het afgelopen jaar ongeveer?

View Total Respondents		61
(skipped this question)		40

17. In welk type industry opereert uw bedrijf?

		Response Percent	Response Total
Voedings- en genotmiddelen industrie		13.1%	8
Textiel en leder industrie		1.6%	1
Papier industrie en uitgeverijen en drukkerijen		3.3%	2
Aardolie industrie		1.6%	1
Chemische basisproducten industrie		1.6%	1
Chemische eindproducten industrie		6.6%	4
Rubber en kunststof industrie		0%	0
Basis metaal en metalproducten industrie		11.5%	7
Machine industrie		8.2%	5
Transportmiddelen industrie		3.3%	2
Zorg en overige dienstverlening		11.5%	7
View Anders (namelijk)		37.7%	23
	Total Respondents		61
	(skipped this question)		40

8. Dit is het einde van de enquete, bedankt voor uw medewerking

18. Wilt u hier uw emailadres invullen indien u de managementsamenvatting wilt ontvangen.

View Total Respondents		52

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Appendix VIII: Results survey supplier

2. Blok 1 van 5: Informatie

1. Wilt u aangeven in hoeverre u het eens bent met de volgende 8 stellingen.

	Absoluut mee oneens			Neutraal			Absoluut mee eens	Response Average
Onze klant informeert ons wanneer de vraag verandert	7% (3)	7% (3)	0% (0)	26% (12)	13% (6)	26% (12)	22% (10)	4.98
Onze klant houdt ons volledig op de hoogte wat betreft zaken die ons bedrijf beïnvloeden	7% (3)	4% (2)	24% (11)	24% (11)	11% (5)	22% (10)	9% (4)	4.28
Onze klant deelt kennis over hun belangrijkste bedrijfsprocessen met ons	9% (4)	4% (2)	11% (5)	26% (12)	20% (9)	26% (12)	4% (2)	4.39
Wij wisselen informatie uit met elkaar die ons beide helpt beter te plannen	7% (3)	7% (3)	11% (5)	11% (5)	17% (8)	30% (14)	17% (8)	4.87
Wij delen informatie met elkaar over gebeurtenissen of veranderingen die invloed hebben op andere strategische partners	9% (4)	4% (2)	11% (5)	22% (10)	22% (10)	15% (7)	17% (8)	4.59
Wij kunnen het werkelijke verbruik/verkoop opvragen bij de klant	9% (4)	9% (4)	7% (3)	17% (8)	17% (8)	24% (11)	17% (8)	4.67
Wij kunnen voorraadstanden opvragen bij de klant	9% (4)	9% (4)	4% (2)	13% (6)	20% (9)	28% (13)	17% (8)	4.80
Wij krijgen vraagvoorspellingen van de klant	7% (3)	4% (2)	2% (1)	17% (8)	24% (11)	15% (7)	30% (14)	5.15
							Total Respondents	46
							(skipped this question)	1

2. Wilt u aangeven in hoeverre u het eens bent met de volgende 5 stellingen.

	Absoluut mee oneens			Neutraal			Absoluut mee eens	Response Average
Wij ontvangen tijdig	4% (2)	7% (3)	17% (8)	26% (12)	20% (9)	24% (11)	2% (1)	4.30

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informatie van onze klant								
De informatie die wij ontvangen van onze klant is nauwkeurig	7% (3)	9% (4)	24% (11)	15% (7)	**28% (13)**	13% (6)	4% (2)	**4.07**
De informatie die wij ontvangen van onze klant is compleet	7% (3)	9% (4)	15% (7)	**26% (12)**	22% (10)	15% (7)	7% (3)	**4.20**
Wij ontvangen voldoende informatie van onze klant	6% (3)	6% (3)	19% (9)	**28% (13)**	21% (10)	19% (9)	0% (0)	**4.09**
De informatie die wij ontvangen van onze klant is betrouwbaar	9% (4)	7% (3)	22% (10)	22% (10)	**26% (12)**	15% (7)	0% (0)	**3.96**
							Total Respondents	47
							(skipped this question)	0

3. Blok 2 van 5: Middelen

3. Wilt u aangeven in hoeverre u het eens bent met de volgende 9 stellingen

	Absoluut mee oneens			Neutraal			Absoluut mee eens	Response Average
Het communicatiesysteem dat gebruikt wordt voor VMI sluit goed aan op onze reeds bestaande IT-systemen	6% (2)	6% (2)	13% (4)	**35% (11)**	16% (5)	19% (6)	3% (1)	**4.19**
Onze IT-systemen sluiten goed aan op die van de klant	3% (1)	6% (2)	10% (3)	**35% (11)**	16% (5)	19% (6)	10% (3)	**4.52**
Het aantal vertaalslagen dat nodig is om informatie van de klant in ons systeem in te voeren is beperkt	3% (1)	6% (2)	16% (5)	16% (5)	**39% (12)**	16% (5)	3% (1)	**4.42**
Het systeem dat gebruikt wordt voor de communicatie van gegevens is erg foutgevoelig	13% (4)	**26% (8)**	19% (6)	19% (6)	16% (5)	6% (2)	0% (0)	**3.19**
Het communicatie-systeem is	0% (0)	0% (0)	10% (3)	**39% (12)**	10% (3)	32% (10)	10% (3)	**4.94**

