Value-in-Use Analysis and Consequences for Value Propositions in the Agricultural Sector

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Management summary

Many businesses nowadays shift from a Goods-Dominant logic to a Service-Dominant logic, in which the value-in-use of goods is considered. Value-in-use implies customers will only experience value of products when used for some purpose in practice. The agricultural sector, traditionally being goods dominant, is due to developments more and more shifting to the service dominant logic. Therefore, it is important to develop further the customer value concept hand in hand with the value-in-use concept for the agriculture sector, because it can give new insights for business opportunities and strengthening value propositions. Accordingly, companies operating based on the Service-Dominant logic constantly strive to improve their value propositions. Therefore, understanding value-in-use and consequences for value propositions is an important field of study both theoretical and practical. The research question is: *How can customer value in the agricultural sector be understood from a value-in-use perspective and what are the consequences for value propositions?*

Overall, based on the insights of end users, five value-in-use categories are derived based on distinct ways of the customer experiences of value; These categories are: core process, real users, system related, company related and law related. In addition, the existence of potential value-in-use emerged. The core process is most important to customers because it pertains to the essence of value creation for the customer. The well-being ness of real users is also resulting in experienced value-in-use, they are being the ones that really get into the system. System related items result in experienced value-in-use, among others, because management becomes easier and end users are more flexible. Company related items result in experienced value-in-use, because of the service and support of the supplier company. In addition, some end users experience value-in-use, because the system meets regulations very strictly. Lastly, while using the system, end users came across with potential value-in-use, i.e. items that could be value creating for them in the future while using the system.

During the creation of value propositions, companies should be aware of the value-in-use as experienced by their (end) users. As identified in this research, five categories emerged through understanding value-in-use from different angles views through the eyes of the end users. Important to companies is to adjust their value propositions accordingly assuming that most value proposition emphasize product features rather than value-in-use characteristics. Only the current value-in-use is important for the present value proposition, the potential value-in-use is important to the overall future development of the users' company.

When designing a value proposition, it is advised to take the following steps. First, a product has to be selected. Secondly, the area for which the value proposition will be designed has to be chosen. Thirdly, identify the value-in-use of your customers based on the five identified categories. Also look for possible potential value-in-use. Fourthly, it is important to identify if there are cost-in-use. Fifthly, choose the value-

in-use elements which are most important to your customers. Sixthly, incorporate the most important elements into your value proposition and demonstrate and document them. At last, companies should communicate their value proposition.

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1. Introduction

The productivity in the agricultural sector increased revolutionary after World War II due to rapid changing systems (Stoate et al., 2009). From 1950 till mid-1970, the land productivity growth in, for example, The Netherlands was enormous (Meerburg, Korevaar, Haubehofer, Blom-Zandstra & Van Keulen, 2009). The Netherlands can be seen as typical for many countries in Europe (Meerburg et al., 2009). Simultaneously, due to large-scale intensification and mechanization, the input per man year declined from 600.000 to less than 300.000 (Meerburg et al., 2009). Important trends in this period were: “production increase, mechanization, intensification and specialization” (Meerburg et al., 2009, p. 514). Farm expansion is critical to maintain a satisfactory income from an economies of scale point of view (Meerburg et al., 2009). As economic conditions favour, farms are becoming more and more specialized and farm size increases (Kirchmann & Thorvaldsson, 2000). Further specialization is expected (Peerlings & Polman, 2004), more companies will become ‘monofunctional’, focussing on only animals or crop, in which efficiency is most important (Meerburg et al., 2009).

Dijkman (2009) argues that innovation will promote the growth of sustainable and profitable smallholder agricultural production. Sayer and Cassman (2013) notice the necessity of innovation in the agricultural sector to tackle obstacles in the environment.

According to Fischer et al. (2012) “the emerging innovation field is most likely to be entered by agricultural entrepreneurs based on perceived market demand, a shared image and institutional situations” (p. 607), contrasting with the classic perspective which approached innovations “from a technology development point of view” (p. 607). These authors present a clear shift, from a technology based to a more customer based view in the agricultural sector.

The importance of innovation is recognised, but even more important is the adoption of innovations by farmers. Sayer and Cassmann (2013), for example, assert many farmers will proceed with traditional farming systems, except if they have the possibility to adopt new, innovative, techniques which enable development in agricultural applications. They identified a shift in research: before single-factor research was leading, nowadays, active commitment with farmers and their communities, to motivate experimentation and innovation, typifies the research area.

What has just been appointed demonstrates the emerging importance of customer involvement in the agriculture sector. Milovic (2012) expresses the need nowadays to address potential and unexpressed customer needs and desires, in order to be able to adjust producer’s applications to customer goals. To meet these customer needs in the agricultural sector, organisations have to create a customer knowledge base.

Therefore, it seems understanding customer value becomes increasingly important, specifically mentioned in the agricultural sector. According to Butz and Goodstein (1996) customer value is “the emotional bond established between a customer and a producer after the customer has used a salient product or service produced by that supplier and found the product to provide and added value” (p. 63). To what extend is knowledge of customer value needed? How can agricultural companies improve their value for customers? Therefore, how can customer value be understood?

Many businesses observe a transition from a traditional Goods-Dominant (G-D) logic of customer value to the Service-Dominant (S-D) logic (Vargo & Lusch, 2004). The traditional approach does not take into account the ‘value-in-use’ of goods, i.e. the value of the whole process and assumes value to be already embedded in products (Alderson, 1957; Vargo & Lusch, 2004). Value-in-use implies “a customer’s outcome, purpose or objective that is achieved through service” (Macdonald, Wilson, Martinez & Toossi, 2011, p. 671). It concerns products and services can only be assessed properly through its use by customers (Vargo & Lusch, 2004), and cannot be assessed at the moment of purchase (Raja, Bourne, Goffin, Çakkol & Martinez, 2013).The S-D logic typifies marketing as a continuous process, aimed at operant resources “with which the firm is constantly striving to make better value propositions than its competitors” (Vargo & Lusch, 2004, p. 5). A value proposition implies a process in which different actors invite each other to join in service, with the purpose of obtaining value (Chandler & Lusch, 2015). This logic does take into account the value-in-use. To summarise, the creation of a proper value proposition is of great importance, but will not have desirable effect without applying value-in-use (Alderson, 1957; Vargo & Lusch, 2004).

Vargo & Lusch (2004) mention the agricultural sector is traditionally a proper example of the G-D logic. Given other authors, the agricultural sector is, due to developments in recent decades, more and more shifting to the S-D logic. Therefore, it is important to develop further the customer value concept hand in hand with the value-in-use concept for the agriculture sector, because it can give new insights for business opportunities. Because the concepts are still relatively new, particularly in the agricultural sector, there are scant empirical studies investigating value-in-use and value-in-use in relation to value propositions. Investigation is important because value propositions in general, mostly pertain to product features rather than the values customer derive from using the products. Therefore, the purpose of this research is to get a better understanding of customer value in the agricultural sector from a value-in-use perspective and consequences for value propositions. Subsequently, the research question of this thesis is:

How can customer value in the agricultural sector be understood from a value-in-use perspective and what are the consequences for value propositions? This research question will be examined based on two sub questions:

1. How can customer value in the agricultural sector be understood from a value-in-use perspective?
2. What are the consequences of value-in-use on value propositions?

A literature review will be conducted on the concepts customer value, value-in-use and value propositions. The core domain where contribution will be provided is the value-in-use concept.

The empirical study will be explorative. This is because of the novelty of the value-in-use concept in literature. An inductive research strategy is typical for this research. The study will partially be based on the conceptual framework of Macdonald et al. (2011). They assessed customer's value-in-use through their framework based on provider and customer processes. Interview questions will be used to learn more about the value-in-use concept. They will be conducted in a semi-structured form. Nedap Livestock Management will serve as a case in this research, because this company and its division is operating in the agricultural sector. Different from the research of Macdonald et al. (2011), Nedap Livestock Management operates on a market in which both dealers and end users are involved in the sales process and have to be taken into account. In addition, their research was based on two time periods, which will not be possible to conduct within the scope of this thesis.

Among scholars, increasingly interest has been paid to the value-in-use concept (e.g. Vargo & Lusch, 2004; Ballantyne & Varey, 2006; Macdonald et al., 2011). Despite the increase, the customer value area still shows a lack of empirical studies on value-in-use (Macdonald et al., 2011; Raja et al., 2013). Particularly, the field lacks investigation on the manner in which buyer satisfaction is influenced by value-in-use in business-to-business situations (Raja et al., 2013). Given the changes in the agricultural market (specialization, increasing importance of efficiency), further investigation is very likely desirable.
In addition, this research also will have some relevance for practice. Customers nowadays are faced with many new applications due to innovation. The question is whether customers still see value of new applications and whether their needs are sufficiently take into account in the development process of new products.

The outline of this thesis is structured as follows: first, a literature review will be conducted on the concepts that will be most valuable for this research: customer value, value-in-use and value propositions. Thereafter, the methods of this study will be described in detail, these include, for example, the data collection and analysis. Empirical research will be carried out: interviews with dealers and end users based on the framework of Macdonald et al. (2012). Thereafter, the results of the empirical research will be presented, presented by sub question. The research finishes with a discussion and conclusion, in which the key findings, limitations, practical implications and recommendations for further research will be discussed.

