



Mass customisation at TNT post pakkettservice

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Preface

This thesis is the conclusion of my bachelor study Technische bedrijfskunde at the University of Twente in Enschede. In this assignment we explore the possibilities of mass customisation and its use for TNT post pakketservice. This research took place from May 2010 until September 2010.

This study has benefited from the help and support of some people. In this preface I would like to thank some of them in particular. I would like to thank Wilbert Prinssen of TNT post pakketservice for helping and coaching me during my research, he inspired me to make this report to what it is now. I also want to thank Jos van Hillegersberg and Holger Schiele for their help and guidance in this process. They all provided me with great support and feedback, which resulted in a study I am proud of to present to the reader. Finally I want to thank my girlfriend Miriam, for the moral help me and support during this research.

Enschede, 29 October 2010

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Management summary (Dutch)

In de afgelopen periode is op basis van een literatuuronderzoek, drie casestudies en een workshop dit rapport tot stand gekomen. In het verkennende literatuuronderzoek zijn diverse theorieën naar voren gekomen. Wat opvalt is dat het onderzoek naar mass customisation nog in een relatief beginnend stadium is. Dit komt vooral omdat recente ontwikkelingen op het gebied van CRM en internet het goed uitvoeren van een mass customisation strategie nog niet lang mogelijk maken.

De discussie over de definitie van mass customisation verdeelt zich in twee kampen, een op de praktijk gebaseerde en een academisch stroming. De gekozen definitie behandelt drie kanten van het mass customisation verhaal; de diversiteit van het aanbod, de relatief lage kosten en het langdurig klantencontact. Over de diversiteit is een kanttekening te plaatsen aangezien regelmatig het aanbieden van zo veel mogelijk opties gezien wordt als mass customisation. Dit is niet waar het om draait, het gaat erom in staat te zijn de klant een optie te leveren die zo goed mogelijk aan zijn wensen voldoet.

Het Duray framework helpt bij het categoriseren van mass customisation organisaties. Het is gebaseerd op het klant-order-ontkoppelpunt en een typologie voor modularisatiemethoden. Uit een vervolgstudie blijkt dat financiële prestaties het hoogst zijn wanneer de organisatie een vorm van mass customisation aanneemt die niet te ver van haar huidige ontwerp af ligt.

Het klantenrelatie aspect is verwoord door one-to-one marketing dat er vanuit gaat dat iedere klant eigen wensen heeft waar rekening mee gehouden kan worden. Dit behelst vier stappen waarbij eerst de klant geïdentificeerd wordt, om met de opgedane data een differentiatie te maken en daarna de interactie aan te gaan met deze klant. Tot slot dient de organisatie aangepast te worden.

Gekozen is om drie cases aan de hand van de definitie, het Duray framework, one-to-one marketing, de IT inrichting, de voor- en de nadelen te vergelijken. Om de vertaling naar de situatie van TPP goed te kunnen maken is een workshop gehouden bij TPP. Met deze aanvulling zijn de volgende adviezen opgesteld.

Het meest dringende advies aan TPP is om te beginnen met het verzamelen van data over klanten. Op basis van de resultaten van een vragenlijst blijkt dat hier het grootste gat zit ten opzichte van een one-to-one marketing uitvoering zit.

Stap voor stap uitbreiden van het mass customisation portfolio is het tweede advies. Naast dat het inrichten en implementeren van mass customisation een grote klus is, zal het ook veel van het aanpassingsvermogen vergen van zowel TPP als haar klanten. Het is belangrijk om van de klanten te leren en dit als input te gebruiken voor verbeteringen.

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List of abbreviations

B2B	Business to business
B2C	Business to customer
C2B	Customer to business
C2C	Customer to customer
CODP	Customer order decoupling point
CRM	Customer relationship management (system)
CtO	Configure to order
ICT	Information and communication technologies
MC	Mass customisation
SOA	Service oriented architecture
TPP	TNT post pakketservice
VOD	Video on demand

1. TNT post pakketservice

TNT has emerged in 1996 by a merger between Australian TNT and Royal Dutch Mail (PTT post). PTT was a state owned organization originated in 1799 and responsible for mail, telephone and telegraph services. PTT have been privatised in 1989 and PTT was split in 1998 in a telecom company (KPN) and the mail company (PTT post). In 2002 the name was changed to TPG (TNT post group), eventually the merger was called TNT as this had more international potential.

TNT post pakketservice (TPP) is part of TNT post which is in its turn is part of TNT holding (See figure 1). TPP is responsible for delivering parcels not suitable for delivery in the standard postbox. TPP differs from TNT express (a full daughter of TNT holding) as it does not work with guaranteed time delivery and focusses on the lower (mass) side of the market.

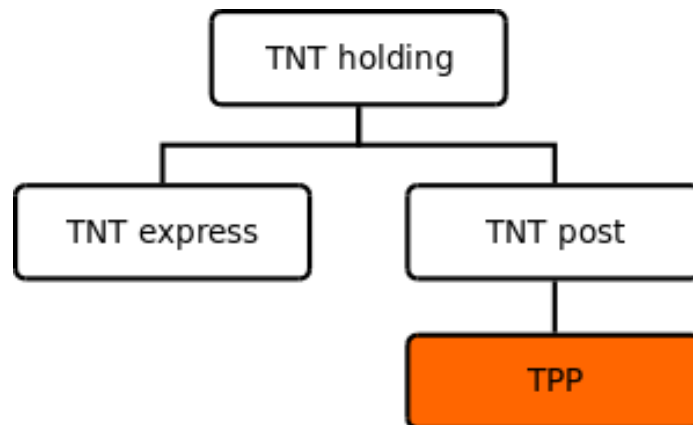


Figure 1: Global organization chart (source: author's own illustration)

In 2009 TNT reported a turnover of 10,4 billion dollar and a profit of 648 million (*TNT Annual report 2009, 2010*). TNT express had in 2008 more than 70 000 FTE employed, TNT post 43 000 FTE. Though TNT express is responsible for more than 50 percent of the returns, TNT post delivers most of the profit (“TNT fact sheet 2008,” 2009).

TPP has a large network of retail points where consumers have access to the services of TPP. These points were mostly situated in post-offices, but after closing most of the post-offices, currently they are situated in stores like supermarket Albert Heijn. Next to these retail points TPP has a collect service called Parcy. Parcy is a service that lets customers print their own shipping labels.

TPP makes a distinction between consumer clients and contract clients who have a contract with TPP en sent at least 100 parcels per year. For these clients TPP has written special software; Parcelware. Parcelware has two flavours, web and desktop. For larger clients it is possible to integrate it into their own ERP and CRM packages. TPP has a track and trace service that gives the sender and receiver information about where in the process the parcel has been.

With the rise of e-commerce (17% growth between 2008 and 2009) TPP has grown on its waves. E-commerce has created a large volume growth of the parcel market next to that the number of potential clients has grown exponential. In the Netherlands alone there are more than 20.000 web shops active in 2009 (*Thuiswinkel marktmonitor 2009, 2010*).

Competitors in the B2C segment of TPP are DHL, GLS, Selectvracht and several locale parties. When it is about B2B TPP has a few very large competitors with full TNT daughter; TNT express and UPS. In the C2B and C2C competitors depend on the service asked for.

The process of TPP is a three step one. Simplistic it is collecting, sorting and distributing (see figure 2). More detailed it contains preparing the parcel with a label that contains all data needed for TPP to deliver it at the right address with the right services. After the collection the parcels go to one of the three sorting centres depending on the geographical division made by TPP. Sorting goes in two stages, in the first stage the parcels

are sorted to which sorting centre they should go for the second stage which sorts the parcels on postal code. The containers sorted on postal code go to distribution centres and there these containers are loaded in the vans for the last step, the delivering of the parcel at the address. Of course it is not always possible to deliver the parcel within one attempt, after two attempts the parcel is either returned to sender or delivered at a nearby retail point. Daily TPP delivers around 400.000 parcels. At this moment TPP has one depot which is a combination of a sorting and a distribution centre. In the future TPP will replace all its sorting and distribution centres by depots. Because TPP works more and more with subcontractors for its distribution TPP becomes more a coordinator for its logistical services than a logistical company.