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gemakkelijk in gebruik								
Het systeem dat gebruikt wordt voor het beheren van de voorraad is makkelijk in gebruik	0% (0)	3% (1)	13% (4)	**29% (9)**	16% (5)	**29% (9)**	10% (3)	**4.84**
Wij zijn tevreden over het systeem dat gebruikt wordt voor de communicatie van gegevens	3% (1)	6% (2)	10% (3)	**29% (9)**	16% (5)	23% (7)	13% (4)	**4.68**
Het systeem dat gebruikt wordt voor het doorgeven van gegevens is goed beveiligd	3% (1)	3% (1)	10% (3)	23% (7)	13% (4)	**35% (11)**	13% (4)	**4.97**
Het communicatiesysteem biedt veel extra mogelijkheden waar wij geen gebruik van maken	0% (0)	10% (3)	13% (4)	**42% (13)**	16% (5)	13% (4)	6% (2)	**4.29**
Ons informatie-systeem is up-to-date	3% (1)	3% (1)	10% (3)	16% (5)	**29% (9)**	**29% (9)**	10% (3)	**4.90**
Het informatie-systeem van de klant is up-to-date	3% (1)	0% (0)	13% (4)	**29% (9)**	26% (8)	**29% (9)**	0% (0)	**4.61**
Wij gebruiken voor alle klanten hetzelfde systeem voor de communicatie	**23% (7)**	10% (3)	10% (3)	16% (5)	3% (1)	19% (6)	19% (6)	**4.03**
Onze planners hebben training(en) gevolgd in het gebruik van het plannings- en communicatiesysteem	3% (1)	6% (2)	6% (2)	26% (8)	13% (4)	**35% (11)**	10% (3)	**4.84**
Onze planners hebben training(en) gevolgd in supply chain management	13% (4)	16% (5)	10% (3)	**32% (10)**	23% (7)	3% (1)	3% (1)	**3.58**
We maken regelmatig gebruik van nieuwe versies voor ons IT-systeem	3% (1)	6% (2)	6% (2)	**39% (12)**	16% (5)	23% (7)	6% (2)	**4.52**
						Total Respondents		**31**
						(skipped this question)		**16**

4. Welk systeem gebruikt de klant voor het communiceren van zijn gegevens?		Response Percent	Response Total
Electronic Data Interchange (EDI)		38.7%	12
Web-based-solution		**54.8%**	**17**
View Anders (namelijk)		32.3%	10
	Total Respondents		**31**

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		(skipped this question)	16

5. Welk systeem gebruikt U voor het beheersen van de voorraad bij de klant? (meerdere antwoorden mogelijk)

		Response Percent	Response Total
Material Requirements Planning (MRP)		64.5%	20
Advanced Planning System (APS)		6.5%	2
View Anders (namelijk)		38.7%	12
	Total Respondents		31
	(skipped this question)		16

6. Wordt de informatie m.b.t. voorspellingen en historische vraagegevens van de klant handmatig of geautomatiseerd ingevoerd in het planningssyteem?

		Response Percent	Response Total
Handmatig		48.4%	15
Volledig geautomatiseerd		19.4%	6
Gedeeltelijk geautomatiseerd		32.3%	10
Anders (namelijk)		0%	0
	Total Respondents		31
	(skipped this question)		16

7. Wat is het gemiddelde scholingsniveau van uw planners?

		Response Percent	Response Total
LBO		0%	0
MBO		67.7%	21
HBO		29%	9
Universitair		0%	0
View Anders (namelijk)		3.2%	1
	Total Respondents		31
	(skipped this question)		16

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8. Over welk type geschreven instructies beschikt een planner? (meerdere antwoorden mogelijk)

		Response Percent	Response Total
Geen		29%	9
Instructies met betrekking tot het nemen van replenishmentbeslissingen in standaardsituaties		45.2%	14
Instructies met betrekking tot het nemen van replenishmentbeslissingen in uitzonderingsgevallen		19.4%	6
Instructies over het gebruik van het IT-systeem		51.6%	16
View Anders (namelijk)		3.2%	1
	Total Respondents		31
	(skipped this question)		16

4. Blok 3 van 5: Samenwerking

9. Wilt u aangeven in hoeverre de machtsverhouding is veranderd door de implementatie van VMI

	Wij zijn afhankelijk van onze klant						De klant is afhankelijk van ons	Response Average
Hoe was de verhouding tussen u en uw klant te definieren vóór de implementatie van VMI?	14% (4)	21% (6)	14% (4)	36% (10)	7% (2)	4% (1)	4% (1)	3.25
Hoe was de verhouding tussen u en uw klant te definieren na de implementatie van VMI?	7% (2)	11% (3)	7% (2)	32% (9)	36% (10)	7% (2)	0% (0)	4.00
						Total Respondents		28
						(skipped this question)		19

10. Wie betaalt de voorraadkosten bij de klant?

		Response Percent	Response Total
Klant (regulier)		39.3%	11

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Wij (consignment)						53.6%	15
View Anders (namelijk)						7.1%	2
					Total Respondents	28
					(skipped this question)	19