2. Literature review

This chapter contains the literature review of this thesis. First, the current literature on customer value will be described. Thereafter, the main topic of this thesis, value-in-use, will comprehensively be illustrated. At last, the literature regarding value propositions will be described.

2.1 Customer value

Companies' survivability and growth perspective on the long-term is dependent on the creation of superior customer value (Woodruff, 1997). Customer value is created when advantages of an application exceed the life-cycle expenses for customers (Slater & Narver, 2000). Slater and Narver (2000) argue superior customer value in combination with a positive net present value (NPV) results in competitive advantage. Customer value 'captures the result of service' (Babin & James, 2010, p. 471). In business markets, value 'is the worth in monetary terms of the technical, economic, service, and social benefits a customer company receives in exchange for the price it pays for a market offering' (Anderson & Narus, 1998, p. 54).

Research has identified two main reasons why analysis of customer value is of great importance for companies (Desarbo, Jedidi & Sinha, 2001). First, when developing company strategies, there is a need to reckon with the perceptions and expectations of buyers, which may change over time (Prahalad and Hamel, 1994). Second, customer value does have positive economic effects, for example, it positively influences buyer contentment (Yin Lam, Shankar, Erramilli & Murthy, 2004). This, in turn, results in the secure of faithful buyers, higher yields and lower costs (Reichheld, 1996). So it seems reasonable for companies to discover what customer's value.

Traditionally, value is created by the company and offers organisations the possibility of achieving sustainable competitive advantage (Gummerus, 2013). Examples are Porter's five forces framework (Porter, 1985) and the resource-based view (Barney, 1991).
In addition, authors also look at specific business processes that will lead to customer value creation (Gummerus, 2013). These include the customer value strategies of Treacy and Wiersema (1993): product leadership, operational excellence and customer intimacy and the business process view of Srivastava, Shervani and Fahey (1999), which are similar (Gummerus, 2013).

An emerging topic in the field of customer value is the co-creation of value. Value co-creation implies value is not just created by companies on their own, but by the interface of companies and their environment (Håkansson & Snehota 1989; 2006). Largely, this stream of literature describes the co-creation process of companies with their customers (e.g. Prahalad and Ramaswamy, 2004a). Customers are regarded as 'a major contributor and beneficiary' (Gummerus, 2013, p. 6) and it is argued customer value cannot be created by the vendor solely (Gummesson, 2008).

Customer value creation, in addition, watches the way buyers are interpreting services and appliances, in which activities of companies are taken into consideration, but only as interpreted by buyers (Gummerus, 2013).

2.1.1 Service-Dominant logic

A very important stream of customer value research, is the S-D logic, which is quite new (Vargo & Lusch, 2004). This logic typifies marketing as a continuous process, aimed at operant resources "with which the firm is constantly striving to make better value propositions than its competitors" (p. 5). These operant resources are central to the S-D logic and are the producers of effects, are often invisible and intangible and act on operand resources (Constantin & Lusch, 1994; Vargo & Lusch, 2004).

The S-D logic takes into account the 'value-in-use' of goods, i.e. the value of the whole process. Value for customers will only emerge if the customers have products really in use. Central to this logic are intangibility, exchange processes and relationships. The G-D logic, the traditional approach to marketing and reverse to the S-D logic, assumes value to be already embedded in products (Alderson, 1957; Vargo & Lusch, 2004).

More and more companies shift from a G-D logic to a S-D logic, focusing on value co-creation and value-in-use (Terho, Haas, Eggert and Ulaga, 2012; Vargo & Lusch, 2004). According to Terho et al. (2012), three perspectives on value have emerged in literature, these include creating value from the seller's perspective, the customer's perspective and a mutual, dyadic perspective. The S-D logic belongs to the dyadic perspective, in which co-creation of value is one of the major topics. Co-creation implies the jointly, actively, value creation process of both the vendor and buyer, in which vendors, as value facilitators, strive to make superior value propositions (Vargo & Lusch, 2004; Grönroos, 2008).

2.2 Value-in-use

Value is generated through interactions emerging by relational actions among sellers and customers and is determined by value-in-use (Kowalkowski, 2011). Value-in-use implies "a customer's outcome, purpose or objective that is achieved through service" (Macdonald, Wilson, Martinez & Toossi, 2011, p. 671). It concerns products and services can only be assessed properly through its use by customers (Vargo & Lusch, 2004), and cannot be assessed at the moment of purchase (Raja, Bourne, Goffin, Çakkol & Martinez, 2013). The value-in-use concept is based on the mind-set "things (objects or the conditions produced by actions) cannot have an embedded value," they can only have value to the extent that they meet needs (Ballantyne & Varey, 2006, p. 345). So do the authors argue the time logic of marketing trade turns into an open-ended story with a relationship as a possible result. Value is assessed in a two stage process, first exchange value will be assessed and thereafter, products are 'a store of potential value', assessing the value-in-use is its affirmation (p. 344). The establishment of value propositions vendors and buyers convey is the value-in-use. Only companies can build a value proposition, the buyer states value and is co-producer of this value (Vargo & Lusch, 2004).

Lemke, Clark and Wilson (2011) stress the importance of value-in-use for customers in Business-to-Business markets. It is expected "value-in-use mediates between customer experience quality and relationship outcomes such as commitment, purchase, retention and word-of-mouth" (p. 860). Stressing these elements, it seems value-in-use is very important.

The value-in-use concept is still in its infancy. Up to now, not a lot empirical studies on the value-in-use concept have been carried out. Ostrom et al. (2010), Raja et al. (2013), as well as Macdonald et al. (2011) notice the importance of the value-in-use concept, but emphasize the scarcity of empirical studies. At this moment some authors have conceptually or empirically studied the emerging topic.

Authors	Subject
Edvardsson, Enquist and Johnston (2010)	B2C – experience room
Macdonald, Wilson, Martinez and Toossi (2011)	B2B – one customer over time
Raja, Bourne, Goffin, Çakkol and Martinez (2013)	B2B – key attributes value-in-use

Table 1: Empirical studies on value-in-use

Among a study of consumers (B2C), Edvardsson, Enquist and Johnston (2010) discovered value-in-use can be evaluated or interpreted prior to buying and using. A success condition is an experience room which is correctly created, i.e. it has to allow buyers suitable inferences what the value-in-use of the actual service is. In addition, the involvement of other, trusted persons, is remarkable. Customers need a second opinion from someone they trust before they proceed to buy, this, in turn, creates opportunities for sellers to produce value-in-use between different possible customers. In addition, separate buyers focus on separate design aspects and they differ in their previous experiences, constructing trust is very important, the experience room has to be contextualized and false impressions that could emerge due to a degree of artificiality, should be reduced as much as possible.

Kowalkowski (2011) argues a main challenge of creating value-in-use propositions is the decision making unit (DMU) in which dissimilar roles are present in dissimilar purchase processes. One good relationship on the operational-user degree does not warrant prospective quotes, which do have greater value-creation capability. Increased value propositions could fail due to the DMU's goods dominant mind set, its absence of prestige, or its ill comprehension of the corporate working and strategies of its organisation (Kindström, 2009).

Companies that use the value-in-use concept, see the importance of interactions with customers that go beyond the operational level, so that they together can discuss lifecycle costs and identify recent value-creation chances (Kowalkowski, 2008).

Value-in-use is by nature idiosyncratic and process-oriented, sellers have to be aware of the cross functionality of the concept, and should not focus only on buying units (Kowalkowski, 2011).

Kowalkowski (2011) argues “the closer the relationship between customer and provider, the more the emphasis of the value proposition can be placed on value-in-use” (p. 20). Again, the relationship between value propositions and value-in-use appears. Buyers who focus on long-term, participating relationships, feel more attracted by the value-in-use concept. Sometimes, a long-term focus on value-in-use is not possible because of restrictions buyers place on contractual periods.

According to Michel, Brown and Gallan (2008), users are most likely to base decisions on value-in-use, the payer’s role is more related to value-in-exchange and the buyer’s role is to mediate between the two.

Macdonald et al. (2011) assessed value-in-use in the industrial maintenance sector. On behalf of their conceptual framework, they identified the value-in-use of one customer. The assessment in year one (after 12 months of usage of the offering) and year four (after 37 to 48 months), because the estimate of value-in-use may develop in process of time (Huff, 1990). Macdonald et al. (2011) found for example, efficiency and asset control being value-in-use elements in year one and continuity of operation and retention of competency in year four. Provider processes (service quality, relationship quality and network quality) result in usage process quality and this in turn results in value-in-use.

Raja et al. (2013) identified the “key attributes of value-in-use for integrated products and services” (p. 1131) of a large manufacturer operating internationally. They found seven dominant aspects of value-in-use integrated product service mixes: “knowledge, access, relational dynamic, range of product and service offerings, delivery, price, and locality” (p. 1135). Of these attributes, ‘relational dynamic’ and ‘access’ were identified as having the greatest effect on buyer satisfaction. It is important for vendors to adjust their offers to these attributes and customize them. They could communicate these attributes in their value proposition. Here again the link between value-in-use and value propositions is stressed.

According to Pires, Dean and Rehman (2015), providers who participate in competitive markets will benefit themselves if they identify the value-in-use expectations of their customers as soon as possible. In addition, they argue “value-in-use might be confirmed in the usage phase but must be conceived, at least, when the purchase (exchange) decision takes place” (p. 931).

