

Master Thesis

Business-to-Business Market Making on the Internet: A Case for End-of-Life Electric Vehicle Batteries

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Abstract

Introduction: The ongoing transformation towards emission-free means of transportation goes along with the resource-intensive production and integration of electric vehicle batteries. Despite the environmental potential in decarbonizing the transport sector, electric vehicle batteries lose capacity over time and use and are only usable for transportation purposes until reaching 70 to 80 residual capacity. Discarding the electric vehicle batteries despite the high residual capacity represents a waste of resources and does not go in line with European-wide sustainability goals. Consequently, several second life scenarios for end-of-life electric vehicle batteries have been identified and partly proven to be technologically feasible. European laws oblige automotive original equipment manufacturers (OEMs) to ensure that end-of-life electric vehicle batteries are taken back and recycled adequately. Despite the importance of automotive OEMs in the battery value chain, they want to focus on their core business while leaving the remanufacturing process to third parties, namely second life manufacturers. Accordingly, the market for end-of-life electric vehicle batteries is expected to be intermediary-based in which automotive OEMs transfer end-of-life electric vehicle batteries to second life manufacturers. However, automotive OEMs and second life manufacturers face two inter-organizational uncertainties when trading end-of-life electric vehicle batteries which can be conceptualised by means of the principal-agent theory: First, ex-ante, the second life manufacturer cannot assess the electric vehicle battery's quality without facing high costs (hidden characteristics) which can prevent the transaction to occur (adverse selection). Second, ex-post, the automotive OEM cannot fully monitor the second life manufacturer's actions (hidden action), who can act against the automotive OEM's interest (moral hazard). Due to the growing demand for electric powered vehicles, large amounts of end-of-life electric vehicle batteries will become available for second use in the future. There is an ever-increasing need for a cross-sectoral market form that reduces or prevents the inter-organizational uncertainties between the automotive OEM and second life manufacturer and thereby facilitates the exploitation of the environmental and economic potential connected to second life. **Research Question:** The study aims to answer to what extent an online business-to-business marketplace can reduce or prevent the inter-organizational between the automotive OEM and second life manufacturer. **Methodology:** A multiple-case study based on three business-to-business marketplaces was conducted, including two semi-structured interviews with the operators. Additionally, two semi-structured interviews with one automotive OEM and one second life manufacturer were carried out, respectively. Lastly, a semi-structured interview with an expert on business-to-business marketplaces underpinned the overall study. **Findings:** Six general areas of activity are identified and theorized that reduce the agency problems of adverse selection and moral hazard: (i) the implementation and maintenance of market regulations; (ii) the definition of a standard for evaluating and classifying the product quality (iii) the definition of a standard for specifying the traded product(s); (iv) the definition of a standard for specifying each type of market participant; (v) the provision of a comprehensive customer support; and (vi) the provision of a secure payment system. The proposed theory is subsequently tested on the market for end-of-life electric vehicle batteries revealing the transferability of the identified areas of activity in reducing the inter-organizational uncertainties between the automotive OEM and second life manufacturer. **Conclusion:** Despite the potential of the identified areas of activity in reducing the inter-organizational uncertainties between the automotive OEM and second life manufacturer, further research is needed to analyse and measure their effectiveness.

Keywords: Electric Vehicle Battery, Repurposing, Second Life, Business-to-Business, Market Making, Marketplace, Principal-Agent Theory, New Market Creation

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Abbreviations

BMS	Battery Management System
BNEF	Bloomberg New Energy Finance
BOM	Battery Ownership Model
EBA	European Battery Alliance
EOL	End-of-Life
EU	European Union
EV	Electric Vehicle
EVB	Electric Vehicle Battery
IT	Information Technologies
KPI	Key Performance Indicator
kW	Kilowatt
kWh	Kilowatt-Hours
MM	Market Maker
OEM	Original Equipment Manufacturer
SOH	State of Health
TMS	Thermal Management System
US	United States
WTA	Winner-Takes-It-All

1 Introduction

1.1 Background

The automotive industry is about to undergo a remarkable transformation towards e-mobility. By 2040, more than half of new-car sales and a third of the global fleet - equal to 559 million vehicles - will be electric (BNEF, 2019). Within the European Union (EU), the demand for electric vehicles (EVs) is driven by not only legislative initiatives (e.g. Low-Emission Mobility Strategy and “Europe on the Move”) that include for instance carbon-dioxide emission standards but also a growing public concern about high levels of air pollution and the health risks connected thereto facilitate EV adaption (EC, 2019). As climate change continues to unfold, the EU aims to decarbonize the European transport sector who is responsible for around 27 percent of total greenhouse gas emissions (EEA, 2019).

The current key technology of EVs is the lithium-ion battery, which determines the overall performance (e.g. range, acceleration, and fast charging capability) of the vehicle. In contrast to traditional combustion engines an electric vehicle battery (EVB) loses capacity over time (calendar ageing) and use (cycle ageing), both of which negatively impact the EV’s performance. After reaching a capacity below 70 to 80 percent, EVBs are expected to be unusable for EVs due to a lack of fulfilling certain performance requirements (Ebner et al., 2013; Sasaki et al., 2013). However, recycling or discarding the EVBs despite the high remaining capacity represents a waste of resources (Bobba et al., 2018). EVBs are also extremely costly and can account for about 25 percent of the EV’s production costs (Nykvist and Nilsson 2015). Hence, creating ways to give end-of-life (EOL) EVBs a second life in applications with less-demanding performance requirements, such as energy storage solutions for renewables, has gained increased attention in recent years.¹ An extended EVB life cycle does not only help to mitigate the environmental footprint but also to reduce the high acquisition costs of EVs. The high upfront cost of EVBs is still one of the major barriers for the mass market adoption of the EV (BNEF, 2020). Furthermore, a sustainable battery value chain including responsible sourcing and manufacturing practices as well as a circular economy approach can represent the core of the EU’s ambition to become competitive in the global battery sector and thus create new jobs in a relevant future and emerging global market. As of today, the European share of global cell manufacturing stands at just around three percent, while Asia possesses an 85 percent share (Tsiropoulos, 2018).

A handful of automotive original equipment manufacturers (OEMs) have already started to either launch own second-life businesses (e.g. Renault or Nissan), or develop second-life applications in close collaboration with other companies (e.g. BMW and Vattenfall). The global number of EVBs, however, is expected “to exceed the equivalent of about 3.4 million packs by 2025, compared with about 55,000 in 2018” (BNEF, 2019). European laws oblige automotive OEMs to take back and recycle EOL EVBs (e.g. Directive 2006/66/EC 2006). Considering the fast growing EV market and the legal obligation to collect retired EVBs, automotive OEMs must manage large amounts of incoming EOL EVBs in the future. It is questionable whether all EOL EVBs suitable for second life applications can be repurposed through small-scale pilot projects. Most automotive OEMs want to focus on their core business while outsourcing the repurposing processes to so called second life manufactures.

¹ EOL EVBs are being defined as all EVBs that are not applicable in EVs anymore.

As of today, there is no wider market for EOL EVBs in place. This is partly due to the low amounts of EOL EVB, but also the underlining uncertainties connected to the transaction of EOL EVBs. Markets for used goods are especially affected by high uncertainty due to information asymmetries between seller and buyer (Akerlof, 1979). EVBs are complex goods that can be expected to feature significant hidden characteristics, resulting from a unique use history of each individual battery and high variance in the quality of different batteries of the same kind (Baumhöfer et al., 2014; Bräuer et al., 2018). If potential buyers, in that case the second life manufacturers, cannot assess and trust the quality of EOL EVBs in a cost-efficient way, the market is likely to fail (Bräuer et al., 2019). Besides that, the sellers, in that case the automotive OEMs, cannot monitor the activities of the second life manufacturer after the transaction took place. Irresponsible behavior of the second life manufacturer may harm the reputation of the automotive OEM's brand, e.g. through low quality and safety standards during the remanufacturing process (Bräuer et al., 2019). There is an ever-increasing need for a cross-sectoral market form that mitigates the uncertainties connected to trading EOL EVBs on a large scale. This may help strengthen not only existing efforts, but also incentivize third-party entrepreneurs to create business models around the repurposing of EOL EVBs and thereby contribute to a more economically valuable and environmental-friendly battery value chain.

1.2 Research question

Since the mid 1990s, online marketplaces started to emerge as successful market forms to connect buyers and sellers. Despite the non-physical character of transactions on the internet, online marketplaces across different segments have proven to be able to mitigate or circumvent the uncertainties connected with trading used goods, such as the well-known platform eBay. Indeed, information transparency is one of the main features that distinguishes digital exchanges from traditional markets (Zhu, 2004). Also, internet-based platforms improve scalability and lower coordination costs, providing a more efficient matching between buyers and sellers (Klein & Quelch, 1997). The question arises whether such online-based platforms can be applied on the market for EOL EVBs as an efficient and effective trading system. Consequently, this study aims to answer the following research question:

1. *To what extent can an online business-to-business marketplace reduce or avoid the inter-organizational uncertainties between the automotive OEM and second life manufacturer?*

As of today, no marketplace for EOL EVBs is existing that may serve as the unit of observation to answer the research question. Therefore, other already existing marketplaces need to be considered as a proxy. Accordingly, three additional research questions have been developed to answer the main research question as depicted above:

- a. *What buyer-seller uncertainties do already existing online business-to-business marketplaces face and how are they different or alike to the inter-organizational uncertainties between the automotive OEM and second life manufacturer?*
- b. *How do already existing online business-to-business marketplaces reduce or avoid the identified buyer-seller uncertainties? (i.e. what activities are being pursued to prevent or mitigate these uncertainties?)*
- c. *To what extent can these activities be transferred on the market for end-of-life electric-vehicle batteries?*

1.3 Objectives

Answering the proposed research question shall help to draw conclusions whether an online business-to-business (B2B) marketplace represents a feasible solution for trading EOL EVBs and thereby encourage and support future efforts related to the repurposing of EOL EVBs and a more sustainable battery value chain. This shall be achieved by identifying a set of areas of activity that already existing marketplaces apply to reduce or prevent buyer-seller uncertainties, and investigate to what extent these areas of activity can be applied to the market for EOL EVBs. Moreover, the identified areas of activity are supposed to be generalized to provide added value for the resolution of similar buyer-seller uncertainties in other markets. The findings can serve as a decision-making tool for intra- and entrepreneurs that engage in the commercialization of EOL EVBs. Accordingly, this study is pursued from an entrepreneurial perspective exploring the potential of a platform that focuses on digitally mediating the transaction of EOL EVBs. Furthermore, there are only a few studies to be found focusing on the role of intermediaries in facilitating the creating of new markets.

Besides that, this research shall provide valuable insides into the research area closed loop supply chain management which is defined as “...the design, control, and operation of a system to maximize value creation over the entire life cycle of a product with dynamic recovery of value from different types and volumes of returns over time.” (Guide and Van Wassenhove, 2009). Such “system” can be depicted in the form of two-sided platform as proposed in this study. The following findings shall also contribute to the EU’s efforts in designing a sustainable eco-system around the manufacturing, use and recycling of batteries.

1.4 Disposition

The study is structured as follows: First a literature review is conducted not only on the design and characteristics of EOL EVBs, but also on all other parts that lead to a better understanding of the context of the research question. Second, the prosperities of online B2B marketplaces are being outlined, including various aspects, such as why and how two-sided platforms create value. Third, the theoretical framework of this study is being illustrated. Hereby, the focus lays on the interaction between the second life manufacturer and automotive OEM which has been analysed in-depth by Bräuer et al. (2019). Each main part of the literature review and theoretical framework is concluded and summarized in an interim conclusion.

After describing the research methodology (e.g. case study method), the empirical findings are being outlined. One of the key data collection methods have been semi-structured interviews with not only one seller (automotive OEM) and one buyer (second life manufacturer), but also operators of already existing marketplaces. Subsequently, the empirical findings are being theorized and tested on the market for EOL EVBs by iterating between the literature, theoretical framework and empirical findings. This theory testing phase is characterized by reasoning to what extent the identified measures can be applied by an operator of an online marketplace for EOL EVBS to reduce the inter-organizational uncertainties between the automotive OEM and second life manufacturer. The study is finalized by making concluding remarks related to the research questions and outlining further research recommendation.

2 Literature Review

The literature review is divided into two main parts. First, the necessary background knowledge related to EOL EVBs is provided to understand the context of the introduced research question. Second, the prosperities of online B2B marketplaces are illustrated to grasp the value creation process of such platforms and the challenges related thereto. Both parts of the literature review are connected to the research questions in various aspects and must be considered in the theory development and testing process.

2.1 Background Knowledge

The following section focuses on all background knowledge that is relevant to understand the subject area of battery second life. The descriptions of technical matters are being kept simple as this study concentrates on the commercial aspects of battery second life rather than its technical challenges.

2.1.1 Design and Characteristics of Electric Vehicle Batteries

An EVB is an energy storage system that consists of one battery pack. Each battery pack includes of a few modules, and each module comprises several cells. Each cell consists of a positive cathode, a negative anode and an electrolyte (necessary components to create electricity). The cells and modules can be connected in parallel or in series which allows adapting the battery pack to varying electric requirements of appliances (Bräuer et al., 2019). The battery pack is monitored and controlled by the battery management system (BMS) which represents one of the most crucial components of the EVB. Besides that, a thermal management system (TMS) regulates the temperature to avoid battery failures due to high or low temperatures. The entire battery pack including the BMS and TMS is covered by a battery case. EVBs are usually seized in kilowatt-hours (kWh) which measure the amount of energy used or produced over time. Kilowatts (kW), on the other hand, measure the rate (i.e. the power) at which electricity is produced or used. For instance, the newly introduced Polestar 2 has a battery capacity of 78 kWh in 27 modules and a maximum power output of 300 kW. Assuming the Polestar 2 generates full power output; the battery would be discharged approximately after 16 minutes:

$$\frac{78 \text{ kWh}}{300 \text{ kW}} = 0,26 \text{ h}$$

2.1.2 Degradation

Even though EVBs are superior to traditional consumer batteries regarding energy and power density, they also degrade over time (calendar ageing) and use (cycle ageing) (Han et al. 2014). Accordingly, the lifespan of an EVB can be expressed either in terms of its cycle life or its calendar life (Richa et al., 2014). The cycle life refers to the number of charge-discharge cycles (e.g. 2000 cycles) a battery can undergo before failing to meet certain performance requirements, whereas the calendar life is being defined as the length of time a battery can be stored with minimal discharges before capacity diminishes (e.g. 30 years). Per Olsson et al. (2018), the degradation of EVBs is dependent on three main factors:

- consumer behaviour
- technical specifications
- climate

The consumer behavior refers to the driving and charging profile of the EV owner. This can be measured for instance by the charging and discharging current rate and the depth of discharge (Han et al. 2014).² Moreover, each EVB degrades differently dependent on the technical specifications and production process (Olsson et al., 2018). Lastly, too high or too low temperatures have a negative impact on the ageing process of EVBs as extreme weather conditions might shorten the anticipated life span. The ideal operating temperature for EVBs ranges from 20 to 45° Celsius.