11. Wilt u voor de volgende stellingen aangeven in hoeverre u het eens bent met de stellingen

	Absoluut mee oneens			Neutraal			Absoluut mee eens	Response Average
Vergeleken met de ideale situatie zijn we tevreden met de moeite die de klant in onze relatie steekt	0% (0)	0% (0)	11% (3)	29% (8)	14% (4)	46% (13)	0% (0)	4.96
Over het algemeen zijn we erg tevreden met deze klant	0% (0)	0% (0)	14% (4)	14% (4)	21% (6)	39% (11)	11% (3)	5.18
Ons bedrijf is niet helemaal tevreden met de inzet van de klant ten opzichte van onze relatie	4% (1)	21% (6)	25% (7)	29% (8)	4% (1)	11% (3)	7% (2)	3.68
In vergelijking met de verwachtingen omtrent investeringen in onze relatie, zijn we erg tevreden over deze klant	0% (0)	7% (2)	11% (3)	7% (2)	36% (10)	36% (10)	4% (1)	4.93
Wanneer er belangrijke beslissingen genomen moeten worden houdt de klant rekening met onze belangen	0% (0)	18% (5)	21% (6)	18% (5)	21% (6)	18% (5)	4% (1)	4.11
We kunnen er op vertrouwen dat onze klant correct omgaat met onze vertrouwlijke informatie	0% (0)	4% (1)	4% (1)	14% (4)	11% (3)	57% (16)	11% (3)	5.46
Voor belangrijke zaken kunnen we op steun van onze klant rekenen	0% (0)	0% (0)	7% (2)	11% (3)	29% (8)	46% (13)	7% (2)	5.36
We zijn er van overtuigd dat de klant alle overeenkomsten en afspraken nakomt	4% (1)	11% (3)	11% (3)	18% (5)	25% (7)	29% (8)	4% (1)	4.50

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De klant is niet altijd eerlijk en oprecht naar ons	14% (4)	18% (5)	11% (3)	29% (8)	11% (3)	14% (4)	4% (1)	3.61
We kunnen er op rekenen dat de klant zijn beloftes nakomt	0% (0)	4% (1)	32% (9)	4% (1)	14% (4)	43% (12)	4% (1)	4.71
We richten ons op lange termijn doelen in deze relatie	0% (0)	4% (1)	4% (1)	7% (2)	7% (2)	39% (11)	39% (11)	5.93
We zijn bereid om tijd en andere middelen te investeren in de relatie met deze klant	0% (0)	0% (0)	0% (0)	11% (3)	7% (2)	57% (16)	25% (7)	5.96
We vinden de lange termijn samenwerking met deze klant belangrijker dan onze winst op korte termijn	0% (0)	0% (0)	0% (0)	14% (4)	21% (6)	39% (11)	25% (7)	5.75
We zouden graag nog meer zaken doen met deze klant	0% (0)	4% (1)	0% (0)	7% (2)	14% (4)	50% (14)	25% (7)	5.82
Wij nemen het voor deze klant op wanneer buitenstaanders kritiek hebben op deze klant	0% (0)	0% (0)	0% (0)	18% (5)	14% (4)	46% (13)	21% (6)	5.71
Onze visie wat betreft de relatie komt overeen met die van de klant	0% (0)	7% (2)	7% (2)	18% (5)	18% (5)	39% (11)	11% (3)	5.07
Onze doelen wat betreft de relatie komen overeen met die van de klant	4% (1)	4% (1)	7% (2)	21% (6)	29% (8)	29% (8)	7% (2)	4.82

Total Respondents	28
(skipped this question)	19

5. Untitled Page

12. Wanneer u alles in overweging neemt, wilt u voor de volgende items aangeven wat de relatieve bijdrage is van u en uw klant

	extreem laag				extreem hoog	Response Average
Uw contributie aan de relatie	0% (0)	0% (0)	4% (1)	29% (8)	64% (18)	4% (1)	4.68
De contributie van uw	4% (1)	11% (3)	11% (3)	61% (17)	14% (4)	0% (0)	3.71

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klant aan de relatie							
De voordelen die uw bedrijf ontvangt van de relatie	0% (0)	4% (1)	21% (6)	25% (7)	43% (12)	7% (2)	4.29
De voordelen die uw klant ontvangt van de relatie	0% (0)	0% (0)	4% (1)	14% (4)	79% (22)	4% (1)	4.82
					Total Respondents		28
					(skipped this question)		19

