FACULTEIT BEDRIJFSECONOMISCHE WETENSCHAPPEN

master in de toegepaste economische wetenschappen:
handelsingenieur in de beleidsinformatica

Masterproef

Customer experience and its potential to extend business process management

Promotor :
Prof. dr. Mieke JANS

Yves Ruland
Scriptie ingediend tot het behalen van de graad van master in de toegepaste economische
wetenschappen: handelsingenieur in de beleidsinformatica

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Samenvatting

Het afleveren van een buitengewone klantenervaring of '*customer experience*' wordt vandaag de dag gezien als enerzijds een nieuwe aanpak om een competitief voordeel te behalen en, anderzijds, een methode om de trouwheid van klanten aan producten of diensten van een organisatie te garanderen.

Men heeft aangetoond dat de belevenis van de klant significant bijdraagt tot klantenbinding. Meer zelfs dan klantentevredenheid. Indien bedrijven er in slagen de ervaringen van klanten succesvol te beheren, resulteert dit niet enkel in klantenbinding maar ook in een stijging aan inkomsten en zelfs meer tevredenheid van werknemers (Berry & Carbone, 2007; Berry, Carbone, & Haeckel, 2002; Fatma, 2014; Rawson, Duncan, & Jones, 2013).

Dergelijke uitstekende klantenervaringen afleveren is uitdagend en vergt een nauwkeurige afstemming van bedrijfsprocessen op deze van de klant. Business Process Management (BPM) is een relevant vakdomein dat zich hoofdzakelijk toespitst op het in kaart brengen en optimaliseren van zulke bedrijfsprocessen.

Echter blijkt in de praktijk en theorie dat Business Process Management gedomineerd wordt door een *inside-out* perspectief. Met andere woorden legt het merendeel van onderzoek naar en projecten rond BPM zich toe op het verbeteren van efficiëntie. Een voorbeeld hiervan is het doel om processen te standaardiseren opdat deze minder afwijkingen van het procesmodel vertonen. Zo ziet men ook regelmatig dat men zich concentreert op het verbeteren van doorlooptijden of het vermijden van knelpunten. Deze courante gebruiken dreigen de rol van de klant in procesverbeteringen te verwaarlozen.

Mede door deze redenen riep Rosemann, een vooraanstaand onderzoeker in het domein van Business Process Management, in 2014 op tot meer aandacht naar de rol van de klant. Hij schuift Customer Process Management (CPM) als nieuwe tak binnen BPM naar voren. Via CPM mikt hij op een integratie van procesbelevenissen van verschillende stakeholders alsook op het herschuiven van de focus naar het afstemmen van bedrijfsprocessen op de processen vanuit het perspectief van de klant (Rosemann, 2014).

De literatuur binnen Customer Process Management is vandaag de dag nog erg beperkt. Dit tegenover een sterk ontwikkeld vakdomein rond *customer experience*. Bovendien gebeurde onderzoek in beide domeinen tot nog toe in parallel en onafhankelijk van elkaar.

Aldus op de oproep van Rosemann (2014) te beantwoorden, spitst de thesis zich toe op de integratie van de literatuur rond *customer experience* in het domein van Business Process Management. Een belangrijke stap hiertoe is het in kaart brengen van de

theoriën rond *customer experience* en deze te toetsen aan concepten binnen Business Process Management. Op deze manier worden zowel overeenkomsten, mankementen als verdere onderzoekspistes aan het licht gebracht.

Preface

First and foremost I would like to express my gratitude to my supervisor Prof. dr. Mieke Jans for her guidance throughout the entire thesis. Her assistance in structuring and refining the scope of a plethora of ambitious ideas, as well as her feedback regarding the development of the thesis, have been invaluable towards its completion.

Special appreciation also goes out to Mr. Walter Vanherle without whom, despite the initial ambitions, my interest for this subject would never have materialized. Furthermore, as a web design hobbyist, researching customer experiences has opened up a new and very compelling environment which I intend to use in the future in an e-commerce context.

In light of the numerous hours of research, I am also deeply indebted to the campus library. Not only for providing a stimulating environment for productive work, but also for its remarkable support and positive 'customer experience' in retrieving almost antique literature where online academic research engines would dreadfully fail.

My further praise goes out to three fraternity codes which have guided me throughout the course of being a graduate student: originality, absurdity, and collegiality.

But by and large, I would like to thank my significant other, friends, and family, for supporting me throughout this journey.

1. Introduction

1.1 Problem discussion

In today's business environment it seems that companies are increasingly looking to cater to the different needs of every single customer. As they look to move away from a standardized offering, these organizations no longer just look at the products or services customers buy and where they do so. They seem to be shifting their focus to making sure that clients stay loyal to their brand and attempt to turn them into promoters who preach about the company's products or services to friends, family, and co-workers. Having customers who advocate for a company in our new world of social media, can be a powerful force (Peppers & Rogers, 2010). Moreover, loyalty not only increases sales through repurchasing behavior, but it also brings along a stronger market position for the organization, as clients are less likely to purchase products or services from competitors (Peppers & Rogers, 2010).

Traditionally, loyalty has always been considered as a result of three variables: satisfaction, quality, and value. However, it is claimed these variables only partially explain customer loyalty and an important variable is omitted, namely that of customer experience (Cronin, Brady, & Hult, 2000). Berry and Carbone (2007) have identified this missing variable and illustrated how customer experience has a significant impact on customer loyalty (Berry & Carbone, 2007; Carbone & Haeckel, 1994). Likewise, research shows that organizations who can properly manage this experience of clients see a great increase in not only customer loyalty, but also customer satisfaction, revenue, reduced churn, and greater employee satisfaction (Fatma, 2014; Rawson, Duncan, & Jones, 2013). As a result, organizations are now increasingly moving towards the notion of delivering excellent customer experiences for every individual client at the right moment, the right place, every single time.

Imagine a customer in the hospitality industry, due to arrive late at night at a hotel after an exhausting flight. Probably tired. But upon arriving he is pleasantly surprised as he was immediately greeted by an employee who tells him they already took care of the check-in procedure for him, and they would be happy to escort him to the room. Meanwhile, a complementary bottle of water is offered, and the employee talks him through the history of the hotel. The next morning the customer is greeted by a different employee inquiring whether they had a good night's sleep and asks if they would like any assistance in booking a rental car to travel to his scheduled meeting at 2 pm. For the remainder of his stay and during every interaction with the hotel staff and amenities, the customer is positively surprised by these personalized services. He is quoted saying: "To this day I still cannot say how different employees immediately knew who I was without asking, and how they managed to anticipate on my situation". Following his pleasant stay, he decides to write a blog post about it for all his online followers to read.

Delivering such great customer experiences is challenging. And intuitively we would assume it requires an extensive amount of meticulous planning and fine tuning of a company's service processes. An important field of study in management theory charged with managing and optimizing business processes to reach certain business goals is that of Business Process Management (BPM). Recently, a new research directive within this domain called for the integration of customer experiences in BPM. This instruction proposed in 2014 by Michael Rosemann, a leading expert in Business Process Management, aims to complement the extensively developed and established theory of BPM by involving the aspect of process experiences of external stakeholders. This inclusion is considered as a separate discipline within BPM, titled *Customer Process Management* (CPM) (Rosemann, 2014).

Rosemann (2014) argues that current process management initiatives and research are dominantly focused on efficiency, e.g. eliminating bottlenecks or avoiding deviations of the intended behavior, neglecting the potential for using a more external or outside-in perspective such as the involvement of customers in the design, analysis and improvement phases of Business Process Management. Similarly, it seems that most companies tend to concentrate their efforts on managing internal business processes such as manufacturing, sales or procurement. Companies sometimes wrongfully convey being *customer-centric* or to be having a *customer-first* approach, but upon closer inspection they too, are mainly concerned with improving internal processes and their efficiency. Practitioners and researchers should be wary of claiming the improvement of an internal process will also result in an improvement in the eyes of the customer and therefore being customer-centric (Rosemann, 2014; Surbakti, 2015; Trkman, Mertens, Viaene, & Gemmel, 2015).

On the other hand, it isn't so difficult to find cases where organizations employ customer satisfaction, loyalty, repurchasing behavior and churn when inspecting their business processes. Using these measures can be considered as an external point of view and relates to effectiveness instead of efficiency, which contradicts Rosemann's (2014) statement.

Albeit these are desirable traits to perform well in, both for customers and companies, but it has been shown that these concepts provide only limited insights and are outcome-oriented with regards to the functionality of a service or product. Customer experience, however, is a concept that is process-oriented and includes every interaction and emotion (Nenonen, Rasila, Junnonen, & Kärnä, 2008). Additionally, as discussed earlier, the construct of customer experiences as an underlying factor of customer loyalty proves to be more interesting to investigate. If this concept is implemented in Business Process Management, businesses would be able to not only tap in on the neglected outside-in perspective, but they could also potentially identify hidden customer expectations in processes. Moreover, as argued by Rosemann (2014), "open up entire new insights into process experiences that start far before the corporation is engaged" (p.14).

Furthermore, the concept of *Customer Experience* itself has been extensively developed in both marketing and consumer behavior theories. Customer Process Management, however, which designates BPM research that exhibits a customer-centric view, is still in the very early stages of development. Surbakti outlined how, as of 2015, only ten academic papers currently explicitly mention the term *Customer Process Management*. This could point to the limited interest of researchers towards CPM. But it is indicated that focus on Customer Process Management will likely evolve significantly in the future (Behara, Fontenot, & Gresham, 2002; Bolton, 2004; Moormann & Palvolgyi, 2013; Rosemann, 2014; H. Smith & Fingar, 2003; Surbakti, 2015). Moreover, delivering exceptional customer experiences is expected to be the new battleground for competitive positioning (Bagdare & Jain, 2013; Gentile, Spiller, & Noci, 2007; Johnston & Kong, 2011; Klaus, 2014; Rawson et al., 2013; Teixeira et al., 2012).

Even though Customer Process Management calls for an integration of the process experience of the customer, no literature so far has examined or identified any possibilities for exchange between the research of Customer Experience (Management) and that of Business Process Management. Studies in both fields are largely done in parallel and independent of each other.

1.2 Research statement

In light of the above discussions, this study attempts to bridge this gap by providing an investigation into the possible uses of existing customer experience concepts in a business process management context.

We therefor arrive at following research stated below. The methodology used to provide an answer to this question is outlined the next section.

How can existing Customer Experience literature attribute to the development of Customer Process Management theory?

1.3 Methodology

As outlined in the research statement, the aim of this study is to determine whether connections can be made between both the domains of Customer Experience Management and Customer Process Management. This way, a path towards interdisciplinary research can potentially be obtained.

First, a preliminary conceptual analysis is conducted to gain a better situational understanding of concepts in both domains. As a result, a visualization of all relevant theories and how they relate to one another is obtained. This will be of use throughout the entire thesis. Concept analysis is, as argued by Walker and Avant (1994), "an excellent way to begin examining information in preparation for research or theory construction".

Next, throughout the remainder of the thesis we go through the different stages of the BPM Lifecycle up to, and including, the Process Analysis stage, introduce their particular uses in the context of traditional Business Process Management and follow up with a preliminary investigation of the corresponding stage while applying a customer-centric perspective. This last step will be characterized by a mixed use of concepts from the identified domains in the systematic conceptual analysis with the hopes of finding possible areas to extend, find new research directives, or integrate Customer Experience literature. Given that Customer Process Management is a subdomain of Business Process Management, an investigation by way of going through the consecutive stages of the BPM Lifecycle is considered a reasonable approach. We suppose the notion of CPM being a subdomain of BPM, implies that the lifecycle is similarly applicable to a CPM initiative.

1.3.1 Systematic conceptual analysis

Conceptual analysis was originally designed for use in the context of linguistic terminology work. Different methodologies have been derived however with a broader application scope. Most of these methods are too discipline-specific however and are mainly situated in the domain of life sciences according to Nuopponen (2010). She has therefore developed a notion which can be applied in broader scholarly research named *Systematic Concept Analysis*. With this in mind, Nuopponen's (2010) methodology is used in this study.

Furthermore, Nuopponnen (2010) explains that concept analysis is regularly conducted in the background. Not all steps are necessarily demonstrated or discussed. Its primary focus is to provide conceptual clarity at various stages throughout the research. Below we elaborate on the different steps of the systematic concept analysis methodology. Note that these steps are by no means successive and can be interchanged (Nuopponen, 2010).

- **Step 1: Goal and delimitation**: The first phase is concerned with defining a purpose for the analysis as well as its scope.

- **Step 2: Acquisition of domain knowledge and creating a general idea of the field**: Second, the researcher should get accustomed to the outlined concepts and their respective areas, to locate where identified concepts belong.

- **Step 3: Compiling the material**: commonly conducted in parallel with the next step, this phase relates to singling out relevant literature and pinpointing key articles and works.

- **Step 4: Elaborating a preliminary concept system for the analysis**: step four in the methodology designates the construction of a concept system, or in other words, a representation of the inherent structure of the concepts. Satellite maps are proposed as an ideal tool for this (Nuopponen, 2011). A satellite model is a graphical representation similar to that of a mind map, yet more flexible than a tree diagram. Branches are spread around central core concepts, and new nodes can be added during the research process without the need for a modification of the structure of the model (Nuopponen, 1997).

- **Step 5: Systematic analysis of the material**: Now that there is a preliminary view on the concept system, the actual research is conducted with regards to the concepts and their relations.

- **Step 6: Further analysis and conclusions according to the goal of the concept analysis**: In the final phase, results of the research are assembled to form concluding remarks towards similarities and differences, about the objective of the study.

Steps one, up to and including step four, were applied to arrive at the satellite map pictured in figure 1 on the next page. Furthermore, in the next two chapters, essential knowledge from the core concepts are outlined. The last two stages of the systematic concept analysis are reflected in the remaining chapters of the thesis. It is likely that new theories and connections will be discovered and extend our preliminary model in figure 1. Nonetheless, it provides an excellent starting point for the research.

Figure 1
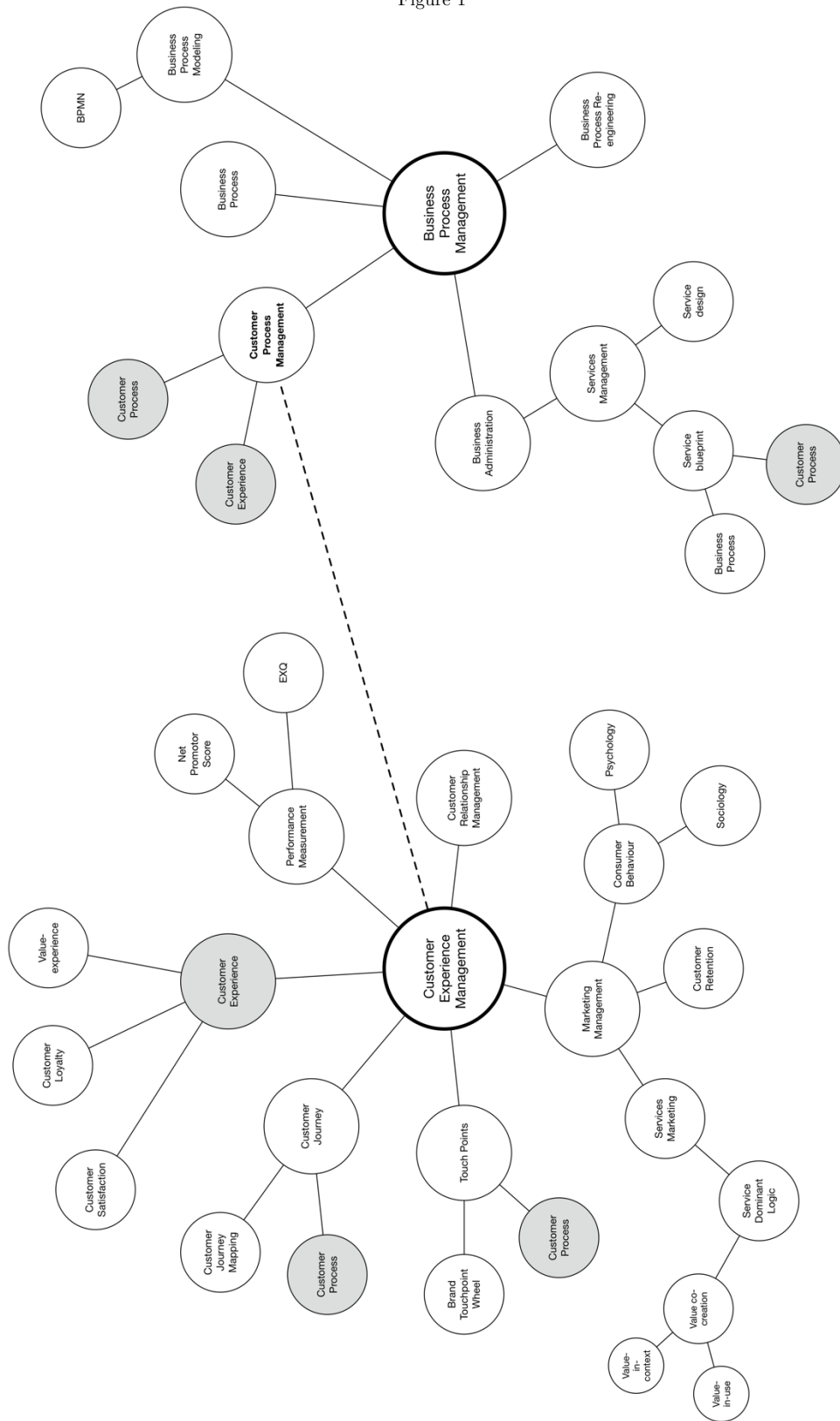
2. Customer Experience

2.1 History of customer experience

Historically, experience research originates from consumer behavior theory. Traditional consumer behavior theory considered the consumer a rational human being who bases his or her choices on logical decision making. In choosing between two products, the product with the most favorable utilitarian and functional characteristics is preferred and thus chosen based on rationality. If a product is not only cheaper but also sports better features than others, this line of reasoning suggests that the consumer would prefer and buy that product. However, in reality, consumers would sometimes make irrational purchasing decisions. For example (approached from a modern setting), a wide variety of smartphones exist in the market with new phones being released every month by different manufacturers. But there is a significant disparity in the pricing strategy of Blackberry and Apple smartphones compared to smartphones of other manufacturers with the very same features, nearly identical hardware, and a similar design. Suggesting there is more to the perceived value that is taken into account in the decision-making process than stated in traditional consumer behavior theory.

Holbrook and Hirschman elaborated on this. In 1982, they shifted the focus of consumer behavior theory towards the consideration of experiential aspects. In this perspective, the consumer is no longer regarded as a rational thinker making logical purchasing decisions but is now considered having more irrational needs such as fantasies, feelings, and fun (Holbrook & Hirschman, 1982). As a result, a customer's choice to buy a certain product or use a particular service is no longer considered only to be affected by its original offerings but also by more intangible elements such as human emotions, which in turn are summoned by a specific brand, product or service.