Figure 2: High level process (source: author's own illustration)

Problem

Due to the rise of internet and e-commerce the situation of TPP has changed. Also the competition on the mail and parcel market is higher due to liberalisation. Expansion in the Netherlands is difficult because the NMA (The Netherlands Competition Authority) does not allow TPP to lower their price because of their market share. Expansion has to be international. TPP has a good starting point as it has experience with an open market. On the other side TPP can't afford to lean back, especially due to the changing market. Customer expectations are higher than ten years back. TPP wants to serve these clients as good as possible but it has to keep in mind they are a bulk logistic organization and changes in the operational process are slow and have big impacts and large risks. Also the operational process has cost leadership as goal. Giving added value to the customers comes at a cost, the customer must be prepared to pay that price to make it worthwhile for TPP.

Research question

In order to tackle the problem TPP has set its eye to mass customisation (MC). As an exploration of the subject the following, broad research question is formed:

How can mass customisation principles help TPP?

Because of the broad scope of the research question it raises more questions. Though one of these follow-up question should be what are the wishes of the customers. This question is out of scope for this thesis and should be answered somewhere else. In order to structure the answering of the research question three sub question will collectively answer the main research question.

Sub questions

1. Which possibilities of mass customisation are suggested by literature?
2. Which solutions of mass customisation are used in other sectors?
3. What is the current situation at TPP regarding mass customisation?

Research method

The first sub question requires a literature study. As a first step a literature search needs to be done as exploration of the MC field. Broad search queries will be used to get a good understanding of this research area. In specific areas that are more of interest for this paper specific literature search will be done. As a result of the literature search a framework needs to be developed.

The second sub question will be answered by doing a case study. Searching for valuable cases will be the first step in this process. Next these cases need to be fitted into the framework to see how they relate to each other. The last step is to distil the lessons for TPP out of the literature and cases. Next to that input from a workshop will also be used to bring up different alternatives for TPP. To conclude conclusions will be given with recommendations for TPP.

2. Literature

This chapter first gives MC a place in the history of manufacturing. Next the key concepts are explained and choose a definition to work with. A special section is for the relationship between service organisations and MC. Benefits and challenges of MC are handled in the following sections. A short overview of the research area is given next. As MC is linked with many different research areas, like marketing, IT, and innovation will briefly be touched upon. The last section is about the framework that will be used with the cases.

Mass customisation history

During the industrialization era, craftsmanship was replaced by industrial production and after Ford had produced the T-model, the mass production era was born. Famous is the quote from Henry Ford his autobiography: “Any customer can have a car painted any colour that he wants so long as it is black”. This quote is typical for mass production. Most important in mass production is efficiency. In the design of a product also the design of the manufacturing process needs to be considered as this will determine the efficiency. Efficiency is in every aspect of the process. Though the effect was that every company created more or less the same one-size-fits-all product. Especially when also transport became cheaper and faster and markets became global.

The mass production had also an effect on marketing. Not only production should be efficient also marketing needs to be as efficient as possible. Mass marketing focusses on reaching as many potential customers as possible via mass media like television. Also here it meant a one-size-fits-all approach

From the 1950s till the 2000s customers got more demanding. First price was the main reason for purchase, after that they wanted also a high quality. Next also variety and speed were added. The focus of strategies shifted with these market developments as the old ones were not sufficient (Yassine, Kim, Roemer, & Holweg, 2004). The focus shifted from a process orientation to a product orientation to a customer orientation.

The trend is toward individualization in every possible way. This can be explained by a growing number of single person households, a orientation towards design and being aware of quality and functionality that consumers want (Piller & Müller, 2004). Also due to the fact that customers have better and easier access to information, customers become more cost-conscious and demanding (Kratohvil & Carson, 2005). Individual customers have become more important for companies to focus on.

Mass customisation reads as a paradox. Especially with the Porter's generic strategies in mind. Not choosing between differentiation (customisation) and cost leadership (mass production) has been called “a recipe for below-average performance” (Porter, 1985). Still Pine argues that it is possible to have differentiation and low prices at the same time. These two viewpoints seem to conflict. This conflict exists because of the different viewpoint, Porter looks at the world around him at that time, Pine looks ahead and saw some organisations successful balancing between differentiation and cost-consciousness. If MC is not done properly it will lead to a below-average performance because of being stuck in the middle as Porter calls it. People do not buy expensive products that do not appeal to their needs. Both also call for a clear choice and dedication to that choice, whether that is differentiation, cost leadership, focus or using MC to get a trade-off between these strategies. The same holds for the value strategies of Treacy and Wiersema (1997). MC tries to combine all three strategies; customer intimacy, operational excellence and product leadership. Though MC scholars do remark that a organisation that is designed for cost leadership or operational excellence will most likely outperform a MC organisation in the short run.

The term mass customisation has been first used by Stan Davis in his book *Future Perfect* (1987). Joseph Pine II has made the concept popular with his book *Mass customisation - The New Frontier in Business Competition* (1993). As with mass production the automotive industry also was one of the first to embrace this mass concept. One of the reasons why Pine's book generated more popularity than Davis' had done is that it gave a more practical advice how managers should use MC in day-to-day practice.

Internet has been a great enabler of MC. Not only has it lowered the transaction costs, it also created a low

barrier meeting place for customers and organizations. Since the rise of the internet MC use has also risen, because it reduced practical issues of handling complexity (Piller, Moeslein, & Stotko, 2004).

Definitions

Although MC is around for almost three decades there is still not a uniform definition accepted by all scholars. Pine has produced a standard work in this research area. Due to implementation issues, like data management, it remained difficult to give perfect examples of MC in practice in the 90s. Because of the lack of perfect examples there were two streams, the papers originated from practice that gave a more pragmatic twist to the definitions and the academic school describing ideal types. Below are three different definitions that are most influential in the research area.

Davis, when first talking about MC, describes the phenomena when “the same number of customers can be reached as in mass markets of industrial economy, and simultaneously they can be treated individually as in the customized markets of pre-industrial economies” (1987). Knowing that MC was a future concept Davis sketched an ideal type. Pine defines the goal of MC in 1993 as providing enough variety in products and services so that nearly every one finds exactly what they want at a reasonable price. Pine clearly is much more pragmatic as Davis which is shown by the words “enough” and “reasonable”.

Piller and Müller state that MC consists of three options; “Mass customisation means the production of goods and services for a (relatively) large market, which meet exactly the needs of each individual customer with regard to certain product characteristics (differentiation option), at costs roughly corresponding to those of standard mass-produced goods (cost option). The information collected during the process of individualization serves to build up a lasting individual relationship with each customer (relationship option).” (Piller & Müller, 2004). Pine defines in 2007 mass customisation as “the low-cost, high-volume, efficient production of individually customized offerings” (Piller, 2007).

The definition used in this thesis is the one of Piller and Müller, though meeting exactly the needs is not correct as that would exclude forms of MC. It is also important to point out the quote of Pine that “customers don't want choice. They want exactly, what they need” (Pine, 1998, p. 14). With this quote Pine disqualifies his own definition of 1993. Though knowing what they need does not mean that exactly that should be delivered. With these remarks we use the definition of Piller and Müller.

Concepts

There is no standard MC implementation. Gilmore and Pine define four different types of MC implementations; collaborative customisation, adaptive customisation, transparent customisation, cosmetic customisation (1997). These types have a different approach to the way to customize the product. Collaborative customizers conduct a dialogue with individual customers to help them articulate their needs, to identify the precise offering that fulfils those needs, and to make customized products for them. Adaptive customizers offer one standard, but customizable, product that is designed so that users can alter it themselves. Cosmetic customizers present a standard product differently to different customers. Transparent customizers provide individual customers with unique goods or services without letting them know explicitly that those products and services have been customized for them (Gilmore & Pine, 1997).