6. Blok 4 van 5: Het resultaat

13. Wat is de invloed van VMI op:

	Zeer negatief			Geen invloed			Zeer positief	Response Average
het totaal aantal verkochte producten?	0% (0)	4% (1)	0% (0)	59% (16)	30% (8)	4% (1)	4% (1)	4.41
de totale voorraadkosten in de keten?	4% (1)	7% (2)	0% (0)	19% (5)	30% (8)	26% (7)	15% (4)	5.00
de capaciteitsplanning?	0% (0)	4% (1)	4% (1)	7% (2)	30% (8)	52% (14)	4% (1)	5.33
de accurraatheid van vraagvoorspellingen?	4% (1)	11% (3)	7% (2)	26% (7)	33% (9)	19% (5)	0% (0)	4.30
het opslingereffect (ook bekend onder de naam bullwhip effect)?	4% (1)	0% (0)	15% (4)	19% (5)	22% (6)	33% (9)	7% (2)	4.85
de mate waarin wij kunnen inspelen op unieke wensen van de consument	0% (0)	4% (1)	0% (0)	41% (11)	30% (8)	26% (7)	0% (0)	4.74
de relatie met de klant?	0% (0)	0% (0)	0% (0)	19% (5)	26% (7)	52% (14)	4% (1)	5.41
de flexibiliteit in de keten?	4% (1)	0% (0)	0% (0)	15% (4)	19% (5)	48% (13)	15% (4)	5.48
het aantal stock-outs?	4% (1)	4% (1)	0% (0)	26% (7)	33% (9)	26% (7)	7% (2)	4.89
de bezettingsgraad van de bottleneckmachine?	0% (0)	4% (1)	4% (1)	33% (9)	22% (6)	26% (7)	11% (3)	4.96
de transportkosten?	0% (0)	0% (0)	7% (2)	30% (8)	15% (4)	37% (10)	11% (3)	5.15
de servicegraad naar de klant?	0% (0)	0% (0)	4% (1)	7% (2)	26% (7)	44% (12)	19% (5)	5.67
de administratiekosten?	0% (0)	0% (0)	11% (3)	22% (6)	37% (10)	22% (6)	7% (2)	4.93
de handlingskosten?	0% (0)	7% (2)	15% (4)	11% (3)	26% (7)	37% (10)	4% (1)	4.81

| | | | | | | | Total Respondents | 27 |
| | | | | | | | (skipped this question) | 20 |

14. Wilt u aangeven in hoeverre u het eens bent met de volgende 4 stellingen

	Absoluut mee oneens						Absoluut mee eens	Response Average
Het introduceren van VMI was een goed idee	4% (1)	0% (0)	0% (0)	11% (3)	22% (6)	37% (10)	26% (7)	5.63
VMI heeft voor mij meer voordelen dan nadelen	4% (1)	4% (1)	0% (0)	11% (3)	26% (7)	37% (10)	19% (5)	5.37
VMI heeft voor de klant meer voordelen dan nadelen	0% (0)	0% (0)	0% (0)	7% (2)	22% (6)	52% (14)	19% (5)	5.81
Wij ervaren evenveel voordelen als onze klant	0% (0)	15% (4)	11% (3)	4% (1)	41% (11)	11% (3)	19% (5)	4.78
							Total Respondents	27
							(skipped this question)	20

7. Blok 5 van 5: Algemeen

15. Met hoeveel klanten heeft u VMI geimplementeerd?

	View	Total Respondents	25
		(skipped this question)	22

16. Van wie kwam het initiatief om VMI te implementeren?

		Response Percent	Response Total
Klant (sla de volgende vraag over)		60%	15
Onszelf		40%	10
	Total Respondents		25
	(skipped this question)		22

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17. Welke alternatieven heeft u overwogen vóórdat u VMI geimplementeerd heeft?

		Response Percent	Response Total
Geen		43.8%	7
Collaborative Planning Forecasting and Replenishment (CPFR)		18.8%	3
Efficient Consumer Response (ECR)		12.5%	2
Continuous Replenishment Planning (CRP)		6.2%	1
Just In Time (JIT)		31.2%	5
Quick Response (QR)		31.2%	5
View Anders (namelijk)		6.2%	1
	Total Respondents		16
	(skipped this question)		31

18. Wilt u aangeven in hoeverre u het eens bent met de volgende 7 stellingen

	Absoluut mee oneens			Neutraal			Absoluut mee eens	Response Average
Wij hebben veel informatie m.b.t. voordelen, consequenties, beperkingen en alternatieven ingewonnen over VMI voordat we besloten het te implementeren	0% (0)	16% (4)	16% (4)	28% (7)	16% (4)	20% (5)	4% (1)	4.20
Wij waren bewust van de te verwachten consequenties van VMI voordat we VMI daadwerkelijk geimplementeerd hebben	0% (0)	4% (1)	8% (2)	16% (4)	36% (9)	28% (7)	8% (2)	5.00
Wij hadden al voor het invoeren van VMI veel ervaring met verbeterinitiatieven in samenwerking met andere spelers in de keten	0% (0)	0% (0)	8% (2)	28% (7)	20% (5)	28% (7)	16% (4)	5.16
Mijn bedrijf is een voorloper in het initieren van verbeterprojecten binnen de keten	0% (0)	0% (0)	12% (3)	28% (7)	16% (4)	40% (10)	4% (1)	4.96

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Wij hadden al voor het invoeren van VMI veel ervaring in nauw samenwerken met deze klant	0% (0)	0% (0)	4% (1)	8% (2)	28% (7)	36% (9)	24% (6)	5.68
Ook wanneer het financieel minder goed gaat, houden we rekening met de voordelen voor de klant	0% (0)	4% (1)	4% (1)	16% (4)	28% (7)	44% (11)	4% (1)	5.16
Het optimaliseren van de keten is belangrijker dan het optimaliseren van eigen succes	0% (0)	4% (1)	8% (2)	24% (6)	8% (2)	40% (10)	16% (4)	5.20
						Total Respondents		25
						(skipped this question)		22