Experience gained more traction in 1990 when Pine and Gilmore published their book "The Experience Economy". In this book, Pine and Gilmore propose that experiences are the next big thing in providing value to the consumer. They outline how, throughout history, we have evolved from a *commodity economy* to an *experience economy*. To arrive there, we transitioned through a *manufacturing economy* where goods are produced and can be purchased readily from the shelf. The manufacturing economy was then followed by the development of a *service economy*, where offering additional services were a way to provide extra value to customers. Today, consumers are demanding more than just service, which designates the arrival of the *experience economy*. In the current environment, services and products should be memorable, robust, engaging and compelling next to their particular utilitarian features (Pine & Gilmore, 1998; Schmitt & Zarantonello, 2013). Other researchers confirm that merely the quality of service is no longer sufficient to differentiate and maintain a competitive advantage. We need to shift from *what* is offered by a service, to *how* it is provided and

how it affects clients (Berry, Carbone, & Haeckel, 2002; Prahalad & Ramaswamy, 2004; Schembri, 2006).

The following example inspired by Pine and Gilmore (1998) illustrates the evolution towards an experience economy. Mothers in the commodity economy would bake a cake for a birthday party using materials bought from a local farm for a few cents, such as flour, butter, and eggs. In the manufacturing economy, however, the ingredients of the cake would simply be available for purchase premixed, for a dollar or two. Progressing into the service economy, the same birthday cake can just be bought from the local bakery for about 10 dollars (quite an increase in price consumers are willing to pay when compared to the commodity economy). Today, in the experience economy, it wouldn't be frowned upon and might even be common practice if mothers would choose to buy the service of hosting an entire birthday party from a single provider for about a hundred dollars, cake included for free and a fantastic party entertainer.

Customer experience literature today is still not as rich as other theories like consumer choice, customer satisfaction or customer and brand equity. Most customer experience expertise is acquired from practitioner-oriented journals or management books. In the next section, we will consider several dimensions and elements that need to be taken into account when talking about customer experiences to arrive at an overall definition.

2.2 A definition of customer experience

The Cambridge dictionary defines an experience as "something that happens to you that affects how you feel" or "(the **process** of getting) knowledge or skill from doing, seeing, or feeling things." It is quite a broad definition and refers to many different kinds of psychological sensations or perceptions that stem from a person's interactions with certain activities.

In a business context, Gupta and Aggarwal (2000) state that an experience occurs when a customer has any sensation or knowledge acquisition emerging from some level of interaction with different elements of context created by a service provider. Another author who refers to experiences in a business context is Schmitt (2011). He argues that experiences are "perceptions, feelings, and thoughts that consumers have when they encounter products and brands in the marketplace and engage in consumption activities, as well as the memory of such experiences."

Pine and Gilmore (1998) pointed out that when looking at the experience from the point of view of a customer, there are two aspects to be considered. One is the external aspect invoked by products and services, and the other is the personal or internal viewpoint of the customer (Pine & Gilmore, 1998).

The external aspect of an experience, related to a specific product or service, can be viewed quite broadly because it primarily originates from interpretations of *all* possible interactions with a particular company that offers the service or product. These interactions can either be direct or indirect. Direct contact, initiated by the customer or the company, happens during the use of a service or the purchase of a particular product. Indirect contact, in contrast, is less predetermined and can be in the form of e.g. word-of-mouth recommendations, advertising or a brand's image (Frow & Payne, 2007; LaSalle & Britton, 2003; Meyer & Schwager, 2007).

The personal aspect is shaped by five different dimensions according to Brakus (2001): a sensory dimension, an affective dimension, an intellectual dimension, a bodily dimension and a social dimension. The sensory dimension considers perceptions of a product or service as 'friendly' or 'cute' while the affective dimension relates to perceptions such as jealousy or nostalgic feelings. The intellectual dimension is to what extent the customer has to figure out how a particular product or service works before being able to use it. The bodily dimension, in turn, designates how the individual perceives their physical being, this would for example be, how skinny or athletic someone perceives themselves to be. Finally, the social dimension is related to the role an individual has in his or her social context. In conjunction with these dimensions, Brakus (2001) states that not all are of equal importance. A hierarchy is present wherein the sensory and affective dimensions are the most influential in shaping the individual customer experience. Although separate dimensions and hierarchy are present, it is

important to note that customer experience is seen as holistic in nature, to accentuate the fact that all its dimensions attribute to one collective experience (Brakus, 2001; Voss, Roth, & Chase, 2008).

Furthermore, based on research in the domain of philosophy, Schmitt (2011) also elaborates on the individual aspect. This time through the connection between feelings (or emotions) and experiences. Emotions resulting from experiences are subjective. They offer an individual a means to develop a unique view of the objective world surrounding him or her. Due to this personal nature of experiences, they are real to the individual and have a past, a present, and a future. From this, we can derive two aspects of the experience. One of which is new to our discussion. On the one hand that of a *lifeworld* or *reality* that is unique to the person, fitting the individual aspect. Discovering how this *truth* develops (however complex it may be) and its underlying influences may pave the way to engineering experiences. On the other hand, a new dimension, that of time, is implied. Individuals not only remember past experiences but also continuously change their perception of something based on anything that has happened before, during or after an encounter or interaction (Schmitt, 2011).

Another element about experiences is how they appear to be responsible for creating intentions in individuals. These intentions, e.g. repurchasing a product or service, are not initiated by individuals themselves but rather by the experience. This is why experiential aspects are getting more attention in both marketing and management contexts as they in part define how consumers make decisions (Johnston & Kong, 2011). By understanding the different experiences individuals are subjected to while going through a purchasing process, and understanding how they form these intentions. Service- and product developers or marketers could gain a better understanding of how to best answer to the needs of an individual and grow their company's business.

The collective evaluation of all different experiences obtained through different interactions with a company is often referred to in the literature as the "total customer experience". This entire customer experience goes beyond the act of consumption itself. Although somewhat different in terminology, multiple authors identify four longitudinal phases in the total customer experience: the pre-purchase or search stage, where a consumer plans, discovers or dreams about an experience. The purchase stage itself where a particular good or service is chosen and paid for, and next, the consumption stage where the good or service is consumed. Finally, the after-sales phase marks elements such as nostalgic experiences or experiences related to support, disposal, or maintenance of a product or service (Beauregard, Younkin, Corriveau, Doherty, & Salskov, 2007; Carù & Cova, 2003; Verhoef et al., 2009). Similar to indirect or direct contact stated earlier, not all interactions in these different stages can directly be controlled by the company. Interactions can originate from various channels such as

external service providers in the service or product value chain, but also from family, friends, and other customers (Verhoef et al., 2009).

All things considered, some characteristics of the experience have been identified. To summarize, customer experience:

- Has an external aspect. Resulting from direct and indirect interactions, encounters, or engagements with a specific company (Frow & Payne, 2007; Gupta & Aggarwal, 2012; LaSalle & Britton, 2003; Meyer & Schwager, 2007; Pine & Gilmore, 1998; Schmitt, 2011).
- Has an internal aspect related to personal and contextual dimensions of the customer (Brakus, 2001; Pine & Gilmore, 1998; Schmitt, 2011).
- Is holistic (Brakus, 2001; Voss et al., 2008).
- Can change over time (Beauregard et al., 2007; Schmitt, 2011).
- Creates intentions upon which customers act, i.e. reactions (Johnston & Kong, 2011).

Accordingly, a definition that encompasses the points mentioned above is given by Gentile, Spiller and Noci (2007):

> "*The customer experience originates from a set of interactions between a customer and a product, a company, or part of its organization, which provoke a reaction. This experience is strictly personal and implies the customer's involvement at different levels. Its evaluation depends on the comparison between a customer's expectations and the stimuli coming from the interaction with the company and its offering in correspondence of the different moments of contact or touch points*" (p.397).

However, the aspect of time seems only to be partially included. They do state that the experience results from different moments of contact (which can happen over a different timespan). Nonetheless, this does not cover conditions unrelated to the moments of contact, which can alter the perceived experience. For example, a customer who had an experience that resulted from interaction with a company in his youth may view this experience quite differently many years later (Schmitt, 2011). When discussing customer experience, we thus consider it to be defined according to the definition given by Gentile et al. (2007), yet nuanced with a dimension of time which can alter the experience.

A concept contained in this definition that has gone unmentioned throughout the analysis is that of a *touch point*. The idea of touch points is repeatedly used throughout the discipline related to managing customer experiences. In the next section, the concept of touch points is analyzed followed by an introduction to the domain of managing a client's experiences.

2.3 The concept of touch points

A new element in the definition of customer experience outlined above is the notion of touch points. This concept relates to both direct and indirect moments of contact. More specifically, it designates all interactions or encounters between a customer and a company. Direct content is usually initiated by the client while the indirect contact is typically unplanned, such as word-of-mouth recommendations (Meyer & Schwager, 2007). On each and every encounter, the consumer can undergo a certain experience, and he or she is considered to be 'touching' the organization. During this *touch*, organizations can collect information that can be used to understand the customer better and obtain valuable customer experience data (Bolton, 2004). Similar concepts are found in other research areas, namely *moments of truth* and *service encounters*. It has been shown that these are identical to customer touch points (Jenkinson, 2007).

Davis and Longoria (2003) introduced the Brand Touchpoint Wheel (figure 2). According to their research, we can divide all touch points into three categories: pre-purchase touch points, purchase touch points, and post-purchase touch points.

- **Pre-purchase touch points** are very defining in how a customer sets his expectations and shapes his perception of a service or product. They influence whether someone will decide to buy a service or not. These touch points are usually related to advertising and will try to focus on creating brand awareness and highlighting differences with competitors. They are mostly of a convincing nature, seeking to persuade customers as to why they would need a certain service or product. Examples of pre-purchase touch points are newsletters, advertisements in the media, special promotions, but they could also be word-of-mouth recommendations or past experiences that a client remembers (S. Davis & Longoria, 2003).
- **Purchase touch points** occur when the customer has decided to act upon an individual need or desire. However, he may still be undecided as to which particular product or service he wishes to purchase. As a result, these touch points are usually trying to make sure that any doubts a customer may have are dealt with, as this is where in the end, an exchange of value will take place. A sales person, store & shelf placement, P-O-P displays such as banners to catch the customer's eye, and packaging are examples of purchase touch points (S. Davis & Longoria, 2003).

- **Post-purchase touch points** designate, as the name suggests, every interaction after the purchase experience. These could be things like customer support, actually using a service, performance or reliability of the service delivery. They are considered to be the last opportunities for interaction in the total customer experience. These touch points are mainly trying to make sure that the service exceeds the client's expectations and delivers on its promises as well as creating brand loyalty (S. Davis & Longoria, 2003).
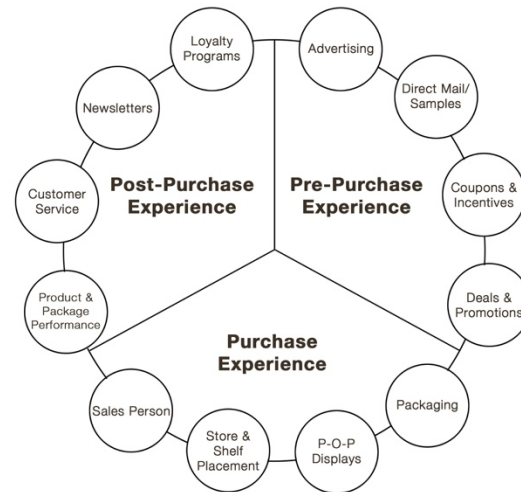

Figure 2

Identifying where these touch points are situated in a company is crucial to gaining an understanding of the total customer experience. They can be used not only to orchestrate experiences but also as a reference to where the performance with regards to experience can be measured, from both the perspective of the customer and the firm. Additionally, some touch points may be of greater importance than others (Pullman & Gross, 2004). Managing these touch points is a fundamental goal of Customer Experience Management. We therefore briefly explain this theorem in the next section.

2.4 Customer Experience Management

A preliminary exploration of managing customer experiences is given by Carbone and Haeckl (1994). In their work "*Engineering Customer Experiences*" they illustrate how, similar to the definition of *customer experience*, consumers are objected to all kinds of *clues* that originate from either the product or service they are using or from other contextual *clues*. If companies properly manage these clues, they can systematically craft a positive impression and use this to their competitive advantage. Since customers will always get an experience when coming into contact with a product or service, it is better to try and *engineer* these experiences than leaving it to chance whether the customer will perceive it as good or bad (Carbone & Haeckel, 1994).

Fatma (2014) recently conducted an elaborate literature review of Customer Experience Management (CEM). In her final analysis, she defines CEM as:

> "Strategically manages experiences across all touch points which a customer has with a company or product (...) The purpose of CEM is to capture customer feedback, to identify business processes which need upgrading and to minimize negative customer experiences" (p.4)

Customer Experience Management has evolved as a successor of Customer Relationship Management (CRM). While most companies are familiar with and employ CRM systems, it is argued that these systems don't always lead to the desired results (Palmer, 2010). Consequently, businesses are increasingly turning towards Customer *Experience* Management, which in certain ways overlaps with Customer *Relationship* Management. However, there are some significant differences.

Kamaladevi (2010) outlines how the central idea of Customer Relationship Management is to capture, analyze, share and act upon information that can be obtained every time a customer interacts with an organization. This way, clients can be segmented regarding potential profitability and different business strategies can be applied with regards to certain segments of customers. Customer Experience Management, however, is concerned with managing the actual experiences that result from every interaction between a company and a customer. During this interaction, the customer experiences something about the company and depending on their perception can alter their behavior and influence their potential profitability towards that company (Kamaladevi, 2010).

So in CEM, companies try to orchestrate more profitable relationships similar to CRM, but by making sure their customers are subjected to positive experiences at every moment of interaction between the business and client (touch points) (Meyer & Schwager, 2007). CRM, in contrast, accounts for the registration of transactions and information about a particular customer. Additionally, CRM can be characterized as a

more one-sided approach in building relationships with their clients. It is the company who stands to gain the most from successful implementation. While in regards of CEM, this balance is more neutral. Creating positive experiences is both valuable to the consumer and the profitability of the business (Berson & Smith, 2002; Fatma, 2014; Meyer & Schwager, 2007).

2.5 Relation of customer experience to loyalty and satisfaction

Customer experience is sometimes erroneously mistaken for customer satisfaction. While both concepts are related to one another, they are very different. Customer satisfaction only specifies the extent to which a client is satisfied with a product or service. Moreover, it is a result of customer experience (Fatma, 2014). If the overall net sum of different experiences undergone by a client through various touch points is positive, customer satisfaction is obtained (Meyer & Schwager, 2007). The main factor defining whether an experience is positive or negative is the difference between a client's expectations and the actual experiences endured while interacting with a company (Gentile et al., 2007). This difference between a client's expectations and the reality experienced can be nuanced as having a zone of tolerance in which a company is allowed to deviate while still achieving the satisfaction of the customer. This is due to the duality of expectations, stating that a customer has desired expectations and adequate expectations. Both representing the extent to which a customer wishes to experience a particular product or service and the level at which the experience is tolerated as sufficient (Hsieh & Yuan, 2010; Zeithaml, Jo, & Gremler, 1996).

An equally important distinction between customer experience and customer satisfaction is made by Nenonen, Rasila, Junnonen, and Kärnä (2008). They outline how customer satisfaction is outcome-oriented and mainly focuses on the functionality of a service or product. While experience is process-oriented and includes all the different moments of contact (Nenonen et al., 2008). With this in mind, multiple conceptual models have been constructed that outline the relationships of customer experience with regards to both customer loyalty and satisfaction (Fatma, 2014; Vergidis, Turner, & Tiwari, 2008; Verhoef et al., 2009; Voss et al., 2008).

A well-known model is that of Verhoef et al. (2009) in figure 3. They demonstrate as primary constructs of customer experience: social environment, service interface, retail atmosphere, assortment, price, customer experiences in alternative channels, and retail brand. Additionally, their model incorporates a dynamic time component indicating that customer experiences are directly affected by experiences from the past. A limitation of their findings is that it was constructed in the context of a retail vendor, correspondingly it's applicability outside of this regard is questionable. Also, it is not clear how the different constructs relate to each other. Furthermore, Verhoef et al. (2009) state that positive customer experiences leads to more customer satisfaction and increased customer loyalty, but this is not displayed in their model.
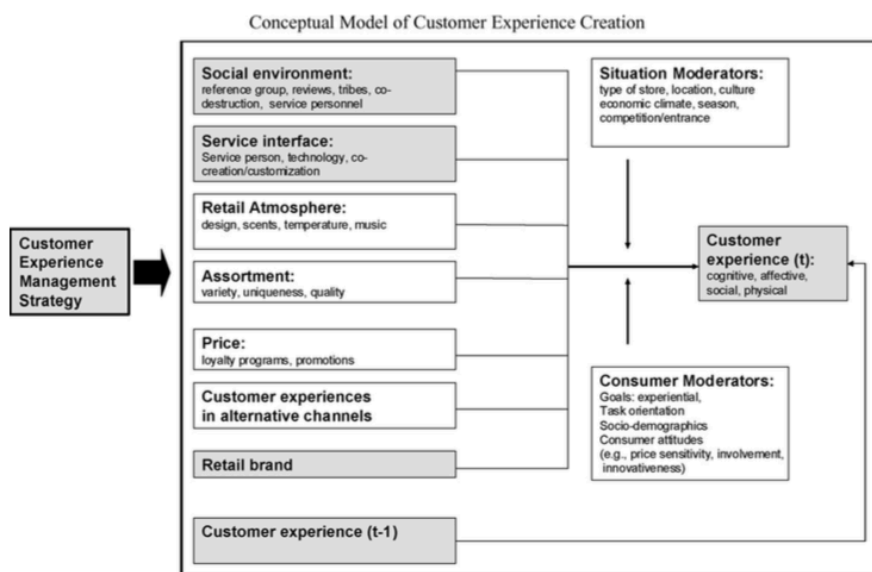

Figure 3

A different, more general model is proposed by Fatma (2014). Her model focuses on both the antecedents and the consequences of customer experience. She argues six elements directly influence the experience: Brand performance, multichannel interaction, service interface, physical environment, social environment and price and promotions. By efficiently managing these six elements in a customer experience strategy, companies can obtain more customer satisfaction which leads to increased customer loyalty.