Customer integration is one of the important aspects of MC as seen in the definition. It is defined as a form of industrial value creation where 'the consumers take part in activities and processes which used to be seen as the domain of the companies' (Wikström, 1996).

Modularity is an other key aspect on which the success of MC is based. Ulrich and Tung (1991) developed a typology of modularity with six different forms (see figure 3 for short explanations). Depending on how to reuse the modules these types can be used in combination with each other.

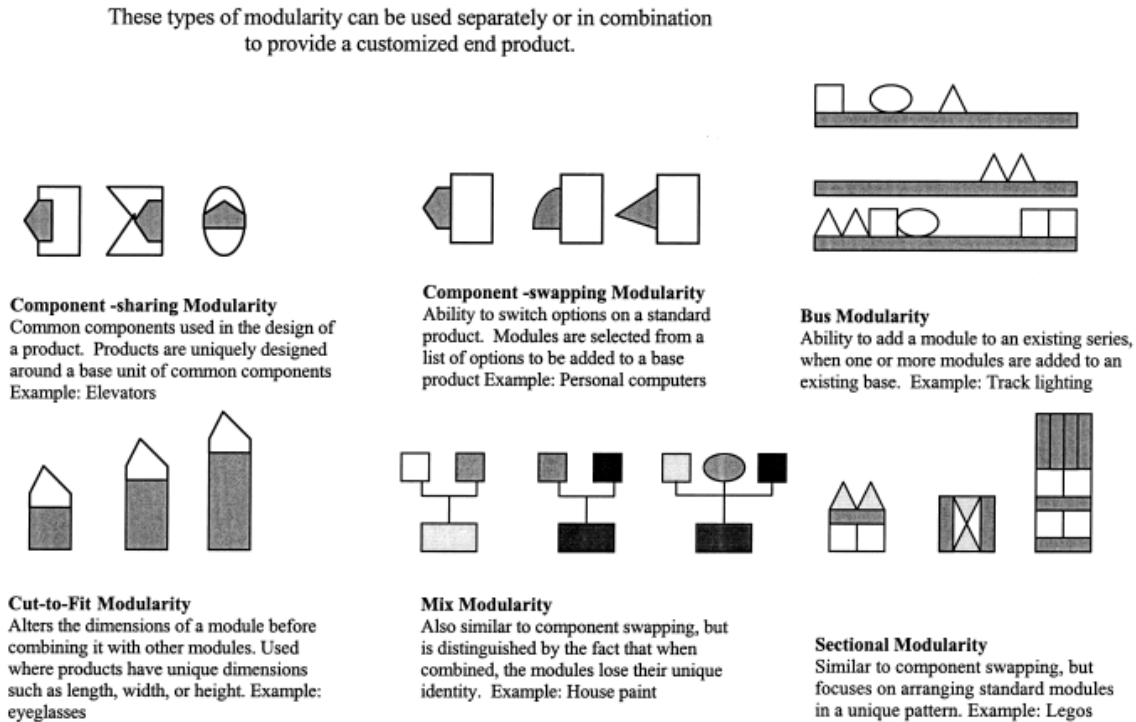


Figure 3: Modularity types (Ulrich & Tung, 1991)

Based on the typology of Ulrich and Tung, Duray et al. (2000) made a typology of MC configurations. She combined the typology with the point of customer involvement. Duray identified four MC configurations; fabricators, involvers, modularizers and assemblers. Fabricators and involvers have the customers involved early in the production cycle, modularizers and assemblers only involve them during the assembly or use. Fabricators and modularizers use modularity types that are applied in the beginning of the production cycle, like component sharing and cut-to-fit. Involvers and assemblers use the other modularity types that are applied in the assembly and use phase of the production cycle. Most mass production originated organisations will tend to MC configurations that are closer to mass production (assemblers and modularizers) and visa versa with customized originated organisations. When organisations have their previous production strategy in tact, the choice for a matching MC configuration will have a higher financial performance (Duray, 2002).

An other view is proposed by Mintzberg. Mintzberg (1988) defined three forms of customisation; pure, tailored and standardized. He already linked customer involvement to the customisation process. While in pure customisation the customer is needed throughout the complete process and is therefore not really suitable for MC, the other two are. Tailored customisation involves the customer from the fabrication phase in the production process and standardized customisation from the assembly.

Kratochvíl and Carson see a trend from assemble to order and engineer to order towards configure to order. They state that every complex product or service can be made using one of these concepts (2005). Assemble to order implies that the variance is kept small to keep the price as low as possible. Engineer to order does not need to keep the price that low, but it has difficulties estimating cost and time to produce. Configure to order (CtO) is the MC option. CtO serves the middle between luxury and simple low-price products.

The framework as proposed by Duray (2000) can be used to categorise MC manufacturers. Though this framework is build upon the production cycle it is also useful for service oriented organisations. Duray looks at the point customers are involved and the type of modularity. As MC is between mass production and customisation it can lean towards both sides. Duray concludes that more successful organisations tend to pick an MC solution that looks like their old process.

There is no discussion that for the design of MC the placement of the customer order decoupling point

(CODP) is important. Duray picks four points along the production process. Traditional is the engineering-to-order, manufacture-to-order, assemble-to-order, and make-to-stock. Rudberg and Wikner (2004) has an overview of the different options as suggested by Duray (2002; 2000), Gilmore and Pine (1997), Lampel and Minzberg (1996), and Da Silva (2001). They separate the engineering and production part as they can have separate CODPs. As services are iterative they do not have a clear stepwise process it is much harder to pick a point from where the customer is decoupled from the process.

MC and services

Though many think of MC as a strategy for manufacturing companies only, several companies have shown that this is far from true. Products make MC more tangible and that is why MC might give the impression that MC is about products. Services are not yet as standardized as products were, because most often service is listening to your customer and providing him or her with the service he/she asked for. Exactly that is what MC is delivering except that it take into account that it needs to be done in a efficient way. Service automation is one way of doing this and software products play an important role in this automation to handle the complexity.

Customer needs and a dynamic environment are also drivers for organisations to change to MC in service organisations. What is more important in service delivery than with product manufacturing is the human factor. The human factor is vital to the success of MC as they not only have to understand the concept of MC, they also need to have the skills for its implementation. IT is a critical success factor for implementation of MC in a service organisation (Peters & Saidin, 2000).

Papathanassiou (2004) made a recommendation for the service sector in the UK, which is based upon studies on the financial sector: (1) develop business models that reflect the interdependencies between services and resources such as IT applications, employees' knowledge, customers' requirements and behaviour, (2) develop a modular IT applications architecture, with each IT module supporting product and services' modules, (3) this will increase the degree of reusability and flexibility of technological capabilities and it will facilitate the development of economies of scale in software production and the support of services production and management, (4) carry out process re-engineering studies so that business processes support the integration of the organisations and their customers and take into consideration issues such as flexibility and reusability which are needed for implementing MC. Particular important business areas are those related with the new product development, (5) understand and communicate the potential of the internet for MC. Innovation should be encouraged, which coupled with the process re-engineering initiatives will yield highly valuable application that benefit from the support of the employees, the management and the customers, (6) prepare customers to support MC, so that organisations will gain their support for collaboration. Identification and encouragement of groups of individuals who would be willing to participate in MC development initiatives, (7) facilitate planning for MC that would also engage IS, business staff and key employees, (8) organise employees' training about the concept of MC its implementation and the role of the Internet technologies, and (9) organisations should facilitate the reconfiguration of their resources, by encouraging for example employees to participate in the management of groups of related services.

Benefits

One of the benefits is economies of integration. Piller et al. (2004) introduces economies of integration as counterpart of economies of scale. They find three sources of economies of integration; (1) on postponing some activities until an order is placed, (2) on more precise information about market demands and (3) on the ability to increase loyalty by directly interacting with each customer.