19. Hoeveel medewerkers heeft uw bedrijf?

		Response Percent	Response Total
1-20		4%	1
21-50		28%	7
51-150		28%	7
151-500		28%	7
Meer dan 500		12%	3
	Total Respondents		25
	(skipped this question)		22

20. Hoe hoog was de omzet van het afgelopen jaar ongeveer?

	View	Total Respondents	25
		(skipped this question)	22

21. In welke bedrijfstak opereert uw bedrijf?

		Response Percent	Response Total
Voedings- en genotsmiddelen indutrie		0%	0
Textiel en leder industrie		0%	0
Papier industrie en uitgeverijen en drukkerijen		0%	0

Aardolie industrie		4%	1
Chemische basisproducten industrie		8%	2
Chemische eindproducten industrie		0%	0
Rubber en kunststof industrie		4%	1
Basis metaal en metaalproducten industrie		28%	7
Machine industrie		20%	5
Transportmiddelen industrie		0%	0
Zorg en overige dienstverlening		0%	0
[View] Anders (namelijk)		36%	9
		Total Respondents	25
		(skipped this question)	22

8. Dit is het einde van de enquete, bedankt voor uw medewerking

22. Wilt u hier uw emailadres invullen indien u de managementsamenvatting wilt ontvangen.

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Appendix IX: Descriptives

Result	Customer (N=64)		Supplier (N=23)	
Item	Mean	S.D.	Mean	S.D.
Increasee in sales	4,560	0,906	4,43	0,945
Decrease in inventory costs	5,130	1,047	5,13	1,359
Increase in capacity planning	n/a		5,43	0,896
Decrease in forecast errors	4,69	0,990	4,43	1,273
Decrease of the bullwhip effect	4,66	0,946	4,91	1,276
Increase in customer focus	4,64	1,146	4,83	0,834
Better partnership	5,31	0,889	5,43	0,896
Increase in flexibility	5,19	1,022	5,57	0,945
Decrease in the number of stock outs	5,12	1,134	5,09	0,900
Decrease of transportation costs	4,67	1,070	5,13	1,180
Increase in service levels	5,33	1,009	5,78	0,902
Decrease of administration costs	5,00	1,155	5,04	1,107
Decrease of handling costs	4,78	1,119	5,04	1,186
Increase of utilization rate of the bottleneck	n/a		5,04	1,186

Information	Customer (N=64)		Supplier (N=23)	
Item	Mean	S.D.	Mean	S.D.
We inform trading partners in advance of changing needs	5,34	1,417	5,52	1,344
Our trading partners keep us fully informaed about issues that affect our business	4,56	1,355	4,83	1,370
Our trading partners share knowledge of core business processes with us	4,63	1,327	4,87	1,217
We and our trading partners exchange information that helps establishment of business planning	5,56	1,220	5,00	1,567
We and our trading partners keep each other informaed about events or changes that may affect the other partners	4,80	1,595	4,91	1,584
Information exchange is timely	4,95	1,350	4,83	1,267
Information exchange is accurate	4,92	1,429	4,39	1,305
Information exchange is complete	4,80	1,394	4,48	1,377
Information exchange is adequate	5,16	1,439	4,52	1,163
Information exchange is reliable	4,86	1,446	4,43	1,121

IT-system	Customer (N=64)		Supplier (N=23)	
Item	Mean	S.D.	Mean	S.D.
The communication system is well linked with existing systems	3,91	1,806	4,52	1,377
The number of conversions necessary, for the data to be adapted by the system of the trading partner is limited	4,06	1,435	4,39	1,373
The security of the communication system is fine	4,64	1,537	5,30	1,329
The communication system is sensitive to flaws	3,42	1,193	3,13	1,392
The communication system is easy to use and understand	4,30	1,388	5,04	1,147
We are satisfied with the communication system	4,37	1,558	5,09	1,240
We use the same communication system for all our trading partners	4,64	1,889	3,65	2,080
Our IT-systems are well linked to the IT-systems of the trading partner	3,61	1,658	4,83	1,302
Our information system is up-to-date	4,48	1,512	5,26	1,214
The information system of the trading partner is up-to-date	4,27	1,250	5,00	1,000
We regularly use new versions or features to keep our IT-system up-to-date	4,03	1,699	4,48	1,377
The planning system is easy to use	n/a		5,13	1,359