An important difference between Fatma's (2014) model (figure 4) and that of Verhoef is that it includes the consequences of customer experience and more specifically those of customer loyalty and satisfaction. In spite of this, it does not contain a dynamic component related to time similar to Verhoef's conceptual model.
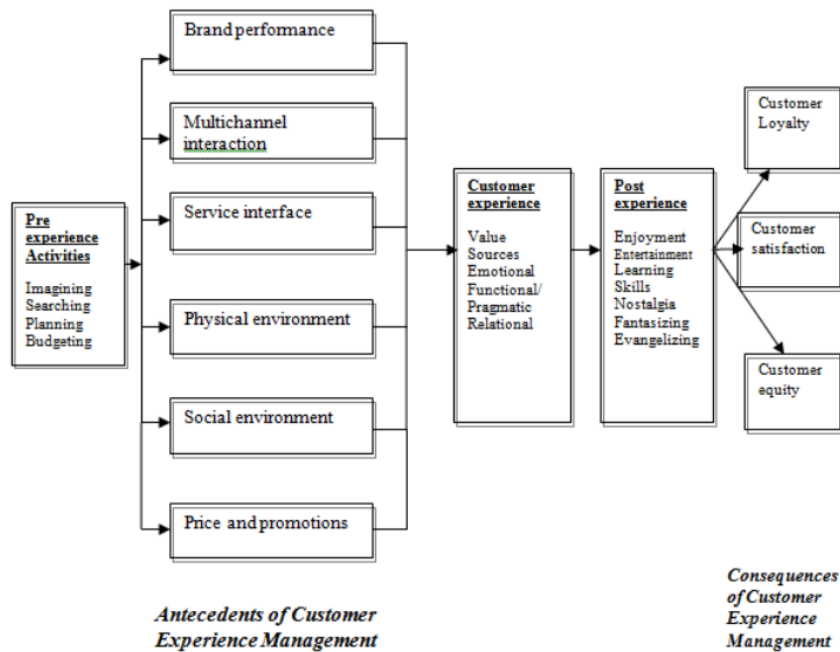

Figure 4

With regards to customer repurchasing behavior, Liljander and Mattson (2002) conducted an empirical study on data from private bank services, food purchased in retail, and travel agency services. Their research was twofold. Firstly, they investigated the influences of a customer's mood on service quality perception. Secondly, they examined the effect of past service experiences on responses such as repurchase intentions. Their findings, as displayed in figure 5, describe both the direct effects of satisfaction and past experiences on repurchase intention. Moreover, they state that experiences may be more important than satisfaction with regards to repurchase intentions (Liljander & Mattsson, 2002). Similarly, this relationship was also investigated and confirmed in an online environment by Rose, Hair, and Clark (2011).
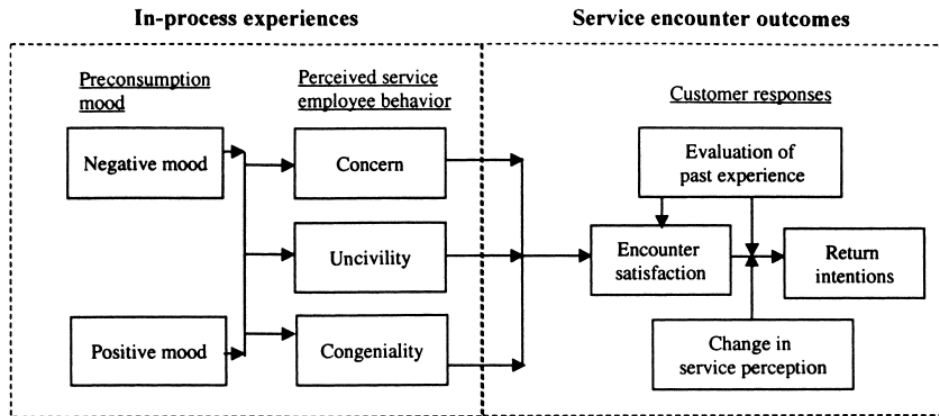
Figure 5

Last, the relationship between customer satisfaction and customer loyalty can be derived from the ECSI model developed by the European Foundation for Quality Management [EFQM]. This model has been tested by several authors in many different contexts (Ciavolino & Dahlgaard, 2007; Gronholdt, Martensen, & Kristensen, 2000; Türkyilmaz & Özkan, 2007). The model, pictured in figure 6, outlines the positive effect of customer satisfaction on customer loyalty. Moreover, it displays the relationships between perceived value, customer satisfaction, and customer loyalty (Committee, 1998).
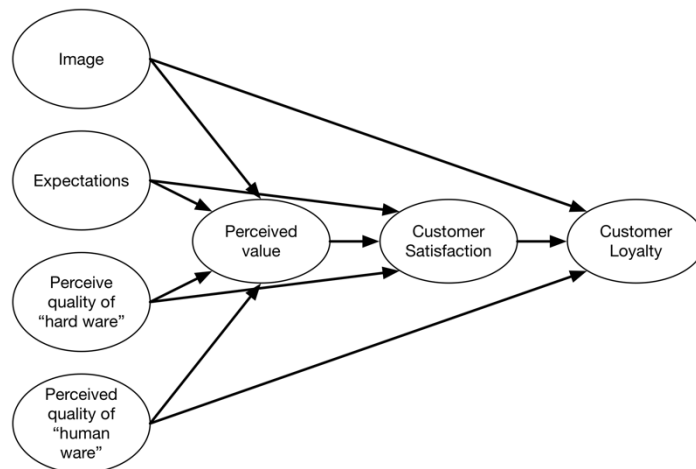

Figure 6

Altogether, the following integrated model in Figure 7 is proposed based on the previous analysis. This to provide a clear and comprehensive view of the different relationships between customer experience, loyalty, satisfaction, and repurchase behavior. Within the model, the direct relationships of customer experience on loyalty, repurchase behavior, and satisfaction are illustrated using solid and directional arrows. The indirect influences of customer experience on re-purchase intention, through customer satisfaction or loyalty, is displayed using a dashed line. Its indirect impact on loyalty through customer satisfaction is illustrated in the same way.

The relationship between repurchase intentions and loyalty is quite natural, given that repurchase intention is a specific type of loyalty. Peppers and Rogers (2010) state that loyalty can take on two different forms. More specifically, an attitudinal form or a behavioral form which both have different implications. The attitudinal aspect concerns increasing the customer's preference for a brand while behavioral relies on actual repurchases by a client, regardless of their preferences. In this context, the relationships of the constructs on repurchase intentions are considered to be of the attitudinal type.
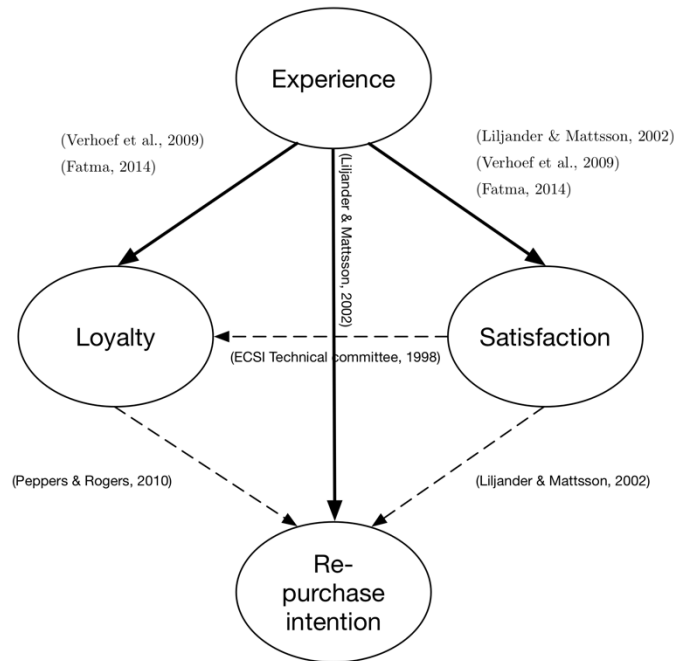

Figure 7

3. Customer and Business Process Management

3.1 Business Process Management

Business Process Management (BPM) as the name intuitively suggests, involves the management of business processes. It aims to identify opportunities for process improvement and tries to ensure a process leads to consistent outcomes (Dumas, La Rosa, Mendling, & Reijers, 2013). Van der Aalst, Hofstede and Weske (2003) define BPM as:

> "Supporting business processes using methods, techniques, and software to design, enact, control, and analyze operational processes involving humans, organizations, applications, documents and other sources of information" (p.4).

These processes or "sets of activities that are performed in coördination in an organizational and technical environment" as stated by Weske (2012, p.5), jointly realize a business goal. It is what a company does whenever they deliver a product or service to customers. A well-summarized definition of a process itself is given by Gersch, Hewing, and Schöler (2011)

> A process is a specific ordering of work activities across time and place, with a beginning, an end, and clearly identified inputs and outputs (p. 733).

It's hard to imagine an organization that does not function in a process-oriented way. A business can have a very accurate view and understanding of their processes, actively map and follow-up on them. But even if this is not the case and the organization is not *process-aware*, they will presumably still handle business on a day-to-day basis according to a particular pattern, with or without deviations.

As outlined by Dumas, La Rosa, Mendling, and Reijers' book *Fundamentals of Business Process Management*, business processes typically consist of one or more of the following elements:

- *Events*, denoting occurrences that happen without a specific duration and may trigger a particular activity. An example of an event is the arrival of a package in a warehouse location.
- *Activities* (or *tasks*) are performed by a person or system and have a particular duration. An example of an activity is moving a package in the company warehouse to a different location.
- *Decision points*, in turn, are elements in a business process that define the course of the process execution based on a decision. An example of a decision point is deciding wether a package that has arrived at a company's warehouse should be returned or not after inspecting it for damages.

Consider the following example of a simple business process in figure 8. A pizza restaurant employee receives an order *(event)*, proceeds by checking if the ingredients are running low, and in case they are *(decision point)* orders new ingredients. Next, he assembles the ingredients *(activity)* and once this is done, starts cooking the pizza. Next, the delivery activity is performed, and finally, the employee collects the customer's payment.
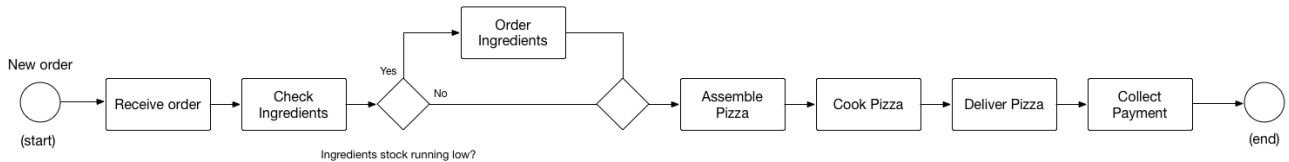

Figure 8

Once a process is mapped, a typical next step in Business Process Management is to analyze potential issues or areas for improvement and, where possible, quantify these concerns using performance measures. These different steps are outlined by the well known BPM Lifecycle. This continuous cycle, as pictured in figure 9, represents the six typical stages a Business Process Management initiative goes through (Dumas et al., 2013).

- *Process Identification*: During this stage relevant business processes in accordance with the business objective of the BPM initiative are identified.

- *Process Discovery*: Once appropriate business processes have been determined, they are visualized and documented in their current state.

- *Process Analysis*: The third stage of the BPM lifecycle consists of using business process performance metrics to identify possible issues with the company's business processes.

- *Process Redesign/Improvement*: If potential issues are found, the goal of this stage is to inspect how changes to elements of the process model could help in resolving these matters.

- *Process Implementation*: During the process implementation phase, the envisaged changes to the model are configured to fit into the working environment. An example of how this can be done is through change management and adapting operational guidelines or even programming changes into existing operational management systems to automate some elements (Weske, 2012).

- *Process Monitoring and Controlling*: In the final stage of the BPM Lifecycle, data is collected and analyzed, again using process performance metrics, to investigate if the changes were beneficial or not. New issues can then be identified and initiate a repetition of the cycle.
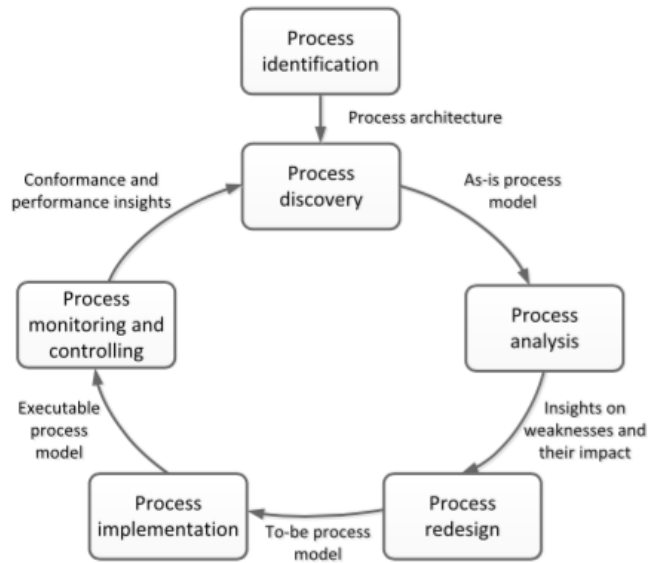
Figure 9

Reconsider the previous example of a pizza restaurant. The owner has encountered some unsatisfied customers and felt there are some issues with the *sales* process. After recording how long it takes to sell a pizza, and recording the separate durations of each activity, he concludes that making pizzas for customers is taking too long. More specifically, by using *time* as a measure of performance, he suggests that checking the stock of ingredients should be done in parallel with *cook pizza*. This way, if some ingredients are running low, the *order ingredients* activity can happen while cooking. The time an employee is waiting for a pizza to bake in the oven is currently wasted (assuming for illustrative purposes that a single employee handles one order at a time). He is convinced this will not pose any problems for the *assemble pizza* activity as ingredients will always be ordered in time if the stock starts running low. He thus proposes changing the process to the envisaged model depicted in figure 10.
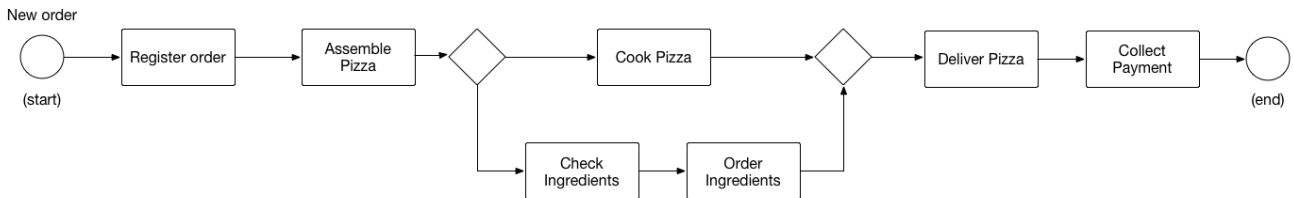

Figure 10

Although elementary, the example above appears to reflect most Business Process Management appliances today in the process analysis stage of the BPM Lifecycle. Using a performance measure related to efficiency (time), the restaurant tries to improve the performance of their internal sales process. Numerous authors such as Bolton (2004), Surbakti (2015), Moormann and Palvolgyi (2013), and Rosemann (2014) imply that today, BPM practices and theory are dominated by an inside-out view. Implying that the conversation focuses too much on internal business processes like manufacturing, sales or procurement and the used performance metrics are mostly related to efficiency, i.e. performing in the best way feasible with a minimum waste of time and resources. In this regard, the customer only plays a minor role in the improvement of business processes (Bolton, 2004; Moormann & Palvolgyi, 2013; Rosemann, 2014; Surbakti, 2015).

Nevertheless, Dumas et al. (2013) argue that one of the fundamental goals of BPM is to deliver the best value possible with regards to servicing clients (Dumas et al., 2013). Likewise, in the works of Smart, Maddern, and Maull (2009) it is professed that Business Process Management should be a means by which the requirements or wishes of the customer are transformed into actual goods and services. To arrive at this result, an orchestrated set of activities and events is used (Smart, Maddern, & Maull, 2009). Although customer-centricity is an important aspect in BPM, Brocke and Sinnl (2011) nuance this notion. They state there are more core values to BPM, precisely "consistency, quality, continuous improvement, customer orientation, process orientation, and responsiveness to change from the research examined" (p. 367) (Brocke & Sinnl, 2011). So, although the importance of the involvement of customers is recognized, there are differing goals for a BPM initiative.

The discussion above has sparked the conversation about *Customer Process Management* (CPM). With Customer Process Management, organizations aim to optimize their business processes so that they optimally play-in on the experiences customers go through with regards to their respective *customer process*. A *customer process*, as outlined by Moormann and Palvolgyi (2013) is:

> "The chains of activities that customers pass through with the aim of fulfilling their needs" (p.174).

In other words, it is the entire process a customer goes through to fulfill a particular desire (Heckl & Moormann, 2007b; Moormann & Palvolgyi, 2013). Important to note is that customer processes can start way before the client interacts with a business (Rosemann, 2014). For illustrative purposes, this is what a customer process could look like for a client of our fictive pizza restaurant (figure 11).
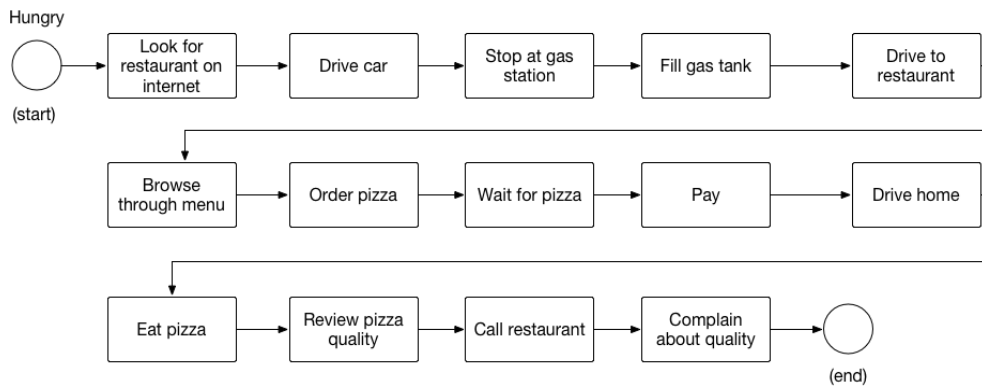
Figure 11

The customer's process starts with feeling hungry; he therefore decides to look on the internet to solve this *problem*. Once his decision is made, he sets out to drive to the restaurant of choice to fulfill his need for food. Upon driving, he notices that the gas tank is near empty and thus makes a stop at a nearby gas station. Once done filling up the tank, he arrives at the restaurant only to have to start browsing through an extensive menu with a confusing and hardly readable typeface. Slightly annoyed he orders a pizza, waits for it to be ready and pays the amount owed. His next activities are evidently driving home and eating the pizza. Once finished and his hunger is over, however, he contemplates on the actual quality of the pizza. It didn't taste *that* good, and it was quite cold already when arriving home. The box it was put in did seem quite the special pizza box. Infuriated he phones the restaurant to complain, marking the end of his *journey* or *process* to fulfill his need for food.

From the example, it is clear that there are several potential areas for improvement with regards to the experience of the customer. While we could intuitively argue there are elements in direct control of the restaurant, such as the lack of a proper pizza box and a properly designed menu, there are elements outside of their scope, such as the event of a client's empty gas tank. Possibly the restaurant could create a promotional partnership with surrounding gas stations and hence make it a new touch point for experiences. The issue here is, however, that the *entire* customer (experience) process is seldom visible to a company. It can differ for individual clients, starts before the client enters the business, and does not end upon the customer exiting, e.g. the restaurant. Managing and adapting business processes, so they optimally play-in on the processes of the client is an objective of Customer Process Management (CPM). This domain that complements Business Process Management is introduced in the next section.

3.2 Customer Process Management

Customer Process Management (CPM) was introduced approximately ten years ago. However, 90% of articles in the academic literature about Customer Process Management are situated in-between the years 2010 and 2015 (Surbakti, 2015). It was originally conceived, similar to the introduction of Customer *Experience* Management, as an approach to offer a solution to the implication that two-thirds of Customer Relationship Management initiatives failed, but it did not gain traction until 2010 (Surbakti, 2015).