Grönroos (2009) has identified three key steps in the value creation process based on the value-in-use perspective. The first one is value facilitation, implying vendors have to provide their customers with products that they can use in common sense, in a way it creates value. The second step is the co-creation of value, in which “both parties are active as a resource inside each other’s processes” (p. 353). Both customer and supplier can influence each other’s actions in this process. The last step is the sole value creation, in which the customer alone creates its value.

Is real value-in-use measured?

The studies on value-in-use attempted to measure the real value-in-use, but it becomes clear the concept is misused some times. For example, Edvardsson et al. (2010) tried to identify the value-in-use in the consumer market. They implemented an experience room, to imitate the value-in-use that could emerge if

the consumer has the product in use. Customer's expectations and perceptions may change over time (Prahalad & Hamel, 1994), so the value-in-use cannot be assessed before or at the moment of purchase. Therefore, the real value-in-use is not measured in this study, because customers did not have the product in real use. The value-in-use attributes of Raja et al. (2013) are not real value-in-use attributes, since they contain attributes that are more likely to be product specific than, really values that emerge in practice, i.e. in use. For example, the attributes 'delivery' and 'price' are value-in-exchange attributes, because they emerge before the application is in use and are not changing as customers do have products in use.

The empirical research of Macdonald et al. (2011) did assess real value-in-use of a customer in the industrial maintenance sector. They assessed value-in-use over time and identified that it changes when time evolves.

Overall, the value-in-use concept is clearly described in the past years. Literature only shows a serious lack of empirical studies who asses real value-in-use. It is enormously important for companies to measure the real value-in-use of customers. As we see in previous empirical literature, the value-in-use concept is well explained, but not properly measured. Because value-in-use cannot be measured before customers do have the products in use. In addition, companies tend to give an interpretation of the potential value for customers, as they estimate it by themselves. Companies are not able to estimate the potential value for their customers on their own, without input of their customers. As a consequence, 'value-in-use' is mostly concerned with real product properties. Some companies might see the benefits of this approach, but many companies will fail. Many companies that are technology driven and probably stress product attributes, will miss the boat here.
To show value only will emerge if products or services are in use, the Tweet Mirror of Nedap is a good example. Nedap is technology driven and invented the Tweet Mirror, a mirror which could make pictures of customers standing in front of the mirror and these pictures could be tweeted to show the outfit they were fitting to friends. The Tweet Mirror was targeted to be a gadget for trendy shops. A big additional effect emerged when these mirrors were introduced in shops in the Middle East, where retailers had them really in use. In a lot of countries in the Middle East, men are not allowed to join women in the fitting room. The Tweet Mirror made it possible for women to show their outfit to their husband. This resulted in the fact that retailers had up to 30 percent fewer clothes returns (A. P. Heitema, personal communication, August 2015).

Literature reveals that value-in-use is often associated with value propositions (Vargo & Lusch, 2004; Ballantyne & Varey, 2006; Kowalkowski, 2011; Raja et al., 2013). Therefore, the value proposition concept will be elaborated, in order to get more insights.

2.3 Value proposition

Companies use value propositions to communicate their potential added value to potential buyers. A value proposition implies a process in which different actors invite each other to join in service, with the purpose of obtaining value (Chandler & Lusch, 2015). According to Gummesson (2008), a value proposition cannot suffice without input of customers, which is also related to the co-creation process with customers (Prahalad & Ramaswamy, 2004a). The improvement of value propositions is associated with the understanding of the value chain and lean consumption process of the buyer (Gummesson, 2008). Ballantyne and Varey (2006) discuss reciprocal value propositions, which are "reciprocal promises of value, operating to and from suppliers and customers seeking an equitable exchange" (p. 344/445), thus two-way oriented. They assert the value-in-use of buyers starts with the implementation of a value proposition. According to Ballantyne, Frow, Varey and Payne (2011), the original S-D logic lacks reciprocity. This suggests, they assert a lack of customer input by creating value proposition.

Providers allow, encourage or require contribution of buyers in the creation process of value propositions, because buyers are most aware of their personal requirements and favourites. This enables successful implementation of value proposition into value-in-use (Zeithaml, 1981; Prahalad & Ramaswamy, 2004b; Payne, Storbacka & Frow, 2008). So again the link between value propositions and value-in-use emerges.

If suppliers fail to be customer oriented, they are possibly facing the value proposition does not correspond to the value requirements of customers (Strandvik, Holmlund & Edvardsson, 2012). In addition, value propositions can be interpreted differently by different customers. Therefore, promises that are made can be regarded dissimilar by the marketer and buyer (Grönroos, 2009). So it seems important to tune properly among both parties. Important to notice, it is mostly not possible, feasible or necessary for customers to accept all available value propositions, due to the abundance of value propositions customers come across (Chandler & Lusch, 2015).

By crafting their value proposition, suppliers have to know what customers value about a product, i.e. the special benefits and utility of products. It is necessary to engage customers in the co-production of value, suppliers need to know what their customers really value (Desarbo et al., 2001). Only value propositions that are created in mutuality and co-operation with customers, i.e. value co-creation, will be successful (Ballantyne et al., 2011). Most important, customers are only able to value products if they have them really in use, i.e. value-in-use (Vargo & Lusch, 2004).

Terho et al. (2012) argue the importance of understanding the business model of buyers. These are fundamental for creating and communicating value propositions. Only if salespersons comprehend and convincingly communicate superior value propositions to buyers, the value creation activities of companies will affect performance (Anderson, Kumar & Narus, 2007).

While the importance of value propositions is visible among scholars, Frow and Payne (2008) found, in a sample of 265 managers, 65 per cent of the companies used the term 'value proposition', but only 8 per cent had a formal process in which value propositions were developed and communicated. In 2013 they again researched the latter among 200 companies, and found less than 10% of the companies having a formal process to create value propositions (Frow and Payne, 2013). This implies a lack of strategy in the creation process of value propositions among companies nowadays (Frow, McColl-Kennedy, Hilton, Davidson, Payne & Brozovic, 2014).

Chandler and Lusch (2015) argue not only customers can engage in the value proposition creation process, groups can be created of, for example customers, suppliers and sellers. Different actors can help each other to increase a specific past, create significance in the present, or direct to a specific future. The extent of how strong the value proposition constitutes potential engagement, is called value proposition intensity. An understanding of how propositions invite engagement is important, because numerous varying actors can engage simultaneously.

Kowalkowski (2008) argues the shift from GD-logic to SD-logic is complex and hard to achieve; lots of companies will face internal challenges. First, customers have to change too. Mostly, they are GD-logic oriented; sellers do have to adjust their value propositions to customers (Kowalkowski, 2011). Secondly, companies need to have competences to fulfil what was promised to customers, i.e. their value proposition has to be adjusted to their operating resources at hand (Kindström, 2009; Kowalkowski, 2011). Third, sellers do have to build trust for their customers, because stressing on value-in-use makes it difficult for companies to generate trust, due to its complexity. Fourth, value propositions do have to create value for everyone who participates, and companies have to distribute value in a fair manner among participants. At last, sellers should be capable "to recognise, shape and exploit opportunities for the co-creation of value" (Kowalkowski, 2011, p. 16).

Anderson, Narus and Van Rossum (2006) identified three kind of value propositions suppliers used, based on the benefits an organisation offers. First, all benefits, in which suppliers just sum up all benefits they possess and, in their view, could deliver value to their customers (p. 3). Second, favourable points of difference in which customer should get satisfying answer on the following question: "Why should our firm purchase your offering instead of your competitors?" (p. 3, 4). This approach seems somewhat better than the first approach, but still is not the most satisfying one. The last one, "resonating focus", has been proposed as the best approach to set up a value proposition (p. 4). Suppliers have to base their offerings on few elements which are most important to target customers. Important is to demonstrate and document the possible value and "communicating it in a way that conveys a sophisticated understanding of the customer's business priorities" (p. 4). This approach requires more information of customers about value than previous approaches. It is very likely value propositions based on resonating focus will become superior if value-in-use of products and services will be identified.

The research of Macdonald et al. (2011) is already discussed according to value-in-use. They also assessed provider processes, which can be assimilated to value propositions. A link between both value-in-use and provider processes shows the close relation between value-in-use and value proposition. According to the authors, the provider processes are based on service quality, relationship quality and network quality. These influence through usage process quality the value-in-use of customers.

Overall, value propositions are important for companies because these can communicate what value will emerge if customers buy their product. Customers need to know what value products will have, because this will help them to consider where to buy the product that will fulfil their needs. As identified by Frow and Payne (2008; 2013), the term 'value proposition' is often misused. This indicates the concept is used very little in a serious way in businesses. Though it is important for companies to insert a formal process to develop a value proposition. It helps organisations to rethink their right of existence and it will create unity among staff. The image that is displayed to the external world will represent strength and unity. Customers nowadays are flooded with value propositions coming from various suppliers. Therefore it is important for companies to stress value in their value propositions that is relevant for the target. They can do this well by basing their value proposition on the value-in-use their current customers experience. It is though clear the connection between value-in-use and value proposition at this moment is missing, there is a gap in literature.