Relationship	Customer (N=64)		Supplier (N=23)	
Item	Mean	S.D.	Mean	S.D.
Compared to our ideal, we are very satisfied with the performance of this trading partner	4,94	1,082	5,22	0,998
All in all we are very satisfied with this supplier/customer	4,98	1,120	5,43	1,199
Our company is not completely satisfied with the performance of this supplier/customer (reversed scored)	4,39	1,518	3,65	1,668
With reference to our expectations we are very satisfied with this supplier/customer	4,86	1,111	5,22	1,204
We can rely on the supplier/customer handling critical information on our company confidentially	5,48	1,195	5,70	1,020
When we have an important requirement, we can depend on the suppliers'/customers' support	5,31	1,111	5,61	0,783
We are convinced that this supplier/customer performs its task professionally	4,92	1,349	4,74	1,484
The supplier/customer is not always honest with us (reversed score)	4,73	1,504	3,30	1,690
We can count on the supplier's/customer's promises made to our firm	5,19	1,233	5,00	1,446
We focus on long term goals in this relationship	5,39	1,149	6,30	0,882
We are willing to invest time and other resources into the relationship with this supplier/customer	5,36	1,173	6,09	0,793
We put the long term cooperation with this supplier/customer before our short term profit	4,94	1,402	5,78	1,014
We expand our business with this supplier in the future	4,69	1,125	5,83	1,193
We defend this supplier/customer when outsiders criticizes the company	4,66	1,130	6,00	0,853

Supply chain perspective	Customer (N=64)		Supplier (N=23)	
Item	Mean	S.D.	Mean	S.D.
VMI offers me more benfits than pitfalls	5,53	1,272	5,57	1,237
VMI offers us both the same amount of benefits	4,81	1,258	5,09	1,505
VMI offers the trading partner more benefits than pitfalls	5,23	1,218	5,91	0,848
When making important decisions our trading partner is concerned about our welfare	4,78	1,076	4,43	1,409
Optimizing the supply chain is more important than optimizing our own success	4,50	1,618	5,28	1,353
Even when things are financially rough, we keep the benfits of our trading partner in mind	4,53	1,228	5,32	0,818

Appendix X: Constructs validity

Result

		Customer		Supplier	
Items	Questions	Factor loading	Cronbach alpha	Factor loading	Cronbach alpha
	Increase in sales	0,652			
	Decrease of inventory costs	0,644		0,585	
	Increase in capacity planning (inappropriate for customers)			0,757	
	Decrease of forecast errors	0,634			
	Decrease of the bullwhip effect	0,568		0,564	
	Increase in customer focus	0,621			
	Increase in flexibility	0,628		0,877	
	Decrease of transport costs (dropped)				
	Decrease of handling costs (dropped)				
	Decrease of administration costs	0,525		0,676	
	Establishing a better relationship	0,772		0,715	
	Increase of the utilization rate of the bottleneck (inappropriate for customers)			0,653	
	Increase in service levels to the customer	0,761		0,640	
	Decrease in the number of stock outs	0,608	0,837	0,635	0,845

Information

		Customer		Supplier	
Items	Questions	Factor loading	Cronbach alpha	Factor loading	Cronbach alpha
information sharing	We inform trading partners in advance of changing needs (dropped)				
	Our trading partners keep us fully informed about issues that affect our business (dropped)				
	Our trading partners share knowledge of core business processes with us (dropped)				
	We and our trading partners exchange information that helps establishment of business planning	0,600			
	We and our trading partners keep each other informed about events or changes that may affect the other partners (dropped)				
information quality	Information exchange between our trading partners and us is timely	0,860		0,783	
	Information exchange between our trading partners and us is accurate.	0,875		0,767	
	Information exchange between our trading partners and us is complete	0,861			
	Information exchange between our trading partners and us is adequate	0,845		0,759	
	Information exchange between our trading partners and us is reliable	0,850	0,902	0,691	0,742

Resources

Items	Questions	Customer Factor loading	Customer Cronbach alpha	Supplier Factor loading	Supplier Cronbach alpha
Communication system	The communication system is well linked with existing systems	0,850		0,798	
	The number of conversions necessary, for the data to be adapted by the system of our supplier/customer is limited	0,715		0,572	
	The security of the communication system is fine	0,637		0,774	
	The communication system is sensitive to flaws			0,601	
	The communication system is easy to use and understand	0,743		0,595	
	We are satisfies with our communication system	0,807		0,870	
	We use the same communication systems for all suppliers/customers (dropped)				
IT-system	Our IT-systems are well linked to the IT-systems of our supplier/customer	0,894		0,783	
	Our information system is up-to-date	0,717		0,687	
	The information system used by our supplier/customer is up-to-date			0,714	
	We regularly use new versions or features to keep our IT-system up-to-date (dropped)				
Planning system	The planning system is easy to use (this question is irrelevant for customers and therefore not asked)		0,885	0,583	0,886

Relationship

Items	Questions	Customer		Supplier	
		Factor loading	Cronbach alpha	Factor loading	Cronbach alpha
satisfaction	Compared to our ideal, we are very satisfied with the performance of this supplier/customer	0,828			
	All in all we are very satisfied with this supplier/customer	0,841		0,853	
	Our company is not completely satisfied with the performance of this supplier/customer (reversed scored) (dropped)				
	With reference to our expectations we are very satisfied with this supplier/customer	0,845		0,657	
Trust	When making important decisions, the supplier/customer is concerned about our welfare (dropped)				
	We can rely on the supplier/customer handling critical information on our company confidentially (dropped)				
	When we have an important requirement, we can depend on the suppliers'/customers' support	0,812		0,757	
	We are convinced that this supplier/customer performs its task professionally			0,600	
	The supplier/customer is not always honest with us (reversed score) (dropped)				
	We can count on the supplier's/customer's promises made to our firm	0,680		0,721	
Commitment	We focus on long term goals in this relationship	0,753		0,629	
	We are willing to invest time and other resources into the relationship with this supplier/customer	0,655		0,689	
	We put the long term cooperation with this supplier/customer before our short term profit			0,691	
	We expand our business with this supplier in the future (this question is inappropriate for suppliers, and therefore not asked) (dropped)				
	We defend this supplier/customer when outsiders criticizes the company	0,590	0,888	0,775	0,862