Most studies suggest that EVBs are not applicable in EVs anymore after reaching 70-80 percent of initial capacity as the ongoing degradation is characterized by a reduced capacity (limiting the vehicle's range) and an increased internal resistance (limiting acceleration and charging speed) (e.g. Ebner et al., 2013; Sasaki et al., 2013). However, Saxena et al. (2015) show that EVBs with a remaining capacity of 80 percent would still be able to cover the daily needs of more than 65 percent of U.S. drivers. After all, determining the EOL of the EVB is mainly subject to the user demands of the EV owner.

2.1.3 Life Span Prediction

Predicting the lifespan of EVBs is not only challenging because the consumer behavior and the operating environment (i.e. climate conditions) vary among EV owners, but also due to three additional uncertainties identified by Rohr et al. (2016): the start of non-linear ageing; increasing cell parameter spreading; and the exceeding of critical limits. Non-linear ageing refers to the so called "ageing knee" in which the degradation accelerates exponentially. At that point, the EVB cannot be used in neither a vehicle nor an energy storage application. It is extremely difficult to determine the point when a battery reaches this threshold and accelerated ageing occurs (Rohr et al., 2016). Per Schuster et al. (2016), the switch from linear to non-linear battery degradation can be explained by ageing induced lithium plating.³ Besides that, the cell spreading within the battery system is a further uncertainty in battery life span prediction. Each cell may not age similarly due to production heterogeneities (Rohr et al., 2016). For instance, during the coating process of electrodes with graphite and lithium, metal oxides statistical heterogeneities in porosity and thickness occur (Rohr et al., 2016). Lastly, the exceedance of operating parameter limits represents a further uncertainty, such as dendrite growth due to deep discharge in combination with low temperatures (Rohr et al., 2016). These critical conditions should not be reached in operation at any time and must be prevented by safety devices like the BMS (Rohr et al., 2016). Today most automotive OEMs issue warranties on their batteries that cover either a time between eight and ten years or up to 200.000 kilometres of distance travelled. Practice however shows that the EVBs perform better than expected and might meet the EV owner's requirements for a longer time (Volvo Cars, 2020).

2.1.4 Volumes of End-of-Life Electric Vehicle Batteries

The immediate urgency of finding an effective and efficient market form for trading EOL EVBs is subject to the number of EOL EVBs in each year. However, forecasting the annual amount of incoming EOL EVBs is complex and insecure. First assumptions need to be made on how many EVs

² The charging and discharging current rate refers to the rate at which a battery is charged/discharged relative to its maximum capacity. The depth of discharge expresses the percentage of battery capacity that has been discharged expressed as a percentage of maximum capacity.

³ Ageing induced lithium plating describes "the deposition of metallic lithium on the graphite anodes. Initial condition for the formation of lithium plating is, when the graphite potential is reduced below 0 V vs. Li/Li⁺. The lithium plating results in a fast consumption of active lithium, which leads to a sudden drop in capacity" (Rohr et al. 2016, p. 3).

will be produced and sold in the future. Hereby policy measures such as environmental bonuses or tax benefits, as well as consumer acceptance for EVs (determined, inter alia, by range and charging infrastructure) need to be taken into consideration. Other aspects are the oil price, shared-mobility trends or economic shocks, such as the current Corona-crisis (BNEF, 2019). One main driver is expected to be the further reduction in EVB costs, making EVs cheaper, both lifetime costs and upfront costs, than internal combustion engine alternatives (BNEF, 2019). The battery pack price (\$/kWh) fell from 1.160 dollars in 2010 to only 176 dollars in 2018. A recent report by the online publisher Electrive indicates that the EV manufacturer Tesla will soon reach the 100-dollar threshold (Electrive, 2020). Most EU members are investing heavily in incentivizing consumers to buy emission-free means of transportation why the adaption rate of EVs is most likely to increase continuously in the future.

Numerous forecasts exist that predict the future development of EV market (e.g. BNEF, IEA, Deutsche Bank). For instance, the publisher BloombergNEF (BNEF) releases a report on the future global EV market every year. Per BNEF (2019), up to 57 percent of global passenger car sales will be electric by 2040. Electric buses are even expected to reach 81 percent of municipal bus sales by the same date. One segment that may struggle in adapting electric engines is heavy commercial. BNEF (2019) predicts that only 19 percent of heavy trucks sales will be electric by 2040. In absolute figures, the global passenger EV sales are expected to increase from 2 million in 2018 to 28 million in 2030 and 56 million by 2040. Whereas, conventional passenger vehicle sales fall to 42 million by 2040, from around 85 million in 2018 (BNEF, 2019).

After making assumptions on the future development of EV sales, the battery life span (i.e. useful life for EV) needs to be estimated by considering three factors:

- accident rate
- battery failure rate
- end-of-life (electric vehicle batteries reaching 70-80 percent of residual capacity)

A low number of EVBs may come back early due to accidents or battery failures. These batteries can be considered as unusable for second life and are recycled directly. Most EVBs, however, will return when they reach their EOL. As already displayed, determining the EOL of EVBs is highly uncertain and dependent on several variables. Batteries of the same car model are likely to return over the course of several years as the usage behavior and operating environment varies across EV owners.

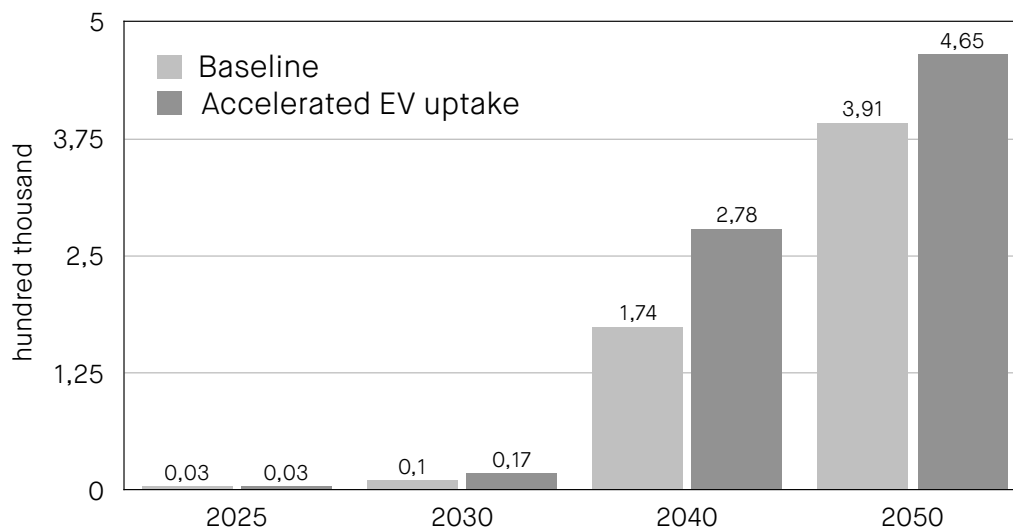
Combining both estimations – battery life span distribution and EV sales – allows to build forecasts on the number of EOL EVB outflows. Such forecasts can be also refined by defining the average capacity (e.g. 75 kWh) of each EOL EVB and thereby provide the amount of capacity becoming available for second life applications.

One of the few authors forecasting the amount of battery waste flows are Richa et al. (2014) who estimated that approx. between 0.88 to 8 billion EOL EVB cells (corresponding to approx. 800.000 to 2.800.000 million battery packs) are going to be available in the United States (US) by 2040. Given the displayed uncertainties regarding the future adaption rates of EVs and battery life span, Richa et al. (2014) developed different scenarios to forecast “low,” “baseline,” and “high” projections of future battery waste flows. The key differences among these scenarios stemmed from variability in EV sales projections, battery lifespan distribution and parameters governing number of cells per battery pack. Even though the framework developed by Richa et al. (2014) considers only the US market and relatively outdated forecasts, it may serve as a blueprint to estimate battery waste flows in other markets.

Another estimation by BNEF (2019) considers the global number of incoming EOL EVB, concluding that “finding ways to reuse [...] is becoming more urgent as the global stockpile of EV batteries is forecast to exceed the equivalent of about 3.4 million packs by 2025, compared with about 55.000 this year.”

Another report published by Element Energy (2019) focused on estimating the number EOL EVBs in the EU. Per Element Energy (2019) between 3.9 to 4.7 million battery packs will become available for second life in 2040, corresponding to 80 percent of the available battery units (see Illustration 1). Alike Richa et al. (2014), the report also considers a “baseline scenario” and an “accelerated EV uptake” to internalize the uncertainties around predicting the number of EOL EVBs.

Illustration 1: Number of Batteries Becoming Available for Second Life in Key Years



Source: own illustration, data based on Element Energy (2019)

2.1.5 Second Life Applications

The type of second use for EOL EVBs can be divided into mobile applications (e.g. electric scooters), quasi-stationary applications (e.g. lightning systems on constructions sites or events), and stationary applications (e.g. energy storage for renewables) (Fraunhofer ISI, 2020). EOL EVBs might also enable the realization of applications that have not been profitable so far, such as off-grid solutions and backup power in rural areas or in developing countries. Olsson et al. (2019) identified and summarized seven different application options (see Table 1). Most of them are either of stationary or quasi-stationary nature. Only the vehicle propulsion can be assigned to the area of mobile application.

Table 1: Second Life Scenarios for End-of-life Electric Vehicle Batteries

Application	Type	Actors	Comments
Storage of solar or wind power	Stationary/quasi-stationary	Households, property owner	Small or large scale, off-grid or grid-connected
Peak shaving	Stationary	Industries	Reducing power demand
EV charging	Stationary	Property owners, grid owners	Reducing power demand at time of charging
Increased grid capability and stability	Stationary	Grid owners	Instead of installing larger cables, or to avoid fluctuation
Backup	Stationary	Industries, property owners	In case of electricity loss
Electricity trading	Stationary	Electricity companies	Having a battery farm for electricity trading
Vehicle propulsion	Mobile	Vehicle manufacturers	E.g., ferries, forklifts

Source: own illustration, based on Olsson et al. (2019)

Among the various application scenarios, (quasi-)stationary energy storage for renewables is identified as the most compelling option: “Whether at the scale of a house, a building, an industrial site or a neighbourhood, a battery’s capacity to store electricity makes it easier to integrate electricity generated by renewable and intermittent energy sources like wind or solar power into the grid” (Renault, 2019). Such types of applications are also supported heavily by policy makers as it strengthens the energy transition towards clean energy sources. The EC (2019) expects that by 2030 approx. 55 percent of electricity consumed in the EU will be sourced from renewables (up from the current level of 29 percent). By 2050 this figure is expected to be more than 80 percent. Battery storage technologies are expected to become the “principal way of integrating renewables into the power system” (EC, 2019). EOL EVBs can help to cover this great need and thereby contribute to faster energy transition.

In the last few years, several pilot projects have been started by automotive OEMs that illustrated the technical viability of repurposing EOL EVBs. For instance, a consortium of Daimler AG, The Mobility House AG, GETEC and Remondis SE has repurposed more than a thousand of end-of-life battery packs from the smart fortwo electric drive to build a 13 MWh battery storage system that is used for grid services (Bräuer et al., 2019). After Daimler AG provided and repurposed the EOL EVBs, The Mobility House AG and GETEC realized the battery system and are now operating the system and monetize its services on the energy market. Another demonstration project called “Second Life Batteries“ was initiated by BMW, Vattenfall and Bosch (Vattenfall, 2018). Hereby, approx. 2.600 battery modules from more than 100 EVs have been transformed into a 2.8 MWh stationary energy storage system to balance fluctuations on the energy grid. The collaboration was structured as follows: BMW supplied EOL EVBs from the EV-models Active E and i3, Bosch developed the battery system, and Vattenfall operates the battery system as well as markets the stored electricity on the energy market. The 2.8 MWh stationary energy storage system is indeed not the first pilot project established by BMW and Vattenfall. Already in 2013, BMW and Vattenfall cooperated to repurpose EOL EVBs as not only a buffer for EV fast charging stations, but also a flexible storage solution for energy generated from renewable sources (Vattenfall, 2013). Furthermore, Nissan and the power management company Eaton started a cooperation to market residential battery energy storage systems. The so called “xStorage Home” is sold in UK, Norway and Germany and can be equipped with new battery components as well as components from EOL EVBs (Nissan Europe).

2.1.6 Second Life Performance

Martinez Laserna et al. (2018) carried out a literature review on, inter alia, the performance of EOL EVBs in second life applications. The investigated publications revealed that EOL EVBs only differ from new batteries in terms of energy and power capabilities, energy density and cell-to-cell heterogeneity. Moreover, Martinez Laserna et al. (2018, p. 4) conclude that "... all these performance handicaps could be overcome by means of appropriate battery sizing, or specific control and energy management strategies." Major concerns that need to be addressed before repurposing EOL EVBs are uncertainties regarding safety and the EOL EVB life span. Martinez Laserna et al. (2018, p. 4) highlight that "... the lack of experimental data hampers the industrial applicability of the battery second life concept, as it is tougher to properly assess suitable warranty periods and effective battery ownership models without an accurate battery lifetime prediction."

2.1.7 Policy Initiatives

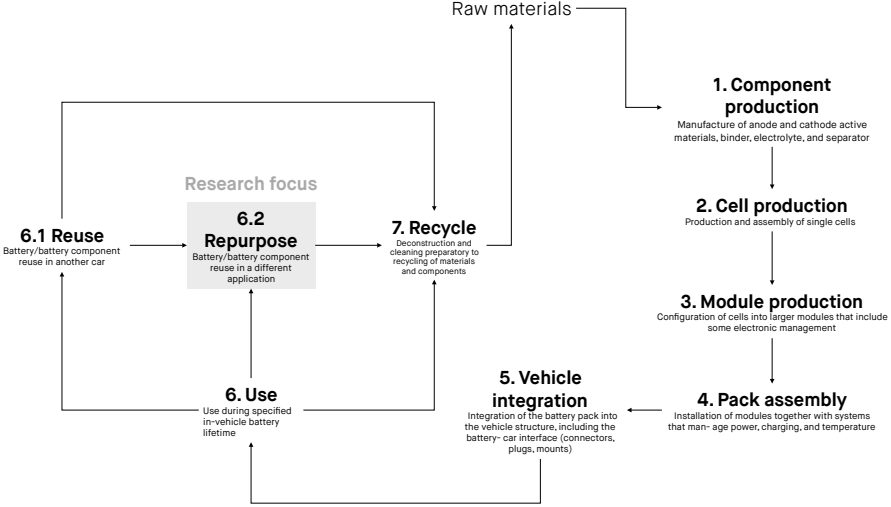
Whether and to what degree a market for EOL EVBs will emerge is also dependent on the EU's efforts, such as initiatives and regulations in creating a sustainable battery value chain. Today, the EU's ambition is to make Europe a leader in "green" battery production by introducing "a robust legal framework complemented by European harmonised standards." (EC, 2019, p. 10). These standards could potentially facilitate the repurposing of EOL EVBs and simplify the remanufacturing process. A recent report by the European Commission (2019, p. 10) indicates that "future regulatory requirements are likely to address battery characteristics such as safety, connectivity, performance, durability, bi-directionality, re-useability and recyclability, resource efficiency, or even life-cycle impacts such as 'carbon footprint'" The current EU Battery Directive is being revised currently and expected to be adjusted by 2021.