According to Osterwalder, Pigneur and Clark (2010), companies that are developing their value proposition must ask themselves the question: *"What value do we deliver to the customer?"* (p. 23). At the same time they have to ask themselves: *"For what value are our customers really willing to pay"?* (p. 31). This value can be equalized to value-in-use, because that is the value customers actually will enjoy. Therefore, companies that are developing value propositions have to take into account two directions, they have to know what value they provide and what value customers will pay for. This as well applies to the alignment of business relations (Corsaro & Snehota, 2011).

To conclude this literature review, there are a number of views on both value-in-use and value propositions. Although, the relation between the two concepts is barely examined and requires further investigation.

3. Methodology

This chapter describes the method of this thesis. First, the research design is described. Secondly, the selection process is explained. Thereafter, the features of the sample are described. Fourthly, the data collection method is illustrated. Next, the data analysis is explained with some references to the appendices, in order to clarify. Thereafter, some criteria for the evaluating of qualitative research are discussed. This section will complete on the short description of the research context, allowing readers to get more familiar with the context in which this research is conducted.

3.1 Research design

The research design is divided into two compartments, based on the research question: *How can customer value in the agricultural sector be understood from a value-in-use perspective and what are the consequences for value propositions?*

1. How can customer value be understood from a value-in-use perspective?
2. What are the consequences for value propositions?

The literature review shows a clear lack of empirical studies on value-in-use. In addition, the agricultural sector is completely changing and can no longer be considered G-D logic. This research will combine both topics and will partly be based on the conceptual framework of Macdonald et al. (2011). They assessed customer's value-in-use through their framework based on provider and customer processes. There will be made use of a qualitative research design (Dooley, 2001). As Miles and Huberman (1994) point out, a number of advantages exist with regards to qualitative research: a researcher gets "intense contact with the field", can "gather data from inside" and "understand account for and act on people's behaviour" (Miles and Huberman, 1994, as referred to in Ehrenhard, n.d., p. 11). This empirical research will be explorative (Dooley, 2001), because it is about a relatively new subject on which not much research is executed yet.

Nedap Livestock Management will serve as a case in this research. Nedap's livestock department consist of both a diary and pig division. The focus of this research is put on the pig division, because Nedap was interested in an investigation on this division. To make myself familiar with Nedap and their pig market, a number of activities have been carried out prior to the empirical research:

- a number of interviews, with the sales manager, salespersons and marketing manager, to get in touch with both Nedap's methods and the market
- a visit to the fair trade "Agrar Unternehmertage Münster", to get in touch with the market
- a product training, to become familiar with the applications Nedap Livestock Management offers
- a visit to a test farm of Nedap, to see their application "Farrowing Feeding" applied in real life

Different from the research of Macdonald et al. (2011), Nedap Livestock Management operates on a market in which both dealers and end users are present and have to be taken into account. As a result, both dealers and end users will be present in this study.

The purpose of this empirical research is to assess how value-in-use emerges in practice. Theory indicated the importance of value propositions that are based on the value-in-use concept. Based on the data that will be gathered in the empirical research, value-in-use in relation to value propositions will be discussed.

3.2 Selection

The market consist of so-called dealers and end users. Dealers buy the products of Nedap and sell (and mostly install) them to the end users, the farmers. The applications of Nedap are never sold directly to farmers, Nedap is though involved with farmers in its selling process. The reason for this is the products often require explanation of the salespersons of Nedap and in addition we are talking about capital goods, which are comprehensive problem solving and need involvement of different DMU members (Gelderman & Van der Hart, 2007). Both dealers and end users are key players in the selling process of Nedap. Therefore, both players will be included in the empirical research. The main focus is put on the end users, because that are the real users of the products of Nedap. A couple of interviews have been executed with dealers, to verify if the dealers experience the same value-in-use for their end users as the end users experience themselves.

3.3 Sample

In total, fifteen interviews have been conducted. Twelve of these have been conducted with farmers. The sample is diverse and includes interviewees who are resident across Europe. The farmers differ on systems, included in this study are the Electronic Sow Feeding (ESF), Pig Performance Testing (PPT) and Pig Sorting (PS), because these have been on the market for a while. Within the Electronic Sow Feeding system, they differ in use: a number of farmers have stable groups and a number have dynamic groups. They also differ on company size, expressed in the number of pigs. At last, acquisition date differs among the sample, which means some farmers have had the system a little longer in use than other farmers. The features of the interviewees can be found in table 2.
Three interviews have been executed with dealers. These interviews were aimed to better understand the context. The dealers differ on country, as can be seen in table 3. They serve as triangulation, in order to test if the interviews with the farmers are valid.

Farmer	Contact	System	Static / dynamic*	Number of pigs (in system)	Year of acquisition	Country
1	Real life	ESF	Dynamic	530	2014	NL
2	Real life	PS	-	5000	2011	NL
3	Real life	ESF	Stable	1600	2003	NL
4	Real life	ESF	Stable	827	2013	DE
5	Real life	ESF	Stable	650	2014	NL
6	Real life	ESF	Stable	500	2001	NL
7	Real life	ESF	Stable	550	2012	NL
8	Telephone call	ESF	Dynamic	550	2014	NL
9	Skype	ESF	Dynamic	500	2007	DK
10	Real life	ESF	Stable	1000	2008	NL
11	E-mail	ESF	Dynamic + Stable	2100	2008	BE
12	Skype	PPT	-	350	2014	ES

Table 2: Features of the farmers interviewed

* Only applicable to the Electronic Sow Feeding system

Dealer	Contact	Country
1	Skype	Denmark
2	Skype	Spain
3	Real life	The Netherlands

Table 3: Features of the dealers interviewed

3.4 Data collection

Cassell & Symon (2004) set up a list of 30 methods that can be conducted in the field of qualitative research. Preference is given to interviews, because people should not be influenced by the opinion of others, as it may be the case with focus groups. In addition, it is important to talk to the 'unit of analysis' and see the body language of the person which is interviewed, as is not the case in an electronic interview. Most of the interviews were conducted in real life. Some interviews were done via Skype, one via telephone and one via e-mail.

An attempt to measure real value-in-use is done by means of interviews. Because the value-in-use concept is still in its infancy, this research is explorative, which had implication for the structure of the interviews. As is explained before, the interviews varied between dealers and end users. The question which was central in the interviews with farmers is:

In which manner does the product of Nedap add value-in-use to your company?

Because this research is explorative, the interviews were semi structured (for the template of the interviews, see Appendix I). The aim was to give the interviewee the possibility for a free reply with the aim of the real value-in-use which is actually experienced by the interviewee will be revealed. The interviews started with the main question, which was the leading question through the interviews. Few elements that where identified by Nedap as being important to know from using the product were included in the interviews. During the first interviews, it became clear which subjects were interesting and which should not have to be included in the following interviews.

3.5 Data analysis

Most interviews were recorded, so all possible data could be put in the analysis process. The interviews were only recorded if the interviewee agreed on it. The interviews were fully transcribed after every interview, as soon as possible, so the interviews were still a fresh memory. This prevented important data would have gone lost. The data that emerged from the unstructured interviews is referred to as 'raw data' (Corbin & Strauss, 1990). To convert raw data into data that can be analysed, first an open coding process is conducted, also referred to as the exploration phase (Baarda et al., 2013). The interviews were read and key words were used as codes. These key words were selected based on the appointed research questions for the interviews. Two types of open coding were applied in this research: in vivo coding and summarizing coding (Baarda et al., 2013). In vivo coding refers to a coding process in which words that are literally named in the interview are used as codes. Summarizing coding refers to a coding process in which a segment of text is summarized into a code. Both types of coding are used mixed, beginning with in vivo coding, and cases in which this technique could not easily be used, summarizing coding was applied (Baarda et al., 2013). After the open coding process was conducted, the codes were translated into English. To get a picture of this process, an example of a farmer is placed in Appendix II*. The second phase is referred to as the specification phase, in which the categorising of codes was conducted. This process is also referred to as axial coding (Baarda et al., 2013). Codes that belonged together were merged into a certain category. For an example of this process, see Appendix III. In this appendix, the process of splitting one category into subcategories is demonstrated as well. After the axial coding process, the codes that were not directly of value for this research, were eliminated (see Appendix III). In Appendix IV, all categories and subcategories that were left are demonstrated. The next phase of the analysis was the reduction phase. In this phase, all material that, in the end, could not be used for this research, was eliminated (see Appendix IV). From that moment, the analysis of results could start. The subcategories were compared to each other and conclusions are drawn thereafter, which can be found in Chapter 4.

* Because of privacy guaranteed to the interviewees, it is not possible to show the fully transcribed interviews

3.6 Criteria for evaluating qualitative research

Since this research is a qualitative study, it is not correct to use quantitative evaluation methods like internal and external reliability and internal and external validity. Guba and Lincoln (1994) have proposed alternative criteria on which a qualitative research can be evaluated. According to them, qualitative research can be assessed based on trustworthiness and authenticity.

3.6.1 Trustworthiness

To ensure this research to be *credible*, the interviews were send to the members after they were transcribed from the data recorder. This gave the respondents the opportunity to check if I understood the conversation correctly. At the end of the research, if there was interest for, a summary of findings was available for the participants of the research.

Only dealers and end users who work with applications of Nedap are included in this research, which make the *transferability* more difficult. According to Geertz (1973a), thick description, a lot of information gathered on a culture, can be fundamental for the establishment of common expressions about cultures and its meaning in the social lives of people. This statement makes it easier to transfer the data to other settings.