McCarthy (2004) gives several reasons why MC can be used in modern organisations; (1) customers and their expectations have shifted from a broad base of uniformity and sameness to a network of niche and heterogeneous market requirements, (2) fashions and customer preferences shift literally overnight, and product life cycles have become significantly shorter, (3) assemble to order and the construction of product families are strategies that offer options and differentiation, whilst maintaining performance in terms of cost, quality and delivery, (4) understanding and satisfying specific customer expectations enables a company to

achieve a better strategic fit with customers' long-term needs, and (5) the ability to forecast and understand market opportunities is increased from the improved and frequent communication with customers

Kratochvíl and Carson have found four benefits from MC; lower costs, minimization of losses, increased loyalty and life-cycle revenue, and easier service and upgrade (2005). Though lower costs seems not in line with what mass production stands for, still this lower costs is seen not for a single product, but for the complete live-cycle of a product category. By reusing components costs are reduced for new versions or other lines, this overlaps partly with the easier upgrade.

Challenges

MC does not come for free. It adds complexity to the system, internally as well as externally. Internal complexity is caused by the product variety but this complexity is not seen by the customer where external complexity is. External complexity arises because of (1) the limited information processing capacity of humans, (2) the lack of customer knowledge of the product, and (3) the customer ignorance about his individual needs (Blecker & Abdelkafi, 2006). External complexity may cause that customers are overflowed with information and not able to make their choice. This is called phenomena mass confusion by Piller.

Piller et al. (2004) point out that the promise of MC was not successful put into practice until CRM systems were mature enough to cope with the customer information. With CRM systems in place the added internal complexity of MC was handled. Though it still will be a challenge to configure a CRM system in such a way that the organization takes full advantage of MC.

Jiao et al. (2003) looked at three technical challenges; maximizing reusability, product platform and integrated product life-cycle. They state the essence of MC lies in the product and service developers' ability to perceive and capture latent market niches and subsequently to develop technical capabilities to meet the diverse needs of target customers. Which leads to three requirements; time-to-market (quick responsiveness), variety (customisation), and economy of scale (mass efficiency)

MacCarthy and Brabazon see the biggest challenge in putting MC in practice. In the first place they show in their research that there is not one solution for implementing MC as every situation is unique. The second challenge is the effective order taking and fulfilment processes (2003).

Piller and Müller (2004) first sum the drawbacks and limits of MC, as named by other papers; investment costs, production planning and control, product architectures and the qualification of workers after they address their own which returns to the returns to the main reason to turn to MC in the first place. In their view it is not useful to implement MC at all when the customer is not willing to pay the premium price for meeting their desires and wishes. In the research conducted by Piller and Müller they show that in the footwear market there is a great potential for MC. One remarkable thing they note is that when asking for that demand with a seven-point Likert scale they got mostly extreme answers, while most these type of questions tend to regress to the middle. Piller and Müller think part of this is due to poor knowledge of the interviewees of MC and their needs, so education of the customers is needed.

Many scholars point out that MC is not about having your customers overloaded with choices (Pine, Peppers, & Rogers, 1995). Having to spend much time in choosing is not what customers want and that is what MC is about; providing a solution that fits the customer best. Though this is what scholars often see when looking at the MC implementations in practice.

Research on MC

Kumar et al. (2007) analysed 1124 MC publications that had been published in journals and magazines since 1987, when the term MC was first used by Davis. They show that MC research has gone through three stages already. First slow or incubation from 1987 till 1992, after that with the publication of Pine's book exponential from 1993 till 2003. From 2003 till 2005 it stabilized and matured. Kumar et al state that MC diffused very well as articles were published in 742 different journals. When a topic is interesting, other fields will claim part of it, so the topic will be covered in journals outside of the original field. This can be seen in the MC field where only 23% of the articles is published in the top ten journals. Though Kumar et al.

state that the MC field is not yet devolving, they have only their own belief that answers that question with a no.

Blecker states that there is a lack of research concerning the effective implementation of MC in practice (2006). This hiatus will most likely be the effect of MC being relatively new and only recent technological developments make effective use of MC possible.

MC does not stand on its own, there are several linked research fields within marketing, innovation, and production. Because MC needs a different mindset in general this mindset needs to be translated in those areas where MC impacts most. Agile manufacturing, focused factories, lean manufacturing, customer driven manufacturing, flexibility, one-of-a-kind manufacturing and customer relationship management (Jiao et al., 2003; Piller et al., 2004) are related research areas as they all want to provide ways of enabling companies to increase cost efficiency continuously along the value chain while simultaneously increasing the ability to react to changing customers' needs stemming from heterogeneous market demands.

When having an intimate relation with your customer, they can be a good source for innovative ideas. Plugging in to this source takes one step further than MC and is called open innovation. Chesbrough defines open innovation as a process where firms commercialize external (as well as internal) ideas by deploying outside (as well as in-house) pathways to the market (2003). Open innovation will be out of scope for this thesis, but might be an opportunity after implementing an MC solution.

IT as enabler

MC is only possible if customer integration and co-creation processes are supported by adequate systems being able to reduce the high transaction costs resulting from deep customer-firm interaction (Duray, 2002). Most important in reducing the transaction costs is the internet.

Especially customer relationship management systems (CRM) is useful in MC to treat different customers differently (Peppers, Rogers, & Dorf, 1999). With CRM systems it is possible to store all interactions with customers and make use of them.

Also configurators are one of the keys to useful MC as they give the sales force access to business rules and all the options the organisation has within a few clicks (Kratohvil & Carson, 2005). Configurators reduce the internal complexity

Not only the application of IT, but also its architecture can make IT an enabler for MC. Service oriented architectures (SOA) make possible that organisations can reorganise its process and not having to rewrite complete programs.

One-to-one marketing

As MC delivers not a mass product it needs a different marketing strategy. And as MC focusses on satisfying the needs of this customer marketing becomes not a one way communication, but more a dialogue.

Peppers, Rogers and Dorf give managers a guide in their HBR tool kit (1999). They identify four steps that should be taken to get started; identify your customer, differentiate your customer, interacting with your customer, and customize your enterprise behaviour. Pepper et. al. show the issues to over think before getting started like having an IT department that is not able to handle one-to-one marketing and the organizational puzzle. Also they give an attractive list of possible positive outcomes; increased cross-selling, reduced customer attrition, higher levels of customer satisfaction, and reduced transaction cost and faster cycle times. One of the key principles they state is that implementation should take multiple steps, not only the ones they identified, but also gradually scaling up.

Evaluation framework

A structured way to evaluate the cases is needed. The different theories that have been discussed above will be used. This combination of evaluation factors will result in a short summing up of the findings shown in a table. At the end of every case this table will be elaborated upon.

As the definition of MC is still debated, the definition used within the cases will be looked after. Especially the fact if MC delivers them only more variety or really gives their customers what they need. The one-to-one marketing approach of Pepper, Rogers and Dorf will be the guideline to compare the cases in the marketing area. Their steps will be compared with how the organisations introduced their MC solution. The way how the organisations constructed their MC solutions will be evaluated with the typology of Ulrich and Tung. Also the client order decoupling point will be evaluated. Combining both of these factors will fit in the framework of Duray. As IT infrastructure plays an important role in MC also this aspect will be touched upon. Depending on how heavily the MC solution depends on IT it can be elaborated more. The use of information from systems like CRMs will be one of the focus parts. The results of the projects will be evaluated and the outcome will be divided into benefits and challenges of the projects.

Theory	Aspects
Duray	Differentiation, cost, and relationship option
Definition	Identify, differentiate, interacting, and customize behaviour
One-to-one marketing	Fabricators/involvers/modularizers/ assemblers
IT	Configurator, CRM

Table 1: Framework summary

3. Cases

In total 37 cases were evaluated on usefulness (see appendix 1 for a full list). The majority of the evaluated cases involved manufacturing organisations and not the preferred service organizations. The quality of the cases differed from small descriptions without a case specific evaluation of the introduced model and special issues with well documented cases. Three cases are selected for further inspection; Miadidas, Expedia and T-online. After introducing the three cases the fourth section will summarize how the cases fit the framework.