Besides passing laws, the EU started a range of initiatives that aim at reaching technological and industrial leadership along the entire value chain. One of the key initiatives is hereby the European Battery Alliance (EBA) which supports "the scaling up of innovative solutions and manufacturing capacity in Europe." (EC, 2019, p. 2). The industry-led initiative comprises more than 260 industrial and innovation actors and can be described "as a catalyst" for transforming Europe into a technological leader in battery technology and production (EC, 2019, p. 2). These ambitions are also supported by providing funding opportunities. For instance, The EU's Framework Programme for Research and Innovation for 2014-2020, Horizon 2020, has granted 1.34 billion euros to projects for energy storage on the grid and for low-carbon mobility. In 2019, Horizon 2020 added a call to fund, under the EBA, battery projects worth 114 million euros. This will be followed by a call in 2020 amounting to 132 million euros, covering batteries for transport and energy.

2.1.8 Closing The Loop: The Value Chain of Electric Vehicle Batteries

The value chain of EVBs comprises nine different steps: component production (including raw materials); cell production; module production; assembly of modules into the battery pack (including the BMS and the TMS); integration of the battery pack into the vehicle; use during the life of the vehicle; reuse in another car; reuse in a different application; and recycling (see Illustration 2). Every step of the value chain must be considered when aiming at creating a "green" battery production and battery use. This study focuses on the repurposing to extend the life span of EOL and thereby contribute to a more sustainable value chain.

Illustration 2: The Value Chain of Electric Vehicle Batteries



Source: own illustration, partly based on BCG (2019)

2.1.9 Interim Conclusion

The reviewed literature discloses important aspects that need to be considered when focusing on commercializing EOL EVBs. First, the number of incoming EOL EVBs in each year is extremely hard to predict since the degradation is highly individual varying across EV owners and EV models. Second, predicting the life span is highly uncertain independent from the operating environment and consumer behaviour as cells and modules within one battery might degrade differently over time (Rohr et al., 2016). Determining the residual life span, however, is crucial for second life manufacturer to assess the economic viability of repurposing. Even though several authors highlighted the potential of repurposing EOL EVBs, the number of pilot projects and engaging stakeholders is still low. This might be due to the non-existence of a European-wide strategy regarding battery second life. The new battery directive is being released within the next two years might point the way to what degree automotive OEMs will engage in enabling a second life for EOL EVBs. After all, policy makers must not only consider on making the existing value chain of EVB sustainable, but also on maximising the use of the resource “battery” through, for instance, repurposing.

2.2 Business-to-Business Marketplaces

The current market setting is not prepared for repurposing the large amounts of EOL EVBs. There are no wider mechanisms in place that may lead to a high share of repurposed EOL EVBs. One market form that may simplify and scale up the exchange of EOL EVBs between automotive OEMs and second life manufacturers is an online B2B marketplace. Nevertheless, online B2B marketplaces have not been investigated in the context of EOL EVBs. Therefore, the following paragraph focuses on generally describing the main properties of online B2B marketplaces as well as providing the reader with a common understanding of such platforms.

2.2.1 Definition

B2B marketplaces are operated by so-called market makers (MMs) that aim to bring buyers and sellers together (Klein & Quelch, 1997). MMs are comparable to other internet intermediaries who provide platforms that are two-sided networks, such as Google, Facebook, or Spotify (Bakos & Katsamakas, 2008). In B2B contexts such marketplaces are often enabling direct transactions between suppliers and business customers (Li & Penard, 2014). Online marketplaces go further than simply matching buyers and sellers, they are also providing credit provision, industry expertise, news and directories, website management and technology assistance (Klein & Quelch, 1997). Jullien (2012) categorizes divides the services offered by two-sided platforms into two main groups: a. matching services; b. support functions. Matching services “help members of the platform to identify opportunities to perform a profitable transaction (to find a match)”, whereas support functions “help traders to improve on the efficiency of trade”, e.g. secured payment services or integrated procurement solutions (Jullien, 2012, p. 2).

2.2.2 Buyer and Seller Benefits

In general, B2B marketplaces are enabling efficiency gains within and/or across markets by reducing transaction costs and facilitating productivity (Lucking-Reiley and Spulber, 2001). MMs must offer benefits for both the seller and buyer that are superior to their traditional transaction methods in order to achieve a sustainable success (Klein & Quelch, 1997). Potential buyer benefits are market-driven prices (i.e. lower purchasing costs), a decrease of inventory levels, an increase of potential suppliers, convenience and rapid procurement, and savings on information search and transaction costs (Klein & Quelch, 1997; Balocco et al., 2010). Possible vendor benefits consist in additional distribution channels, a means of unloading surplus inventory or obsolete equipment, a means of comparing prices in real-time and on a market-by-market basis, the option of price discrimination by market segment, reduced credit risks and lower collections costs, lower marketing cost, and the opportunity to test prices without risk (Klein & Quelch, 1997).

2.2.3 Classification

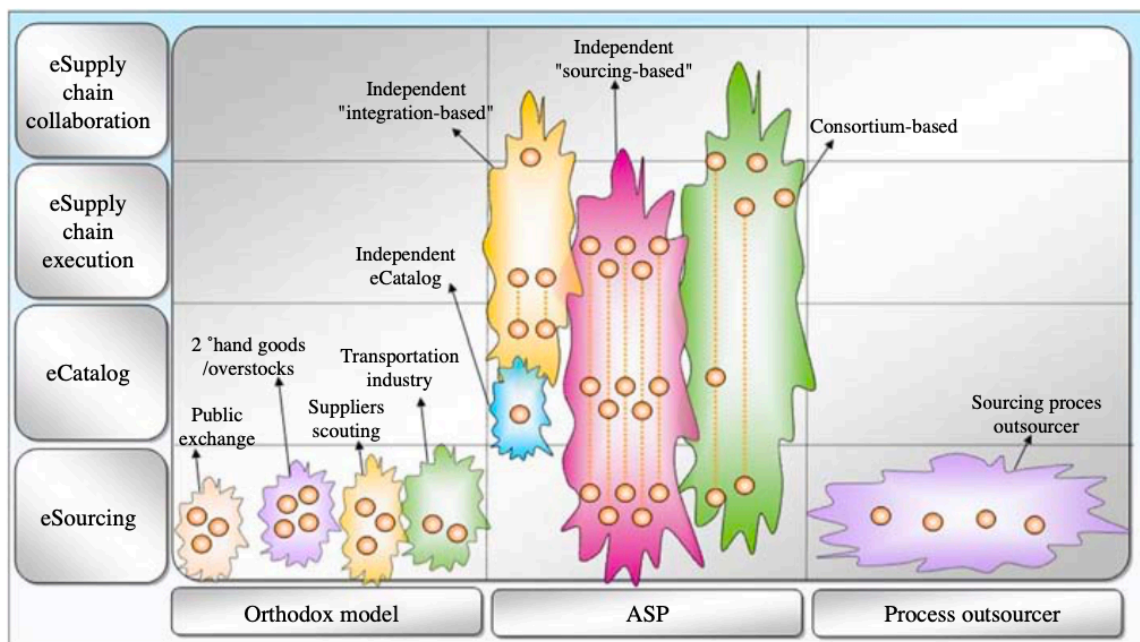
The versatility of information technologies (ITs) creates numerous opportunities for online MMs in combining various services into B2B offers (Jullien, 2012). Some platforms focus on pure sourcing services, whereas others offer a full supply chain management service. However, the high level of heterogeneity across online B2B marketplaces requires to apply a classification framework that helps to understand the similarities and differences. One can hereby focus on various variables, such as the industry which can be vertical (i.e. targeted at a specific industry/supply chain) or horizontal (i.e. targeted at various industries/supply chains) (e.g. Howard et al., 2006), the type of product which can

be direct or indirect (e.g. Kaplan and Sawhney, 2000), the purchasing types which can be spot or systematic (e.g. Kaplan and Sawhney, 2000), or the ownership model which can be independent, private or consortium-based (e.g. Ordanini et al., 2004).

Another classification framework that has been introduced by Balocco et al. (2010) focuses on classifying online B2B marketplaces based on their underlying business models. Per Balocco et al. (2010, p. 1131) online B2B marketplaces create value “by supporting various B2B processes (eSourcing, eProcurement, eSupply Chain Execution, and Collaboration) through different service-provisioning methods (orthodox, ASP, and process outsourcing)”. In other words, online B2B marketplaces can be classified depending on what kind of services (eSourcing, eProcurement, eSupply Chain Execution, and Collaboration) are offered and how these services (orthodox, ASP, and process outsourcing) are delivered.⁴ This way of categorising represents a robust approach as the displayed variables are constant and independent from the rapid changes within the online B2B marketplace hemisphere.

Based on a multiple case study, Balocco et al. (2010) identified nine different types of business models that can be applied by online B2B marketplaces (see Illustration 3). Not all types are relevant for this study, why only certain categories are being illustrated in depth. A special focus lays on orthodox marketplaces that mediate the exchange of second-hand goods and overstocks. Please note, however, that each type is shortly being described as it is yet uncertain what type of business model may be suitable for mediating the transaction of EOL EVBs. Also, Balocco et al. (2010) highlight some critical success factors (CSFs) for each type of business model which can serve entrepreneurs and managers as valuable guidelines when designing new platform-based solutions.⁵

Illustration 3: Classification of Online Business-to-Business Market Places



Source: Balocco et al. (2010)

⁴ A detailed definition of each variable can be found in the appendix.

⁵ In this study, CSFs are being defined as all determinates that affect measurably and positively the longevity of a platform in the marketplace (Johnson, 2013).

2.2.3.1 Orthodox Marketplaces

Public Exchanges

Public exchanges facilitate the transaction process of commodity products (e.g. chemicals, metals, electronics) through a platform. Besides managing the orders and transactions, public exchanges can offer additional services, such as credit provision, logistics, risk management services, and market intelligence services. Balocco et al. (2010, p. 1125) highlight three critical success factors (CSFs) for public exchanges: to guarantee the anonymity and neutrality in managing the transactions between buyers and sellers; to establish trust and relationships with their customers, especially for those operators that offer services such as market intelligence and financial services; and to reach a high level of liquidity, due to the low level of gross margin per transaction and the high level of fixed costs.

Second-hand Goods and Overstocks

The next category deals with intermediaries who focus on the exchange of second-hand goods and overstocks through auction mechanisms. In such settings, the online marketplace must guarantee the credibility of the seller as well as certify the quality of the goods by means of different tools, e.g. user ratings, certification, and warranties. Per Balocco et al. (2010), such players started to move from focusing on various kinds of products to specific types of goods. There are several examples of online marketplaces focusing on second-hand goods and overstocks, such as Liquidity Service (supports the trade of industrial surplus across different industries, e.g. automotive manufacturing, aerospace) or Ironplanet (supports the sale of used machinery, e.g. tractors). Balocco et al. (2010, p. 1126) illustrated three main CSFs for such operators: to guarantee the “credibility” of the sellers and to certify the quality of the products through different mechanisms; and to reach a wide number of “targeted” buyers through advertising activities. Such marketplaces represent a great means of giving equipment a second life and use resources more efficiently. Nevertheless, Balocco et al. (2010, p. 1126) emphasise that sellers who want to engage in such marketplace must “verify the effectiveness of the mechanisms used to certify the quality of the goods and the effectiveness of the advertising activities which are assumed to reach a high number of potential buyers.” On the other hand, buyers who consider acquiring second-hand goods on such marketplaces must make use of the inspection services to be on “the safe side”.

Suppliers Scouting

Another type of an orthodox marketplace is an operator that focuses on using RFX (an acronym for Request For [x] in procurement technology) systems to scout suppliers selling highly complex goods or services. Possible customers are large corporations that are willing to find new suppliers, either worldwide or in local markets. Balocco et al. (2010, p. 1126) emphasize three main CSFs for online marketplaces focusing on supplier scouting: to increase brand awareness in order to become a reference website for the specific kind of sourcing market; to deepen the knowledge about specific sourcing markets to provide all the relevant information about the suppliers; and to ensure operational effectiveness by interacting with many buyers and suppliers. Such operators are valuable for companies which are outsourcing some or all activities in foreign markets. Additionally, companies being already sourcing globally can exploit such marketplaces by testing new suppliers and comparing them with already existing ones.

Transportation Industry

The last category of orthodox marketplaces are platforms offering several services to corporations in the transportation industry, mainly focused on the exchange of “transportation capacity”. However, Balocco et al. (2010) state that such operators shifted towards the application service provider model

by offering exclusive services to company owners. One example of such marketplace is Intra, connecting more than 35.000 shippers across 177 countries with 60 leading carriers and 150 software alliance partners (Intra, 2020). Balocco et al. (2010, p. 1127) illustrate two main CSFs for such operators: to focus on “unsold transportation capacity”, even if it is very difficult to shift a process operated by important intermediaries in a traditional way to online; and to reach a high level of liquidity, due to the low level of gross margin per transaction and the high level of fixed costs.

2.2.3.2 Application Service Providers

Consortium-based

Such online marketplaces offer a consortium of companies in a specific industry eSourcing and eSupply chain services that make use of the technological platform in a safe and private way. Per Balocco et al. (2010), such operators shift from offering different services, such as eSourcing, eCatalog, and eSupply chain collaboration to eSupply chain execution (e.g. data exchange and data alignment) through a customized platform. Examples of consortium-based ASPs are Convisit (automotive and healthcare industry), SupplyOn (automotive and aerospace industry), or Neogrid (retail industry). Balocco et al. (2010, p. 1129) illustrate two main CSFs for consortium-based ASPs: the commitment of the companies belonging to the consortium; a high level of customization of the technological platform for the specific industry.

Independent “sourcing-based”

Online marketplaces in this group provide large companies across industries with eSourcing services through a technological platform. One impressive example in this category is the San Francisco based unicorn Tradeshift who managed to connect more than 1.5 million businesses across the globe in only 8 years. As already indicated, the main strength of such marketplaces lays in their scalability. Per Balocco et al. (2010), some operators may offer additional eSupply chain execution services, such as exchange of purchase orders or electronic invoices, to increase customer loyalty. Balocco et al. (2010, p. 1129) highlight two main CSFs for such operators: to focus on business development and market growth to leverage the investment made to develop the technological platform; and to guarantee the scalability of the technological platform through, for example, standardization.

Independent “integration-based”

The next category describes online marketplaces that offer eSupply chain execution services to exchange documents and to support integrated supplier networks. Alike other operators, such marketplaces expand their service portfolio by, for instance, adding eCatalog services. One example is Hubwoo, offering spend management solutions. Balocco et al. (2010, p. 1130) emphasize two main CSFs for independent integration-based ASPs: to increase the number of suppliers to reach a “critical mass” of company users; and to deepen the knowledge of industry standards in order to “translate” the documents in the different standards required by the company users.

Independent eCatalog

Such operators provide companies in a specific industry with eCatalog tools and services. They need to be customized to the buyers’ needs and manage the complex logistics of the end-to-end process. Balocco et al. (2010) state that many operators shut down their activities due to low levels of adaption. Thus it is unclear, whether any independent eCatalog service providers are still active today. Nevertheless, Balocco et al. (2010) highlight three main CSFs for such operators: in-depth knowledge of the buying process within a specific industry to offer a buying workflow customized on the industry needs; to develop a technological platform (catalog) customized on the buyers’ needs; and to offer high-quality logistic services.