In order to meet *dependability* for this qualitative research, all steps of the research are precisely described and recorded. This enables auditors to check the research, from the data collection to the data analysis.

The *confirmability* of this research is concerned with if the researcher has acted in good faith (Bryman & Bell, 2011). The personal values are as far as possible disregarded in this research.

3.6.2 Authenticity

The fairness of a research includes to which extent different actors are involved in the research. First of all, both dealers and end users are included. The dealers were all salespeople, because the research concerned questions regarding the selling of products and customer insights. Regarding the end users, we are talking about farmers, mostly small companies with a few employees. Among the interviews, most were conducted with the owner of the farm. Once, the farmer's wife also participated in the interview. At last, one interview is conducted with the son of the farmer, so small variation in the sample emerged.

3.7 Research context

The N.V. Nederlandsche Apparatenfabriek "Nedap" was founded in 1929 in Holland. The company nowadays is situated in Groenlo. Nedap has 750 people worldwide working for them and it has eleven offices. It has nine business units, of which Livestock Management is one of them. This research only includes the pig division of Nedap Livestock Management. At this moment, the pig division has four product groups, namely: Electronic Sow Feeding, Pig Performance Testing, Pig Sorting and Farrowing Feeding. This research only considers the first three products referred to, because at the moment this research started, the Farrowing Feeding still was in the test phase (About us, n.d.).

3.7.1 Electronic Sow Feeding

This system enables farmers to feed their sows individually. It ensures every sow will get its individual adjusted quantity of feed automatically. It guarantees sows are in top condition, the pigs are very calm and sows are automatically separated. Farmers have the ability to choose between stable or dynamic groups. Stable groups represent sows which are all inseminated in the same period. In dynamic groups, sows of different inseminations periods all intertwine in a group.

3.7.2 Pig Performance Testing

This system enables farmers to select the state-of-the art pigs very easily. Farmers get very accurate data of individual pigs, enabling them to get insights in the performances of their pigs very quickly. The system is properly applicable in the genetics sector.

3.7.3 Pig Sorting

This system is specially developed for the management of finishing pigs. They can be managed individually when they are situated in big groups. The farmer is able to feed per weight and gender.

3.7.4 Dealers

Nedap Livestock Management has a dealer network which sells and installs the products to farmers all over the world. Dealers are selected on their technical knowledge and the understanding of the sector. Because the products of Nedap are very technical, it needs good support. If this support cannot be given by the dealer, as a result, the products will not have the right effect on farms. Dealers, importers or distributors are trained by Nedap. Every representative of Nedap is responsible for dealers in a specific area (A. van Brandenburg, personal communication, August 2015).

3.7.5 End users

The end users are the farmers who have the products in use. The end users are more and more changing: traditionally, it were family companies having pigs, dairy and for example chickens on the same farm. A trend over the last few year is the specialisation of these farms. A lot of farmers have stopped farming, only farmers with growth perspective, the ones that are becoming increasingly big, continue. In the West of Europe, the Electronic Sow Feeding system is already known. It is a maturity product. There is a great difference between West and East Europe, a difference is seen in end users. In West Europe, mostly the end users are characterised by large family business, and in Spain you see the integrators. So in The Netherlands, Denmark and England you will see more family businesses and in Spain you will see the integrators. In the Eastern of Europe, you will see more investment companies. The situation in Europe nowadays is not that good, the prices are very bad, only the strongest will survive (A. van Brandenburg, personal communication, August 2015).

4. Findings

This chapter presents the results of the qualitative research. It starts with the results regarding experienced value-in-use of the end users. Thereafter, the relation of value-in-use with value proposition will be discussed.

4.1 How can customer value be understood from a value-in-use perspective?

In total, twelve interviews with farmers were conducted. Ten farmers had the Electronic Sow Feeding in use, the most important application of this research. To bring in some variety, one farmer using Pig Performance Testing and one using Sorting were included in the research. The most important question for this research to them was: *In which manner does the product of Nedap add value-in-use to your company?* The coding process has been completed. Codes that emerged from the raw data are converted into categories. In total, five categories emerged. These categories are the core process, real users, system related, company related and law related. The categories emerged all result in value-in-use for the users of the system. These value-in-use categories are covered by the customer processes, as identified by Macdonald et al. (2012). All farmers agreed on the fact the application of Nedap added value to their business by using it. Some farmers enjoy more value-in-use than other farmers. In addition to the actual value-in-use identified by the farmers, the potential for value-in-use in the future emerged. Farmers came up with several elements which could be of value to them by using the application.

4.1.1 Core process

This first category is about the core process the system serves. This mostly is the reason why customers buy the application. Customers are in need of something and try to solve this need by buying the application. The interviews show almost all end users experienced value-in-use of the core process of the system. This is quite logical, because it belongs to the basis of the system acquired. The core process of the *Electronic Sow Feeding system* is the feeding of sows. The farmers experience value-in-use by the feeding abilities the system serves. The feeding is done automatically. Farmers are able to feed individually per sow, so every sow gets its own individual amount of food. Because farmers can feed individually, they are able to feed as required. Every sow has its own need of food, so the farmer can feed the right quantity. The possibility to feed individually and make use of two feeding types, enables the farmer to set an individual curve per sow. The following quote describes why the core process results in value-in-use for this farmer:

"[…] The ability of individual feeding was the most important issue for me, because I can feed based on condition. And potentially two feeding types, so actually feed as required by the pig. That was the most important reason why I got into this system."

The farmer that has the Pig Performance Testing in use experiences value-in-use of the system, because he is able to set individual food conversions, to obtain individual test results and to classify boars.

4.1.2 Real users

It turns out from the results that it is important to not only consider the end user. The importance of the real users, in this case the pigs, clearly emerges. They are the ones that actually get into the machine and are fed with aid of the group housing system. Their welfare seems to be important. End users experience value-in-use because the real users' wellness has been improved. Farmers are able to participate in a wellness program. The wellness of pigs has been improved. The conditions of sows increased after farmers integrated the system. Most farmers held their sows in boxes before they implemented this system. Because of law, holding sows in boxes is no longer legal in the Netherlands, for example. Only boxes with exit are still allowed. In boxes, sows were not used to walk through the stable. If sows are more fit, it will have an effect on farrowing. This is very important for the production of the sow. Having the sow at top condition while farrowing also affects the production of the sow in the next throws. The group housing system is taking the sows more back to their origin, like in nature, which does also have an effect on the farrowing of sows. Farmers do not have problems with the throwing of sows, because the sows keep flexible. The returning of sows more to their natural conditions, is value creating for the ranking among pigs. Pigs are more able to escape their enemies. Remarkable is the calmness among pigs in the group housing systems. Several farmers told they were a bit sceptical beforehand, but the sows behave very calm in the system. Some farmers value the ability the sows can make their own choices, they for example are able to feed themselves whenever they want to. The following quote describes why the real users' wellness results in value-in-use for this farmer:

"You can see the pigs are in a proper condition. If they are too thin you can easily feed them additional, it is easier to make them heavy and if they are on the generous side, it is very easy to ration them, so they will not get too much feed. They can recover from the day period in the night, it ensures they are in top condition if they have to throw. As a result, they can start fit with the working process and are able to take good care of the piglets. Being actually one of the greatest advantages."

4.1.3 System related

A lot of elements that result in value-in-use were directly related to the system. So the system related items are divided into a few main subcategories. First of all, the farmer experiences value by the ease of management.

Management

Farmers experience they can manage their animals easier. They get a lot more data, are flexible, and have more control. It is easy to move sows from one place to another. Overall, it helps to keep up with the planning. The equipment of the stable is quite cheap, because not a lot of equipment is needed. The system has little failures, it functions almost always. Also the piglet production increased.
As the following quote explains, farmers are getting a lot more data that makes it easier to manage their animals:

“That I can collect data with which I can adjust my management. That is actually being the reason why I wanted this system. […] In the field of weighing and when they come in or out the station, the scanning of sows, how far she is in gestation period or how heavy she is, those things, the developments continues, I get a lot easier data, with which I can do something.”

Software

The software available for the application is Velos. Several farmers have linked Velos with management programs like Agrovision. A small minority of the farmers is happy with the Velos system and experiences the system as value creating. Some farmers mentioned the link with the management program is properly.

“It works actually very instinctively, very easily. My dad also, he works very easily with the system. And the link with Agrovision works very convenient, you do not always have to fill in things, you once put the data in the management system and thereafter you can link it to Velos, it works convenient.”

Product features

The group housing system has some product features which add, according to the interviews with the farmers, value to their businesses. A lot of farmers are happy with the manner of separation of the system. It is easy for them the ID of sows is checked, so if the responder of the sows get lost, they will be automatically separated. The heat detection is also mentioned a number of times, this enables the farmers to easily detect returners. In addition, the ease of spray marking is mentioned once, so sows that have to be watched are clearly visible for farmers.

“The heat detection is perfect, you can reckon on it. We do scan on gestation. If a sow is in front of a boar, you are very sure she is on heat. Sows that lost their ear tags will be separated automatically, great! This is better compared to other systems.”

Implementation

Several farmers agree the implementation went smoothly and is easy to do. Most of these farmers that valued the implementation smoothly, build a new stable and did not have to adjust old stables with new equipment. Most sows are not used to feeding stations, so they have to learn how to work with the system. Most farmers had one station applicable for the teaching of sows, the so called teaching station. This extra station enables the farmers to learn the sows more easily to get their own food et cetera.