Miadidas

Founded in 1924 by the brothers Dassler¹ in Germany Adidas grew in fast pace as a sports brand and has the largest market share after Nike in the athlete shoe industry (Moser, Muller, & Piller, 2006). Though originally a sports equipment producer also apparels, fashion shoes and accessories are part of the Adidas branch. Adidas is now in essence a marketing organization rather than a producer. All the large brands have their shoes produced in Asia and rely on their partners heavily.

Moser et al. identify three challenges in the athlete shoe industry which stimulated the development of MC in the industry; (1) blurring of market segments, (2) technological innovation, and (3) growing product variety. Most large brands have in some way an MC program, next to that some start-ups offered MC shoes on-line (Moser et al., 2006; Piller et al., 2004; Sievanen & Peltonen, 2006). Miadidas (my individual Adidas) is the MC concept of Adidas for shoes. Moser points out that only Miadidas serves three identified aspects; personalisation, fit and performance (2006). Most other large brands offer only personalisation. NikeID, the MC option from Nike on the other hand goes beyond shoes and also offers other customizable products like clothing.

Though the shoe has to be made to the customer order its process is not much different from producing the in-line shoe. It is produced in the same factory in a different department (formally used to produce the prototypes). This is a common practice in MC production facilities (Kotha, 1996).

Miadidas was launched in several steps between 2000 and 2006. Internally it was long regarded as a marketing tool which had its impact on the diffusion. The first phase (pilot) was to offer only football shoes based upon the Predator Precision. The customisation offer was done on different events in different countries in 2000. With a 3-D foot scanner and advanced software the feet of the buyer was scanned by trained Adidas employees. With the second phase also a running and a tennis shoe was added (Moser et al., 2006) and the real roll-out was done to get retailers involved. The 100 selected retailers got less complicated hardware to measure the feet, but the software got more advanced. An indoor (basketball) shoe was added in the third phase. In the next phase Adidas rolled out special Adidas shops with the MC option.

Though Miadidas was in the first place not an online option, it opened its Miadidas web store in 2006. Customers could customize and order their shoe online. At this moment the Miadidas online store offers basketball, golf, running, soccer, tennis and fashion shoes. 17 different sport shoe models and 10 fashion models are available with each several customisation options ("miadidas website," 2010).

Framework

Duray framework

As Adidas uses the prefabricated parts to assemble the Miadidas shoe, the modularity type is a component swapping modularity, though also cut-to-fit might be used for the more extreme sizes. These types fit in the assembly and use phases of the production cycle. The customers are involved before the assembly of the shoe. This combined makes Miadidas an assembler in the classification of Duray. Piller et al. place the decoupling point of Miadidas at the manufacturing also before the assembly (2004). As Adidas is a mass producer of athlete shoes it is a logical configuration as assemblers is the nearest configuration to mass

¹ After the second world war the company was split and both brothers went their own way. The other, only slightly less successful, company is Puma, Adolf Dassler founded Adidas.

production (Duray, 2002).

Definition

The differentiation option of the definition is made with the remark that exactly meeting the need is a utopia. Miadidas does give a large range of options to change the design and comfort of the shoe. It should be noted that the Miadidas does not pass the test of scalability (Moser et al., 2006). As Adidas uses the former prototype production locations and is limited by the fact that those higher skilled people are needed to produce the shoe. Also in the design of the shoe MC is only a minor consideration. This will prevent Miadidas from penetrating large markets. Also the cost of customized shoes is not in line with the mass produced version of the shoe, also here the design of the process is to blame. The last part is the relationship option also here Adidas does not take full advantage of the possibilities.

Adidas must be using a different definition of MC for designing the process. The fact that internally the project was seen as a marketing tool will be largely to blame.

One-to-one marketing

There is the risk that customers have too many choices, especially online where the customer needs to know his or her feet pretty good. The result of choices about colour combinations are immediately visible on the screen, but knowledge about what type of heel padding you need is needed. Buying online might not be the best option when lacking this information. Though Adidas limited the colour choice options there still are many options to choose from and the customer has to go through every step to know what his or her options are.

Adidas saw Miadidas as a marketing tool, but mostly a one-way communication medium. There has not much been done with the purchase data. Adidas did some good research about the average customer. With their MC program it is the first time they interact proactively with the individual customer. Adidas differentiated between their top customers and their mass by placing an extra product in the market as Miadidas is. Before Miadidas Adidas had a take-it-or-leave-it interaction with its customers, only top athletes could get a custom shoe, though this was only for marketing reasons. With the introduction of Miadidas the customer has much more choice and Adidas helps them in making that choice. The behaviour of Adidas towards the customer has only changed in the offering. Buying sports shoes is on average twice per year. As Peppers et al. suggested Adidas started small and build upon the experience of previous phases (1999).

IT

In order to support the choice of the clients Adidas developed every step a new system with the user in mind. For the pilot they made a program that was sophisticated but hard to handle, though only special trained Adidas employees had to use it. When the configurator also had to be used by the retailers it became more user friendly. Currently the customer itself has to do its own configuration and the configurator guides the user through the process.

Benefits

- As a marketing tool it delivered Adidas a lot of attention,
- first mover advantage, strong learning curve efficiencies (Moser et al., 2006),
- adequate financial resources for financing future growth,
- close customer contact at the Miadidas shop unit,
- less fashion risks, discounts, and inventory costs,
- Miadidas is the only full customisation business in the athletic shoe industry (three customisation options: fit, performance, and aesthetic design),
- possibility to build strong customer relationships,
- access to aggregated market information can continuously improve inline assortment,
- opportunity to turn mass customisation platform into a major product planning and variety management tool for the entire division.

Challenges

- Selling the project internally,
- making the production modular (Berger, 2003),
- adding CRM (Berger, 2003),
- no configuration system available for online sales (Moser et al., 2006),
- no relationship management system implemented to facilitate re-orders,
- dependence on external partners in manufacturing and logistics (scalability),
- high logistic costs due to manufacturing in Asia,
- unstable processes, unsolved conflicts from integrating the mass customisation system in the inline system,
- unknown market potential for custom footwear,
- potentially limited willingness-to-pay for custom shoes,
- rather long delivery times may hinder growth when new customer segments are targeted,
- customisation is losing differentiation appeal as competitors create similar offerings,
- potential channel conflicts about ownership of customer data.

Theory	Conclusion
Duray	Assembler
Definition	No scalability
One-to-one marketing	Identify, differentiate, interacting
IT	Configurator, no CRM

Table 2: Summary of the Miadidas case

Expedia

Based upon Röglein et al. (2006).

The travel industry has changed much due to the internet. All-in travels made up the market, but due to increasing transparency customers chose to shop around. Suppliers like hotels and airlines bypassed travel agents via the internet and also new entrants used the internet to offer the same travels for less while they did not need to hire real estate and people to fill them. These developments made the travel industry in search for solutions. Some like TUI bought their own planes and hotels and thereby decreasing the price transparency. Others found the solution in an MC variant; dynamic-packaging. Expedia is one of the dynamic-packaging companies.

Expedia is an online travel agent that offers next to all-in and last-minute also individual travels. Expedia uses their click&mix to let customers customize their travel offer. This is standard a combination of hotel, flight and rent car. Per item there are parameters that can be adjusted to the needs of the customer. It is also possible to add extra option like insurance, theatre performance or sight seeing tour. In order to let the customer choose their mix of options Expedia needs to interact with its partner's databases to check for availability. The business logic in the internet booking engine is responsible for adding penalties or savings to the order.

Literature

Duray framework

Expedia uses the assembly phase as decoupling point. It also uses modularity types that fit in the assembly phase. Expedia is an assembler according to the framework of Duray. As Kotha (1996) already described also Expedia keeps its previous business model with all-in travels.