2.2.3.3 Process Outsourcers

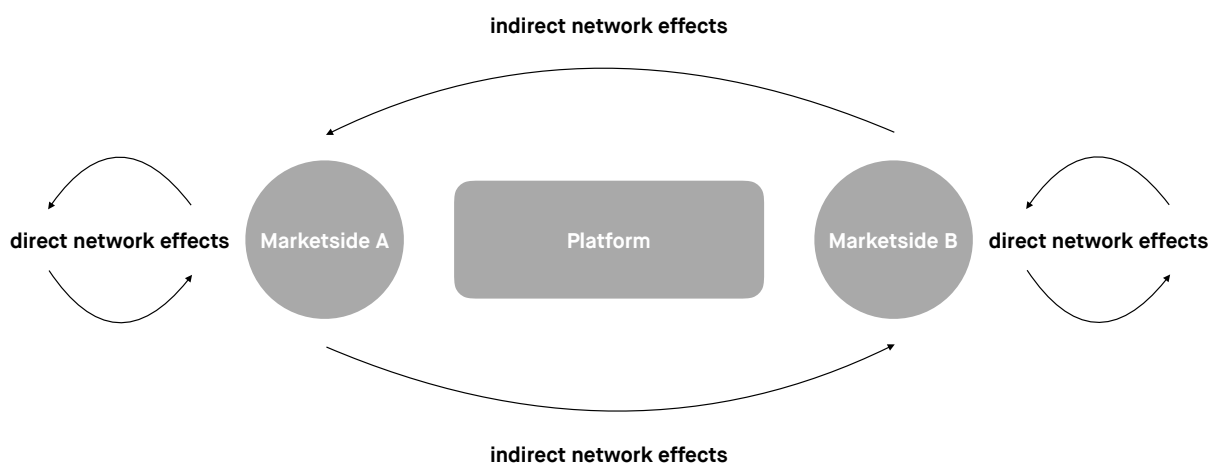
Per Balocco et al. (2010), process outsourcers can only be categorized into one type of business model: eSourcing process outsourcers. Such operators take over the eSourcing processes of their customers as well as offering consulting services. They serve large and medium size companies either on the seller or buyer side. Balocco et al. (2010) observe that a visible number of process outsourcers move towards an ASP model to extend their service portfolio. For instance, SAP Ariba operates as both a service provider and process outsourcer. Balocco et al. (2010, p. 1131) illustrate three main CSFs for such B2B marketplaces: in-depth knowledge of the sourcing markets and product categories; a large base of well-known suppliers and a highly effective and customizable technological platform.

2.2.4 Network Effects

Two-sided platforms, such as online B2B marketplaces, are sourcing their main value from so-called network effects. Network effects occur when “one agent's adoption of a good (a) benefits other adopters of the good (a “total effect”) and (b) by increasing others' incentives to adopt it (a marginal “effect”)” (Farrell & Klemperer, 2007, p. 44). The phenomenon was first introduced by Katz and Shapiro (1985) who describe how the utility of phones changes when more households own one. Accordingly, the network size of a platform affects the average utility of its users (Parker et al., 2016). The more users participate on a platform, the more attractive becomes a platform due to the participants' access to the whole user base. For instance, a supplier is more attracted to a B2B online marketplace, if a lot of buyers are registered as trade opportunities increase; likewise, a buyer prefers a platform that contains a wide choice of suppliers (Li & Penard, 2014).

Network effects in the context of two-sided platforms can be divided into *direct* and *indirect* effects (Parker et al., 2016) (see Illustration 4). Direct effects describe how the participants of the same side influence each other's utility, whereas indirect effects illustrate how the participants from one side influence the utility of the participants from the other side and vice versa. Direct and indirect effects can be both positive and negative (Parker et al., 2016). Positive network effects increase the utility, whereas negative network effects decrease the utility.

Illustration 4: Types of Network Effects



Source: own illustration based on Dietl (2010, p. 67)

One example for a positive direct effect can be drawn from Sony's PlayStation which provides game developers with a platform to connect with players. The more players use a PlayStation, the higher the individual added value (e.g. players can connect with each other via the internet). On the contrary, a negative direct effect can be observed on the game developers' side. The more game developers create PlayStation-based games, the higher will be the potential competition.

Positive indirect effects can be observed on the online marketplace eBay: the more buyers are registered on eBay, the higher the probability for a seller to find a buyer who pays a higher price; and the more sellers are active on eBay, the higher the probability for a buyer to find a suitable product. Negative indirect effects are often connected to an asymmetric relation between the supply and demand side (Parker et al., 2016). For instance, the online booking platform for cabs, Uber, can face negative indirect effects when too many passengers in relation to drivers participate on the platform and thereby increase the waiting time for passengers. On the other hand, too many drivers in relation to passengers can increase the waiting time for drivers and consequently induce drivers to stop their activities (Parker et al., 2016). Therefore, operators of platforms must be able to control all types of network effects and, especially, facilitate positive network effects to create positive "feedback loops" (Parker et al., 2016).

The role of network effects on B2B marketplaces has been investigated by a few authors, but focusing on various aspects. Li & Penard (2014) analyse, how quantitative and qualitative indirect network effects impact pricing and trading decisions.⁶ Per Li & Penard (2014, p. 2), the success of a B2B marketplace depends on both the quantity and quality of suppliers, but quality effects tend to substitute for quantity effects as the size of the marketplace increases. These results suggest that while the quantity of suppliers on board is crucial during the early stage of a marketplace, supplier quality matters much more in the mature stage.

MMs should also choose their business model based on the estimation, which side creates more network externality (i.e. network effect) surplus to the other side (Bakos & Katsamakas, 2008). When the marginal utility for the seller from each additional buyer is higher than the marginal utility for the buyer from each additional seller, MMs should focus on increasing the participation rate of buyers while receiving revenue from the sellers. However, the online market maker should invest enough resources into the "least favoured" (in that case the sellers) side to attract its participation. In conclusion, MMs should invest in one side to maximize participation, and invest in the other side to maximize revenues (Bakos & Katsamakas, 2008).

2.2.5 Competitive Challenges

Based on a multiple case study, Klein & Quelch (1997) identify four generic challenges that MMs face when engaging in B2B market settings. First, MMs face the challenge to reach a critical mass of buyers and sellers (i.e. "chicken-and-egg problem"). On the one hand, it is difficult to persuade buyers to sign up without a critical number of vendors with a wide variety of manufacturers and products to offer. On the other hand, it is difficult to persuade vendors to sign up without a critical number of buyers. While launching the online marketplace, MMs can implement low membership fees and/or transaction costs to encourage both vendors and buyers to sign up. Another strategy is to focus initially

⁶ Quantitative indirect network effects describe how the utility of participants from one side is affected by the *number of users* from the other side, whereas qualitative indirect network effects illustrate how the utility of participants from one side is affected by the *quality of users* from the other side.

on one specific target group or location. Uber, as an example, started its operations in San Francisco before moving into other markets. Besides that, MMs can pursue a “staging” strategy, which implies to focus at first on penetrating one market side before expanding the other market side. Second, this strategy contains the necessity of focusing on one or more specific aspects of the buying process (i.e. create a unique selling point) as its basis for offering value-added over traditional channels, e.g. time-saving, fast delivery, price leadership. Each MM needs to determine exactly how it can add value within an industry over existing markets and channels in order to create a competitive advantage. No MM can be superior to traditional channels in all functions, especially given the limitations of online marketplaces, so focus is essential. Third, the ownership of the customer is considered a critical asset by product manufacturers. Sellers may fear to lose their contact with the customers to the MM. Hence, MMs should be perceived as critical to the transaction’s success or risk of the buyer and seller meeting elsewhere. Last, market makers need to prevent new entrants from stealing buyers and sellers, for instance, by implementing lock-in mechanisms, high switching costs and/or industry standards.

Another important aspect influencing a platform’s success or failure are so-called winner-takes-all (WTA) dynamics. WTA dynamics describe whether a platform manages to outcompete all other alike platforms (Dietl, 2010). A good WTA example is the e-commerce giant Amazon who managed to attract most retailers on the market. Even though a monopolistic market position allows to achieve high mark-ups, rivalling platforms must evaluate, whether they want to take part in a fight for the market leadership, as WTA dynamics can lead to a price war and high marketing expenditures (Mafeé & Rufoni, 2009). Per Eisenmann (2008, p. 36), WTA dynamics are dependent on three main factors: (i) network effects – the stronger the network effects, the more likely a dominant platform prevails; (ii) “multi-homing” costs – the participation on more than one platform creates high costs facilitating WTA dynamics; and (iii) demand for differentiating features – a low level of differentiation across platform favours WTA dynamics (Eisenmann, 2008, p. 36).⁷

2.2.6 Critical success factors

As already displayed, Balocco et al. (2013) introduce some broad CSFs for each type of business model. Nevertheless, the literature provides more generic CSFs that are relevant for all types of online B2B marketplaces. In this study, CSFs are being defined as all determinates that affect measurably and positively the longevity of a platform in the marketspace (Johnson, 2013). CSFs are also temporal as their assessment is contingent “on the stage of the industry life cycle at which the marketplace is situated.” (Johnson, 2013). Consequently, MMs must continuously monitor and analyse their market environment and adjust the strategic focus (i.e. re-assign all resources and capabilities) in accordance with the made observations. CSFs can also be applied as a means to measure an online marketplace’s performance since each CSF is aligned to the goal of achieving a sustainable success. MMs may use CSFs as managerial trajectories in sustaining a unique market position and outcompete competitors.

Johnson (2013, p. 708 ff.) determined a set of eight CSFs for B2B marketplaces which are drawn from the aerospace and defence, healthcare, higher education and local government industry and can be found below:⁸

- (1) Critical mass: A critical mass of actively trading buyers and suppliers provide the cash flow derived from transaction revenues and other fees that online marketplaces need to sustain their long-term survival

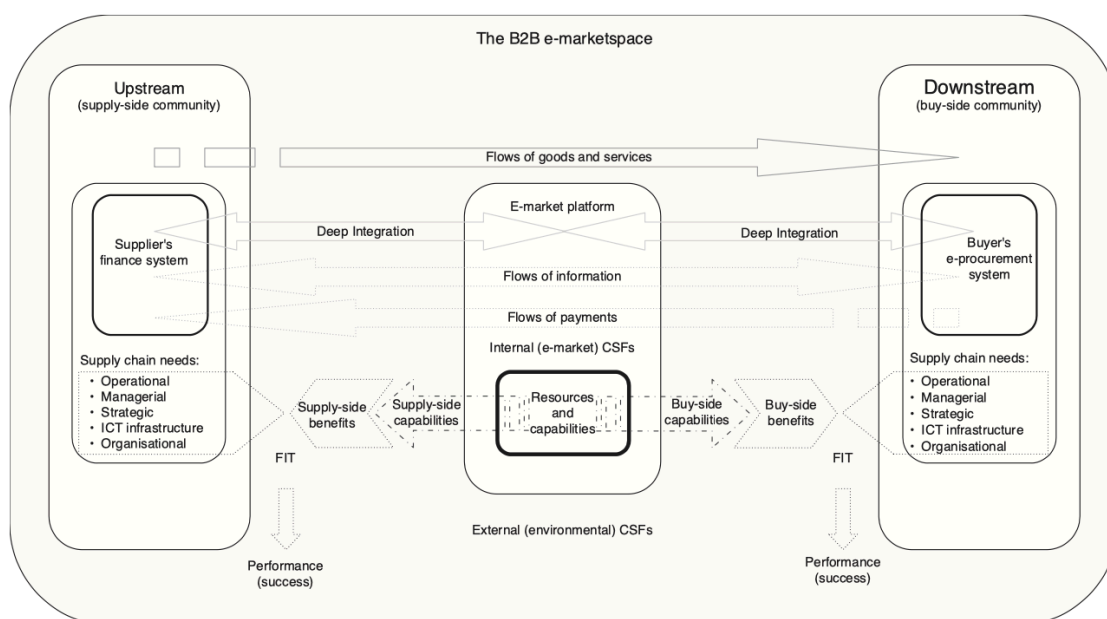
⁷ Homing costs are describing all costs connected to the participation on a platform, e.g. membership fees.

⁸ Ranked in accordance with their importance.

- (2) Deep integration: Many of the supply chain benefits, online marketplaces deliver to industry participants, cannot be delivered without achieving a deep level of integration between online marketplaces and industry participants (e.g. seamless error-free transactions, automated invoicing).
- (3) Value proposition: Industry participants are primarily interested in the various organizational and supply chain benefits they will gain from online marketplace participation that are over and above competing offerings of competitors and alternative means of coordinating market exchange.
- (4) Leadership participation: The participation of large industrial buyers or suppliers can help online marketplaces gain credibility and market acceptance through brand association.
- (5) Industry knowledge: In-depth knowledge is the basis on which the “supply chain needs” within the industry are identified, and the online marketplace business model, organisational strategy, technology strategy and value proposition are formulated to address those needs.
- (6) Revenue model: The revenue model is a key determinant of an online marketplace’s ability to attract, establish and maintain a critical mass of industry participants based on the value proposition being offered, compared to competitor offerings and alternative modes of market co-ordination and exchange.
- (7) Branding and reputation: Branding and reputation helps the online marketplaces to create credibility and establish themselves within the industries.
- (8) Rich content: Rich provides buyers with information and other content that makes purchasing the vendor’s products easier

The displayed CSFs are not independent from each other, as Johnson (2019, p. 715) notes that “the CSFs appear to be interrelated suggesting that it is the collective, synchronous and synergistic effect among them that creates and sustains an e-market’s longevity in the B2B marketplace”. Johnson (2013) comprises the displayed CSFs in one conceptual model that helps MMs to analyse and adjust their business models (see Illustration 5).

Illustration 5: Conceptual Model Critical Success Factors



Source: Johnson (2013, p. 715)

An effective management of CSFs contributes to the B2B marketplace's immediate success. It determines how much value is being delivered to all relevant stakeholders. Johnson (2013, p. 718) constructed three main assumptions for the conceptual model. First, Johnson (2013) distinguishes between two types of CSFs: those that directly relate to the marketplace's resources and capabilities; and those that are connected to external environment, i.e. industry-specific CSFs. Second, the closer the fit between the delivered benefits and the participants supply chain needs, the more successful the performance outcomes. Third, the benefits gained by users from participating on a marketplace and the revenues earned by the marketplace represent some of the key performance measures.

2.2.7 Interim Conclusion

An online B2B marketplace can potentially offer lower coordination and transactions costs for all stakeholders engaging on the market for EOL EVBs and thereby provide benefits that are superior to the current transaction methods. Potential benefits on the buyer's (second life manufacturer) side are savings on information search and convenience procurement, while sellers (automotive OEMs) might be provided with a means of turning used car components into cash. Online B2B marketplaces have not been analysed yet in terms of their role in reducing buyer-seller uncertainties as no theory is being illustrated related there, too. Besides, the online marketplace landscape is very heterogeneous due to the flexibility of software and the number of different market and product segments. This makes it even more difficult for researchers to construct common theories around B2B marketplaces, therefore the robustness of the depicted literature by Johnson (2013) and Balocco et al. (2010) might not be as high. However, both the displayed business models as well as the CSFs can serve as a foundation for an MM in designing and operating an online B2B marketplace for EOL EVBs. What can be expected to be relevant for any type of marketplace is to reach a critical mass of users to capture the value connected to network effects.