Supply chain perspective

Items	Questions	Customer		Supplier	
		Factor loading	Cronbach alpha	Factor loading	Cronbach alpha
	VMI offers us both the same amount of benefits	0,677			
	Optimizing the supply chain is more important than optimizing our own success	0,575		0,836	
	Even when things are financially rough, we keep the benefits of our supplier/customer in mind	0,480		0,710	
	When making important decisions, the supplier/customer is concerned about our welfare	0,601		0,781	
	VMI offers me more benefits than pitfalls	0,781			
	VMI offers the supplier/customer more benefits than pitfalls	0,623	0,682		0,691

Appendix XI: Results of the statistical analysis supplier

Testing the hypotheses:

Table 5: Bivariate correlation matrix supplier

		result	information	ITsystem	planner	relationship	supplychainpers
result	Pearson Correlation	1	-,186	,433(*)	,439(*)	,431(*)	,193
	Sig. (2-tailed)		,396	,039	,036	,040	,378
	N	23	23	23	23	23	23
information	Pearson Correlation	-,186	1	,392	-,029	,219	,117
	Sig. (2-tailed)	,396		,064	,896	,315	,596
	N	23	23	23	23	23	23
ITsystem	Pearson Correlation	,433(*)	,392	1	,240	,326	,259
	Sig. (2-tailed)	,039	,064		,271	,128	,232
	N	23	23	23	23	23	23
planner	Pearson Correlation	,439(*)	-,029	,240	1	,037	-,033
	Sig. (2-tailed)	,036	,896	,271		,866	,881
	N	23	23	23	23	23	23
relationship	Pearson Correlation	,431(*)	,219	,326	,037	1	,683(**)
	Sig. (2-tailed)	,040	,315	,128	,866		,000
	N	23	23	23	23	23	23
supplychainpers	Pearson Correlation	,193	,117	,259	-,033	,683(**)	1
	Sig. (2-tailed)	,378	,596	,232	,881	,000	
	N	23	23	23	23	23	23

Non response bias test:

Table 6: Student t-test for the supplier

T-Test Relationship

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
V1	15	4,627	0,6431	0,1660
V9	6	4,933	0,7916	0,3232

One-Sample Test

	Test Value = 0				95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V1	27,865	14	0,000	4,6267	4,271	4,983
V9	15,265	5	0,000	4,9333	4,103	5,764

T-Test Result

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
V2	15	5,25	0,649	0,167
V10	6	5,39	1,051	0,429

One-Sample Test

	Test Value = 0				95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V2	31,355	14	0,000	5,251	4,89	5,61
V10	12,563	5	0,000	5,390	4,29	6,49

T-Test IT-systeem

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
V3	15	4,4000	0,90040	0,23248
V11	6	4,6667	0,94428	0,38550

One-Sample Test

	Test Value = 0				95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V3	18,926	14	0,000	4,40000	3,9014	4,8986
V11	12,105	5	0,000	4,66667	3,6757	5,6576

T-Test Planner

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
V4	15	5,6213	0,68836	0,17773
V12	6	5,46	1,080	0,441

One-Sample Test

	Test Value = 0				95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V4	31,628	14	0,000	5,62133	5,2401	6,0025
V12	12,390	5	0,000	5,463	4,33	6,60

T-Test Information

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
V5	15	2,5013	1,09010	0,28146
V13	6	3,6567	1,71423	0,69983

One-Sample Test

	Test Value = 0				95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V5	8,887	14	0,000	2,50133	1,8977	3,1050
V13	5,225	5	0,003	3,65667	1,8577	5,4556

Supply chain perspective

T-Test

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
V6	15	5,25	0,770	0,199
V14	6	4,45	1,312	0,535

One-Sample Test

	Test Value = 0				95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V6	26,419	14	0,000	5,253	4,83	5,68
V14	8,302	5	0,000	4,445	3,07	5,82

Testing for experience bias:

One-Sample Statistics result

	N	Mean	Std. Deviation	Std. Error Mean
V1	24	4,0833	1,25989	,25717
V9	20	4,4725	1,11357	,24900

	Test Value = 0				95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V1	15,878	23	,000	4,08333	3,5513	4,6153
V9	17,962	19	,000	4,47250	3,9513	4,9937

One-Sample Statistics Indormation

	N	Mean	Std. Deviation	Std. Error Mean
V2	24	4,996	,7298	,1490
V10	20	4,980	,5863	,1311

One-Sample Test

| | Test Value = 0 | | | | | |
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
					Lower	Upper
V2	33,536	23	,000	4,9958	4,688	5,304
V10	37,984	19	,000	4,9800	4,706	5,254