Definition

Though the variety is limited by the contracts that Expedia has the possibilities within that offering are theoretically not limited by the design. Expedia only shows sensible options to pick from, so when you fly to Barcelona a rental car can be chosen from that area. The cost of the click and mix is not higher as the all-in offerings. Because Expedia has more data about the customer it can sell additional products and services that the customer might be interested in.

One-to-one marketing

With the use of click and mix Expedia get the change to identify their customers. Though they did market research about the wishes of customers differentiation was not made due to the all-in concept. With click&mix it is possible to let customers themselves differentiate their offering. The offering to every customer is still the same, all customers get all options to choose from. So it makes no difference when you book a beach or a cultural trip to Barcelona, you get the same possible additions. When looking at the interaction with the customer it is clear that the customers now have something to say, though the focus is on selling and the consequence is that Expedia offers as much as possible. The enterprise behaviour is not different from what it was before.

IT

The graphical configurator that supports click&mix is the driving force between Expedia's MC concept. It connects the customer with the suppliers (Rögelein et al., 2006). This connection is vital for giving customers correct data and not having double bookings. Expedia does not make good use of CRM software as they do not personalise the offering they show.

Benefits

- Dynamic-packaging is able to fulfil the customers needs in a flexible manner. Following the trend of more individualization (2006),
- with the help of dynamic-packaging it is possible to explore the customer needs. Use of customer data can overcome declining loyalty of customers,
- by offering a more personalised offer it is possible to ask a premium,
- though it is possible for customers to find the separate parts of the offer cheaper online dynamic-packaging has the advantage of keeping the insurance of the travel agent,
- due to better customer knowledge it is possible to reduce the risk costs,
- with MC techniques it is possible with small use of personnel to reach out to niche markets,
- a travel is a information product which favours online services in general but dynamic-packaging in special,
- flexible integration of low-costs airlines makes it possible to compete with charter flight based all-in offerings.

Challenges

- Higher margins are difficult to explain in a transparent market where customers can compare easily,
- there is the risk that customers get overwhelmed with options and exit the configuration process,
- for larger suppliers dynamic-packaging the look-to-book rate will be lower,
- high development costs for databases and front-end systems,
- legal aspects as responsibility for the performance of all suppliers,
- the trend is that young people organize their own travels.

The last point is general to all travel agents and not specific a threat to dynamic-packaging alone.

Theory	Conclusion
Duray	Assembler
Definition	All three options present
One-to-one marketing	No behaviour and few interaction
IT	No full use of CRM

Table 3: Summary of the Expedia case

T-online

Based upon Hafenbrädl and Müller (2006).

T-online is a provider of internet, television and telephone over the cable in Germany to 10 million households. Though cable was in the first place designed for transmission of analogue television signals. Germany plans to replace analogue television for Digital Video Broadcasting (DVB) techniques. T-online needs to adjust its offering and due to new technologies available it will be possible to adjust the offering to individual preferences. T-online calls this product “my personal channel”. One of the technologies that makes this possible are the PVR set-top boxes, which are computers for supporting the TV with functions like time-shift. Also electronic program guides help with the choice of the viewer, these are searchable and in combination with the PVRs it is possible to record for instance every Sunday a Top Gear episode. Also in combination with internet, interaction with the TV is possible. In addition to this it will be possible to get video on demand (VOD) to the TV where the viewer gets access to online film rental services and can choose to view whatever he likes.

T-online developed in cooperation with Fujitsu Siemens an own PVR with integration of its online VOD portal T-vision. The idea is to have the PVR as centre of the living room. T-online got Bundesliga broadcast rights and contracts with large film studios as MGM, Universal and Dreamworks. In the premium subscription “direct +” the PVR will download on the background 30 top films which can be unlocked to view right away.

The market develops in a way that customers want more choice. Because of the large program offering that broadcasters have the risk of confusing the customer is large. The customer needs guidance with its program choice.

Literature

Duray framework

Sectional modularity is used for my personal channel. The customisation takes place at the use phase of the process. This can clearly be called an assembler. As the previous configuration of T-online was a mass deliverer this is also the most logical option.

One-to-one marketing

T-online does not identify its customers as it is the transmitter of the channels. It is not possible for T-online to see what the configuration of the customer is. Also its viewing habits can not be logged, though this is valuable data. Every customer get the choice to make their own channel. The differentiation is in the configuration that the customer makes. Interaction with T-online is via the configurator. This is done by the customer and the TV acts as interface. The process changes not only for the customer also for T-online the process will change. They will need to adapt to these changes. It will be possible to charge customers for what they view, not for what they are able to view.

IT

My personal channel is made possible by a software configurator, but as not every TV has the hardware to do so set-top-boxes were used to bridge this. The possibility to interact with the customer of the internet is used to bypass the one-way design of television. Though knowing which programs someone views gives good opportunities for advertisement these opportunities are not taken.

Benefits

- Meets better the needs of the customer,
- producers will have exact numbers of viewers, which is valuable information for stop/go decisions,
- internet and television can use each others strengths more,
- it meets the individualization trend.

Challenges

- No standard yet,
- the market gets less transparent,
- the learning curve for customers,
- though the program queue can be customized, the program itself can not,
- possible data problems,
- the music industry has already gone trough a same sort of transaction and sales figures dropped.

Theory	Conclusion
Duray	Assembler
Definition	Applies
One-to-one marketing	Good customisation of enterprise behaviour, no good interaction
IT	No CRM usage

Table 4: Summary of the T-online case

Summary

Implementations are suggested to be done step by step (Peppers et al., 1999). Miadidas is the most clear example as the MC portfolio is enlarged by adding products every step. Also the guidance and supporting tool differ each step. In the first phase special trained Adidas personnel is taking the orders with advanced tools without an easy to use interface. When enough experience is collected also easier to use and cheaper tools are used which makes way for franchise takers to take the orders themselves. Currently the customer performs the customisation via internet guided by a wizard.

The market drives the MC initiatives of Expedia and T-online. Miadidas was continued and expended more rapid by demand of the market. It is important that the demand for MC exists otherwise the customers will not be willing to pay the premium.

There are several pitfalls for MC. As MC is about information it is important to have a well working IT back-end. Information is key in MC and the IT makes the information load manageable. Not only a good CRM package is need for storing and managing the customer information also a good configurator is needed for either the online proposition or the sales force. The coupling of these systems and the ERP systems make it possible that the costs of MC need not be higher as mass production.

Although Miadidas is seen a success story it has a large drawback as the set-up is not scalable. Especially illiteracy in Asia is a large problem for producing MC shoes as a large part of the workforce can not read the production instructions. The internal complexity can not be handled by the current work force. Also the work flows of the mass production and MC are separated, though the design of the shoes is the same. When designing a MC process scalability is an important aspect. In the extreme cases unique products can be produced as easy as one million the same products without any a different cost structure. The Expedia and T-online cases are designed as such, though they have the benefit of being an information product.

Adidas has seen Miadidas as a marketing tool for a long term, which is part of the reason why scalability is overlooked. It is also a way to sell the concept internally to overcome the resistance problem. Internal resistance is always part of the problem when drastic changes are to be made. T-online has to make a change due to changing legislation. Expedia has the pressure of a changing market that forces them to look for alternative product offerings.

4. TNT post pakketservice

In this chapter the current situation will be explained first. In the second part results of the workshop at TPP will be presented.

Current situation

The current portfolio of TPP exists of the core service, delivering a parcel, with added services bundled in a package. For consumers there are three options parcels with a weight less than 10 kilograms with or without insurance till € 500 and parcels with a weight of more than 30 kilograms.