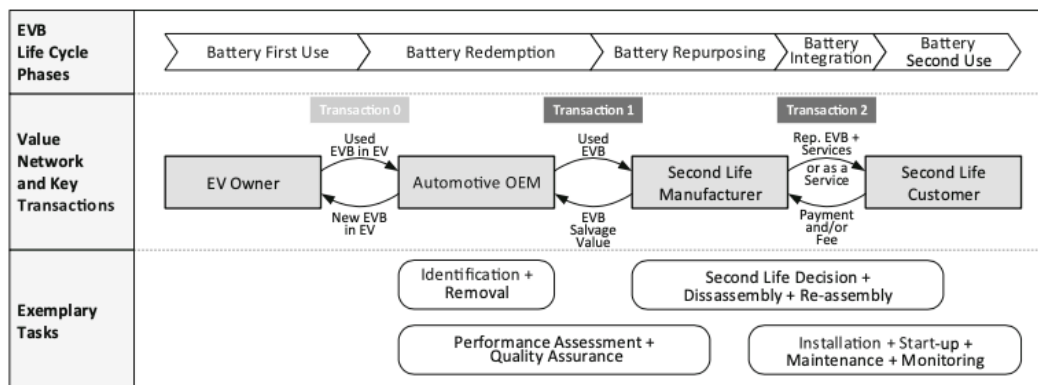
2.3 Theoretical Framework

The following paragraph represents the theoretical framework and foundation of this study and outlines in-detail the value chain of repurposing EOL EVBs including all relevant transactions, stakeholders and processes. Most of the illustrated findings derive from prior research by Bräuer et al. (2019), but also complementary literature is being considered and contextualized in the displayed theoretical framework.

2.3.1 Value Network of Repurposing End-of-Life Electric Vehicle Batteries

Findings by Klör et al. (2015) and Bräuer et al. (2019) indicate that the market for EOL EVBs is likely to emerge as an intermediary-based market being supported by automotive OEMs (see Illustration 6). The main actors within the value network for repurposing EOL EVBs are (i) automotive OEMs who supply the EOL battery systems; (ii) second life manufacturers being responsible for engineering, assembling, selling, installing and servicing the repurposed energy storage system; (iii) second life customers who use the repurposed system (Bräuer et al., 2019). Within the displayed value network, three relevant transactions take place (see Illustration 6). Before illustrating an in-depth analysis of the transaction of EOL EVBs from automotive OEMs and second life manufacturers (Transaction 1), the entire value network is presented in the following.

Illustration 6: Expected Value Network for Repurposing End-of-Life Electric Vehicle Batteries



Source: Bräuer et al. (2019)

When and in which condition EVBs will return from the EV owners to the automotive OEMs is dependent on several factors (Transaction 0). One decisive determinant is the Battery Ownership Model (BOM), specifying who owns the battery (Canals et al., 2017). One can hereby distinguish between three types of BOMs:

- (i) the EV owner is the battery owner;
- (ii) the automotive OEM is the battery owner and has a leasing agreement with the EV owner;
- (iii) a third party is the battery owner, and the EV owner has a leasing agreement for batteries

In the latter two cases, the EVBs are likely to return based on predetermined rules, such as when the battery fails to meet certain performance requirements or the warranty expires (Canals et al., 2017). Accordingly, the time of EVB retirement would occur, when reaching a certain time (e.g. 8 years),

mileage (e.g. 150.000 kilometres) or a specific performance threshold (e.g. 80 percent remaining capacity).

In the first case, the EVB would return to the automotive OEM whenever the customer is not satisfied anymore and/or a repair case has emerged, e.g. battery malfunctioning (Bräuer et al. (2019). Consequently, the automotive OEM must deal with large amounts of EVBs in a state of heterogeneous health conditions. It may also occur that the whole EV gets retired without any battery change. In that case, the EVB might return to the automotive OEM via a car dismantler. For instance, Volvo Cars has labelled their EVBs with instructions for dismantling companies on how to proceed when receiving retired EVBs (Volvo Cars, 2020).

In the EU, automotive OEMs apply different BOMs and redemption procedures as they pursue different approaches in fulfilling their legal obligation to take back and recycle EVBs. However, applying battery leasing agreements allows to maintain a high level of control over the batteries and their time of retirement. For instance, Toyota has implemented a take-back scheme for EOL EVBs through their retailer network that manages to collect more than 90 percent of all retired batteries (Toyota, 2020). Independent from the BOM, automotive OEM are most likely to manage the redemption and disassembly processes in-house through dedicated workshops and/or dealers. EVBs are classified as hazardous goods why strict legal requirements need to be followed when handling and transporting EVBs. This prevents especially EV owners from performing maintenance work or the battery exchange on their own (Bräuer et al., 2019).

When the EV has returned to the automotive OEM, the battery is disassembled manually from the vehicle (Bräuer et al., 2019). In the future, the disassembly process might be automated by using robots (Harper et al., 2019). This could not only reduce the risks posed to humans, but also fasten the disassembly process. However, EVBs need to be more standardized to exploit the full potential of automatization (Harper et al., 2019). After the EVB is disassembled from the vehicle, the automotive OEM performs a battery diagnosis, usually via the BMS, to assess the quality and further use. Each automotive OEM has employed individual proprietary components that demand for OEM-specific equipment and use encryption on battery-specific data streams as well as stored battery data (Bräuer et al., 2019; Klör et al., 2015). Only certified workshops and dealers with suitable devices can decrypt and subsequently read out the data. This shall prevent non-authorized third parties from performing maintenance work on the battery systems or accessing the battery systems' usage and status data (Bräuer et al., 2019). Depending on the SOH, the automotive OEM can choose between three main scenarios regarding the further use:

- (i) recycle (battery gets recycled)
- (ii) reuse (battery/battery component gets reused in a car with lower performance requirements)
- (iii) repurpose (battery/battery component gets remanufactured and reused in new application)

First, the EVB gets *recycled* as the current SOH does not recommend another life cycle. As of today, European laws oblige automotive OEMs to recycle 50 percent of the EVB's weight (EC, 2019). Most automotive OEMs have partnerships with large recycling companies breaking down the EVB into its core components, such as BMW and Audi who partnered up with Umicore (Audi, 2020). Automotive OEMs might experience a trade-off between recycling and reusing/repurposing EOL EVBs as findings by Dhanorkar et al. (2015) indicate that disposal alternatives reduce transactions related to second life, whereas repurposing alternatives increase the same transactions. Hence, to what extent automotive OEMs have access to disposal options might affect their commitment to engage in the repurposing of

EOL EVBs (Dhanorkar et al., 2015). Policy makers must be aware of the displayed trade-off when implementing legal guidelines and support structures for the repurposing of EOL EVBs. It is likely that automotive OEMs go for the most profitable and convenient option. Repurposing efforts may slow down if it becomes more profitable to extract valuable materials like cobalt and simply produce new batteries. A lot of current research and effort is focused on making the recycling of batteries as effective and efficient as possible. Some redefined recycling technologies can recover more than 90 percent of the battery's components. The effectiveness (i.e. the share of recycled components) of recycling may also push the lithium-ion battery prices further down as retrieved rare earths, such as lithium and cobalt, become more accessible and cheaper (Wooyoung, 2018).

Second, the recognized SOH allows to *reuse* the EVB in another car, such as in an EV with lower performance requirements. In that case, the automotive OEM, if necessary, repairs, remanufactures and/or refurbishes the battery in alignment with the requirements of the new vehicle (Bräuer et al., 2019). Afterwards, the EVB is integrated into the vehicle and reused by a new EV owner. At some point the reused EVB will return to the automotive OEM again and the already displayed disassembly and battery diagnosis process takes place. How often one EVB may be reused in one or several EVs depends on the usage behavior and other factors within each life cycle (see Degradation).

Third, and this is the main research field of this study, the battery diagnosis reveals that the EVB may be applicable in second-life applications. EVBs can only be *repurposed* on a pack or module level since “the disassembly to cell level is economically not viable.” (Rohr et al., 2016). To give EOL EVBs a second life, automotive OEMs must either possess an own business around EOL EVBs (closed market) and/or engage with one or several second-life manufacturers (intermediary-based market). However, Bräuer et al. (2019) emphasize that “... the repurposing and marketing of EOL EVBs on an industrial scale lies outside most automotive OEMs' scopes, respectively, core business areas.” Hence, automotive OEMs are more likely to engage in an intermediary-based market in which they can turn EOL EVBs into cash while leaving the second life business to closely collaborating second-life manufacturers (Transaction 1) (Bräuer et al., 2019). Automotive OEMs selling EOL EVBs may be able to strengthen or sustain their market position as they can offer customers a buy-down for their EOL EVBs. Despite the economic potential, automotive OEMs face risks when transferring EOL EVBs to second life manufacturers (Bräuer et al., 2019). Sensitive information that is stored in the battery might be exploited by second life manufacturers or other companies, such as competitors. Also, the automotive OEM's reputation could suffer from inadequate repurposing and/or disposal practices. For instance, the second life manufacturer may not consider safety standards during the remanufacturing process. After all, automotive OEMs have strong incentives in obtaining control of their data, the repurposing process, and the repurposed battery systems' targeted applications (Bräuer et al., 2019). However, a traditional market setting with standardized transactions would not allow automotive OEMs to retain this level of control (Bräuer et al., 2019).

Potential second life manufacturers are businesses building regular battery energy storage systems, suppliers of battery system components, or new start-ups that focus on the repurposing of EOL EVBs (Bräuer et al., 2019). The start-up Freewire Technologies uses EOL EVBs to build mobile chargers and mobile power generators (Freewire, 2020). The second life manufacturers' task is to sell the repurposed battery system and/or provide complementing services to second life customers (Transaction 2) (Bräuer et al., 2019). The characteristics of the interaction between the second life customer and the second life manufacturer is dependent on the actual use case and the underlining business model (service-oriented vs. product-oriented). The lack of standardization among automotive OEMs with regards to the battery components and encrypted data forces second life manufacturers to develop OEM-specific knowledge on the repurposing of battery systems (Bräuer et al., 2019). After

all, the economic feasibility of repurposing relies “... on the availability to assess a battery’s condition and usage history to limit the time-consuming and cost-intensive manual testing” (Bräuer et al., 2019). Besides that, second life manufacturers may face high price pressure from new and cheaper battery systems that compromise the latest battery technology (Nykvist and Nilsson, 2015). The maximum allowable EOL EVB price must be equal to the cost of a new battery with the same characteristics (Martinez Laserna et al., 2018). Neubauer & Pesaran (2015) published a complete framework for estimating the purchase price of EOL EVBs indicating a price range from 44 to 180 \$/kWh for EOL EVBs.

2.3.2 Transfer of End-of-Life Electric Vehicle Battery from Automotive OEM to Second Life Manufacturer

After displaying the overall network of repurposing EOL EVBs, the buyer-seller relationship between the automotive OEM and second life manufacturer is analysed in-depth by describing and applying the principal-agent theory. The principal-agent theory is going to be re-applied along this research in order to compare the market of EOL EVBs with other product markets. The line of thought behind this research design is being illustrated in the methodology section. Whenever the concept of the principal-agent theory becomes unclear, the reader should review the following description. Please also note that the following findings derive from Bräuer et al. (2019) and represent the starting point and core of this study.

2.3.2.1 Principal-Agent Theory

As already indicated both, second life manufacturers and automotive OEMs face inter-organizational challenges when trading EOL EVBs. One way to analyse seller-buyer relationships is to apply the principal-agent theory. Jensen and Meckling (1976) define the principal-agent theory as a delegation relationship between two actors, in which one (the principal) contracts another (the agent) to act on his behalf. The principal-agent theory assumes that agents have an information advantage over the principals and that both actors maximise their utility. The assumed information asymmetry and opportunistic behavior of both trading parties are connected to challenges that, if not effectively addressed, may lead to market failure. In the following, the two main types of information asymmetries are presented:

Hidden Characteristics Leading to Adverse Selection

The principle cannot judge the quality of the good ex-ante due to incomplete information (hidden characteristics). This may drive high-quality goods out of the market (adverse selection) and lead to market failure (Akerlof, 1970). This phenomenon is also being described as the lemon-market problem and was first introduced by Akerlof (1970) regarding the market of used cars. To reduce the uncertainty connected to the displayed information asymmetry, the agent needs to signal the good’s quality to the principal (signalling), e.g. by selling brand-name goods, licensing practices, the provision of guarantees or other services (Akerlof, 1970). Besides that, the principal can screen potential agents for their quality (screening) (Spremann, 1987). Another solution is to use independent authorities for verification to reduce information asymmetry (Keil, 2005). However, as soon as one of the contracting parties pays for the verification, it would need to be counted as signalling or screening (Bräuer et al., 2019)

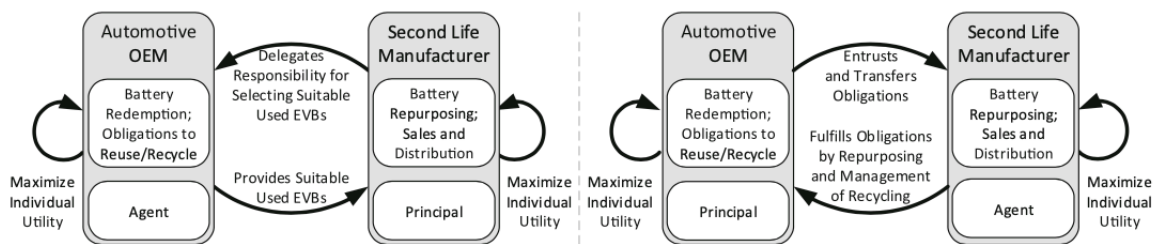
Hidden Action/Hidden Information Leading to Moral Hazard

After both parties concluded the contract (i.e. the transaction), the principal cannot fully assess the actions and effort of the agent (hidden action) or evaluate the quality of the agent’s actions (hidden information) (Arrow, 1986). For instance, the opportunistic agent may reduce the effort below the level previously agreed upon (moral hazard). Hence, mechanisms need to be in place (means of monitoring or contractual agreements) that explicitly restrict specific actions by the agent or provide incentives to act in the principal’s interest need (Bräuer et al., 2019; Keil, 2005).