One-Sample Statistics IT-system

	N	Mean	Std. Deviation	Std. Error Mean
V3	24	2,9483	,57296	,11696
V11	20	3,1590	,75635	,16913

One-Sample Test

| | Test Value = 0 | | | | | |
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
					Lower	Upper
V3	25,209	23	,000	2,94833	2,7064	3,1903
V11	18,678	19	,000	3,15900	2,8050	3,5130

One-Sample Statistics planner

	N	Mean	Std. Deviation	Std. Error Mean
V4	24	4,396	,8305	,1695
V12	20	4,7500	1,21936	,27266

One-Sample Test

| | Test Value = 0 | | | | | |
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
					Lower	Upper
V4	25,930	23	,000	4,3958	4,045	4,747
V12	17,421	19	,000	4,75000	4,1793	5,3207

One-Sample Statistics relationship

	N	Mean	Std. Deviation	Std. Error Mean
V5	24	4,986	1,2593	,2571
V13	20	4,9595	1,19799	,26788

One-Sample Test

	Test Value = 0				95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V5	19,396	23	,000	4,9858	4,454	5,518
V13	18,514	19	,000	4,95950	4,3988	5,5202

One-Sample Statistics supply chain perspective

	N	Mean	Std. Deviation	Std. Error Mean
V6	24	4,8821	,94036	,19195
V14	20	5,2025	,83686	,18713

One-Sample Test

	Test Value = 0				95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V6	25,434	23	,000	4,88208	4,4850	5,2792
V14	27,802	19	,000	5,20250	4,8108	5,5942

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Appendix XII: Results of the statistical analysis customer

<u>Testing for hypotheses:</u>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
2	(Constant)	2,465	,444		5,550	,000
	relationship	,349	,092	,432	3,812	,000
	it-systeem	,168	,060	,318	2,807	,007

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
2	supply perspective	,068(b)	,572	,569	,078	,796
	information	,109(b)	,881	,382	,119	,729

<u>Testing for non response bias</u>

T-Test information

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
V1	26	4,3846	1,22932	0,24109
V9	15	4,0013	0,93082	0,24034

One-Sample Test

	Test Value = 0					
			Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	t	df			Lower	Upper
V1	18,187	25	0,000	4,38462	3,8881	4,8811
V9	16,649	14	0,000	4,00133	3,4859	4,5168

T-Test Relationship

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
V2	26	4,992	0,6536	0,1282
V10	15	4,980	0,7083	0,1829

One-Sample Test

	Test Value = 0			
	t	df	Sig. (2-tailed)	Mean Difference

95% Confidence
Interval of the

					Difference	
					Lower	Upper
V2	38,950	25	0,000	4,9923	4,728	5,256
V10	27,230	14	0,000	4,9800	4,588	5,372

T-Test IT-system

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
V3	26	3,0708	0,59174	0,11605
V11	15	3,1527	0,85013	0,21950

One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V3	26,461	25	0,000	3,07077	2,8318	3,3098
V11	14,363	14	0,000	3,15267	2,6819	3,6235

T-Test Result

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
V4	26	4,5519	0,83660	0,16407
V12	15	4,4200	1,10499	0,28531

One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V4	27,744	25	0,000	4,55192	4,2140	4,8898
V12	15,492	14	0,000	4,42000	3,8081	5,0319

T-Test Supply chain perspective

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
V5	26	5,0258	1,18270	0,23195
V13	15	5,2887	0,86750	0,22399

One-Sample Test

	Test Value = 0

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
V5	21,668	25	0,000	5,02577	4,5481	5,5035
V13	23,611	14	0,000	5,28867	4,8083	5,7691

Testing for experience bias:

One-Sample Statistics result

	N	Mean	Std. Deviation	Std. Error Mean
V1	9	4,756	,7108	,2369
V9	12	4,9075	,69836	,20160

One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V1	20,070	8	,000	4,7556	4,209	5,302
V9	24,343	11	,000	4,90750	4,4638	5,3512

One-Sample Statistics Information

	N	Mean	Std. Deviation	Std. Error Mean
V2	9	5,51	,494	,165
V10	12	4,5625	,93008	,26849

One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V2	33,421	8	,000	5,506	5,13	5,89
V10	16,993	11	,000	4,56250	3,9716	5,1534

One-Sample Statistics Resources

	N	Mean	Std. Deviation	Std. Error Mean
V3	9	4,5833	1,03078	,34359
V11	12	5,4625	,75015	,21655

One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V3	13,339	8	,000	4,58333	3,7910	5,3757
V11	25,225	11	,000	5,46250	4,9859	5,9391

One-Sample Statistics relationship

	N	Mean	Std. Deviation	Std. Error Mean
V4	9	5,6167	,73877	,24626
V12	12	2,6050	1,33454	,38525

One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V4	22,808	8	,000	5,61667	5,0488	6,1845
V12	6,762	11	,000	2,60500	1,7571	3,4529

One-Sample Statistics supply chain perspective

	N	Mean	Std. Deviation	Std. Error Mean
V5	9	3,0222	1,50744	,50248
V13	12	4,9642	,93697	,27048

One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
V5	6,015	8	,000	3,02222	1,8635	4,1809
V13	18,353	11	,000	4,96417	4,3688	5,5595