No explicit definition of CPM could be found in existing literature. We can, however, derive several of its characteristics.

- It complements Business Process Management by offering a customer-centric and outside-in view on the process experiences of external stakeholders (Rosemann, 2014; Surbakti, 2015).
- It is not about how customers engage in business processes, but about how companies participate in the customers processes (Rosemann, 2014).
- It covers all the workflows, business rules, and necessities to deliver custom business processes to different customers (H. Smith & Fingar, 2003).
- It attempts to focus on real-time data from information management systems to eliminate latency and redundancy (Fingar, 2003).

This idea of latency (or *process execution latency*) as stated in the last bullet point is considered as "the time it takes a process to detect an event, analyze its relevance and create a process instance if needed" (Rosemann, 2014, p.4). An example hereof, inspired by Rosemann (2014), could be a car manufacturer who can detect if a customer has an accident and as a part of its customer care process immediately notifies emergency services.

Given the repeated mentions throughout the thesis of customer-centricity and having an outside-in view, we delve next into what is exactly meant by both expressions. Following these two clarifications, the approach used with regards to integrating Customer Experience Management aspects in CPM is described in detail.

3.2.1 A customer-centric organization

Customer centricity can be regarded as a business culture that puts the needs of the customer at the heart of all parts of the organization and its processes. This strategy extends from the front line all the way to upper management, and considers the needs and wants of clients to prime over company goals (Bolton, 2004; Kiska, 2002; Peppers & Rogers, 2010). Or, as put by Peppers and Rogers (2010):

> "What the customer-centric enterprise wants is to deliver whatever offer for this customer is likely to create the most value, overall, without regard to any other organizational or department goals or incentives that might have been established at the firm" (p.396).

With respect to this, employees in a customer-centric organization foster on creating a long-term relationship with clients, even if this mindset results in decisions that are not optimal for the short-term benefit of the organization (Bolton, 2004). The loyalty of existing customers ranks over customer acquisition, and a reward system is in place that reinforces practices which contribute to positive customer feedback (Bolton, 2004). Moreover, interactions with clients are encouraged at all levels, and feedback is collected across every part of the organization (Kiska, 2002; Peppers & Rogers, 2010). This is nuanced by Bolton (2004) stating that the information is mainly captured at the aforementioned touch points mentioned in section 2.3.

A customer-centric organization is considered to be an organization that does not primarily deliver and mass-market standard products, but instead, focuses on offering customer-based customization and personalization of goods or services (Bolton, 2004; Heckl & Moormann, 2007a). The process of a client is the starting point for all business activities so that the organization does not merely meet isolated requirements or solve separate problems. But offers a solution relevant to the entire customer process (Heckl & Moormann, 2007a; Moormann & Palvolgyi, 2013).

With regards to change, the customer centricity paradigm argues that the voice of the customer is used as input at every department or division when creating new processes, services, or employee roles (Peppers & Rogers, 2010). Improving effectiveness is the aim, i.e. the ability to meet customers' requirements, instead of ameliorating operational efficiency (Bolton, 2004).

With this in mind, one could question the power of the client in this context, and the effects on the profitability and longevity of a customer-centric firm. Doubts about customer orientation have been expressed in the past. Stating it results in trivial product development efforts, confused business processes, or even the loss of an industry leader position (Bennett & Cooper, 1979; Christensen & Bower, 1996; Macdonald, 1995)as cited in (Slater & Narver, 1998). Slater and Narver (1998) investigated this and

distinguish at the core of customer orientation, two categories. Businesses having a customer-led philosophy, and those having a market-oriented philosophy.

A customer-led philosophy is characterized as being focused on a more reactive and short-term approach. Concentrating on the expressed voice of the customer and measures of customer satisfaction. The market-oriented philosophy, however, which also strictly focuses on the customers' needs, is regarded as having a long-term vision and attempts to understand the latent (or non-expressed) needs of customers, which are not always visible to the organization. Additionally, this philosophy considers different segments of customers with regards to the type of information they provide. It is also characterized by using all company-wide resources to integrate the voice of the customer properly.

Slater and Narver (1998) argue that, in a dynamic environment, a customer-led philosophy will rarely lead to a competitive advantage. A market-oriented philosophy, which given the aforementioned points closely resembles customer-centricity in having a long-term vision and integration throughout the whole organization, does achieve at obtaining competitive advantages in all types of markets. In a relatively predictable environment, however, the use of a customer-led philosophy can be beneficial, but it falters once the environment is more dynamic or volatile (Slater & Narver, 1998).

3.2.2 An outside-in perspective

The second expression to clarify is that of the *outside-in* perspective, which is contrasted to having an *inside-out* perspective. Both an inside-out and outside-in perspective appear to be recognized concepts in Business Process Management literature. Generally speaking, Heckl and Moormann (2007: states that an outside-in perspective in process management is essentially a view that relies on the consideration of underlying *customer* processes and the resulting customer needs. While an inside-out view focuses on the internal processes of an organization (Heckl & Moormann, 2007a; Trkman et al., 2015).

Regarding business process improvement, an inside-out perspective would involve the assessment of a single process, identify it's associated problems, and incrementally resolving the issues. It is characterized by improving efficiency, such as eliminating bottlenecks of a production process (Surbakti, 2015). An outside-in view, on the other hand, is more concerned with scanning the environment and looking for external opportunities for process improvement. This is regularly referred to as explorative Business Process Management (Rosemann, 2014). Moreover, the outside-in perspective is typically trying to improve effectiveness instead of efficiency. Which essentially designates the improvement of how capable a process is to meet a customers' requirements, needs, or desires. It places more emphasis on the result than on *how* it is achieved (Burlton, 2015).

In the next sections, as described in the methodology in Chapter 1, we go through the different stages of the BPM Lifecycle up to, and including, the Process Analysis stage. This to identify adaptions needed for use in the context of Customer Process Management.

4. Process identification

The first step in the BPM Lifecycle consists of identifying which processes exist within an organization. Although seemingly an obvious step. It would be quite difficult to conduct any Business Process Management initiative without having a clear understanding of the process environment. Moreover, this stage is also concerned with defining criteria to evaluate the relevance of identified business processes. These criteria are set with a specific business goal in mind and usually relate to the value created by a process or by the amount of problems to be resolved within that process. By prioritizing processes, businesses can focus their attention on a particular subset and save valuable resources (Dumas et al., 2013).

Accordingly, two phases are defined in the process identification stage of the lifecycle. That is to say, a designation phase and an evaluation phase. Designation is charged with gaining a basic understanding of what processes are present and how they are connected to each other. The evaluation phase, in turn, consists of everything related to defining assessment criteria and prioritizing the identified processes (Dumas et al., 2013).

As the ambition of this thesis is to provide support to the development of Customer Process Management as a subdomain of BPM. We must not only identify *business* processes but also the *customer* process, i.e. the series of actions that a client conducts to achieve a particular goal from their perspective. Hence, in the following two sections, an exploration is done as to how exactly both business and customer processes are identified in the academic literature. Following these investigations, a proposition is made as to how the alignment of both types of processes could be obtained.

4.1 Identifying business processes

Practices for identifying processes are regularly done in an intuitive manner, requiring numerous meetings and interviews with relevant and knowledgeable persons (Hwang & Yang, 2002). Specific methodologies and rationales for identifying business processes, however, do exist and can mainly be found in two areas, that of process architecture development and that of reference models. Reference models such as the Supply Chain Operations Reference Model (SCOR) or the Value Reference Model (VRM) are tools that can assist in identifying industry-specific business processes (Dumas et al., 2013). These reference models are developed by governments, academics, industry- or non-profit associations and share common best practices among companies. Van der Aalst (2011) however, points to the low quality of these models and pleads for them to be used with caution.

The second area containing methods to identify business processes is that of process architectures. Usually, the result of this stage of the lifecycle is a visualization that gives all the involved stakeholders an abstract and understandable view of the organization's processes and their underlying relationships. This visualization is called a *process architecture* (Dumas et al., 2013). Developing these business process architectures is an entire discipline by itself. Most theory in this domain focuses on extracting architectures from existing business process models (Eid-Sabbagh & Weske, 2013). Nevertheless, some insights can be gained regarding the actual identification of processes without a prior mapping of them. Dijkman, Vanderfeesten and Reijers (2011) have given an elaborate overview of different and commonly used methodologies to design a process architecture. They argue that, depending on the goal of a BPM initiative, a different process architecture design method can be used.

Process architectures typically contain three levels of detail or *granularity* as depicted in figure 12. The first level gives a very abstract or primitive understanding of the process environment in an organization. Each process within this level refers to more concrete business processes on level two. These processes on level two are more refined but still abstract to a certain extent. Level three, in turn, contains the detailed processes with their respective activities and resources. These are associated with processes on the second level. The detailed processes of level three are usually in the format of a business process modeling language and constructed in the process discovery stage of the BPM lifecycle. The primary aim of the identification phase discussed in this section is gaining an abstract understanding of the process environment of the organization, this may result in insights on all levels, but the third level is mostly of concern of the process discovery phase of the lifecycle (Dumas et al., 2013).
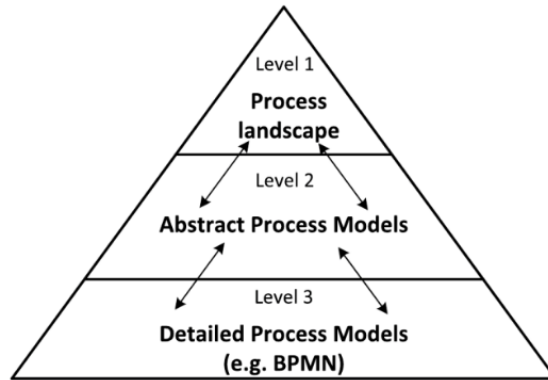
Figure 12

A detailed discussion of each methodology in business process architecture design is outside the scope of this thesis. Still, from Dijkman et al.'s (2011) article we identify one particularly interesting method, namely that of the *goal-based approach*. Using this approach, a first step is to design a *goal structure*, which consists of mapping the different business goals and their inherent connections. Following this, business processes can be derived to construct a business process architecture (Dijkman, Vanderfeesten, & Reijers, 2011; Dumas et al., 2013). Although originally designed for the specification of new, non-existent, business processes, it can also be used for the documentation or derivation of existing processes (Koubarakis & Plexousakis, 1999).

The approach builds on the definition of a business process being, in essence, a collection of activities aimed at achieving a particular goal. If we have a precise mapping of these goals, we can "reverse-engineer" and thus derive processes themselves. A side-benefit of the goal-based methodology is that it helps to determine why certain processes are critical towards achieving a goal, possibly assisting in the later evaluation phase (Dijkman et al., 2011). As will be seen in Section 4.2, this methodology is particularly of interest as there is currently no set methodology for identifying the process a *customer* goes through (Moormann & Palvolgyi, 2013). Therefor, by investigating how processes can be derived from goals, a potential application or adaptation to the individual goals or needs of a customer could be studied.

In a study conducted by Poels, Decreus, Roelens and Snoeck (2013), numerous goal-oriented methods are described with regards to their focus, scope, and maturity. A methodology that explicitly mentions its potential use for identifying unknown business processes is outlined by Koubarakis and Plexousakis (1999). As we are only interested in the identification of the primitive process environment at this stage of the lifecycle, we consider three of five steps from their methodology. The ignored steps relate to a specification of more specific activities and processes in a formal definition, so they are of use for verification and implementation in information systems (Koubarakis & Plexousakis, 1999).

41

Step 1. Identify the organisational objectives and goals, and initiate goal reduction.

The first step involves the initial statement of the organization's objectives or goals. These can be obtained through strategy related documents such as mission statements or brainstorming sessions with different stakeholders. Once these goals have been identified, they are decomposed and reduced into finer non-conflicting goals by asking *why* and *how* questions. Additionally, interactions between the goals are also outlined.

Using our fictive pizza restaurant example, the following goals are identified:

- G1: Be the best and most famous pizza delivery restaurant in town with quality items on the menu.
- G2: Reach a net profit of €140.000 by the end of the year.
- G3: Open a second restaurant in the neighboring city.
- G4: Obtain 6 extra delivery vespas within 12 months.

By way of illustration of goal reduction, we take goal G1 and decompose it into finer goals. Notice how these four new sub-goals all collectively attribute to the goal G1. All four have to be realized to achieve this goal. This refinement is characterized as being an AND-decomposition:

- G11: Pizza's are delivered as fast as possible.
- G12: The restaurant is aggressively advertised.
- G13: The quality of pizzas is tested weekly.
- G14: Only the best and freshest ingredients are used.

Again, goal G12 can be decomposed further into the following subgoals. These new goals are considered to be OR-related. Both can independently lead to the achievement of their parent goal.

- G121: College campuses nearby are targeted.
- G122: Advertisement space is bought on relevant media.

Delving deeper, goal G121 can be decomposed one more time into:

- G1211: Flyers are distributed during weekdays near the entrance of the targeted college campuses.
- G1212: Posters are attached to designated places of the targeted college campuses.

Furthermore, relations between each goal should be outlined. For example, goal G1211 and G1212 can negatively impact goal G2 due to the cost of printing posters or flyers and to have employees distribute them on campuses every day.

To visualize the different relationships between goals and obtain a structure, we use AND/OR trees as proposed in Aburub, Odeh and Beeson's (2007) article on modeling non-functional requirements of business processes. Using this notation, AND-relationships are depicted by a single arc between two goals while OR-relationships are depicted by a double arc. Influences of goals are pictured using dotted lines marked by a plus or minus sign, which respectively represent a positive or negative interaction. The result is shown in figure 13.
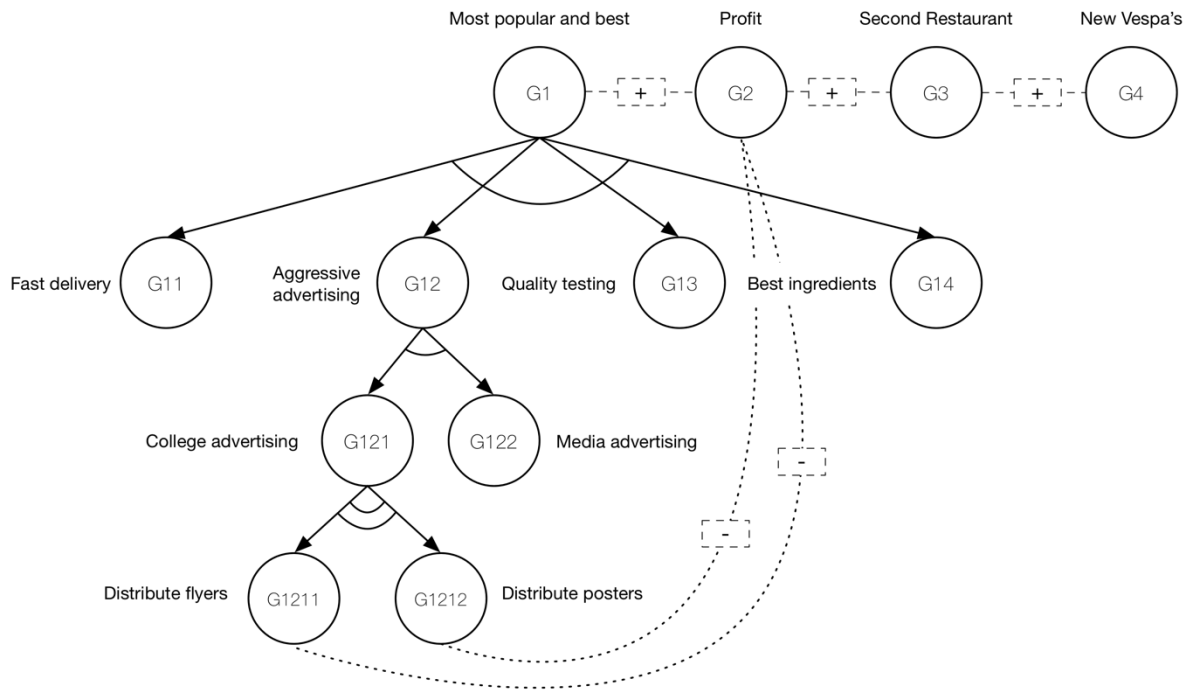

Figure 13

43

Step 2. Identify roles and their responsibilities. Match goals with role responsibilities.

Similar to the identification of the business goals, roles and responsibilities should be discovered by interacting with relevant stakeholders. Once the different roles have been outlined, it should be reviewed whether each role (or a newly defined one) can be assigned to a specific goal as responsible for its achievement. With this in mind, the goals identified in the previous step can be rewritten to reflect the assigned responsibilities.

In our example, we determine the following roles: *Chef*, *DeliveryPerson*, *LeafletDistributor*, *Manager*, and *Server*. The *Chef* will be responsible for making all pizza's while the *DeliveryPerson* ensures the delivery. The *Server* registers incoming orders from clients in the restaurant, on the phone, and from their website. The *LeafletDistributor* is charged with distributing flyers or posters across campuses. Furthermore, the *Manager* sees to the expansion of the restaurant and its resources. As an example, we can now rephrase goal G1211 into: *The LeafletDistributor distributes flyers during weekdays near the entrance of the targeted college campuses.* In a similar fashion, goal G11 can be reworded into: *The Server ensures that all orders are given to the Chef immediately.*

For each role specify its primitive actions, the conditions to be noticed and its interaction with other roles.

In the third step, details of each role are outlined. More precisely the actions, conditions, or situations of each role and their relationship with other roles. For instance, the *LeafletDistributor* will perform actions derived from goal G1 and its subgoals, such as: *collect flyers*, *drive to college*, *distribute flyers*, *drive to restaurant*, and *deposit remaining flyers*. Similarly, he depends on the conditions and situations that flyers are available; a college has been targeted, and he is ordered to start advertising. Both these conditions and situations depend on the *manager*.

Following this step we have now derived from abstract organizational goals a primitive process, it's actors and some influences. This process, which we can arbitrarily name the *college advertising process*, is illustrated in figure 14.
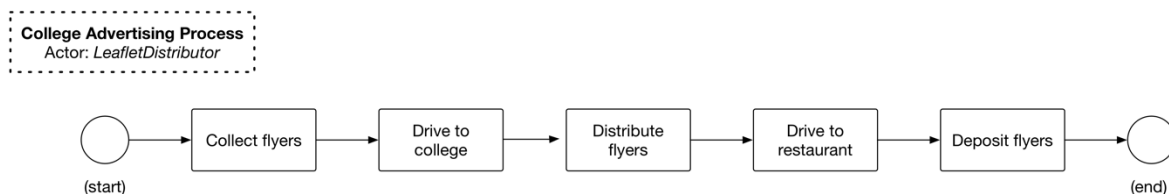
Figure 14

44

By repeating the methodology mentioned above, different processes for all goals can be identified which leads us to the abstract and illustrative business process *architecture* for the pizza restaurant pictured on the next page (figure 15). We now move on to the analysis of how processes from the point of view of the customer, i.e. *customer* processes, can be derived. This to the interest of Customer Process Management.