2.3.2.2 Identified Information Asymmetries

Bräuer et al. (2019) analyse the buyer-seller relationship between automotive OEMs and second life manufactures in the context of EOL EVBs by applying the principal-agent theory (see Illustration 7). Assuming the automotive OEM takes on the role as the agent and the second life manufactures acts as the principal, a crucial information asymmetry regarding the performance and longevity of the EOL EVBs can be observed (hidden characteristics) (Bräuer et al., 2019). After the redemption from EV owners, the automotive OEM can easily asses the quality of the retrieved battery back through, for instance, the BMS. Whereas the second life manufacturer can only test the EVB by conducting a time-consuming and resource-intensive manual testing of the battery components (Bräuer et al., 2019). Besides the effortful battery testing, the second life manufacturer bears the risk of acquiring unsuitable EVBs. Without any signalling efforts from the automotive OEM regarding the EVB’s quality, the market is likely to fail (adverse selection). Thus, the automotive OEM must reveal data indicating and signalling the SOH of the battery. Additionally, the automotive OEM could either provide a mid-term warranty or ask for a significantly lower price, when the relevant data is not intended to be shared. Such signalling efforts mitigate the risks for second life manufacturers to invest in OEM-specific and battery type-specific assets and processes (Bräuer et al, 2019).

Illustration 7: Contractual Relationship between Automotive OEM and Second Life



Source: Bräuer et al. (2019)

When assuming the automotive OEM takes on the role as the principal and the second life manufacturer acts as the agent, another substantial information asymmetry occurs after the transaction of the EOL EVB (see Illustration 7) (Bräuer et al., 2019). The second life manufacturer is interested in keeping the costs of repurposing EOL EVBs down due to decreasing prices of new battery components (Bräuer et al., 2019). This may decrease the quality of the repurposed battery system and, eventually, end in malfunctioning or defect. A negative performance of the second life manufacturer may harm the reputation of the automotive OEM’s brand (Bräuer et al., 2019). However, the automotive OEM cannot fully monitor the activities after the transaction took place (hidden actions), why the second life manufacturer may act as displayed above (moral hazard) (Bräuer et al., 2019).

Thus a (financial) alignment of the OEM's and the second life manufacturer's interests is needed to secure a compliant behavior of both parties (Bräuer et al., 2019).

To sum up, automotive OEMs and second life manufacturers face two main economic challenges when engaging in the process of trading EOL EVBs (Bräuer et al., 2019):

- Ex-ante the second life manufacturer cannot assess the EVB's quality without facing high costs (hidden characteristics), which can prevent the transaction to occur (adverse selection).
- Ex-post the automotive OEM cannot fully monitor the second life manufacturer's actions (hidden action), who can act against the automotive OEM's interest (moral hazard).

2.3.2.3 Information System Design Principles

Based on the identified inter-organizational uncertainties between the automotive OEM and second life manufacturer, Bräuer et al. (2019) developed two design principles (DPs) that need to be considered when designing an information system around the transaction of EOL EVBs. The first DP aims to support the disclosure of hidden characteristics to avoid adverse selection, whereas the second DP shall prevent hidden actions of the second life manufacturer. Embedding and including these DPs in a marketplace design process might reduce or even avoid information asymmetries and their negative effects (moral hazard and adverse selection) (Bräuer et al., 2019). Accordingly, these DPs are re-considered in the final discussion of this study by analysing how they go in line with the measures that online marketplaces have implemented to reduce buyer-seller uncertainties. A detailed description of the research design can be found in the methodology section. In the following, each DP is being illustrated and briefly explained:

DP 1: provide features to import, store, process and distribute EVB-related information in the form of possibly encrypted, anonymized and aggregated master data, usage data and status data while ensuring data integrity, so that a decision-maker can access and judge an EVB's quality without the (immediate) need of testing the EVBs manually, and so that further repurposing tasks can be carried out effectively and efficiently.

Since the ageing behavior of each EVB is highly individual (dependent on user behavior, climate, technical specifications), storing structured battery-related data along the usage time is crucial for exchanging EOL EVBs. The availability of data on each EVB is most likely to mitigate information asymmetries for both actors (Bräuer et al., 2019). On the one hand, the automotive OEM can use the data to signal the EVB's SOH to the second life manufacturer and thereby tackle adverse selection. On the other hand, the second life manufacturer can use historical data on each EOL EVB in order to create a stronger case for potential second life customers.

The data stored in a battery can be divided into master data, usage data and status data (Klör et al., 2015). Master data is required to identify the battery's structure and properties. Usage data illustrate how the battery has been used in first life. Status data measures the retired battery's current properties (i.e. condition). These data sets are significant "...to understanding reconfiguration options, to determine past and likely future ageing behavior, to decide on the EVB's suitability for repurposing, for a fitting application scenario, and for complementing services" (Bräuer et al., 2019, p. 21). Several articles are already focusing on new technologies for monitoring the battery cells in an effective and reliable way, as well as predicting the residual battery life span. For instance, Baumann et al. (2018, p.

1) introduce a cloud-connected battery management system of which “the main advantages [...] are the not any more needed cost intensive state estimation [...] and a reliable prediction of the remaining lifetime within a certain second life application due to the model-based digital twin concept.”

Per Bräuer et al. (2019), the master data on EVBs might be partly publically available, while the usage and status data is usually encrypted in the BMS (Bräuer et al., 2019). Automotive OEMs, however, are only willing to share the data when an information system complies “... with the OEM’s desire of protecting crucial information on battery ageing as well as to conform to increasingly stricter data protection regulations (e.g., as entailed by the new European Data Protection Regulation, GDPR) by integrating means of encrypting, anonymizing, and/or aggregating data as well as processing these data (including the decryption).” (Bräuer et al., 2019). Hence, securing the “integrity of battery data” along the whole value chain of repurposing EOL EVBs represents a key challenge for new information systems (Bräuer et al., 2019). To make sure the EVB’s data is encrypted during both first and second life, various options are available (Bräuer et al., 2019). In one option, the EOL EVB is exchanged (including the BMS) without the re-encryption of data and the automotive OEM provides the second life manufacturer with specific access keys. Alternatively, the EOL EVB is exchanged without the BMS which gives the second life manufacturer the possibility to re-specify data encryption. Due to the need of the automotive OEM to retain a high level of control over the battery-related data, as well as the increased costs for second life manufacturers when replacing the BMS, the EOL EVB is more likely to be exchanged without the change of encryption. Another option is a secure “digital battery pass” (next to the BMS) containing a record of key master data, status data and usage data, which is continuously updated throughout the whole battery’s operational life (Bräuer et al., 2019).

Life manufacturers must also agree on a common data logging. Hereby both parties (and the information system) face the trade-of between having a high accuracy (including high amounts of data to be transferred and processed) and low accuracy (with only low amounts of data to be transferred and processed) (Bräuer et al., 2019). Menne et al. (2019) developed a framework with minimum space requirements for logging data on EVBs (see Table 2). Some parameters are logged on a quasi-continuous basis, while other parameters are logged in an event-based fashion, e.g. when a strong discharge current occurs during start-up (Bräuer et al., 2019). Such logging standards help to define which data is relevant for second life as well as to determine which data has to be stored and collected via the “digital battery pass”.

Table 2: Potential Logging Standard for Electric Vehicle Batteries

	Battery status parameter	Battery usage parameter
Quasi-continuous logging	Capacity (with date and time) Internal resistance (with date and time)	Operating time
Event-based logging	Rate of self-discharge	Current load Depth of charge/depth of discharge Operating temperature Full cycles

Source: Bräuer et al. (2019), based on Menne et al. (2019)

DP 2: support the stakeholder–individual reporting of key battery data, including data on the batteries' first life, on the application scenarios' requirements, on the decision-making process, and on the batteries' second life as well as on the possible redemption and recycling, so that disclosure and submission requirements can be satisfied.

As already displayed, the automotive OEM's inability to monitor the actions of the second life manufacturer can lead to moral hazard. One tool to make sure that the second life manufacturer acts in line with the automotive OEM's strategy and brand is to implement reporting procedures. The automotive OEM may use these reports to document legal compliance with obligations to take back and handle EOL EVBs (Bräuer et al., 2019). Furthermore, the second life manufacturer can report second life usage data to the automotive OEM which might help to optimize and design EVBs for a second life as well as increase EVBs' general performance. Bräuer et al. (2019) suggest to implement a reporting system that integrate all available data on a battery over its whole life cycle, especially including the usage data of its first life, data on the targeted second life application's requirements, and data on its use during its second life, as well as the matching and configuration decision.

2.3.3 Interim Conclusion

The value network of repurposing EOL EVBs comprises four main stakeholders, namely the EV owner, the automotive OEM, the second life manufacturer and the second life customer, that take over different roles and responsibilities along the entire value chain. Three transactions are emerging until the EOL EVBs reach the second life customer from the EV owner and battery second life takes place. Each transaction follows different constraints, uncertainties and types of interaction. This study, however, focuses on the second transaction: the transfer of EOL EVBs from the automotive OEM to the second life manufacturer. Two main uncertainties have been identified by Bräuer et al. (2019) related to this transaction. First, ex-ante, the second life manufacturer cannot assess the EVB's quality without facing high costs (hidden characteristics), which can prevent the transaction to occur (adverse selection). Second, ex-post, the automotive OEM cannot fully monitor the second life manufacturer's actions (hidden action), who can act against the automotive OEM's interest (moral hazard). Based on the underlining inter-organizational uncertainties between the automotive OEM and second life manufacturer, Bräuer et al. (2019) developed two corresponding information system DPs that should guide the design process of an information system in-between the automotive OEM and second life manufacturer in the context of trading EOL EVBs.¹⁰

Even though the value network's prosperities might change over time due to new market environments, it can be assumed that the market for EOL EVBs is continuing to be intermediary-based. Therefore, the pressure on designing appropriately information systems that reduce the uncertainties connected to exchanging EOL EVBs is most likely to increase in the future. Otherwise, the market for EOL EVBs might not reach its full potential in reducing the carbon footprint and the high acquisition costs of EVs. Accordingly, the study aims to evaluate to what extent an online B2B marketplace may reduce the identified inter-organizational challenges between the automotive OEM and second life manufacturer (research question 1.).

¹⁰ Please see for a detailed description of the DPs p. 28 and p. 29

3 Methodology

In the following, the research methodology is being described and explained.

3.1 Research Strategy

The outlined research questions are answered based on a qualitative research approach as the nature of the research questions do not allow to apply a mixed method strategy that includes both quantitative and qualitative research. The relevant data to answer research question a. and b. cannot be quantified, but must be rather captured and analysed by using verbal description and the interpretation of words rather than the interpretation of numbers.¹¹ This goes in line with Bryman & Bell (2011) who define the main difference between qualitative and quantitative research as either focusing on words or numbers. Furthermore, qualitative research follows an inductive approach (i.e. theory building), whereas quantitative research is guided by a deductive approach (i.e. theory testing). As outlined in the introduction, one sub-goal of this study is to identify a set of areas of activity (i.e. construct a theory) which are already applied by existing marketplaces in order to reduce or prevent buyer-seller uncertainties (research question b.).

Nevertheless, the research strategy also partly follows a deductive approach as the proposed theory (i.e. areas of activity that already existing marketplaces apply to reduce or prevent buyer-seller uncertainties) is tested on the market for EOL EVBs by iterating between literature, theoretical framework and empirical findings (research question c.).¹² This, however cannot be fully considered as a mixed method strategy as the theory is not tested by quantitative research methods. Hence, the proposed theory and the underlining hypothesis must be further validated and tested by, for instance, creating and prototyping an online B2B marketplace for EOL EVBs.

3.2 Research Design

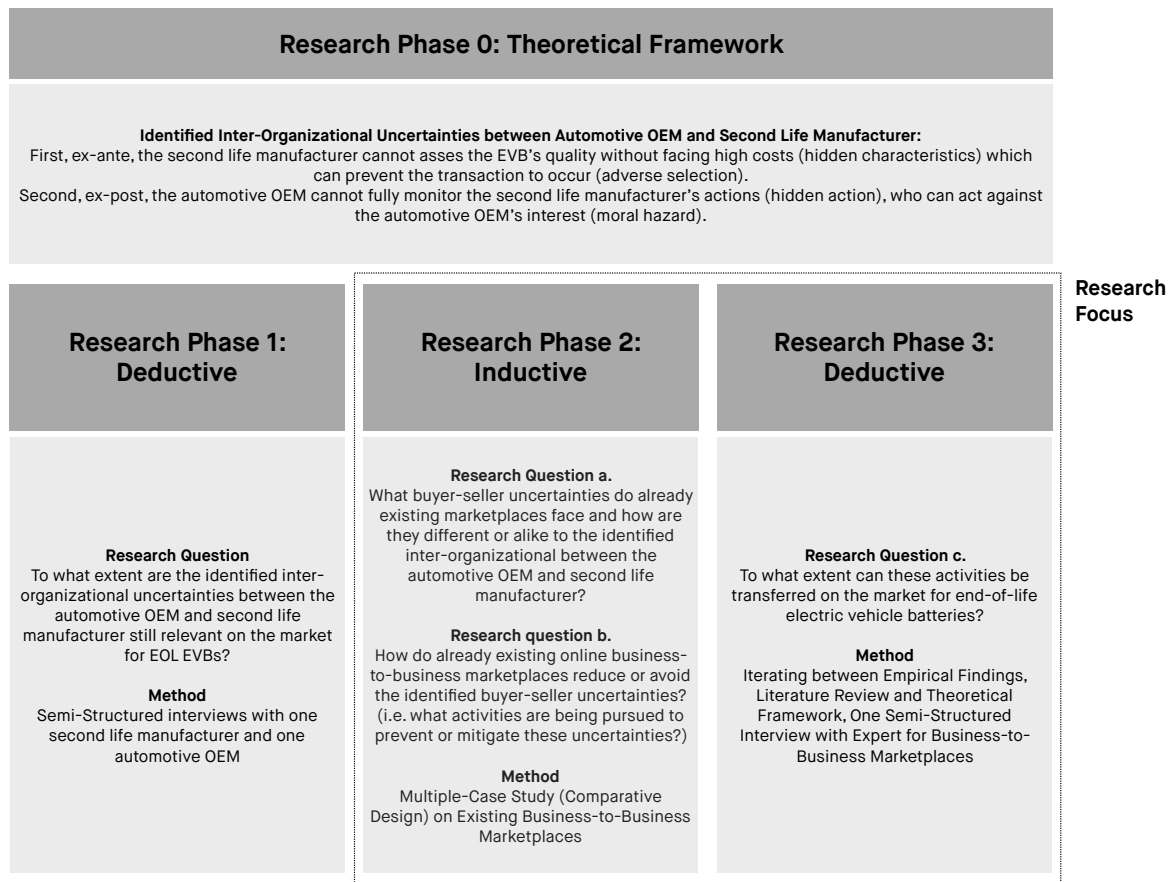
The research design can be understood as of exploratory nature, thus it is not intended to provide any conclusive evidence or decide on a final recommended course of action (Zikmund et al., 2009). In contrast, this research is supposed to explore an unknown phenomenon (i.e. an online marketplace for EOL EVBs) and thereby extend the knowledge base related to the commercialization of EOL EVBs. The research design can be divided into three main phases that are being described and illustrated in the following (see Illustration 8):

¹¹ Research question a.: *What buyer-seller uncertainties do already existing online business-to-business marketplaces face and how are they different or alike to the inter-organizational uncertainties between the automotive OEM and second life manufacturer?*

Research question b.: *How do already existing online business-to-business reduce or avoid the identified buyer-seller uncertainties? (i.e. what activities are being pursued to prevent or mitigate these uncertainties?)*

¹² Research question c.: *To what extent can these activities be transferred on the market for end-of-life electric-vehicle batteries?*

Illustration 8: Overview of Research Design



Research Phase 0

The first research phase is characterized by defining research questions and objectives as well as collecting and reviewing relevant theory and literature (see Literature Review). The focus hereby laid on understanding and depicting the conducted research by Bräuer et al. (2019) who analysed the buyer-seller relationship between the second life manufacturer and automotive OEM in-depth. The findings by Bräuer et al. (2019) has been chosen to form the foundation of this research and thereby represent the main theoretical source. However, literature on the prosperities of online B2B marketplaces as well as general background knowledge is also considered to be relevant for this study but are not always directly linked to the research question.