At this moment TPP adjusts its specifications to large customers. On the other side it delivers the same service to all its customers, also for almost all large customers. Large customers are the only ones that get direct access to the API to implement the order preparation in their ERP or CRM package. For smaller contract customers the Parcelware solutions are available depending on size the web or desktop version is recommended. The order volume is the main diversifier when segmenting the client base of TPP (see table 5). But are the needs of large customers alike or are the needs of the smaller customers alike? As TPP has no enduring relationship with its lowest segment, the smallest senders that send only a package ones in a while TPP does not know much about these customers. The customers that have a contract with TPP are trackable in the CRM which logs the interactions with this customers. TPP wants also be able to analyse their lowest segment of irregular senders. In order to do so they have developed online postkantoor (post office) where these customers can log-in. As most of these customers are more regular also receivers of the packages track and trace will also be part of online postkantoor. At this moment TPP does not use analyses of site traffic to adjust its online offering.

Client segment	Non-contract	Small	Medium	Large
Software solution	Parcy	Parcelware Web	Parcelware Desktop	Home build

Table 5: Current segmentation of TPP's clients

Currently Parcelware offers the same interface to all its customers which leads to an overload of options (see figure 4). In order to be able to reuse elements of Parcelware in online postkantoor TPP has divided these software into services. Though the goal is not to have a complete SOA architecture. A pragmatic approach is taken that when a requested solution is not possible within the current service offering a new specific solution will be made.

Negotiations of TPP with its sending customers is dominated by the party that has most power. Either the order volume of the customer makes TPP adjust to their specifications or it is TPP who is using its size and lack of competition to make their customers adjust to TPPs specifications. Porter's supplier and buyers bargain powers are clearly strong in this industry (Porter, 1985).

TPP efficiency depends on several parameters, driving times, hit rate, inter drop distances and drop duplication rate are the most important. Lowering the time and distances between drop points and raising the rates makes TPP more efficient. Raising efficiency is not only in the interest of TPP but also of the receiver. Cost leadership is the focus for TPP on the operations side.

There are different options of using MC for TPP. As TPP is an operation excellence organisation also its MC solution should lean more towards mass production than towards customisation. This means having a decoupling point late in the process. It also means using a type of modularization which fits in late in the process (Duray, 2004). Next to the new MC process the old mass production process can still be in place and they might have learning effects on each other (Kotha, 1996). The operational process has large possibilities for individual approaches due to the fact that every package needs to be delivered physical. Though the trend at TPP is that no new deliverers are employed, TPP now works with sub-contractors that employ the deliverers. This will make it more difficult for TPP to train these deliverers. At this moment information that goes with the package is static as it should also be readable on the package itself, this reduces options.

Relying on bar-codes (these are already on the package) or RFID chips might solve this problem, but will need a mind-shift as well adjustments in the information storage.

Figure 4: Screenshot Parcelware (source: TNT)

Workshop

In order to get a realistic idea about what MC can do for TPP a workshop was held at the head office of TPP in Hoofddorp. Invited were a mix of people from the ICT and marketing department. Four ICT and three marketing representatives attended the two hour workshop on 23 September 2010. The set-up was to present three theories; the definition by Piller and Müller, the Duray framework, and one-to-one marketing as proposed by Peppers, Rogers and Dorf. In order to get a feeling what the subject is about three cases were presented as examples. To get the discussion started several statements were proposed during the workshop. These statements highlight a part of the previous presented theory. They are shown in appendix 2 in Dutch as they were presented. As input for the workshop the gap tool from the Peppers, Rogers and Dorf (1999) was sent on forehand to look how large the gap is between one-to-one marketing as proposed by Peppers et al. and TPP. As result of most slides had a message of what TPP could learn from it.

During the session there was great interest in the subject and already before the statements there was a lively discussion. A lengthy discussion was held about who is the customer, the paying sender or the receiver. The result of this discussion was that at this moment the focus is and should be on the sending party. The receiver might get more influence in the process of which transporter will be used. In that scenario the end-user needs focus. Concluded during the discussion was that both need to have separate strategies. Peppers, Rogers and Dorf are quite clear in that the end-user is the customer and needs the attention. Though the current structure will not tolerate a 180 degree turn.

One-to-one marketing gap tool

The gap tool of Peppers, Rogers and Dorf (1999) consists of 18 questions concerning seven different aspects of one-to-one marketing (appendix 3). The questions are all stated in the form in what degree does the statement in the question correspond with the current situation. The gap tool will give insight in how the company sees itself and is meant to be a starting point when thinking about one-to-one marketing. Seven people have anonymous submitted their view. To process the collected data an arbitrarily chosen weight was connected to the answer. The distance of the gaps is not to be determined by its score, therefore the scores are not shown in the results. When the correspondents chose the answer representing the largest gap the answer got score 3. When the correspondent chose the smallest gap answer it got score 0. The answers in between got respectively 1 and 2 as score. The outcomes were averaged over the correspondents and the subjects (2-4 questions per subject).

The most striking outcome (see figure 5 and appendix 3 for a more detailed result) is that the largest gap is at the knowledge strategy. The questions asked handled about collecting, using and combining customer data. The knowledge strategy is most important during the data collecting which is part of the first step of the one-to-one marketing tool kit, identifying the customer. Though the results show that the process has the smallest perceived gap this also needs work as do all other areas. The medians of all questions was three except the first two that handled the process and question five about knowledge strategy that scored a four.

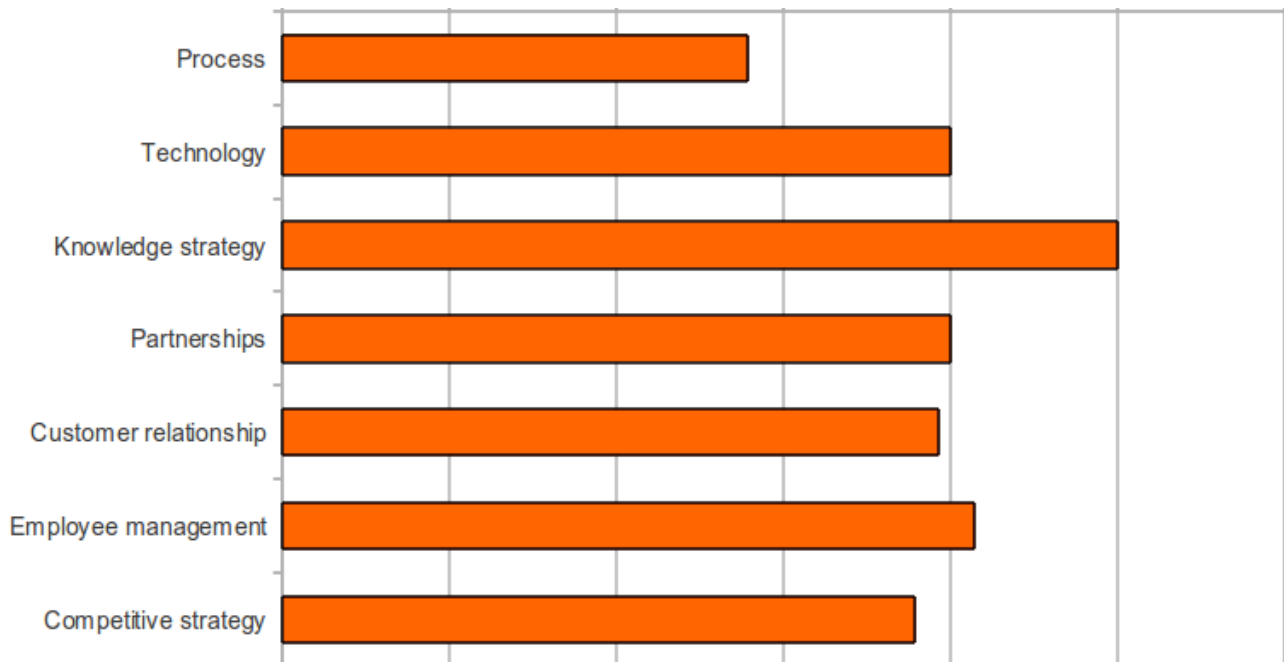


Figure 5: Results of gap tool (source: author's own illustration)

Results

The workshop showed a number of lessons that TPP should bear in mind when proceeding. The gap tool showed that the knowledge strategy gap is the one needing most attention. During the discussion the first step, identifying your customer by collecting data, was easily skipped. It was easily assumed and even explicitly said that TPP can think for its customers. Assumptions about customer needs might be wrong in general, what is more applicable in the case of MC assumptions about one of the customers probably is wrong.