Figure 15

Goal-structure

Process architecture

4.2 Identifying customer processes

No precise methodology for the identification of a process from the point of view of the customer, seems to exist in the literature. Moormann and Palvölgyi (2013) describe how at this moment, there are no proper tools or methods to identify customer requirements in the context of process management. This can result in managers, who try to instill a Customer Process Management initiative, to target the wrong processes which have no customer impact (Moormann & Palvolgyi, 2013; Zeithaml et al., 1996).

Using interviews with management and employees in the sales field, Behara, Fontenot and Gresham (2002) derived a customer process model using factor analysis; wherein each factor represented an activity in the process a customer undertakes while purchasing and using a specific product. This approach, however, as well as other methodologies in the field of marketing are limited. Moormann and Palvölgyi (2013) argue these methods employ an inside-out perspective, are typically based on the concept of a customer life-cycle, and consequently only consider what the customer goes through during the use of a product. Hence, they don't focus on supporting the customer processes in the best possible way (Moormann & Palvolgyi, 2013). Considering, among others, that Cstomer Process Management calls for an outside-in and customer-centric perspective this would be of limited value to our discussion.

In a different domain, that of service management theory, there is a concept titled *Process Blueprinting*. This blueprinting methodology is primarily a modeling tool for services, but also heavily relies on identifying a customer's process. In like manner, no clear know-how could be found in this discipline on how to accurately identify a customer's process. Some authors suggest to rely on videotape recordings, photographs, interviews, or 'mystery shopping' from a customer's point of view to identify a customer's process (Temkin, McInnes, & Zinser, 2010; Zeithaml et al., 1996).

Another difficulty is that both start and end points of a customer's process tend to be unapparent. For example, a study in the context of a hair-salon revealed that clients viewed the process as starting with the phone call to the salon and setting of the appointment, while the hair stylists did not typically see the making of appointments as part of the service process (Zeithaml et al., 1996). Also, it is unclear, when looked at from the perspective of time, how long after the actual process encounter should a customer process be considered to end. Moreover, the consideration of repetition of a customer process is uncertain. Some clients could be going through a process once in their life (e.g. buying a house) while others multiple times a day (e.g. eating) (Moormann & Palvolgyi, 2013).

Moormann and Palvölgyi (2013) investigated these shortcomings in 2013 and outlined possible research directions to fulfill the existing gaps. He argues that, since customer processes are defined as sequences of activities that satisfy particular needs or desires,

we should look at existing knowledge surrounding human needs and desires in other research disciplines. By using theories from domains such as psychology and sociology, one could identify different kinds of human needs and look into how they trigger activities to satisfy them. The result should be a hierarchy of needs which, as phrased by Moormann and Palvölgyi (2013), "could then be used for the identification of customer processes by which a person would strive to fulfill his/her needs" (p.4). This hierarchy of needs can be inspired by the works of Max-Neef (1992), stating the fundamental needs of human beings, or the well-known hierarchy of needs by Maslow (1943). By this reasoning, a customer has a basic need and from this need, possible 'satisfiers' can be deducted. These satisfiers, in turn, can be translated into goals, which would lead to the deduction of customer processes. Yet, Moormann and Palvölgyi (2013) don't give a concrete elaboration as to how the actual extraction of a customer process would be conducted from the needs hierarchy (Moormann & Palvolgyi, 2013).

Considering Moormann and Palvölgyi's (2013) call for the deduction of customer processes using fundamental needs and desires as a starting point. We speculate the use of a similar approach to the goal-oriented methodology outlined in the previous section with regards to the identification of business processes. Presumably, by modifying and testing the method, abstract customer processes could potentially be derived in a similar fashion.

Another important aspect to consider is that, ideally, a researcher would be able to identify each and every customer's individual process. However even "with the best will in the world", as worded by Bolton (2004), this is unlikely to be possible. Consider the customer process example in chapter 3. Activities such as going to a nearby gas station before going to the fictive pizza restaurant will not occur within every customer's process. This heavily relies on context, like in our example case, an empty gas tank. A more efficient approach would, therefore, be to derive processes for a group or segment of customers (Bolton, 2004).

4.3 Business and customer process alignment

So far, we have noted that there is currently a lack of concise methodologies to identify the processes of the customer. These customer processes are particularly of interest in the context of Customer Process Management. The suggestion was made to test whether the goal-oriented approach, developed for *business* process identification, can also be employed for use in identifying *customer* processes. We also outlined how business processes are identified and how this usually leads to a business process architecture map. As discussed, this diagram is a prominent tool in BPM. It gives all the involved stakeholders a clear and understandable view of the business process environment. Additionally, it assists decision makers in defining which processes to target for further consideration throughout the BPM lifecycle.

In this section, we call for the extension of this business process architecture map to include processes from the point of view of the customer. In part due to the assertion that a customer's world, according to Moormann and Palvölgyi (2013), can be described by a map of processes that run in parallel and at different speeds and frequencies. If an organization has a decent view over processes a customer goes through to achieve a certain desire or goal, as well as the different activities contained within. Then a company can properly try to adapt its *business* processes to provide optimal support to *customer* processes. Hence, achieve customer-centricity. Yet, due to a lack of knowledge and oversight, knowing *which* business processes to target for improvement in this context, is still a question left to be answered (Moormann & Palvolgyi, 2013).

The inclusion of customer processes in the architecture map could be of assistance to this complication. For this reason, having such an adapted version of the architecture diagram for particular use in Customer Process Management can prove to be valuable. However, merely displaying customer processes next to those of the business, on different levels of the architecture diagram, would be of limited use. We therefore suggest a second adaptation using the concept of touch points from Customer Experience Management.

The notion of touch points was introduced in section 2.3. To be recalled is that touch points are process-oriented. In the sense that they represent all points of interaction between a company and a customer before, during, and after the act of purchasing a product or using a service. Touch points invoke perceptions of experiences within customers. They can be direct or indirect. Accordingly, there are touch points which the company can control, such as a newsletter, or touch points it cannot control, e.g. a family member talking about a company's service (Meyer & Schwager, 2007; Schmitt, 2011). A more detailed elaboration on the concept of touch points was given in Chapter 2.

Because touch points represent interactions between a customer and the organization, each touch point must somehow be related to both an activity in a business process, as well as an activity in the process of the customer. Consider the following elementary example. In the context of a pizza restaurant, an advertisement on the Google search engine is a touch point. From the perspective of the restaurant, this touch point is part of the *advertising process*. While from the viewpoint of the customer, this touch point can be related to his process of *buying pizza*. On the activity level, it could be associated with a task like *Buy Google ads* for the restaurant. For the customer, this could be part of an activity such as *Look for pizza restaurant* in his process. In general, a touch point acts as an intermediate 'component' that links the world of the customer to the 'world' of the business through their respective process activities. An abstract illustration of what this extended process architecture could look like is pictured below in figure 16.

Figure 16

51
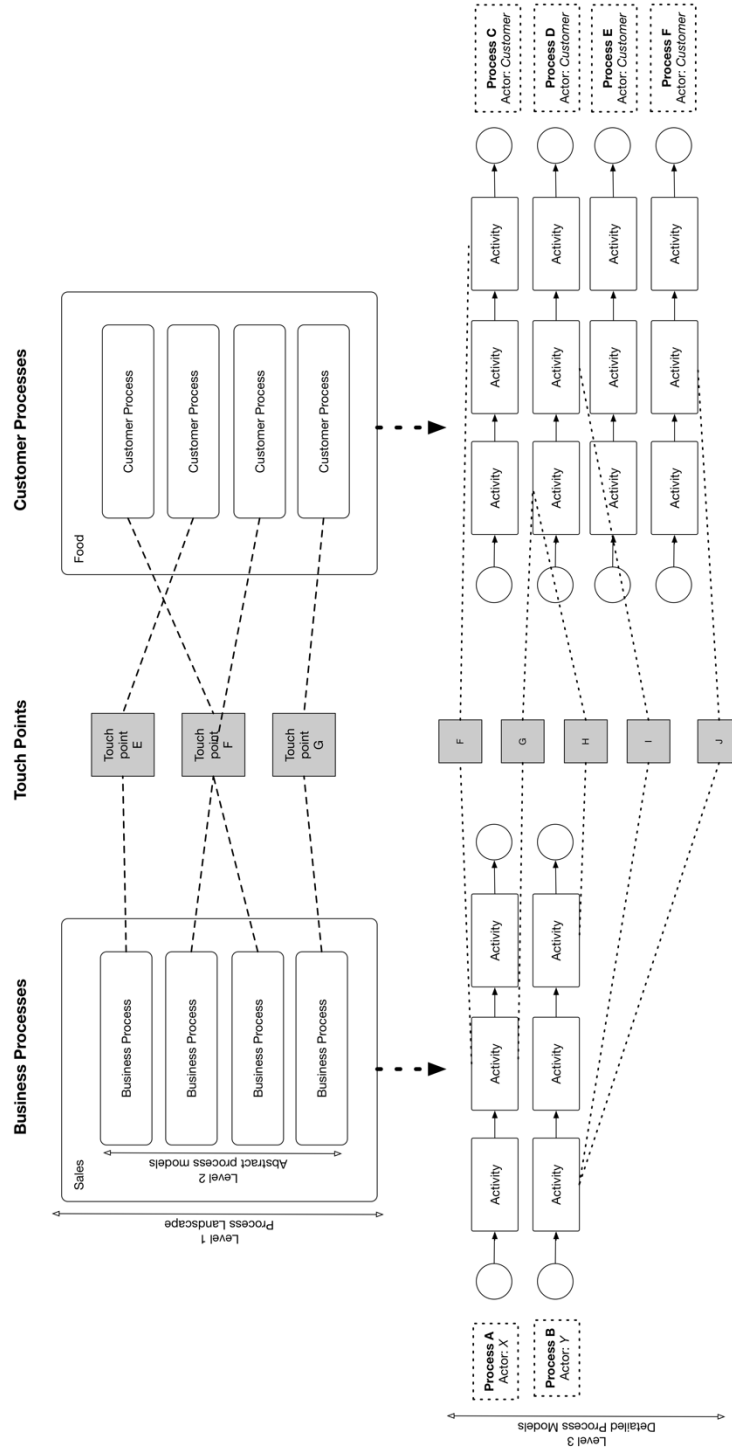
Adding these touch points to the process architecture can also assist with the later evaluation phase in this stage of the lifecycle. Essentially, it is at these touch points that businesses can collect information about customer experiences (Meyer & Schwager, 2007). Consequently, having them on the process architecture diagram can likely give prompt insights into which touch points are not performing to their standards. This, however, is more prone to be analyzed during the process analysis phase of the BPM lifecycle (Dumas et al., 2013). A different way of prioritizing processes could, for example, be according to the number of touch points that are associated with it. However, as argued by Davis and Longoria (2003), even a small company can have up to a hundred touch points. Therefore, they offer a methodology to determine which points can be classified as *key touch points*. Meaning these are more influential towards shaping a customer's experience. Eventually, it could be opted only to display key touch points on the architecture map. Or depending on the level shown in the typical process architecture map (see section 4.1), a greater or lesser number of touch points could be displayed.

As a concluding remark for this chapter, it must be noted that currently there appears to be a lack of methods or tools to both identify the actual touch points, as well as their associations. Further research is needed with regards to this gap (Clatworthy, 2012). Moreover, as was briefly remarked in the previous section, it is more desirable to segment customers with regards to their processes. In part due to the complexity and wide variety of processes of each and every individual client (Bolton, 2004). We now move on to the examination of the next phase in the BPM Lifecycle, Process Discovery.

5. Process discovery

Process discovery is a broad phase in the BPM Lifecycle. It involves both collecting information about the different activities contained within a process, as well as illustrating the detailed processes in their current state using process modeling tools. Dumas, La Rosa, Mendling and Reijers (2013) outline four subsequent phases within the Process Discovery stage of the lifecycle:

1. Defining the setting. More specifically gathering a team that will be responsible for the initiative.
2. Gathering information about the process in question, i.e. its activities and resources.
3. Conducting the modeling task. This stage deals with the actual creation of a visualization of the processes as a diagram, using a modeling method or language.
4. Assuring process model quality. This last phase is aimed at assuring the mapped models from phase 3 are conform to a range of quality criteria.

The focus of this chapter is in phase three, the modeling task. Its aim is to investigate to what extent modeling tools from Customer Experience Management literature can be integrated into those of Business Process Management. Its scope is therefore delimited at outlining the different components in standard modeling methods of the respective domains, and reviewing whether concepts of the one are supported by the other. By making these comparisons, a potential path is paved towards the development of modeling methodologies or extensions to existing methods specifically for use in a Customer Process Management context.

Inspired by the works of Kazemzadeh, Milton and Johnson (2015) and their approach with regards to comparing Service Blueprinting and Business Process Modeling Notation (BPMN), we use the same methodology and apply it to the concepts of Customer Journey Mapping (CJM) and Customer Experience Modeling. Using this approach, we can readily compare two process modeling formalisms and outline their specific similarities and differences.

The methodology as mentioned above consists of five steps:

1. Determine the concepts of A.
2. Determine the concepts of B.
3. Perform a conceptual evaluation of B against A.
4. Perform a conceptual evaluation of A against B.
5. Consolidate the findings and explain the implications from the results of steps 3 and 4.

To conduct the conceptual evaluations, a number of written symbols are used. These are outlined in Table 1 below. The actual comparison of concepts is done using *semiotics*. This, as argued by Kazemzadeh et al. (2015) is an appropriate approach to depicting the relationships between concepts in this context. In semiotic theories, each concept is regarded as having a *semantic field* which designates the conceptual span of a term and corresponds to its definition. This is then used to express similarities or differences between concepts (Milton & Kazmierczak, 2004). From this comparison, three results can occur and are portrayed using different symbols. A concept can be fully covered by another concept, meaning that its semantic field has a total overlap with that of the latter concept. Alternatively, it can partially cover the semantic field of another concept. Full coverage and partial coverage are respectively represented by the symbols ✓ and ✓p. If there is no coverage of the semantic field between two concepts, the symbol ✗ is used. These results are then represented in a tabular form (Kazemzadeh, Milton, & Johnson, 2015; Milton & Kazmierczak, 2004).

Table 1. Written symbolism used for the conceptual evaluation of A and B from (Kazemzadeh, Milton, & Johnson, 2015)

Representation	Description
$\langle a_1 \rangle, \langle a_2 \rangle, ..., \langle an \rangle$	The individual concepts for A.
$\langle b_1 \rangle, \langle b_2 \rangle, ..., \langle bm \rangle$	The individual concepts for B.
$\langle a_i' + ... + a_j' \rangle$ with $(0 < i' \leq j' \leq n >$	A combination of concepts from A.
$\langle b_i' + ... + b_j' \rangle$ with $(0 < i' \leq j' \leq m >$	A combination of concepts from B.
$\langle b_1 \rangle = \langle a_i' + ... + a_j' \rangle$	A concept in B is fully or partially covered by a combination of concepts in A.
$\langle b_i \rangle = S_i(A)$ $= \{ \langle a_i' + ... + a_j' \rangle, ..., \langle a_i'' + ... + a_j'' \rangle \}$	Different combinations of concepts of A independently cover the subjected concept of B. These distinct combinations of concepts are represented as members of the set $S_i()$.

Now that the methodology has been outlined, we move on to inspecting modeling tools used in both Business Process Management and Customer Experience Management literature. Accordingly, their various concepts are determined and represented in the format to be utilized in the conceptual evaluation. Step 4 of the methodology outlined by Kazemzadeh et al. (2015) is not researched. The purpose of this thesis is to examine if the principles of modeling in Customer Experience Management can be used in the context of Business Process Management. More specifically, in the BPM subdomain of Customer Process Management. The analysis whether BPM modeling concepts can be used by modeling tools in CEM is of little interest to our research statement.

5.1 Business Process Modeling Notation (BPMN)

In Business Process Management, the current standard for representing business processes is argued to be the Business Process Modeling Notation (BPMN). It was developed by the Object Management Group [OMG] and is to this day the most prominently used modeling language. In part due to its standardized graphical notation that is easy to interpret and its straightforward use by many different stakeholders. Moreover, in contrast with other modeling notations such as UML activity diagrams or Event-driven Process Chains (EPC), BPMN aims at offering support to all abstraction levels, such as business and software technology (Dumas et al., 2013; Eid-Sabbagh & Weske, 2013; Johnson & Milton, 2012; Weidlich & Weske, 2010). Another advantage of BPMN, particularly interesting for this study, is that BPMN allows the process designer to extend the language with their own expressions (Weske, 2012).

In BPMN there are four main categories of elements. *Flow objects*, *artefacts*, *connecting objects*, and *swimlanes* (Weske, 2012). Flow objects are the main building blocks of processes in BPMN. They include *events*, *activities*, and *gateways*. An event marks an occurrence that happens and can trigger a particular activity. Next, the activities represent the work that is performed during the process. There are two types of activities, *Sub-processes* and *Tasks*. Tasks relate to an 'atomic activity', i.e. the work cannot be broken down into finer actions. A sub-process however, is a 'compound activity'. This activity can be divided into a finer level of detailed work actions. This finer level of detail is in itself a process with its own detailed activities, hence a *sub-process* (Model, 2011). The last element within the category of flow objects is gateways. They assure different routing options for the process to *flow* through. These gateways can represent split or join behavior of the flow between activities, events, and gateways (Weske, 2012).

The second category of elements in a BPMN diagram, the artefacts, are used to show additional information that is not directly relevant for the sequence flow. Within this category are situated the *Data Object*, *Group*, and *Annotation* elements. Data objects serve the purpose of documentation or data retrieval. For example, this object could

designate paper documents or electronic databases that are being modified, created, or used by an activity in the process. Text annotations are used to provide contextual understanding to the person who reads and interprets the process model. Finally, group objects can be used to group elements of the process purely for documentation purposes (Weske, 2012).

The third category, connecting objects, are used to connect objects in the process diagram. There are three types of connectors. *Sequence Flow*, *Message Flow*, and *Association*. Sequence Flow regards the specification of the ordering of objects in the process. Message Flow is concerned with the flow of messages between *pools* (discussed later). These messages can be used for triggering activities. The Association element, in turn, is used to link artefacts to elements in the process diagram.