Research Phase 1

As prior research forms the foundation of this study, it is of high relevance that these findings possess a high degree of validity. In other words: The inter-organizational challenges between the automotive OEM and second life manufacturer must be still existing and relevant. Therefore, the findings by Bräuer et al. (2019), namely the inter-organizational challenges between the automotive OEM and second life manufacturer, need to be further proven to create a stronger robustness around this study. This is being pursued by conducting an initial research phase that is guided by the following question:

To what extent are the identified inter-organizational challenges between the automotive OEM and second life manufacturer still relevant on the market for end-of-life electric vehicle batteries?

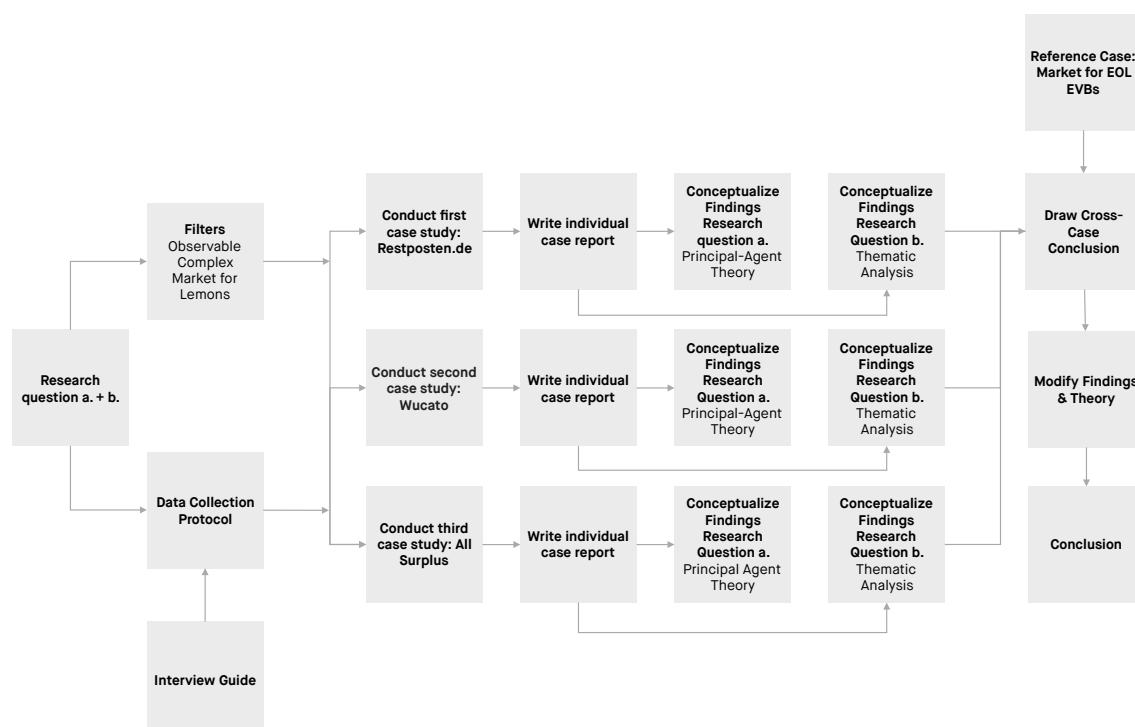
This initial research phase does not represent the main research focus, but rather aims at validating whether to continue with acting along the created research questions and objectives. The illustrated

question above is answered by conducting semi-structured interviews with one automotive OEM and one second life manufacturer. The interviews are guided by an interview guide which shall capture the information needs from the seller's and buyer's perspective (see Data Collection). This should help to understand to what degree the agency problems of adverse selection and moral hazard still exist on the market of EOL EVBs and thereby validate or neglect the displayed findings by Bräuer et al. (2019). In case of neglecting the findings of Bräuer et al. (2019), a new research design needs to be created excluding the risk of being insignificant.

Research Phase 2

As the existence of inter-organizational uncertainties between the automotive OEM and second life manufacturer has been proven, the second research phase is being initiated. Hereby a case study method is chosen to answer research question a. and b. Since qualitative questions, such as “how” and “what” questions, are likely to favour the use of a case study method, they seem to be suitable for this research approach (Yin, 2003). Per Yin (2003), a case study method “is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.” Since both, the nature of the buyer-seller uncertainties on already existing marketplaces as well as the corresponding functions to reduce these buyer-seller uncertainties, are not obvious and “clearly evident” within its context, a case study method seems appropriate to answer research question a. and b. Creswell (2013, p. 97) adds, that a case study is a method that “explores a real-life, contemporary bounded system (a case) or multiple bounded systems (cases) over time, through detailed in-depth data collection involving multiple sources of information.” As multiple cases strengthen the generalizability of the collected data and the research questions a. and b. go by capturing multiple marketplaces, a multiple case study seems appropriate. A case study method also allows to consider various sources of information to strengthen the empirical results and constructed theory. The overall process of the multiple case study follows the case study design of Yin (2003), and can be described as follows (see Illustration 9).

Illustration 9: Multiple-Case Study Design



After defining the research questions of interest, the number of cases need to be determined. In this study three cases were considered as an appropriate number to answer the research questions a. and b.. A larger data collection from different cases would increase the research complexity and exceed the scope of this study, whereas a lower number of cases would reduce the empirical validity. The online B2B marketplaces of interest were identified by using online sources (e.g. search engines and websites) and offline sources (e.g. journals and research reports). Complementary to that, a set of criteria was created to filter out the relevant cases for this study (see Illustration 9). One key determinant during the search and choice was, whether the entity of interest is “transparently observable”, meaning the necessary information is accessible and not, for example, exclusive to the registered users of the platform (Pettigrew, 1988). Another criterion was that the traded goods must have a certain degree of complexity (i.e. not commodity products) since an EVB can be considered as a high-tech product. Lastly, the markets in which the marketplaces engage are expected to be especially affected by the agency problem of adverse selection (i.e. market for lemons). This explains, why two out of three marketplaces are not engaging in markets for new goods, but rather in goods that are either used or possess a certain flaw, such as a damaged packaging. A short description of the selected cases can be found below (see Table 3).

Table 3: Selected Cases

Case	Description
Restposten.de	Marketplace for remaining stock and surplus inventory, mainly focusing on consumer goods
Wucato	Marketplace for various types of product categories, ranging from connection technology to office furniture.
AllSurplus by Liquidity Services	Marketplace for surplus goods of any type of category and condition

In accordance with Yin (2003), each case is investigated by following an identical data collection protocol (see Illustration 9). By doing so, the researcher can compare across cases (i.e. comparative design) subsequently, meaning to find out what is common and unique among the cases. This is especially relevant to research question a., as the identified buyer-seller uncertainties are not only compared across the marketplaces (i.e. cases), but also with the already identified buyer-seller uncertainties between the automotive OEM and second life manufacturer (see Illustration 8). The more similar the buyer-seller uncertainties on already existing marketplaces are to the buyer-seller uncertainties between the automotive OEM and second life manufacturer, the more relevant are the identified areas of activity (that reduce or prevent buyer-seller uncertainties) for the market of EOL EVBs. To ensure a high comparability between the selected cases and the market for EOL EVBs, the principal-agent theory is applied to answer what buyer-seller uncertainties already existing marketplaces do face. This goes in line with the research approach of Bräuer et al. (2019) and the theoretical framework of this study.

Research Phase 3

The last research phase focuses on testing (i.e. deductive approach) to what extent the identified areas of activity can be transferred on the market for EOL EVBs by iterating between the empirical findings, literature and theoretical framework (research question c.). Taking the DPs as an example, the introduced DPs are re-considered and evaluated how far they go in line and match with the identified areas of activity. By discussing and investigating to what extent these areas of activity can be transferred on the market for EOL EVBs, the underlining research question is being answered. Complementary to that, a semi-structured interview with an expert on B2B marketplace is conducted to discuss the context of this study. This shall expose any limitations regarding a marketplace for EOL

EVBs that have been neglected so far. Even though this part of the study can be considered as a deductive approach (i.e. theory testing), further testing is needed to validate or neglect the introduced theory by, for instance, prototyping an online B2B marketplace that is based on the introduced key areas of activity. By doing so, one can more effectively measure to what degree these areas of activity reduce or prevent the identified buyer-seller uncertainties and eventually adjust or refine the initial theory.

3.3 Data Collection

The relevant data was collected by conducting semi-structured interviews and online media (mainly the marketplaces' websites). For the first research phase, semi-structured interviews have been conducted to capture the buyer's and seller's perspective as depicted in the prior paragraph. For the second research phase, a data collection protocol was created to guide the multiple case study and capture the relevant findings to answer research question a. and b. The relevant data was collected by observing the marketplaces' websites and pursuing semi-structured interviews with the operators. Along the entire data collection process it was guaranteed that no data is lost or invalid by following strict recording, logging and transcription guidelines.

3.3.1 Data Collection Protocol

The data collection protocol for the multiple case study consists of three main parts. First, each online B2B marketplace is regarded by collecting data on general facts, such as the company history, the market focus, the industry, and the revenue model. This is pursued by drawing data from the website itself as well as from the semi-structured interviews with the operators. It was expected that not every MM may expose certain data points, such as key performance indicators (KPIs).¹³ After having collected data on general matters of interest, each case needs to be observed by collecting data, that is relevant to answer research question a. and b.. For research question a., the information needs from each market side (buyer and seller) are being captured. For instance, what information does a buyer engaging on Wucato need from a seller and vice versa. This approach has proved to be appropriate as buyer-seller uncertainties emerge from information asymmetries. The main objective is to get an understanding of the market in which the marketplaces engage. For research question b., data needs to be captured on how each MM mediates the information needs from every market side. Alike in the first part of the data collection protocol, the relevant data to answer research question a. and b. is drawn from the marketplaces' websites and the semi-structured interviews. The last part of the data collection protocol touches upon all information that is not necessarily related to the data collection protocol, but of importance in the context of this research.

3.3.2 Primary Data

The data collection protocol was filled with information by, inter alia, conducting semi-structured interviews with the operators of the investigated marketplaces. Besides that, two other semi-structured interviews have been conducted to capture the buyer's and seller's perspective as being described in research phase 1. These interviews are however not part of the multiple-case study or need to go in line with the data collection protocol. The focus of the semi-structured interviews lays on capturing the interview partners' knowledge and experience within a certain field of interest. The aim of the study is to receive information related to not only the markets in which the chosen marketplaces

¹³ Please note that a detailed description of the data collection protocol can be found in the appendix.

engage but also the applied mechanisms that mediate information needs of the market participants. Even though semi-structured interviews are guided by key questions that need to be answered along the conversation, the order of the questions is not predetermined. Hence, the advantage of semi-structured interviews lays in being able to adapt the questions to the course of the conversation (Gläser & Laudel, 2010).

3.3.2.1 Selection of Interview Partners

The selection of the interview partners is of great importance in the context of semi-structured interviews as it determines the quality of the obtained information to answer the research question (Gläser & Laudel, 2010). Therefore, the interview partners were selected by using the methodology of purposive sampling which guarantees to choose interview partners that possess the necessary knowledge to answer the underlining research question (Bryman & Bell, 2011). Accordingly, the interview partners for the multiple-case study need to have a detailed knowledge about the functionalities of the marketplace as well as the market in which the MM engages, whereas the interview partners related to the buyer's and seller's perspective need to be directly involved in the commercialization of EOL EVBs. The expert on online B2B marketplaces was recommended by Stefan Grimm, the CEO and founder of Restposten.de, and thereby considered as a suitable interview candidate.

Shortly after the interview partners have been identified through online sources, the interview partners have been contacted via email containing all relevant information regarding the purpose of the study. Only the interview partner related to the seller's perspective was predetermined as the research is pursued in collaboration with an automotive OEM.¹⁴ One selected case, AllSurplus, was not available for my research but has been investigated and analysed by using secondary data (see Secondary Data, p. 39). A list of all interview partners including the job title can be found below (see Table 4). The companies related to each interview partner are described and illustrated in the empirical findings (see p. 42 ff.)

Table 4: List of Interview Partners

Company	Interview partner	Position	Interview length	Language	Method	Date
Restposten.de	Stefan Grimm	CEO and founder	2:29:47	German	Zoom	24 April 2020
Wucato	Goran Stanar	Senior Category Manager	27:39	German	Telephone	30 April 2020
Warenausgang.com	Lennart Paul	CEO	30:08	German	Telephone	15 May 2020
Automotive OEM (anonymised)	Auto OEM	Sustainability Manager	1:03:46	English	Zoom	14 April 2020
Battery Loop	Rasmus Bergström	CEO	37:32	English	Zoom	14 May 2020

¹⁴ Please note that the Automotive OEM is anonymised, but the interview partner is actively involved in the commercialization of EOL EVBs and thereby fulfils the requirement of being a suitable interview partner.

3.3.2.2 Interview Guides

Semi-structured interviews are different to everyday communication since they determine a clear allocation of roles, are limited in time and the interview partners do not know each other. These special circumstances need to be considered when designing the interview guides as well as when conducting the interviews (Gläser & Laudel, 2010). The fundamental task of an interview guide is to use pre-formulated questions to create a basis for discussion that enables the researcher to acquire information relevant to the research question (Gläser & Laudel, 2010). Whether the needed information is obtained depends on the extent to which the interest in knowledge can be operationalized.¹⁵ Therefore, Gläser & Laudel (2010) recommend to describe and document the construction of the questionnaire in detail, so that the operationalization can be understood by third parties.

On the one hand, two interview guides are related to capturing the seller's and buyer's perspective and are divided into two main subject areas, respectively (see Table 5). The detailed composition of each interview guide can be found in the appendix.

Table 5: Overview Interview Guides Buyer's and Seller's Perspective

Buyer's perspective	
Subject area 1	Volumes of end-of-life electric vehicle batteries and collecting scheme
Subject area 2	Buying end-of-life electric vehicle batteries from automotive OEMs
Seller's perspective	
Subject area 1	Volumes of end-of-life electric vehicle batteries and take-back scheme
Subject area 2	Selling end-of-life electric vehicle batteries to second life manufacturers

On the other hand, one interview guide was designed to retrieve information related to the observed marketplaces. The focus hereby laid on collecting data that is not necessarily visible from observing the marketplaces' websites. The interview guide goes in line with the already displaced data collection protocol and focuses on three main subject areas (see Table 6). Accordingly, the first subject area focuses on collecting general information related to the marketplace, such as the underlining business model while the second subject area focuses on capturing the information needs of the seller from the buyer and vice versa. The third subject area touches upon the areas of activity in which the observed marketplaces engage to mediate the information needs of both the seller and buyer.