From the questions raised it became clear that MC has a great difficulty in explaining what exactly is MC. Although bringing up the definition to undermine that problem. The definition of Piller and Müller (2004) is large and the setting makes it difficult to understand it at first sight. Also the different options make it difficult. For presentations purposes this definition might not be the best choice. Also the Duray framework needs more study upfront to understand.

One discussion was about whether TPP its service is part of the MC proposition of its clients or TPP its service itself should make MC possible. Linked with this discussion is who is the customer that TPP should base its process around. The discussion about who TPP should regard its customer is one with a longer history as this workshop. In the light of MC it is important to know who you define as customer in order to collect data about them. The resulting conclusion of the discussion that the market will need time to take the end user as customer. With taking the receiver's needs into account also the sender will profit, though implementation will be difficult as long as the sender collects the payment for TPP of the receiver. So the sender needs also to be considered in looking for a MC proposition.

5. Conclusion and discussion

The literature and case studies give helpful answers to the research question. TPP can make use of MC in multiple ways. Important is to not think that MC can be implemented overnight. As seen from the cases and also literature suggests taking one step at the time. The one-to-one marketing tool kit can function as a helpful guideline for making those steps. TPP should start collecting data of its customers. Though the discussion about who actually is the customer remains. As resulted from the workshop the first focus should be on the sender side, but should shift to the end-user, the receiver. The results of the gap tool show that data collecting and handling is at this moment a weak point at TPP. As this is the starting point the first steps should be made in this direction. The to be designed new online postkantoor might be a good opportunity to make first steps. This configurator should be input for a CRM system. It can collect data from both sender and receiver. Currently additional services are offered to customers. Making the infrastructure flexible enough to handle every possible combination will be an other option to start from.

The framework of Duray learns that an organisation like TPP should look at assembler options to implement MC. This will mean that an modularity type is used like bus modularity, where additional services are options for the main service, delivering a parcel. Also it predefines that the customer is not influencing the design and production process, the sorting in case of TPP.

As the cases and also literature suggests TPP needs to take one step at the time. As said above collecting data will be the first step. Before collecting the data it is also important to know what to look for. For TPP it is especially important who to collect data from as there is hardly any data of the receiver.

Some remarks need to be made concerning this report. First of all no suitable cases of failing MC implementations were found. Though literature does address challenges and pitfalls. One repeating issue is that MC is not about offering the customer variety. Learning from mistakes (of others) is perhaps more valuable than trying to copy success stories. As markets are different MC solutions will be different.

Second remark is that the MC research field is still under heavy development. Not even the definition of MC has complete consensus. Partly because of the difference between theory and practice there is still a lot to be researched. Several MC solutions were not possible before the introduction of CRM packages with flexible integration with other applications. The impact is that theoretical concepts are only recently or even not yet to be empirical validated.

Third it should be noted that logistics has it own dynamics, different from manufacturing and service delivery. The lack of decent examples of MC implementations within a logistical organisation makes it harder to conclude that the suggestions also hold for TPP. Also is there a lack of well documented service examples.

In the next paragraphs some implementation examples will be discussed. The next paragraph will take the sender as starting point, where the last paragraph takes the receiver as starting point.

Looking at the service TPP delivers it is important to know which parameters have an impact on the costs. Size, weight and value all have some impact and are known to the sender before the package is collected. An application can be that the sender gives these parameters as an input for the sending. The parameters can be used in for instance the planning. Getting the sender to share this information he has got to have an incentive. A reduced or better a package specific price can be the result.

Taking the viewpoint of the receiver also opens up possibilities. Having the receiver determine the delivery spot and time can be one of these possibilities. The information if the receiver is at home is valuable information and the receiver might be willing to share that information as he gets a faster delivery. In a later stadium it would be preferable that the sender determines the sending options. In that case the price can be variable on parameters the receiver gives. For instance when the receiver orders from different parties he might be able to combine them on a date and time. Most important will be to listen to the receiver more and take advantage of its needs.

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7. Appendices

Appendix 1; case studies

Case	Source
APC	Hvam 2006
Cmax.com	Piller 2003
Creo	Piller 2003
Custom Fit	Ong 2008
Dolzer	Piller 2003
DZ Bank	Piller 2003
Ethicon	Piller 2003
Expedia	Piller 2006 Jacso 2007 Thomson 2006 Smith 2004
F.L. Smidth	Hvam 2006
getCustom	Piller 2003
Gienow	Dean 2007
Hyve	Piller 2003
ic3d	Van Asperen 2008
idTown	Piller 2003
IKEA	Piller 2006
InVIDO	Piller 2003 Piller 2006
Kfz insurance	Piller 2006
KücheDirect	Piller 2003
Lands' end custom	Piller 2006
LEC systems	Piller 2003
Left foot	Sievänen 2006
Levi Strauss	Piller 2003
Linel	Piller 2006
MarelliMotori	Forza 2006
Mi Adidas	Piller 2003 Berger, C 2003 Mozer 2006 HBR case 2002
Natural gas industry	Fogliatto 2007
Newspaper industry	Franke 2009
NIBD	Kotha 1996
Nike	Piller 2003 Piller 2006
Possen.com	Piller 2003
Reflect.com	Piller 2003
Socital Life	Piller 2003
Steppenwolf	Mozer 2006
Streif	Piller 2003
TGI Fridays	Lashley 2000
Toyota	Adler 1999
Turo Tailor	Sievänen 2006
Zoots	Piller 2003

Appendix 2; statements (Dutch)

Stelling 1

Mass customisation betekent voor iedere klant dezelfde dienst, namelijk een op maat gesneden oplossing

Stelling 2

Het proces van TPP is niet modulair en leent zich dus niet voor mass customisation

Stelling 3

Ieder pakket is gelijk, vandaar eenheidsprijzen

Stelling 4

De bezorger is de enige flexibiliteit in het proces

Stelling 5

Voor mass customisation is een radicale verandering nodig binnen TPP

Stelling 6

De ontvanger is de betaler, dus dient het proces rond hem/haar opgezet te worden

Stelling 7

Het bezorgadres is de meest waardevolle data

Stelling 8

De consumentenmarkt is structureel anders dan de businessmarkt

Stelling 9

Onze grootste klanten zijn de meest waardevolle klanten

Stelling 10

Consumenten zijn niet in staat om goede keuzes te maken

Stelling 11

De inhoud van het pakket bepaalt de gewenste verzendopties

Stelling 12

Wij weten beter wat de klant nodig heeft dan de klant zelf

Appendix 3; results gap tool

Questions:

1. Does the company have established quality-assurance processes?
2. Are the company's business processes customer-centric?
3. Does the company take customers' needs into consideration when selecting and implementing technology
4. Does the company provide its employees with technology that enables them to help customers?
5. Does the company maintain a strategy for collecting and using information about customers?
6. How effectively does the company combine information on customers with its experiences to generate knowledge about its customers?
7. How does the company select its partners?
8. Does the company understand the relationships among its customers and partners?
9. How effectively does the company differentiate its customers?
10. What steps has the company taken to improve the total experience of its customers?
11. How effectively does the company measure and react to customers' expectations?
12. How effectively does the company understand and anticipate customers' behavior?
13. To what degree are employees empowered to make decisions in favor of the customer?
14. Has the company formally linked employees' rewards with customer-centric behavior?
15. To what extent does the company understand how customers affect the organization?
16. How much influence do customers' needs have on the company's products and services?
17. How effectively does the company build individualized marketing programs?
18. How aware is the company of other organizations' approaches to building customer relationships?

Results