Finally, the category of swimlanes contains the *pool* and *lane* concepts. These two concepts are related to organizational aspects. A pool designates a participant in a process, such as an organization. Only objects related to that participant are drawn within their respective pool. A lane represents an entity such as a department, or a role within the pool. Message flow can happen between pools while sequences flows are restricted for use within a single pool. The different types of elements and their graphical representations are summarized in figure 17 while an example of a process, modeled with BPMN, as previously given is repeated below in figure 18.
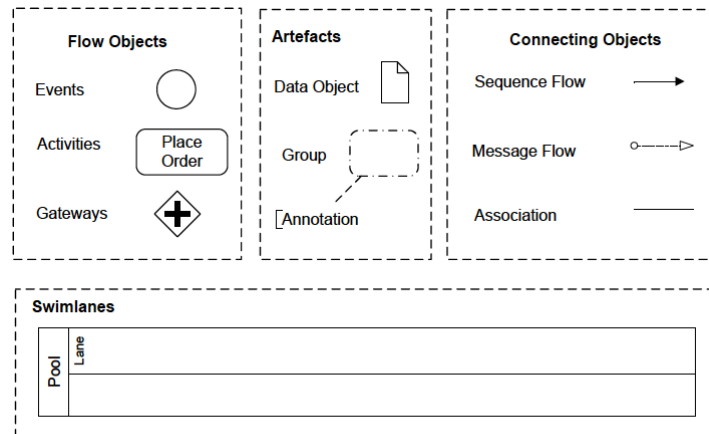
Fig. 4.78. Business Process Modeling Notation: categories of elements

Figure 17
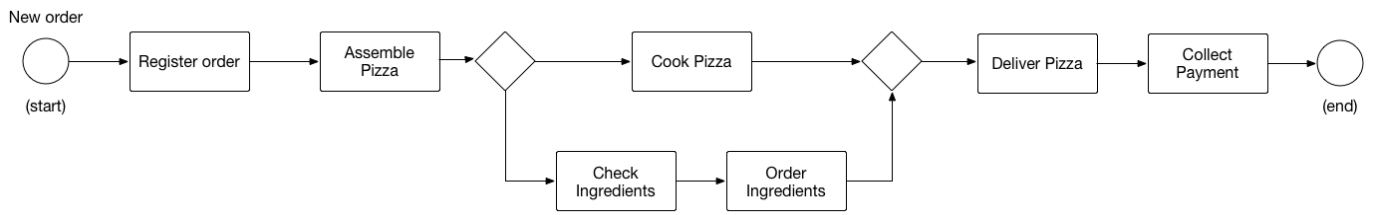
Figure 18

Considering that Kazemzadeh et al. (2016) already compared the concepts of Business Process Modeling Notation to Service Blueprinting, using the methodology discussed. We implemented their codification, located in Table 2, for use in the likewise comparison but extended to Customer Journey Mapping and Customer Experience Modeling. Table 2 contains the main concepts of BPMN and their respective definition, as given by the Object Management Group [OMG] (2011).

Table 2. Concepts in Business Process Modeling Notation as assembled by Kazemzadeh et al. (2015) from OMG (2011)

Concept	Description
\<Activity\>	An Activity is a generic term for work that an organization performs in a process. An activity can be atomic or compound. An atomic activity (task) is used when the work in the process is not broken down to a finer level of detail. A compound activity (sub-process) comprising more compound activities or tasks.
\<Event\>	An Event is something that "happens" during the course of a Process. These Events affect the flow of the model and usually have a cause (trigger) or an impact (result). An event can happen at the start of a process (start event), during a process (intermediate event), or at the end of a process (end event).
\<Pool\>	A Pool represents a Participant in a process. A Pool is a graphical container for partitioning a set of Activities from other Pools/participants.
\<Lane\>	A Lane is a sub-partition within a Pool. Lanes are often used for such things as internal roles (e.g., Manager, Associate), systems (e.g., an enterprise application), or an internal department (e.g., shipping, finance).
\<Sequence Flow\>	A Sequence Flow is used to show the order that activities will be performed in a process by a participant. Sequence flows are connecting and ordering activities within a pool.
\<Message Flow\>	A Message Flow is used to show the flow of Messages between two Participants that are prepared to send and receive them. In BPMN, two separate Pools in a Diagram represent the two Participants.
\<Message\>	A Message is used to depict the contents of a communication between two participants.
\<Gateway\>	A Gateway is used to control the divergence and convergence of Sequence Flows in a Process. Thus, it will determine traditional decisions, as well as the forking, merging, and joining of paths.
\<Data Object\>	Data Objects provide information about what Activities require to be performed and/or what they produce.
\<Text Annotation\>	Text Annotations are a mechanism for a modeler to provide additional information for the reader of a BPMN Diagram.
\<Association\>	An Association is used to link artefacts (data objects and annotations) to flow objects (activities, events and gateways).
\<Group\>	A Group identifies logically related activities and does not affect the sequence flow. The grouping can be used for documentation or analysis purposes.

5.2 Customer Journey Mapping (CJM)

A Customer Journey Map (CJM) is an instrument frequently used in Customer Experience Management to display the experience process. It both models and assesses the customer experience from the client's point of view throughout all possible touch points between the client, and an organization. It provides a means to "understand a customer's behavior, feelings, motivations and attitudes while using a service" (Kojo, Heiskala, & Virtanen, 2014) (p.4). So not only is the ordering of each interaction a customer goes through displayed, but also the attitude and feelings of the customer at these moments (Cruickshank, 2011).

Although a reasonably new method, customer journey mapping is a notion that is already widely used in practice and appears in many forms. These various formats are somewhat problematic with regards to consistency and mutual compatibility (Moon, Han, Chun, & Hong, 2016). While Customer Journey Maps have been around for some time in a practitioner's context, researchers are only now setting the methodological frameworks in place for delineating the rules of constructing these diagrams. Two very different approaches were found in the academic literature. One developed by Temkin, McInnes and Zinser (2010) and a very recent methodology introduced by Moon, Han, Chun and Hong (2016).

Upon closer inspection, it appears that Temkin et al.'s (2010) methodology to construct a CJM lacks, to some degree, substantiality. The descriptions for each consecutive step in the approach are short and exempt from examples. Furthermore, the steps themselves tend to ambiguous such as "Step 3: Research customer processes, needs, and perceptions" (Temkin et al., 2010) (p.4). With regards to the visualization of a customer journey map, their methodology does not contain any information towards the formatting requirements. The modeler is allowed to design a customer journey map to their own accord. Temkin et al. (2010) do give a set of required and optional elements to be portrayed in the map. To be more specific, the required elements of the map are outlined as the *customer processes*, the *customer needs*, and the *customer perceptions*. It seems that these elements too, are quite ambiguous. Temkin et al.'s (2010) research does shine a light on different use cases of customer journey maps in various organizations, but in this thesis, we cautiously consider their approach to not be accurate enough for integration purposes in Customer Process Management.

The methodology proposed by Moon et al. (2016) is more detailed, and contains some preliminary realizations towards the actual notation of elements in a CJM. We, therefore, consider this methodology as a proper basis. An illustration of its fundamental elements is given in figure 19. The central concepts or elements in the Customer Journey Map using this approach are: *Phases*, *Goals*, *Tasks*, *Routines*, *Starting Point*, *End Point*, *Arrows*, *Pain points* and *Dividing lines* used to group elements into distinct phases (Moon et al., 2016). We are particularly interested in conducting a conceptual

evaluation according to the methodology employed by Kazemzadeh et al. (2015). The explicit details of Moon et al.'s (2016) modeling approach such as identifying, deriving, and constructing the CJM diagram are not explicitly described. If so, they are explained in a very brief or abstract manner. Above all, it is the concepts and their definitions that are of relevance in the comparison to those in Business Process Management modeling methods.
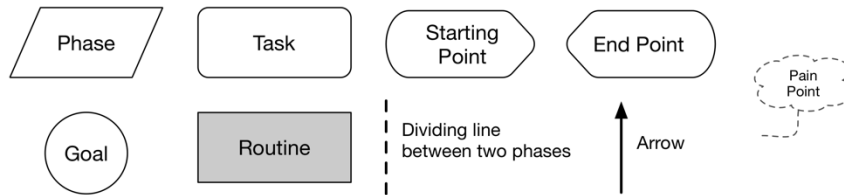

Figure 19

Phases point to the experience before, after, and during the service engagement. These phases group a collection of goals and tasks. An example of three phases in the context of a pizza restaurant could be *pre-ordering*, *ordering*, and *consuming* (Moon et al., 2016). Goals are desired conditions the client wishes to achieve. The CJM can contain multiple paths towards the achievement of a particular goal, this to emphasize the different ways a customer can accomplish them in reality. Inevitably, e.g. to achieve the goal of buying a particular product or browse through a menu, a customer will have to conduct a series of tasks. These tasks are explained and derived using the smallest components of the map, routines. Routines describe the unique physical and mental activities of the customer. They cannot be split into more refined user actions, e.g. *phone restaurant* or *eat pizza*. Furthermore, tasks or goals can be *mandatory* or *optional* depending on their depicted relationships. These links are drawn using *arrows* and portray the path of the customer journey. They can either be sequential (mandatory), optional, parallel, or circular (in case the goal or task can be repeated). The *Starting Point* and *End Point* mark at what goal the customer journey starts and ends. The last element not yet described are *Pain points*. These are mainly used to map difficulties that users perceive throughout the journey, and aim at displaying the emotional or personal aspects of the experience process. The entire path from start to end is denominated as the *Journey Stream*.

Finally, the following mapping rules are in place in Moon et al.'s (2016) approach. A task has to contain at least one routine and refer to a single goal. As a result, a goal includes at least one task. Similarly, a phase has at the minimum one goal. The starting position of the customer journey is always placed on a mandatory goal in the first phase. Also, within a journey stream, there can be no disconnections in arrows from the starting

point to the end point. In like manner, every goal or task has to be connected with at least one other goal or task. The different concepts outlined above and their definitions are summarized in table 3. They are coded in accordance with the introduction of Chapter 5, for use in the conceptual comparison. An example of a customer journey map for the pizza restaurant is given in Figure 20.

Table 3. Concepts in Customer Journey Mapping (Moon, Han, Chun, & Hong, 2016)

Concept	Description
<Goal>	Goals are desired conditions the customer wishes to achieve. Goals can be *mandatory* or *optional*. A goal is composed of at least one task. E.g. *have a solid meal.*
<Task>	Tasks denote work activities that are performed towards the achievement of a goal. Tasks are composed of at least one routine. E.g. *order pizza.*
<Routine>	Routines describe the exact physical and mental activities performed by the customer. They cannot be split into finer activities. E.g. *phone restaurant.*
<Starting Point>	Designates the starting point of the customer journey.
<End Point>	Designates the end point of the customer journey.
<Arrow>	Arrows portray the path of the customer journey in the form of relationships. They connect goals, tasks, and routines. There are 4 types of relationships: *sequential, optional, parallel,* and *circular.*
<Pain Point>	Pain points designate difficulties in the customer journey. E.g. *customers are frustrated by the impractical website.*
<Phase>	Phases categorize elements of the journey map into the experience *before*, *after*, and *during* the service engagement.
<Dividing Line>	Dividing lines are used to distinguish different phases.

Figure 20

62
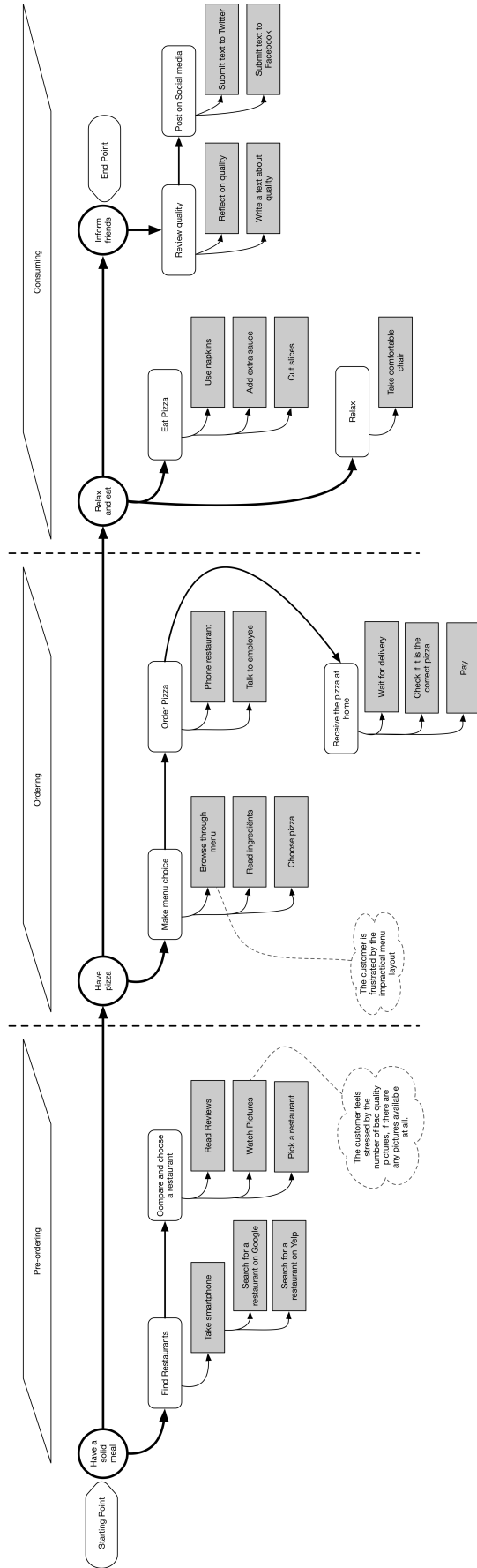
5.2.1 Conceptual evaluation of BPMN against CJM

Now that the concepts of both BPMN and CJM have been determined in the previous sections, step three of the methodology can be conducted. Using the representation of the concepts of CJM in Table 3 and those of BPMN in Table 2, the conceptual comparison of BPMN against CJM is outlined below while its results are displayed in Table 4 at the end of this section.

In Customer Journey Mapping, the concepts of `<Goal>`, `<Task>`, and `<Routine>` refer to work performed by the customer. These elements differ from one another as follows. `<Routine>` objects are the smallest part of a work activity and cannot be split in separate actions. These elements are part of a single `<Task>`. A `<Task>` designates a more abstract notion of the work that is performed by the customer. Multiple `<Task>` elements represent the different activities that can be carried out to achieve one particular `<Goal>`. In other words, a `<Goal>` object contains one or more `<Task>` objects, while a `<Task>` object is made up of at least one `<Routine>`.

Similarly, in BPMN, the `<Activity>` concept represents work performed in a business process. The actual performer of the work can be a particular individual, a group, a role, a position, or an organization (Model, 2011). Moreover, this concept can optionally contain more detailed and additional `<Activity>` elements. Therefore, two types of `<Activity>` objects exist. A *compound activity* often referred to as a *sub-process*, and an *atomic activity*. Compound activities are `<Activity>` elements that enclose other `<Activity>` elements, while atomic activities represent work that cannot be split into separate activities. There is no limit as to how many different levels of abstraction can be contained within a compound activity, e.g. a sub-process can contain another sub-process while this latter one can contain yet another sub-process and so on. Given this information, plus the consideration of the customer being the performer, and the possibility of having both atomic and compound activities. The `<Goal>`, `<Task>` and `<Routine>` concepts of CJM are fully covered by `<Activity>` in BPMN.

`<Start Point>`, and `<End Point>` elements of Customer Journey Mapping mark respectively the start `<Goal>` and the final `<Goal>` of the customer journey. In BPMN, `<Event>` elements designate something that 'happens' during the execution of a process. Events of the type *start* and *end* can be used to denote where the process begins or ends. Therefor `<Event>` fully covers both `<Start Point>` and `<End Point>`.

Relationships between `<Goal>`, `<Task>`, `<Routine>`, `<Start Point>`, and `<End Point>` elements are depicted using the `<Arrow>` concept in CJM. As mentioned earlier, there can be four different types of `<Arrow>` elements: *Sequential*, *optional*, *circular*, and *parallel*. These relationship types relate to the ordering in which the elements are performed, and if their execution is obligatory (sequential) or if it is optional. Also, it specifies if an element can be repeated or *looped*. Multiple `<Arrow>` elements can part

from, and arrive at an object to visualize the parallel execution of e.g. two `<Routine>` elements. Moreover, an `<Arrow>` can be linked to another `<Arrow>` element to visualize optional flows (Moon et al., 2016).

In BPMN, `<Sequence Flow>` is used to show in what sequential order `<Activity>`, `<Event>`, and `<Gateway>` elements are performed. According to the formal definitions contained in the "Business Process Model and Notation" document released by the Object Management Group [OMG] (2011), both an `<Activity>` and an `<Event>` *may* (are allowed to) have multiple outgoing and incoming `<Sequence Flow>` elements. This, to depict both parallelism and loops. Optional flows, however, cannot be represented in a similar fashion to Customer Journey Mapping because a `<Sequence Flow>` cannot be the source or destination of another `<Sequence Flow>` element (Model, 2011). Moreover, having multiple incoming and outgoing `<Sequence Flow>` elements, linked to a single `<Activity>` or `<Event>`, is not advised and regarded as *uncontrolled flow.* The BPMN standard therefore recommends the use of `<Gateway>` elements to portray parallel, optional and loop flows. All things considered, we thus identify a combination of BPMN concepts that can fully cover the `<Arrow>` concept of CJM. That is `<Sequence Flow>` and `<Gateway>` (Model, 2011).

`<Pain Point>` elements in CJM, as previously discussed, express difficulties in the journey. These elements are not connected to the *journey stream* by use of an `<Arrow>`, but are linked to other elements without any specific rules regarding its format. This in part because of its descriptive nature (Moon et al., 2016). The BPMN concept of a `<Text Annotation>`, which does not alter the flow of the process and is used to provide additional information about an element, proves to be an appropriate concept to cover `<Pain Point>`. However, a `<Text Annotation>` is always combined with an `<Association>`. This latter concept mandatorily links `<Text Annotation>` elements to any other object in the BPMN diagram (Model, 2011). As a result, `<Pain Point>` is fully covered by the combination of `<Text Annotation>` and `<Association>`.

In Customer Journey Mapping, `<Phase>` categorizes the customer experience into three groups: before, after, and during the service engagement. In BPMN, `<Lane>` is used to organize and categorize activities. However, in BPMN a `<Lane>` cannot be used separately from a `<Pool>`. A `<Pool>` element represents a participant in the process and contains all elements related to that participant. A participant can be a specific entity such as a company, or it can be a broader role such as a customer, a seller, or a manufacturer. As a result, `<Phase>` is fully covered by `<Pool + Lane>`, wherein a customer is the entity of the `<Pool>` while the different `<Phase>` concepts can be illustrated using `<Lane>` elements, within the `<Pool>`.
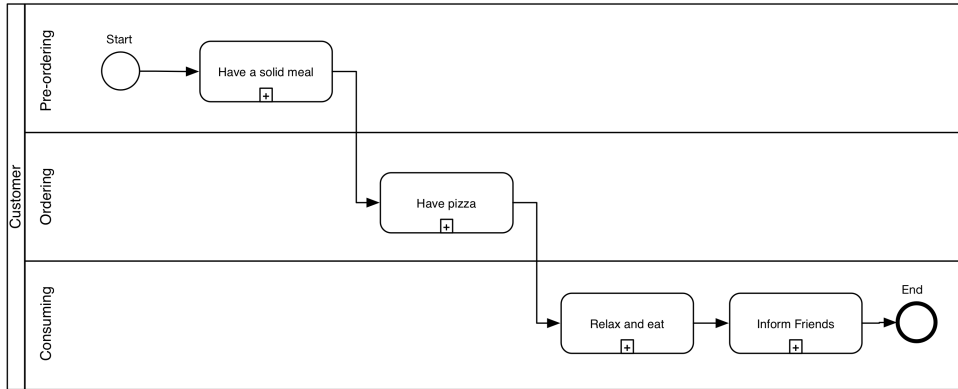
Finally, the last concept in the Customer Journey Map is the `<Dividing Line>`. This concept does not influence the sequence flow, and its purpose is to make a distinction between different phases. Similarly, in BPMN, a `<Group>` element is a grouping of

elements with respect to an arbitrary category. It does not affect the flow of a process and can cross different `<Pool>` and `<Lane>` objects (Model, 2011). Therefore, a `<Dividing Line>` is fully covered by the BPMN `<Group>` concept. However, if `<Lane>` elements together with a `<Pool>`, are used to visualize the `<Phase>` concept. Then the distinction would already be illustrated by each `<Lane>` being a different box on the diagram inside the `<Pool>`. Therefor, `<Dividing Line>` is also fully covered by the concept of `<Pool + Lane>` with the customer being the participant in the `<Pool>` object.
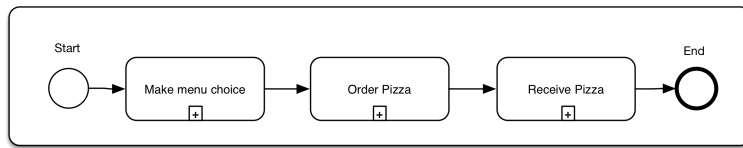
To sum up, the results of the analysis are summarized in Table 4. In the left column, the concepts of CJM are outlined. The center column contains the corresponding symbols which relate to the coverage by a BPMN concept (or a collection thereof) given in the last column. As can be seen, BPMN fully covers the concepts of CJM. To clarify these results, the Customer Journey Map in Figure 20 was translated into BPMN using our findings. This result is displayed in the diagram below in Figure 21. Note that only two sub-processes are pictured, this due to its illustrative purpose and by virtue of giving an abstract, yet clear, overview.