4.1.4 Company related

Some farmers explained they experience value-in-use because of the great service and support of Nedap. Nedap is very willing to help. One farmer explained Nedap had the abilities competitors of Nedap did not have, which creates value for this farmer. A farmer mentioned Nedap is, according to him, progressive and innovative. Another farmer mentioned he has chosen for Nedap, because he thought the company to be the furthest on the field of development.

Features of company

Some farmers explained they experience value-in-use because of the origin of Nedap. For a few farmers it is important Nedap, or one of its dealers, is in the neighbourhood, or because Nedap speaks Dutch and is located in Europe.

4.1.5 Law related

A few farmers from The Netherlands experience value-in-use of the system, because it meets regulations. The holding of sows in boxes is not permitted anymore and the group housing system of Nedap is a legal solution. A farmer told that, thanks to the system, it is easier for him to get away with the four days requirement. This requirement means sows may be put in boxes maximal four days after insemination. According to him, it is easier to participate in concepts.

4.1.6 Potential value-in-use

Value that was mentioned before is actual value that the end users experience by use. As appeared in the interviews, the end users also have some potential value-in-use in their mind. These ideas for potential value-in-use emerge when they have the system in use. This potential value-in-use could be of value for the end users.

A few farmers explained Nedap should better listen to practice. One farmer explained this problem is also mentioned in the field. As is explained by a farmer, who argues too little attention is paid at the functioning of an adjustment in practice:

"[…] Sometimes I think if there is a new update of the program, that a lot of people who are in front of the ironing table are watching the program and too little is asked for the desirability in practice. That are little things, someone who is in front of the iron table has invented it nicely, but for sure did not ask how it would work best in practice."

Farmers will experience potential value-in-use if Nedap better listens to the field. The changes in the applications sometimes need a more practical oriented way of thinking, thereby trying to prevent the farmer does not experience value-in-use of it.

A number of farmers came up with the idea of a GPS per sow, so the sow is easily tracked. The GPS has to be placed in the earmark, according to the farmers. Because the searching of sows in big groups became more difficult, a GPS per sow could facilitate farmers to search sows in groups. Farmers are mostly looking for sows is they are on the residual feed list, which means they did not eat for some days.

Two farmers mentioned the need of animal weighing. In addition, weighing the thickness of fat and the condition is also desirable. According to one of these farmers, the system is too simple and has enough abilities to be elaborated, so the needed options can be realized, in his view.

One farmer explained he could experience potential value-in-use if the switch between silo's would be easier. It now takes some time to switch, according to him this could easily be adjusted in the software.

This farmer also sees benefits in multiple software modes. A division should be made between something that is used once a day, once a week, once a month and once a year.

Another farmer explained potential value-in-use could emerge if the system could automatically adjust the feeding quantity to heat. He explains:

"[…] It is very hot in there […]. If it was outside 40 degrees, inside it was 38 degrees. Actually, I regret that, because the next time I will propose it to them, I now and then do that, things I come across in practice, that I just say, actually you have to say with the very hot weather now, every sow will get twenty percent less feed. Now you keep the feeding list, very much sows did not eat their total proportion of food, that is not a big case, but then you will have this much less."

One farmer could experience potential value-in-use if the system implements the detection of for recognition. If an animal enters the system twice and has already eaten its own proportion of food for that specific day, he has to be restrained. According to the farmer this would create more rest in the stable.

Another farmer could experience potential value-in-use if the Velos software will also be applicable in farrowing. According to this farmer, it enables him to connect an individual feeding curve to an individual sow.

A farmer proposed the implementation of a study club of farmers who have systems of Nedap, to meet, for example, twice a year. Farmers could exchange ideas and learn from each other.

At last, the farmer who has the Pig Sorting system in use, could experience potential value-in-use, if pigs can be followed from seed to chop. The identification of individual animals is crucial to him. According to him, sows can also be traced with the aid of camera's.

4.2 Value-in-use in relation to value propositions

In literature, a gap is identified concerning the value-in-use concept in relation to value propositions. Some authors made a connection between the two concepts. Kowalkowski (2011), for example, argues a close connection among client and supplier is crucial when companies want to base their value propositions on value-in-use. So do Ballantyne et al. (2011) assert only value propositions that are created in mutuality and co-operation with customers, will be successful. While providers are creating their value propositions, they allow, encourage or require contribution of buyers, because these are most aware of their personal requirements and favourites. This enables successful implementation of value proposition into value-in-use (Zeithaml, 1981; Prahalad & Ramaswamy, 2004b; Payne, Storbacka & Frow, 2008). Ballantyne and Varey (2006) assert the importance of reciprocal value propositions. Reciprocal value propositions imply two sided orientation, therefore, input of the customers is needed (Gummesson, 2008). Macdonald et al. (2011) identified in their research provider processes, which can also be regarded as value propositions. The provider processes influence the usage process quality of customers and this, in turn, has impact on the value-in-use of customers.

This research has identified five categories that result in value-in-use for end users. These categories are: core process, real users, system related, company related and law related. In addition, the existence of potential value-in-use emerged. Ballantyne and Varey (2006) argue the value-in-use of buyers starts with the implementation of a value proposition. Therefore, these identified categories have an impact on the development of value propositions. The value-in-use categories that already exist are most important for value propositions. Therefore, companies, especially operating in a business to business context may benefit from incorporating these five categories in their value propositions. With an outlook towards the future, the potential value-in-use may play a role also in the present use, as the study clearly indicates. If companies implement the required changes, this may have an effect on the designing of value propositions. Given this research, it is not possible to establish a value proposition which concerns multiple products. As has been shown, every product will have its own value-in-use and this value will vary among products. In addition, a value proposition has to be adjusted to cultural and institutional features. This has partly to do with legislation. Therefore, it is not possible to use just one value propositions for several areas.

5. Conclusion and discussion

This chapter includes the closure of this thesis. First, there will be concluded on this thesis. The central research question will be answered based on the findings of this thesis. Thereafter, the findings will be discussed, compared to what was found in literature. Thirdly, the limitations of this study will be presented, hand in hand with the recommendations for future research. This section will complete on the practical implementations, in which the advice to management is presented.

5.1 Conclusion

More and more businesses nowadays shift to a S-D logic. The agricultural sector, being traditionally a G-D logic sector, is also shifting to the S-D logic. Central to the S-D logic is the implementation of the value-in-use concept. This research was executed among this emerging, understudied, concept. It was attempted to learn more about the subject.

The central research question in this research: *"How can customer value in the agricultural sector be understood from a value-in-use perspective and what are the consequences for value propositions?"* This research question is divided into two sub questions.

The first sub question in this research *"How can customer value in the agricultural sector be understood from a value-in-use perspective?"* aimed to get insights into the value-in-use concept in the agricultural sector. Important to know was what customers, in this case end users, value while they had the product in use for a while. Overall, this research has identified five categories that result in experienced value-in-use for end users. These categories are: core process, real users, system related, company related and law related. In addition, the existence of potential value-in-use emerged.

End users experienced value-in-use of the core process of the system. The core process is the reason why customer buy a system, to fulfil a kind of need that emerged by end users.

In addition, end users experienced value-in-use, because of the wellness of the real users. The real users have to get into systems and they are actually the reason why systems are bought. The wellness of the real users has been improved since the system was acquired.

End users experience value-in-use of system related items. The end users were able to do their management easier, because they gained access to much more data. This enabled them to be more flexible and at the same time have more control. The software program is value creating for them. The basic product features were also value creating for the end users. Finally, the end users that implemented the system in new building, gained value on the ease of implementation.

Some end users experienced value-in-use thanks to the supplier company's service and support. In addition, value-in-use is experienced, because of features of the supplier company. It is value creating for

them the supplier company is in the neighbourhood, speaks Dutch or is located in Europe. The system is, for example, in The Netherlands value creating because it meets regulations. It is easier for the end users get away with strict requirements.

While using the system, end users came across with potential value-in-use, i.e. items that could be value creating for them in the future while using the system. This can either arise from product-specific adjustment as adjustment in company policy to a more practical approach to renovations.

The second sub question in this research: *"What are the consequences of value-in-use on value propositions?"* aimed to get insights in the relation among value-in-use and value propositions. Important to know was what impact the value-in-use concept has on the development of value propositions. In the creation of value propositions, companies should be aware of the value-in-use as experienced by their (end) users. As identified in this research, five elements result in value-in-use for end users. Important to companies is to implement these value-in-uses into their value proposition. Only the current value-in-use is important for the present value proposition, the potential value-in-use is important to the overall future development of the company. It is important to design value propositions per product and per area.

5.2 Discussion

Kowalkowski (2011) argues a good relationship on the operational-user degree does not warrant prospective quotes. The interviews conducted with dealers demonstrated the relationship seemed to be most important to them. Also the end users stressed the importance of good relations with their dealer as well as with the supplier company. So this research suggests a good relationship provides for continuation of the relationship and thus in prospective quotes.

According to Strandvik, Holmlund and Edvardsson (2012), suppliers are possibly facing their value proposition does not correspond to the value requirements of customers, if they fail to be customer oriented. In addition, Grönroos (2009) argues promises made can be regarded dissimilar by the marketer and buyer. As is discussed in the findings of the interviews, some end users experienced the renovations of products are not enough based on the convenience in practice. This is due to the technology orientation of the supplier company, who in this cases failed to be customer oriented, or in other words, failed to detect the value-in-use of these renovations.