Table 4. Results of the conceptual evaluation of BPMN against CJM

Concepts of CJM	Degree of overlap	Supportive concepts of BPMN
$<$Goal$>$	✓	$<$Activity$>$
$<$Task$>$	✓	$<$Activity$>$
$<$Routine$>$	✓	$<$Activity$>$
$<$Starting Point$>$	✓	$<$Event$>$
$<$End Point$>$	✓	$<$Event$>$
$<$Arrow$>$	✓	$<$Sequence Flow + Gateway$>$
$<$Pain Point$>$	✓	$<$Text Annotation + Association$>$
$<$Phase$>$	✓	$<$Pool + Lane$>$
$<$Dividing Line$>$	✓	Si(B) = {$<$Group$>$, $<$Pool + Lane$>$}

**Have pizza
(expanded sub-process)**

**Make menu choice
(expanded sub-process)**

The customer is
frustrated by the
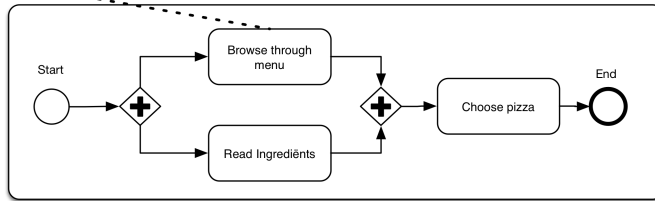impractical menu
layout

Figure 21

5.3 Customer Experience Modeling

A different approach to visualizing the experience in Customer Experience Management literature is titled Customer Experience Modeling. This modeling method places a stronger emphasis on the personal aspects, as well as the touch points that attribute to the experience. This in contrast with Moon et al.'s (2016) Customer Journey Mapping approach. The Customer Experience Modeling methodology developed by Teixeira, Patricio, Nunes, Nobrega, Fisk and Constantine (2012) has its foundations in theories such as Human Activity Modeling, Goal-Oriented Analysis, and Multi-level Service Design. Its aim is to provide a customer-centric modeling tool that can accurately visualize all knowledge about a client's experience to represent, systematize, and evaluate all components that shape the experience in a service process. Given its customer-centric property, the service process is entirely viewed through the eyes of the customer (Teixeira et al., 2012). An example of a Customer Experience Model of a multimedia service provider is given by Teixeira et al. (2011) and shown below in figure 22. It is clear that this approach has a tendency to easily be chaotic for the reader.
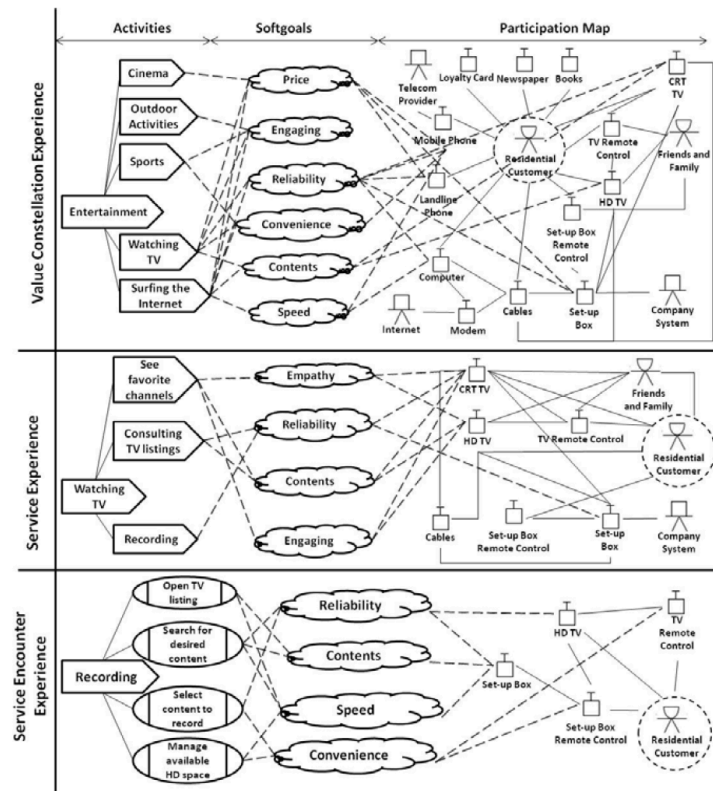

Figure 22

A primary feature of the Customer Experience Model is its subdivision in three different levels: the *Value Constellation Experience* level, the *Service Experience* level, and the *Service Encounter Experience* level. These levels are characterized by the level of granularity they represent, the activities that are performed within the level, and by the service providers involved (Teixeira et al., 2012).

The first level, Value Constellation Experience, is the broadest of all three. It contains all interactions between different businesses and the customer with regards to a specific activity. In other words, this level goes beyond a single service provider and includes all the organizations which support the client's activity (Teixeira et al., 2012). Activities on this level are broad and can be refined into more narrow interactions. An example of an overall activity on this level, given by Teixeira et al. (2011), is *food*.

The second level, Service Experience, encloses more refined activities. Each activity in this level is related to one specific activity in the Value Constellation Experience. That is to say, an activity such as *going to a restaurant* is related to *food* on the first level. Moreover, elements within this category are focused on a single service provider. This in contrast with portraying multiple organizations as was the case on the first level (Teixeira et al., 2012).

The last level, Service Encounter Experience, depicts the specific touchpoints of the organization it is related to from the Service Experience level. Only the elements relevant to the encounter between the customer and the organization are visualized (Teixeira et al., 2012). An example of an activity within this level is: *make a reservation*.

Within each level, a number of concepts are used to map the overall experience. Their visual notations are given in figure 23, while a summary of their definitions along with their adaption for use in the conceptual evaluation is given in Table 5. The concepts in Customer Experience Modeling are: *Artifact*, *System Actor*, *Actor*, *Softgoals*, *Activity*, and *Interaction Line*. Softgoals can also be expressed as *customer experience requirements*. (Teixeira et al., 2012; Teixeira, Patrício, Nunes, & Nóbrega, 2011).

Moreover, in a Customer Experience Model, concepts are grouped into three categories: *Activities*, *Softgoals*, and *Participation Map*. The activities group naturally contains the activity and action elements, while the softgoals group contains the softgoal elements. The participation map, in turn, groups all artifacts, roles, actors, and system actors (Teixeira et al., 2011).

As for the concepts themselves, the following definitions are deducted from the works of Teixeira et al. (2012). The activity concept is used to portray all the different actions a client performs throughout the entire service experience. An activity can be split up into more precise activities or actions. Correspondingly, an action is the most detailed element of the diagram with regards to a task being performed. An action element

cannot be split into further independent sub-actions, in contrast with a (sub-)activity element that can once again be further refined on a different level. Both action and activity elements always relate to a specific activity on an upper-level (Teixeira et al., 2011).

The next concept of softgoal represents a specific requirement with regards to the experience the customer wishes to achieve while performing an activity or action. That is to say; softgoals are always associated with one or more activities or actions. These desires are not necessarily tangible and can be subjective (Teixeira et al., 2011).

An artifact represents objects that the client uses to perform an activity. Similarly, a system actor is a nonhuman entity that interacts with the customer. Artifacts can be related to a system actor, e.g. a mobile phone *(artifact)* can be linked to a telecom provider *(system actor)*. Human entities, such as the customer or employees, are depicted using the actor concept. Moreover, an actor can be assigned a certain role to denote their relationship with the customer (Teixeira et al., 2011).

Last, the interaction line concept relates different elements to one another. In the works of Teixeira et al. (2012) these are drawn using both dotted and solid lines, there is no information given towards their difference in meaning. In Table 5, a summary of the different concepts and their descriptions are given as well as their representation for the conceptual comparison in the next step.
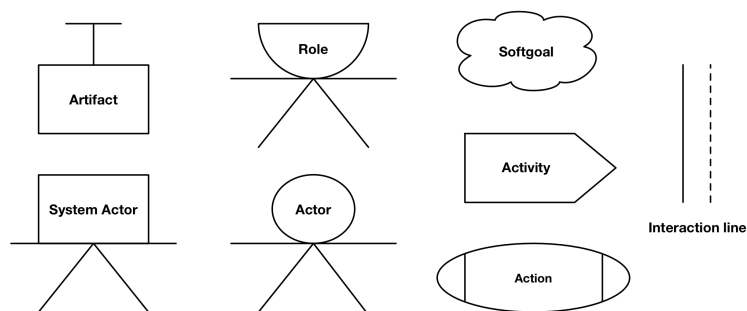

Figure 23

Table 5. Concepts in Customer Experience Modeling, based on (Teixeira, Patrício, Nunes, & Nóbrega, 2011; Teixeira et al., 2012)

Concept	Description
<Artifact>	Any artifact employed with an activity.
<System Actor>	Non human system (software or hardware) interacting with the customer.
<Role>	Relationship between an actor and the customer.
<Actor>	Activity participant interacting with the customer (or the customer himself).
<Softgoal>	Condition in the world which the actor would like to achieve, but unlike in the concept of (hard-) goal, the criterion for the condition being achieved is not sharply defined a priori, and is subject to interpretation.
<Activity>	Collection of actions or tasks undertaken for some purpose.
<Action>	Action by a customer for some goal within an activity.
<Interaction Line>	Depicts the interactions between elements of the model.
<Activities>	Groups all <Activity> elements in the model.
<Softgoals>	Groups all <Softgoal> elements in the model.
<Participation Map>	Groups all <Artifact>, <Role>, <Actor>, and <System Actor> elements in the model.

5.3.1 Conceptual evaluation of BPMN against Customer Experience Modeling

Now that the concepts have been outlined for comparison using the described approach in the introduction of this chapter, this section conducts the conceptual comparison. The summarized results of the analysis are displayed at the bottom of the section in Table 6.

The `<Activity>` concept in Customer Experience Modeling refers to work being performed by the client. These elements can be further refined into more precise `<Activity>` elements. Likewise, in BPMN `<Activity>` also refers to the execution of work by a performer and can contain sub-processes. Considering the customer as the performer, `<Activity>` in Customer Experience Modeling is fully covered by the concept of `<Activity>` in BPMN.

An `<Action>` is the most detailed activity in the Customer Experience Model. It cannot be split into a more detailed action. We consider `<Action>` to also be fully covered by `<Activity>` in BPMN, given that the atomic activity type of the `<Activity>` concept is semantically the same as `<Action>`.

The `<Artifact>` concept denotes any physical object that is used by the customer to execute activities. These are, for example, objects such as a cable, a computer, or even a book. It could be argued that `<Data Object>` elements in BPMN partially cover `<Artifact>`. This because a `<Data Object>` represents the input and output data of activities. This object is allowed to be a physical or digital document. So if an `<Artifact>` in the model is an object such as a physical document, then `<Data Object>` in BPMN covers it. However, this is such a small portion of the `<Artifact>` concept. Moreover, BPMN does not contain any concept that can represent a physical object that can influence the customer. Therefor, `<Artifact>` in the context of Customer Experience Modeling cannot be covered by any concept or combination of concepts in BPMN.

`<Soft goal>` elements represent the (in)tangible experience requirements of the customer. These `<Soft goal>` components do not always reflect actionable goals, as was the case for a goal element in Customer Journey Mapping which could be covered by `<Activity>` in BPMN. Moreover, a `<Soft goal>` interacts with `<Activity>`, `<Action>` and `<Artifact>` elements in the Customer Experience Model. It denotes a relationship. In BPMN, there is no concept or combination thereof that can serve as an intermediate element between two objects, influence them, and not be related to flow in the process. Therefor, `<Soft goal>` in a Customer Experience Model is not covered by BPMN.

In Customer Experience Modeling, both `<Actor>` and `<System Actor>` elements denote a participant in the experience. The activities of the `<Actor>` or `<System Actor>` are however not displayed in the model. In BPMN, a `<Pool>` element, as explained in the previous sections, can represent a participant in the process and contains all elements related to that participant. Moreover, the activities of the participant do not have to be known or displayed. In other words, a `<Pool>` is allowed to be a *black box*. `<Pool>` therefor fully covers both the `<Actor>` and `<System Actor>` concepts of Customer Experience Modeling.

A `<Role>` is used to describe the relationship between an `<Actor>` or `<System Actor>` and the customer. Given the descriptive nature and the coverage of `<Actor>` and `<System Actor>` by `<Pool>`, we consider `<Role>` to be fully covered by a combination of `<Text Annotation>` and `<Assocation>`. As `<Text Annotation>` elements are used to describe another object in the model and an `<Association>` is used to relate the `<Text Annotiation>` to the particular object, which is allowed to be a `<Pool>`.

`<Interaction Line>` elements are used to show the different interactions between all the elements of a Customer Experience Model, no directions are shown. In BPMN, there is no concept or combination of concepts that can depict an interaction, link all elements of the map, and not display a sense of directionality. Therefor `<Interaction Line>` is not covered by BPMN. It could be argued that `<Interaction Line>` is partially covered by `<Assocation>`, however, the semantic definition of `<Association>` is to link descriptive elements to flow objects. No interaction is implied.

Finally, the concepts `<Activities>`, `<Softgoals>`, and `<Participation Map>` which are used to visually group different elements of the Customer Experience Model, are fully covered by the `<Group>` concept in BPMN. A `<Group>` element in BPMN is similarly defined as a grouping of elements with respect to an arbitrary category.

Altogether, the results are shown in Table 6. Because the concepts of *artifact*, *soft goal*, and *interaction line* cannot be modeled in BPMN, this modeling tool is only partially covered. Limiting its use in Customer Process Management, unless the notion of BPMN is extended so it can incorporate all concepts of Customer Experience Modeling. Our study now moves on to the next stage of the BPM Lifecycle. Herein, the case for customer experience measurement tools and their potential use in Customer Process Management is reviewed.

Table 6. Results of the conceptual evaluation of BPMN against Customer Experience Modeling

Concepts of Customer Experience Modeling	Degree of overlap	Supportive concepts of BPMN
<Activity>	✓	<Activity>
<Action>	✓	<Activity>
<Actor>	✓	<Pool>
<System Actor>	✓	<Pool>
<Role>	✓	<Text Annotation + Association>
<Activities>	✓	<Group>
<Softgoals>	✓	<Group>
<Participation Map>	✓	<Group>
<Artifact>	✗	
<Soft Goal>	✗	
<Interaction Line>	✗	

6. Process Analysis

Third in line in the BPM lifecycle is the Process Analysis phase. In this phase several process performance measures are chosen in order determine on what terms a process is considered to be underperforming, or being in line with specific requirements (i.e. KPI's). This way, decision makers in Business Process Management can appropriately target processes that need the attention of improvement initiatives.

As outlined by Dumas et al. (2013), in traditional Business Process Management, there are three standard dimensions of process performance measurement: time, cost, and quality. Time is the most commonly used performance metric. Similar to our example in chapter 3, organizations can measure concepts such as *cycle time*, *processing time*, or *waiting time*. Cycle time relates to the duration of going through a process from start to finish while processing time is the total time that resources are conducting a particular activity in the process. Similarly, waiting time is concerned with measuring how long an instance has to wait before it can be, e.g. served by a service process. The second dimension, cost, usually relates to a broad range of financial metrics.

The third dimension, that of quality, can be viewed from two different perspectives. From the viewpoint of the client, or from the process participant. In essence, an external and an internal aspect (Dumas et al., 2013). The main criticism on traditional process performance measurement is, that it is too narrowly focused on an inside-out, noncustomer-centric, perspective. As extensively discussed in the problem discussion of Chapter 1. So when measuring the quality dimension from the external viewpoint, many companies reside to customer satisfaction or loyalty. However, these concepts cannot uncover latent customer needs and are limited in their use (Moon et al., 2016; Teixeira et al., 2011). Customer experience, however, would be a proper construct for performance measurement in the context of customer-centric Business Process Management, or more specifically Customer Process Management. bron

In the following sections, research techniques such as Net Promoter Score, and the Service Experience Scale, from CEM literature, are reviewed. These methods are argued to be promising in measuring customer experience. However, there is no abundance of academic literature surrounding the subject. Also, no comparative studies have been done regarding the quality of different metrics and if they do in fact, properly measure the experience. Some authors argue it is currently not known what the best method is to collect information on customer experiences and what is the proper way to manage it, urging for the development of new metrics (Bolton, 2004; McColl-Kennedy et al., 2015).

Furthermore, to evaluate if these metrics can be regarded as proper performance measurement constructs in a Customer Process Management context. We try to identify the criteria a metric must satisfy to be used in process management, in the following section. Next, the criteria for the assessment of customer experience is also explored.

6.1 Process performance measurement criteria

In an article of Kueng (2000), the different requirements to be considered a proper process performance indicator are outlined based on the works of Kitchenham (1996) and Winchell (1996). By this accord, a metric must be quantifiable, sensitive, linear, reliable, efficient, and improvement-oriented.

The quantifiability criteria states that an indicator must be expressed in a numeric quantity. If this is not the case, the indicator must be transformed. Next, sensitivity relates to the extent the actual performance must change before it is noticed by the indicator. A sensitive indicator can detect even the most minor changes in performance. Linearity, in turn, means that changes must be proportional and linear. E.g., a small change in the value of the actual performance, should lead to a correspondingly small change in the indicator. The reliability criteria indicates that the metric must be free of measurement errors. While efficiency states that the actual measurement must be worth the effort. It should not consume too many resources. Finally, the improvement-oriented norm outlines that a metric must be focused on giving constructive feedback upon which decision makers can act (Kueng, 2000).

6.2 Customer experience measurement criteria

Although literature surrounding the measurement aspect of customer experience is limited, one study could be identified regarding measurement criteria. Helkkula, Kelleher and Pihlström (2012) have conceptualized a notion of *value in the experience*. By assigning a value perception to the experience that, goes beyond the context of consumption, includes the past and future experiences, and considers the customers personal circumstances, they were able to outline criteria for correctly measuring experiences. These measurement criteria titled the *Value In The Experience propositions* (VALEX) state that a measurement tool must satisfy four propositions as outlined below (Helkkula, Kelleher, & Pihlström, 2012).

Proposition 1: Value in the experience is individually intra-subjective and socially intersubjective.

Proposition one imposes that an experience measure must be able to capture both an individual and a collective level of the experience. This relates to the argument that people sometimes share their experiences with other "cultural and social resources"(p.4) as worded by Helkulla et al. (2012), for the sole purpose of feedback from their social

76

surroundings. These social surroundings typically hold collective beliefs about certain activities, services, or events. An example of this proposition could be the situation where someone posts a picture on Facebook after having eaten a pizza, seeking validation or feedback from their social network (Helkkula et al., 2012).

Proposition 2: Value in the experience can be both lived and imaginary.

The main idea behind this proposition is that someone doesn't necessarily need to have "lived" through a service to experience it. It can be imaginary. This is similar to the notion of direct and indirect touch points in chapter 2. For example, someone can have an experience simply by seeing advertisements in the streets. Similarly, they could even form perceptions of value from the way the sun shines on a picture of a product. A proper metric must therefore recognize this imaginary aspect (Helkkula et al., 2012).

Proposition 3: Value in the experience is constructed based on previous, current, and imaginary future experiences and is temporal in nature.

This proposition notes that measures of overall customer experience should take into account the continuously changing nature of the experience and it's longitudinal aspect. So it needs to measure experiences before, during and after the service and at different points in time, as individuals reinterpret past experiences (Helkkula et al., 2012).

Proposition 4: Value in the experience emerges from individually determined social contexts.

In short, this proposition relates to the fact that people perceive different values in the experience based on their personal backgrounds or *lifeworlds*. This proposition differs from proposition 1 in that it emphasizes the *personal* context of the customer and doesn't focus on the individual's social surrounding and their collective beliefs (Helkkula et al., 2012).

We now move on to testing both the process performance and customer experience metric criteria on two measurement scales in Customer Experience Management literature. The Service Experience Scale (EXQ), and the Net Promoter Score (NPS).

6.3 Service experience scale (EXQ)

The service experience scale is a measurement instrument developed by Klaus and Maklan (2012). It was developed by investigating the triggers of customers' purchasing and re-purchasing behavior. Their instrument was first conceptualized within the context of surveying a financial service provider and later tried and tested in different contexts. More specifically a luxury goods service provider, a retail banking provider, and a fuel service station (Klaus, 2014; Phil Klaus & Maklan, 2012).

The EXQ is not a scale in the pure sense of the word, but it is a methodology that can be followed by researchers or practitioners to develop surveys which measure the customer experience. These surveys should contain questions relevant to each attribute of every dimension outlined. Once the final survey is developed, it can be used to measure customer experience performance and its key attributes, over time.

Moreover, by using EXQ, managers can both review individual experience components and look for weak performance in the individual parts, or review the overall customer experience by looking at the overall score from all elements collectively (Klaus, 2014; Phil Klaus & Maklan, 2012).

The four dimensions as mentioned above are *product experience*, *outcome focus*, *moments-of-truth*, and *peace-of-mind.*

- **Product experience** mainly focuses on how important, the ability to compare different service offers and choose between them, is to the individual. These services don't necessarily have to be from competitors. As long as the feeling of having a choice is measured with the person being interviewed.
- **Outcome focus**. This dimension relates to how much the customers value the ease of use of the service offering. For example, it could question individuals with regards to how fast and effortlessly they want the end result of a service.
- **Moments-of-truth** involves the evaluation of how service providers act in interactions with the customer. These *moments of truth* are essentially touch points as previously discussed.
- **Peace-of-mind** relates to how the customer perceives the entire interaction with a service provider. So before, during and after purchase. Most of the attributes in this dimension are related to emotional aspects, and will reveal the emotional benefits customers get out of a service. It also tries to evaluate the relationship building process with customers.

As stated earlier, each dimension contains a certain amount of attributes (19 in total), as shown in figure 24. The main idea is that a survey must have a question or statement for each attribute in every dimension. All these questions or statements should be asked in such a way that respondents can rate the items on a 7-point scale. One should equal

strong disagreement while seven should relate to strongly agreeing with the statement or question. No specific structure is needed with regards to the ordering of the questions. They can be asked in a random order.
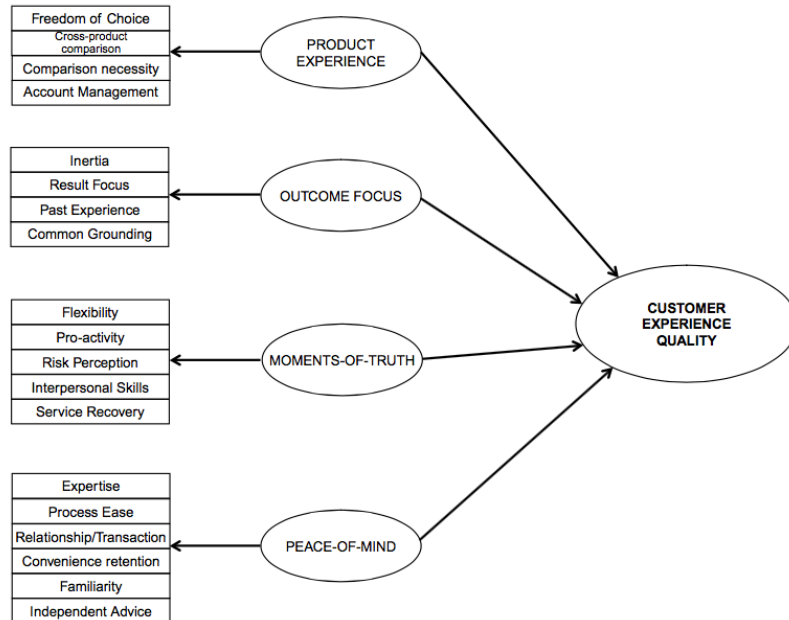

Figure 24

An example of such a questionnaire given by Klaus and Maklan (2012) is repeated below. It shows what a proper question or statement could be for each attribute for an illustrative service provider "XYZ".

Product experience dimension

- I need to choose between different options at XYZ. (Freedom of choice)
- I need to receive offers from more than just XYZ. (Cross-product comparison)
- I need to compare different options from XYZ. (Comparison necessity)
- I have one designated contact at XYZ. (Account management)

Outcome focus dimension

- Staying with XYZ makes the process much easier (inertia).
- XYZ gives me what I need swiftly (result focus).
- I prefer XYZ over an alternative provider (past experience).
- The people at XYZ can relate to my situation (common grounding).

Moments of truth

- XYZ was flexible in dealing with me and looked out for my needs (flexibility).
- XYZ keeps me up-to-date (pro-activity).
- XYZ is a safe and reputable company (risk perception).
- The people at XYZ have good people skills (interpersonal skills).
- XYZ deal(t) with me correctly when things go (went) wrong (service recovery).

Peace of mind

- I am confident in XYZ's expertise (expertise).
- The whole process with XYZ was easy (process ease).
- XYZ will look after me for a long time (relationship/transaction).
- I stay with XYZ because of my past dealings with XYZ (convenience retention).
- I have dealt with XYZ before so getting what what I needed was really easy (familiarity).
- XYZ give(s) independent advice (independent advice).

Given this introduction to the EXQ metric. We evaluate its characteristics with regards to process performance and customer experience measurement criteria outlined in the previous sections. The results of this assessment are displayed at the end of the chapter in table 7.

6.3.1 VALEX criteria

The *outcome focus* dimension is an aspect that can be related to the first VALEX proposition. Questions related to both the outcome of feedback from social surroundings and personal desired outcomes would cover VALEX 1. The second and the third VALEX propositions appear to be covered by respectively the *peace of mind*, and *outcome focus* dimensions. Given the imaginary aspect considered (familiarity) and that of time (past experience). Finally, VALEX 4 is also covered by the *outcome focus* dimension. For example, "The people at XYZ can relate to my situation" is a question that covers the individual context.

6.3.2 Process performance criteria

With regards to the process performance criteria, we argue that the measure is reliable as it has been extensively tested in development (Phil Klaus & Maklan, 2012). Moreover, given that items are rated on numbered scales, both the quantifiability and linearity conditions are met. Since the measure gives insights in both the overall experience as well as the individual components, it is improvement oriented. The analyst is encouraged to identify problem areas and improve upon them. The aspect of efficiency is however questionable. It is efficient in a sense that it both captures individual experiences and the total experience at the same time. However, the number of people

that will be interviewed as well as the medium through which this is done highly affects the efficiency aspect. We therefor conclude that, if the survey is conducted with careful considerations to the sample size and medium, the efficiency criteria is covered. Finally the same logic applies to the sensitivity criteria. Each dimension and statement contributes equally to the overall result and changes in the individual components can be examined separately. But if the sample size is very large, a small change will be difficult to notice.

6.4 Net Promoter Score

The net promoter score is a measurement tool that only requires a minimal investment of time by the customer who is surveyed. It was developed by Reichheld (2003) by ranking a variety of survey statements and questions according to how well they predicted behaviors such as re-purchase, and word-of-mouth recommendations.

For his research, information was collected from about 4,000 consumers. Accordingly, an assessment was made of how some questions or statements, had stronger statistical correlation with the aforementioned consumer behaviors. He concluded that the most effective question to ask was (on a scale of 1 tot 10) "How likely is it that you would recommend *company X* to a friend or colleague?" (figure 25). Second and third in rank were respectively "How strongly do you agree that *company X* deserves your loyalty?" and "How likely is it that you will continue to purchase products/services from *company X*?". If a company has a much higher NPS than its competitors, it is argued to potentially grow at a much faster rate (Frow & Payne, 2007).

The actual *score* is calculated by taking the percentage of the customers who gave the question at least a score of 9 (the promoters) and subtracting them from the percentage of those who gave a score of at most 6 (the detractors). Customers who do not qualify for being promoters or detractors are categorized as *passive* customers (Reichheld, 2003). Despite not giving any insight as to how to address poor customer experience or where the causes of bad performance are situated, Reichheld (2003) claims that by asking only this question it gives an indication on how well a company performs in delivering overall customer experience. An example of the (Frow & Payne, 2007)
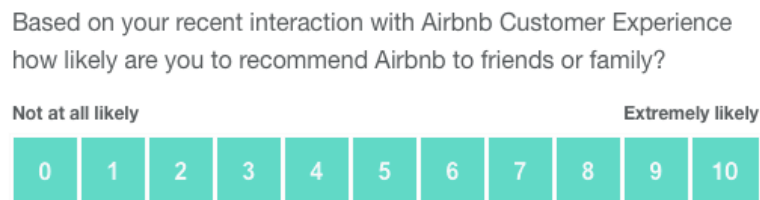

Figure 25

6.4.1 VALEX criteria

Proposition one of the VALEX criteria is covered by NPS. That is to say, the Net Promoter Score mostly relates to word-of-mouth recommendations which is i.e. a form of feedback related to social surroundings. Proposition two however, given that questions only relates to people who have effectively used the service, is not covered. Likewise, VALEX 3 is not covered unless the one question is repeatedly asked to the same customer (or customer segments). Finally, VALEX proposition 4, due to there only being one question that is linked to social surroundings, cannot be covered.

6.4.2 Process performance criteria

With regards to the process performance criteria, the Net Promoter Score is in effect quantifiable and linear. The measurement is made using a 10 point numeric scale and the result is expressed in percentages. For sensitivity, the same logic as used with the service experience scale is applied. Depending on the sample size, sensitivity is largely altered. With looking at efficiency however, due to the simplicity of the survey, it can be considered as being efficient, in contrast to EXQ. Some authors question the Net Promoter Score by stating it is merely a derivative of the customer satisfaction measure (Klaus & Maklan, 2013). One author even claims, from their findings, that none of the claims of the Net Promoter Score are supported (Keiningham, Aksoy, Cooil, Andreassen, & Williams, 2008). With this in mind, we do not consider the NPS as meeting the reliability requirement. Finally, the last process performance criteria of improvement-orientation is covered. The Net Promoter Score is very popular amongst practitioners and invokes many intentions for improvement if the score is low (Keiningham et al., 2008).

In the table illustrated below, the final results of both the assessment of the Service Experience Scale, and that of the Net Promoter Score are outlined. As can be seen, only the EXQ covers all criteria and is therefor considered to be a proper process performance metric in the context of Customer Process Management.

Table 7. Results of customer experience measure evaluation against process performance and VALEX criteria

	Criteria	EXQ	NPS
Experience	VALEX 1	*Yes*	*Yes*
	VALEX 2	*Yes*	*No*
	VALEX 3	*Yes*	*No*
	VALEX 4	*Yes*	*Yes*
Process Performance	Quantifiable	*Yes*	*Yes*
	Sensitive	*Yes**	*Yes**
	Linear	*Yes*	*Yes*
	Reliable	*Yes*	*No*
	Efficient	*Yes**	*Yes*
	Improvement-oriented	*Yes*	*Yes*

* depends on sample size and/or medium

Conclusions

Encouraged by the research directive proposed by Rosemann (2014) to integrate experiential aspects of external stakeholders in Customer Process Management (CPM), this thesis has set out to examine one of those stakeholders: the customer. Correspondingly, based on literature surrounding Customer Experience Management (CEM), possible areas for interdisciplinary harmonization with Customer Process Management were investigated using systematic conceptual analysis.

Given that in today's business environment, CEM is used as a competitive tool to increase both customer satisfaction and loyalty, the inherent relationships between experience and both concepts were explored from available research and depicted into an integrated model. It appears that customer experience directly influences loyalty, satisfaction, and repurchasing behavior. Moreover, it indirectly influences re-purchase intentions through satisfaction, and indirectly through loyalty.

To clarify Customer Process Management, its roots in Business Process Management literature were subjected to the study. Overall, it appears that CPM is still in the very early stages of development. Moreover, no concise definition of CPM could be found. Therefor, its characteristics were derived from literature mentioning the concept. Customer Process Management is customer-centric, has an outside-in view on processes, regulates business processes to play-in on the processes of the customer, attempts to offer customized processes to customer segments, and tries to eliminate latency and redundancy.

The integration of CEM constructs into CPM is reviewed with reference to three stages of the Business Process Management Lifecycle. Altogether the following conclusions are established with respect to the these stages.

Process identification

The goal-based approach for constructing a business process architecture proves to be most relevant in a CPM context. This in part due to its ability to 'reverse-engineer' and derive processes from business goals. Because no clear methodology exists to identify customer processes, we call for the development of an adapted goal-based approach for use in uncovering customer processes in the context of Customer Process Management. This adapted approach should be applicable to the desires or needs customers wish to achieve. Moreover, two extensions of the business process architecture are called for. One, to visualize customer processes in the architecture map. And second, a construct for visualizing touch points and associating them to both business and customer processes on the diagram.

Process discovery

Customer experience is process-oriented. Accordingly, different process modeling tools exist in Customer Experience Management. A conceptual evaluation was done to investigate whether these tools can be integrated, and are thus covered by, a prominent modeling language in Business Process Management, more specifically BPMN. From our results it is indicated that Customer Journey Maps are fully covered and can be integrated into BPMN diagrams. Customer Experience Modeling however, is only partially covered. Extensions to BPMN are needed in order to cover this latter modeling tool.

Process Analysis

By using the identified criteria related to the qualification of being a proper process performance, and customer experience metric, two renowned measurement tools of customer experience were studied. It appears that only the Service Experience Scale (EXQ) could be used as a process performance measure in Customer Process Management.

Following these conclusions, several limitations as well as areas for future research were identified. Both are briefly described in the following sections.

Limitations

With regards to the findings of the thesis, four limitations we identified are outlined below. Although these may be true, other limitations whom did not come to our attention may be missing. The reader's critical mind is therefor, as always, a value added with regards to the evaluation of our study.

First, a relevant research domain for Customer Process Management was only partially, or very briefly considered. Yet some if its principles relate to assumptions made in this thesis. These parts relate to Service Blueprinting, Service Design, and the service dominant logic in Services Management. This latter logic states that in today's business environment, there are no *pure* services or products as they are inevitably intertwined. The customer is regarded as a co-creator of value throughout the entire service process. In this respect, the aim of customer-centricity is also implied (Hoffman & Bateson, 2008). Moreover, service blueprinting is also highly involved in visualizing a customer's process relative to a service process. Most theories within this domain focus on new service design and development. Whereas Business Process Management is primarily aimed at, eventually, improving and maintaining business processes. In our study, we have not made any clear distinction between companies who are pure service providers, offer a mix of services and manufacturing, or don't offer any services at all. Our assumptions were built purely on the notion of being in an *experience economy*, where businesses generally use a combination of products and services in their offerings (Pine & Gilmore, 1998).

Second, we did not give a definition as to what is considered as *the customer* in the study. It should be noted that a customer can be seen from a business-to-business (B2B), or business-to-consumer (B2C) perspective. Even an employee can be considered as a customer in management theories (Campbell, Maglio, & Davis, 2011; Peppers & Rogers, 2010).

Last, the evaluation stage was not engaged in our discussion of the Process Identification phase of the BPM Lifecycle (Dumas et al., 2013). This in part due to our consideration of evaluation metrics to be more valuable to a discussion in the Process Analysis phase in the lifecycle.

Future research

From our discoveries, several research propositions can be derived. A first proposition is built upon the lack of concise methods or tools to properly identify both customer processes and touch points. As well as the identification of associations between both concepts. If Customer Process Management is to develop, then the existence of such methodologies are critical for its success.

A different research directive concerns modeling approaches in Customer Process Management. We have shown that one modeling tool from Customer Experience Management (CEM), that of Customer Journey Mapping, is fully covered by the modeling language BPMN, used in Business Process Management. The notion of Customer Experience Modeling, however, cannot be covered in the current state of BPMN. Furthermore, if these maps from the discipline of CEM are effectively integrated into BPMN diagrams. Then rules must be set in place so that these BPMN diagrams cannot violate the rules of the integrated CEM modeling tool. Therefor, a course of study could be the development of a BPMN extension, specifically destined for use in the context of Customer Process Management.

Another potential path for research relates to the concept of business process architectures. According to our analysis, these diagrams should be extended so as to include experiential aspects like touch points and customer processes. A more concrete development in the form of a methodology or a case study, is well-considered in this regard.

In this study, only the Process Identification, Process Discovery, and Process Analysis stages of the Business Process Management lifecycle are discussed. Further research is needed regarding the remaining stages of the lifecycle, from a Customer Process Management perspective.

Also, the recent development of Process Mining in BPM (van der Aalst, 2012) could be valuable to the discussion of Customer Process Management. However, proper approaches for gathering customer experience data for use in this research domain are needed. Moormann and Palvölgyi (2013) suggest a use for ethnographic techniques to collect data from online discussion groups or social media. The result of Process Mining in this context, according to Moormann and Palvölgyi (2013) would be a network of customer processes that visualize the most popular routes taken (Moormann & Palvolgyi, 2013).

Finally, we note that Rosemann's (2014) call for integration of process experiences in Business Process Management is related to all external stakeholders. This study has looked at the customer as this external stakeholder. Further research is needed with regards to other external stakeholders such as e.g. suppliers.

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