As became evident from the interviews, every individual end user experiences his or her own value-in-use. These value-in-uses are categorised so it was easier to compare the interviews. In addition to the identification of value-in-use, so-called cost-in-use is discovered in this study. These include contingency expenses that arose during the use of the product. If someone intends to create a value proposition based on value-in-use, it is important to take into account the possible cost-in-use that emerged. In this study, it became clear what one end user values by use, is sometimes experienced as a cost-in-use by another end user. Therefore, companies must consider possible cost-in-use experienced by users, in order to prevent value propositions will partially be based on cost-in-use.

This research also identified some boundary conditions. These are conditions, circumstances and/or incidentals someone has to take into account while developing value propositions. The boundary conditions have, for instance, to do with cultural and institutional differences. For example the law is differently regulated among Europe. The law does have consequences for some end users, where for other end users it has no effect whatsoever. In addition, institutions also differ. For example, one end user had a so called high health status farm, which has consequences for the number of visits allowed. As a result, the supplier company and dealer were only allowed very little in the stable, making it difficult to think along for improvement. These examples show boundary conditions have to be taken into account. Therefore, value could be created if companies adjust their value propositions based on cultures and institutions.

5.3 Limitations

As arises in almost all empirical studies, this study also has some limitations. First of all, as many qualitative studies have to do with, this study is hard to generalise. The empirical research is conducted in the agricultural sector and is focused on the end users, instead of the direct customers (dealers) of the supplier company. So it has to do with a very specific setting.

Secondly, due to the little availability of interviewees among the dealers, there is too little focus placed on the dealers. It was, for instance, not possible to detect the consequences of value-in-use for both the value proposition of dealers and end users. Dealers certainly are important, because they do a lot of work for companies and they also need to have a value proposition.

Thirdly, it was not possible to include different roles of the DMU, because the end users consisted mostly of very little parties, by which a plurality of DMU roles were performed by one person. Though in literature it seems important, because Kowalkowski (2011) argues the main challenge of creating value-in-use propositions is the DMU in which dissimilar roles are present in dissimilar purchase processes.

Fourthly, due to the method of research, the sample is not that diverse as desired. It was very important to do ‘live’ interviews as much as possible. As a consequences, most of the interviewees are situated in The Netherlands. It was not possible to travel to very diverse countries in Europe. In addition, a language barrier emerged, sometimes end users could not express themselves in English and therefore were not able to add value to this research.

Fifthly, it was not possible to carry out the research over time, as did the research of Macdonald et al. (2011). So it was not possible to see how the value-in-use develops over time. According to Prahalad and Hamel (1994), the expectations and perceptions of buyer’s may change over time, so it seems important to measure value-in-use over time.

At last, it was not possible in the scope of this research to see what effect the value-in-use would have on value propositions in practice. This might be interesting to discover.

5.4 Recommendations for future research

In an attempt to solve the problem of generalisation, research in a wider context is valuable to conduct.

Very preferably outside the boundaries of the Nedap network and it has to take into account, for example, the entire livestock sector, instead of only the pig industry.
Secondly, it seems important to include two entities while companies with a dealer network are developing their value propositions based on value-in-use. This research lacked the involvement of dealers. Dealers are the ones that know their local market best and can do a great deal of work for supplier companies. Research is needed into the role and importance of involving dealers in the creation of value propositions.
Thirdly, this research did not include several DMU roles, because the end users were not as large on itself. Additional research is needed on different DMU roles and the effect on the creation of value-in-use propositions.
Fourthly, it is interesting to research how value-in-use emerges over time. Prahalad and Hamel (1994) assert the expectations and perceptions of buyer's are changing over time. So, additional research is needed to see how customers value the use of goods over time and how it evolves.
At last, it will be interesting to research the effect of potential value-in-use on the future value propositions. How would this potential value-in-use effect the value creating process of companies? Are companies thanks to the knowledge of this potential even better able to increase their value for customers?

5.5 Practical implications

This thesis learned us a lot about the value-in-use concept and the relation with value propositions. This section describes the practical implications of this thesis, i.e. what companies are advices to do based on the results of this thesis.
As far as we know now, end users are only able to value their acquired products if they have them really in use. This research concluded on the fact that in the agricultural sector, five value-in-use categories are identified and end users came up with potential value-in-use when they use the product. Companies in the agricultural sector should base their value propositions on these value-in-use categories. Based on this research, the following process for designing and communicating a value proposition is advised:

1. Select the product or application of the company for which the value proposition has to be designed. Given this research, it is not possible to establish a value proposition which concerns multiple products.
2. Select the area for which the value proposition has to be designed, could be more than one. This research shows value propositions may not correspond to all cultures and institutions that are present in a specific area. Also confirmed by Strandvik et al. (2012), who assert value propositions can be understood differently by different customers. So value propositions have to be set up per area.
3. Get to know what your customers really value while using the product, i.e. what the value-in-use of the company's specific product in that specific culture / area is. Value-in-use can perfectly be

investigated with the aid of interviews. The questions for interviews have to be set up based on the five value-in-use categories which emerged in this research. In addition, it is very likely suggestions for potential value-in-use emerge. The potential value-in-use is not that important for the current value proposition, this aspect is more important for future offerings.

4. It is also important to identify what costs emerge while using the product, i.e. what the cost-in-use is. It could happen a value-in-use for a particular end user is a cost-in-use for another end user. Therefore, it is important to score out the value-in-use elements which are appointed as a cost-in-use as well.
5. When you know the value-in-use, it is important to see which elements are very important to your customers, so the ones that are mentioned most. Once these are identified, choose the few elements which are most important to your customers (Anderson et al., 2006).
6. Incorporate these elements into your value proposition. Thereafter, it is important to demonstrate and document this value (Anderson et al., 2006).
7. Communicate the value proposition. It is important companies communicate as one unity.

Important issues not to forget:

- The communicating of value propositions is very important. Salespersons play a major role. Especially for the dealers, salespersons proved to be very important. Only if salespersons comprehend and convincingly communicate superior value propositions to buyers, the value creation activities of companies will affect performance (Anderson et al., 2007).
- It is important for companies to stay close to the field. Only salespersons getting in touch with the field is not sufficient, this study showed the ones who devise and develop renovations also need experiences from practice. As an advice, companies could implement a focus group in their company, consisting of various disciplines internal and customers, both dealers and end users, of the company.
- Companies have to be aware of the fact that it is not possible, feasible or necessary for customers to accept all available value propositions, when they are communicating their value propositions (Chandler & Lusch, 2015). If they base their value propositions on the value-in-use as experienced by their existing customers, it may happen they lose sight of their competition, because that is not the main topic discussed in a value-in-use discussion with own customers. A value proposition is mostly aimed at new, potential customers, and these are likely to be overwhelmed with value propositions of several providers. Make sure the value proposition stands out between the ones of the competition.
- Over the long term, the potential value-in-use will play a larger role. It is a way for companies to increase the value of their current applications. Therefore, the potential value-in-use must come first in the value creation process of companies.

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Appendix I Interview questions

1. In which manner does the product of Nedap add value to your company?
2. What effect does the system have on your pigs?
3. What is the most important advantage on the field of finance?
   - What are the effect on the operational costs (like employee costs)? Do you spend more or less time and did work activities change?
4. What is the most important advantage on the field of technology?
5. What is the most important advantage for the management of your company?
6. Was it easy to integrate the system into your management system?
7. Why did you choose for Nedap instead of her competitors?
8. How may sows and stations do you keep? (ESF related)

Appendix II Open coding process

Farmer 1

1. Wellness program
2. Required in environmentally preferred story
3. Individual feeding
4. Two feed types
5. Feed as required

6. Individual feeding
7. Two feeding types
8. Energetic start
9. Empty scanners
10. Returners
11. Aid experts
12. Sufficient adjustment options

13. Discomfort pick out sows on your own
14. Ease separation farrowing

15. Calm pigs

16. Expensive purchase
17. Sows in better condition
18. Investment in technique instead of steel with a view on development
19. Easier data extraction
20. Easier management
21. Study club customers searching for the best

22. Pretty flawlessly
23. Ease/speed to teach

24. Investment in technique
25. Management individual sow
26. Nedap control is the furthest
27. Extra guidance of the program is desirable

28. Studyclub
29. Nedap support program
30. Report increasingly important

31. Unknowing due to complexity program

32. Individual feeding
33. Easier switch
34. Two feeding types

35. Downturn
36. Individual feeding
37. Two feeding types
38. Investment in technique (development-oriented)

39. Existing stable requires adjustments
40. Less concerned with feeding, more with control

41. Heat detection works good

42. Able to keep more sows

43. Individual feeding
44. Technique automation
45. Collecting data for management
46. Teaching a lot of work
47. Too little gates at the beginning

48. Proper concentricity system
49. Many coronet inflammation (claws), more failure → no issue with boxes

50. Wellness program
51. Sows economically more viable
52. Easier investment with sows

These codes are obtained from the interview with farmer 1. Most important topics of the conversation were used as codes.

Appendix III Axial coding process

Farmer 1

1. Wellness program
2. Required in environmentally preferred story
3. Individual feeding
4. Two feed types
5. Feed as required

6. Individual feeding
7. Two feeding types
8. Energetic start
9. Empty scanners
10. Returners
11. Aid experts
12. Sufficient adjustment options

13. Discomfort pick out sows on your own
14. Ease seperation farrowing

15. Calm pigs

16. Expensive purchase
17. Sows in better condition
18. Investment in technique instead of steel with a view on development
19. Easier data extraction
20. Easier management
21. Study club customers searching for the best

22. Pretty flawlessly
23. Ease/speed to teach

24. Investment in technique
25. Management individual sow
26. Nedap control is the furthest
27. Extra guidance of the program is desirable

28. Studyclub
29. Nedap support program
30. Report increasingly important

31. Unknowing due to complexity program

32. Individual feeding
33. Easier switch
34. Two feeding types

35. Downturn
36. Individual feeding
37. Two feeding types
38. Investment in technique (development-oriented)

39. Existing stable requires adjustments
40. Less concerned with feeding, more with control

41. Heat detection works properly

42. Able to keep more sows

43. Individual feeding
44. Technique automation
45. Collecting data for management
46. Teaching a lot of work
47. Too little gates at the beginning

48. Proper concentricity system
49. Many coronet inflammation (claws), more failure → no issue with boxes

50. Wellness program
51. Sows economically more viable
52. Easier investment with sows

Farmer 1	Category
Individual feeding (5x) – two feeding types (4x) – feed as required – less concerned with feeding, more with control	Core process
Ease separation farrowing – easier data extraction – easier management – ease/speed to teach – management individual sow – easier switch – able to keep more sows – heat detection works good	System related
Wellness program – calm pigs – sows in better condition	Real users
Required in environmentally preferred story	Law related
Investment in technique instead of steel with a view on development (4x) – study club customers searching for the best (2x) – Nedap control is the furthest – collecting data for management - Sufficient adjustment options Nedap – extra guidance of the program is desirable – Nedap support program – required in environmentally preferred story	Potential value-in-use

The topics mentioned above ensure the famer experiences value-in-use of the system. The codes that belonged together, are put into a category. For example, the codes that were all about feeding, are put into one category that is called core process, because feeding is the core process of an Electronic Sow Feeding system. In this interview, three other categories that will result in value-in-use emerged, namely system related, real users and law related. This farmer also mentioned in the interview potential value-in-use could be experienced.

Cost-in-use
Empty scanners – discomfort pick out sows on your own – expensive purchase – unknown due to complexity program – teaching a lot of work – too little gates at the beginning returners – aid expert – downturn – existing stable requires adjustments – many coronet inflammation (claws), more failure: no issue with boxes

This farmer experiences in addition to value-in-use, also cost-in-use by using the system. These are addressed above.

After the axial coding process, the codes that were not directly of value for this research, were eliminated. This applies to the uncoloured codes as can be seen above, the cost-in-use emerged, as well as the boundary conditions that emerged.

Appendix IV All categories and subcategories of the farmers

Farmer 1	Category
Individual feeding (5x) – two feeding types (4x) – feed as required – less concerned with feeding, more with control	Core process
Ease separation farrowing – easier data extraction – easier management – ease/speed to teach – management individual sow – easier switch – able to keep more sows – heat detection works good	System related
Wellness program – calm pigs – sows in better condition	Real users
Required in environmentally preferred story	Law related
Investment in technique instead of steel with a view on development (4x) – study club customers searching for the best (2x) – Nedap control is the furthest – collecting data for management - Sufficient adjustment options Nedap – extra guidance of the program is desirable – Nedap support program – required in environmentally preferred story	Potential value-in-use

Farmer 2	Category
200% sure choice, enthusiastic – would do it again – emotional value (trainees, foreigners) – more emotional value than financial value – weighing does work properly	X
Seed chop – ease of identification animal – Ben camera above	Potential value-in-use

Farmer 3	Category
Individual feeding (2x)	Core process
Calm pigs – ease management individual pig	Real user
Minimal equipment (2x) – cheap equipment – ease of system – easy movable (2x)	System related
Abilities program not optimally used by Nedap – animal weighing, thickness of fat, condition – simple system, sufficient expansion abilities – benefits are not fully used – not a lot of labour costs needed to make right changes - need of integration with other programs – choice of Nedap: size player, reliable – changes in electronics and transmitters: beat competition – no difference other group housing systems – other systems are also well	Potential value-in-use

Farmer 4	Category
Very calm pigs – keeps sow flexible, just like in nature	Real users
Individual feeding (2x) – less feeding costs – two feeding types – feeding dependent on gestation – different individual curves	Core process
Flexible – easy link with Agrovision – easy to implementate, started with zero – little failures	System related
Nedap familiar and in the neighbourhood	Company related

Farmer 5	Category
Sows in good condition – pig in top condition – top condition for next throw – pigs behave well – pigs no longer overfed – more fit sows – pig in good condition	Real users
Feed as required – less waste of feed – saving feed costs – less feed needed – ease of set feeding curves – satisfied about feeding and condition sows	Core process
Increased throw – heat detection does work properly – ease of automatically separating – ease of Velos – easy link with Agrovision – keep up with the planning very tightly	System related
Need of GPS per sow	Potential value-in-use

Farmer 6	Category
Securely and precisely feeding (5x) – savings on biggest expense – two feeding types – adjust feed to age of sow – adjust feed to stage of gestation – feed as required	Core process
Big group advantage ranking, just like in nature (2x) – very calm pigs – system fits the sows	Real users
System does work nicely (4x) - ease of heat detection (2x) – ease of separation (2x) – ease of working (2x) – Velos farmer friendly (2x) - ease of ID check – ease of V-scan – 70% of returners detected by heat detection – ease of spray marking – system helps to keep up the planning – ease of teaching – solid system – ease of integration – customer friendly – optimal production	System related
Great service – willingness of Nedap	Company related
Weigh plateau – wish: automatically adjust feed to heat	Potential value-in-use

Farmer 7	Category
Individual feeding (3x) – in terms of feeding big plus – better use of feed – two feeding types – feeding strategy: based on condition	Core process
Calm pigs (3x) – improved conditions – sows more fit - pig is able to determine own timing of food –	Real users
Flexible (3x) – improved production – improved control – teaching and start went properly – proper link Velos and Agrovision – Velos user friendly	System related
Sees merit in detecting for recognition – wish earmark with GPS	Potential value-in-use

Farmer 8	Category
Able to feed individually (2x) – ease of heat detection (2x) – control per pig and group – ease of automatically separation – easy to integrate: new build – ear tags – selection stations	System related
Easier to get away with four days requirement: nothing to hide – easier to participate in concepts	Law related
Calm pigs	Real users
Conditions remain more equal (thanks to feeding)	Core process
Need of more abilities Velos (2x) – want to schedule on Monday for whole week – GPS per sow would be convenient	Potential value-in-use

Farmer 9	Category
Right way of separating (2x) – do not have to look for sow who lost her responder – animals can be treated individually – functions almost always – Velos not difficult to use – not hard to find individual animal – few complaints	System related
Calm animals (2x) – animals run free – animals feed themselves – pigs do look good	Real users
Great service and support of Nedap (2x) – abilities competitors of Nedap did not have – Dutch speaking company	Company related
Various feed curves – feed as required – individual amount of food – feeding conditions remain more equal	Core process
Now only once per two days attention animal did not eat – ease of potential GPS system – when implementing new ideas: Nedap looks too little to see use in practice	Potential value-in-use

Farmer 10	Category
Individual feeding (2x) – feed per age and condition – importance ability two feeding types	Core process
Right condition farrowing – proper viable piglets – calm pigs	Real users
Find individual animal doable – ease of stable groups – teaching station des work properly – to see in a store what animals did and did not eat – satisfied user	System related
Nedap: dealer in neighbourhood – Nedap is progressive and innovative	Company related
Meets regulations	Law related
Wish: easier switch between silo's – wish: software in multiple modes - Nedap should listen better to practice	Potential value-in-use

Farmer 11	Category
Feed the right quantity (2x) – able to feed individually – feed at right moment – automatically feeding - able to adjust individually or in group	Core process
Ease of heat detection – separation system does work very well – sows are easily moved in a group – satisfied – works usually well – easy to integrate	System related
Very calm sows – sows can eat when they want to	Real users
Wish: Velos in farrowing	Potential value-in-use

Farmer 12	Category
Individual food conversions (2x) – individual test results – classifications of boars – individual growth rates – classify the animals more accurately – able to give better service to our clients - now it works properly	System related
Nedap: European company – idea of getting better service Nedap – Arno: important reason why we bought the machines – good relation with Nedap	Company related

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The category 'system related' is divided into subcategories over all interviews. The following process is conducted:

System related	Subcategory
Data (F1) – management (F1) – able to keep more sows (F1) – flexible (F4;7) – control (F7;8) – sows are easily moved (F3;11) – helps to keep up planning (F6;5) – to see in a store what animals did and did not eat (F10)	Management
Easy link Agrovision (F4;5;7) – Velos (F5;6;7;9)	Software
Separation (F1;5;6;8;9;11) – heat detection (F1;5;6;8;11) – ease of ID check/V scan (F6) – ease of spray marking (F6) – ear tags (F8) – selection stations (F8)	Product features
Teaching (F1;6;7;10) – easy to implementate / integrate (F4;6;7;8)	Implementation

As one can see, all system related items resulted in four subcategories. In total, four subcategories emerged.