Table 6: Overview Interview Guide Multiple-Case Study

Marketplace operators	
Subject area 1	General information
Subject area 2	Inter-organizational information needs between buyer and seller
Subject area 3	Mediation of inter-organizational information needs between buyer and seller

Lastly, an interview guide was created to capture any left-out limitations related to an online B2B marketplace for EOL EVBs as well as exclusive knowledge related to such platforms (see Table 7)

¹⁵ Operationalization means the linguistic translation of the interest in knowledge into the practical context of the interview partner.

Table 7: Overview Interview Guide Expert on Business-to-Business Marketplaces

Expert on business-to-business marketplaces	
Subject area 1	General information
Subject area 2	Battery-related information

The interview guides related to multiple-case study more detailed and consist of more questions as the research focus of the study lays on analysing the chosen marketplaces. Also, the interviews were conducted over a longer period which allowed to make small adjustments and ensure an effective information transfer (Bryman & Bell, 2011).

3.3.2.3 Interview Process

Initially, the interviews were supposed to be conducted face-to-face, however, physical contact restrictions and travel bans that have been implemented by the EU and its member states to fight the spreading of the Covid-19 virus required to switch to internet-based telecommunication tools, such as Zoom. This does not affect the data quality of this study as no data on the respondents' behavior is needed to answer the research questions. The interview questions have been sent to the respondents before-hand to provide some preparation time and increase the quality and precision of the responses. Also, each interview started by introducing the interviewee (the author of the study) and explaining the process of the interview. The interviews were not supposed to be finished in a certain time (although 45-60 minutes was anticipated) but rather aimed to exploit the time of the respondents to the fullest. This explains partly the differences in the interview lengths. For instance, the interview with Stefan Grimm lasted almost 150 minutes while the interview with Goran Stanar took approx. 30 minutes.

3.3.2.4 Transcription of Data

To ensure that no information is lost or falsely interpreted in the subsequent data analysis, the interviews were recorded via the smartphone and subsequently saved on the computer. The transcription of data does not follow generally accepted rules, but is rather guided by the researcher's interests and goals. Therefore, the applied transcription rules followed self-defined guidelines and were based Gläser and Laudel (2010). The following rules were created:

- Non-verbal statements such as coughing, laughing or clearing the throat are not transcribed.
- Appropriate statements such as "Okay" or "Yes" are not transcribed.
- Expressions like "um" or "hm", just like repetitions of words, are not transcribed.
- Text passages with grammatical and typesetting errors are only improved if the meaning of the sentence cannot be understood.
- Conversation pauses are not transcribed.
- The interviews are transcribed in the original language, while direct quotes used in the study are being translated word by word.

Not all interviews have been transcribed due to the time-intensive effort related thereto. Hence, only the interviews with the operators of the marketplaces have been transcribed since the multiple-case study represents the core of the study as well as the main source for identifying the relevant areas of activity.

3.3.3 Secondary Data

Furthermore, secondary data (i.e. already existing data) was considered as a mean to follow the data collection protocol of the multiple-case study, especially with regards to the implemented features of the observed marketplaces. The main sources hereby have been the websites of the marketplaces as well as annual reports. Especially, AllSurplus needed to be analysed based on its online presence. A list of the main online sources can be found in Table 8.

Table 8: List of Secondary Data Sources

Case	Website
Restposten.de	www.restposten.de
Wucato	www.wucato.de
AllSurplus by Liquidity Services	www.allsurplus.com (including annual report)

3.4 Data Analysis

Per Bell (2013), the analysis of qualitative data is about reducing your data, and identifying patterns and relations (i.e. “themes”). This pursued by coding the data (i.e. thematic themes) meaning the extracting of quotes and the subsequent detection and definition of concepts and overall themes. This theme-creation process follows five stages. Firstly, the researcher gets familiar with the collected data by reviewing the findings and taking initial notes. Secondly, “interview-centered” codes are identified within and across the interviews, using the same formulations as the respondents. Per Bryman & Bell (2011), codes can be described “as a label put on a specific piece of data.” Thirdly, these codes are combined and categorized into themes that are repetitive across cases and relevant for the proposed research question. Fourthly, the themes are reviewed and refined to not only guarantee coherent and convincing themes but also assess their relation to each other. Lastly, the themes are being defined and finalized and, if necessary, embedded in a proposed theory. Even the though the coding of data was applied for all semi-structured interviews, one needs to distinguish between three different analysis phases that go in line with the already displayed research phases (see Illustration 8).

Data Analysis Research Phase 1

The collected data from the automotive OEM (anonymised) and second life manufacturer (Battery Loop) follows an inductive approach, meaning to evaluate whether the created themes match with the findings by Bräuer et al. (2019). In other words, the analysis shall reveal to what extent the identified inter-organizational challenges between the automotive OEM and second life manufacturer are still relevant on the market for end-of-life electric vehicle batteries. Accordingly, this analysis phase focuses on searching for predetermined notions and variables rather than identifying new themes within the data.

Data Analysis Research Phase 2 (First Part)

The second data analysis phase focuses, inter alia, on categorizing the relevant data for research question a., meaning to identify the information needs of the buyer from the seller and vice versa on each marketplace. These information needs are then contextualized and illustrated by applying the principal-agent theory. This allows to capture and understand the buyer-seller uncertainties on the observed marketplaces in an effective way as well as to compare them with the already identified inter-organizational uncertainties between the automotive OEM and second life manufacturer. The main aim of this data analysis phase is to define to what degree the agency problems of adverse

selection and moral hazard are relevant on the observed marketplaces and how their nature matches with the inter-organizational uncertainties between the automotive OEM and second life manufacturer.

Data analysis Research Phase 2 (Second Part)

The next data analysis phase aims at developing a theory (i.e. inductive approach) around how the observed marketplaces reduce or avoid the identified buyer-seller uncertainties (research question b.). Accordingly, the analysis of this study focuses on identifying new themes within the data rather than searching for predetermined notions and variables. The main goal of this data analysis phase is to define a general set of areas of activities that marketplaces can apply to reduce the identified buyer-seller uncertainties (adverse selection and moral hazard).

Data Analysis Research Phase 3

Besides analysing one semi-structured interview, the last research phase does not include any data analysis, but rather focuses on testing the identified areas of activity on the market for EOL EVBs by iterating between the empirical findings, literature and theoretical framework.

3.5 Research quality

The collected data and information along the research process must not be only relevant, but also of high quality to ensure the significance of the findings in answering the underlining research question. As the study follows partially an inductive research approach, the constructed theory must be based on robust data to ensure a high degree of generality. Per (Bryman & Bell, 2011), the research quality of a study is evaluated by using three criteria: validity, reliability and replicability. In the following, each variable is discussed further in the context of the study.

3.5.1 Validity

The validity of a study can be measure along two dimensions: internal and external validity (Bell et al., 2011). Internal validity is commonly understood as the degree to which the results are attributable to the independent variable and not some other rival explanation, whereas external validity refers to the extent to which the results of a study can be generalized (Bryman & Bell, 2011). In the context of the study, internal validity is guaranteed by not only verifying the displayed findings from Bräuer et al. (2019) though semi-structured interviews (i.e. test the underlining theoretical framework) but also investigating the cases based on the causality between marketplaces and their efficiency in reducing buyer-seller uncertainties, namely the agency problem of adverse selection and moral hazard. However, this study is also of explanatory nature why the connection between marketplaces and their efficiency in reducing buyer-seller uncertainties is not fully evident before the data is being collected and analysed. External validity, on the other hand, is guaranteed by choosing cases that are not engaging in the same product segments to avoid industry-related biases as well as by following strict data collection and analysis methods (see Primary Data, p. 40).¹⁶ Also, the study follows to some extent a deductive research approach where the constructed theory needs to be generalized to be able to test it on a new market setting, namely the market for EOL EVBs (see Research Phase 2, p. 38).

¹⁶ In other words: Creating overarching themes that cover all observed marketplaces.

3.5.2 Reliability

Alike the validity, the reliability of a study can be measure along two dimension: internal and external reliability (Bryman & Bell, 2011). Internal reliability refers to what degree the data collection, data analysis and interpretation is consistent, whereas external reliability relates to the extent to which the proposed findings are replicable (Bryman & Bell, 2011) Internal reliability was achieved by creating a detailed research design framework which has been reviewed by several supervisors (see Illustration 8, p. 34). Moreover, several feedback loops along the whole research process guaranteed the consistency and coherence of the study. External reliability, on the hand, is achieved by outlining in a transparent and understandable way the underlining research design and literature as well as by choosing a generic data collection protocol that can be applied on any type of marketplace. Also, the methods chosen are widely accepted research methods in business studies. One circumstance that may affect the external reliability of the study is the crises connected the spread of Covid-19 and its effect on the respondents' way of thinking and behaviour.

4 Empirical findings – Research Phase 1

In the following, the empirical findings related to research phase 1 (i.e. initial research phase) are being outlined (see p. 34). Accordingly, the displayed findings shall reveal to what extent the inter-organizational uncertainties between the automotive OEM and second life manufacturer are still relevant on the market for EOL EVBs. Most of the displayed information has been collected by conducting semi-structured interviews with one automotive OEM (anonymised) and one second life manufacturer (BatteryLoop). The position and role of the interview partners are being outlined in Table 4 (see p. 45). Only information related to the companies' background is being collected by using their website as a data source (see p. 45).¹⁷ Also, the following section focuses only on displaying the collected data not interpreting any information.¹⁸ The empirical findings are illustrated by, firstly, describing shortly the company's background before, secondly, displaying relevant information related to the transaction of EOL EVBs from, one time, the seller's perspective and, another time, the buyer's perspective. Lastly, additional information from both the automotive OEM and BatteryLoop is being depicted. Direct quotes are depicted in cursive and visually indented when not being embedded within the continuous text as well paraphrased before each quote. Also, only the most concise quotes are being illustrated.

4.1 Automotive OEM – Seller's Perspective

General Information¹⁹

The automotive OEM is a European car manufacturer that is today active all around the globe running manufacturing, research and design operations in China, Europa and the US. In 2019, the automotive OEM sold around 700.000 cars while capturing an operating profit of around 1.5 billion euros. The automotive OEM is committed to an ongoing reduction of its carbon footprint, with the ambition to be a climate-neutral company by 2040. This shall be achieved by not only electrifying the car fleet but also adjusting the manufacturing network, wider operations supply chain and through recycling and reuse of materials,

Transaction of End-of-Life Electric Vehicle Battery to Second Life manufacturer

To begin with, Auto OEM (2020) agrees on the necessity of collaborating with second life manufacturers as the volumes of EOL EVBs will increase in the future.²⁰ This may be pursued by either engaging on a commercial platform or through fixed agreements with second life manufacturers (Auto OEM, 2020). Independent from the way of commercializing the EOL EVBs, the automotive OEM does not want to share all the data from the BMS but admits that second life manufacturers need some information to make a purchase decision: "...to get the most out of the deal we need to share information with the second life applicant. They want to know what they are buying." (Auto OEM, 2020). Moreover, Auto OEM (2020) points out that the automotive OEM faces uncertainty regarding in which form the battery should be sold (on a pack-level vs. on a module-level).

¹⁷ Please note that all data being sourced from the companies' websites are not relevant for answering to what extent the inter-organizational challenges between the second life manufacturer and automotive OEM are still relevant but shall give the reader a short introduction into the companies' background.

¹⁸ The data analysis is conducted afterwards.

¹⁹ Due to the necessity of anonymising the automotive OEM, the illustrated information is relatively generic.

²⁰ Please note that the interview partner is labelled as Auto OEM for confidentially reasons.

“Yes, I don’t think we can keep all used batteries in the future. So, yes I think we will find a commercial platform, either we have fixed agreements, a limited number of second life applicants. Because we don’t want to share all the data that is needed for a second-life applicant related to the BMS. You may also want to know how these batteries have been charged? What have they been charged by AC/DC or how many cycles are left? What is the SOH of the batteries? Has the car been used in Spain or Saudi Arabia? There is some information you need to share. Then we also need to understand do we need to sell the entire battery pack? Or do we only sell modules?”²¹

Auto OEM

According to Auto OEM (2020), the automotive OEM has started a collaborative pilot project to gain first knowledge not only on battery second life performance, but also concerning the information needs from the second life manufacturer. Interestingly, the automotive OEM does hereby not ask for monetary remuneration but receives information in exchange for the EOL EVBs. This includes to get an understanding on how the EOL EVBs perform in the second life application which then allows to get a better perspective on the residual value (Auto OEM, 2020).

“We have leased the batteries to Fortum for free so we get at the same time some information on what energy do they get out of these batteries to understand what are they worth. But also to understand what is the needed information by the second life applicant? What do they need to know? So, it is mainly related to information sharing.”

Auto OEM

Auto OEM (2020) states that the main challenge for the automotive OEM when selling EOL EVBs to second life manufacturers is that the shared data must be kept confidential. However, Auto OEM (2020) also notes that the automotive OEM does not only face risks when sharing data, but also gets the opportunity to increase the sales price. Consequently, the more battery information is being shared by the automotive OEM the higher the sales price of EOL EVBs. Besides that, most EOL EVBs are older than eight years when being repurposed why the relevant data might not be as sensitive to the automotive OEM anymore (Auto OEM, 2020).

“The biggest challenge is that I want to have a clear relationship with the partner I’m selling to. I need to have some confidentially agreements in place. [...] We think that there is a linear connection between information you are willing to share and the price of the second life battery.”

Auto OEM

Also, Auto OEM (2020) assumes that automotive OEMs might be obliged to share certain information related to the battery in the future, whereas the design of the battery is not expected to be regulated by policy makers.

“We expect that we would be asked to share some information [...] towards second life applicants. On the other hand, we don’t foresee that we will get requirements for the design of the batteries.”

Auto OEM

Auto OEM (2020) wonders whether the automotive OEM need to provide second life manufacturers with a volume commitment to establish a trusted relationship. Furthermore, Auto OEM (2020) expects second life manufacturers to ask for a warranty which cannot be offered by automotive OEMs as of today.

²¹ Note of the author. AC refers to alternate current (AC), while DC refers to direct current (DC)

“How can I build a trusted relationship without a volume commitment? [...] When you are a second life applicant, don't you want some kind of warranty?”

Auto OEM

Currently, the automotive OEM experiences a high demand for EOL EVBs, however, Auto OEM (2020) worries that the market for EOL EVBs will be saturated at some point, why the residual value of EOL EVBs may diminish over time.

“On frequent basis we are being approached by energy providers and that could be on smaller scale, on a bigger scale [...] There is a huge demand and a huge interest [...] After a certain period I think that the second life business will be, I mean they are not hungry anymore, we might overflow the market.”

Auto OEM

Another issue expressed by Auto OEM (2020) is the uncertainty around the pricing of EOL EVBs.

“We heard different stories about battery second life prices”

Auto OEM

Furthermore, Auto OEM (2020) discusses the options of selling EOL EVBs either on a dedicated marketplace or through an own sales department. Auto OEM (2020) perceives a marketplace as a traditional intermediary that matches automotive OEMs and second life manufacturers in accordance with their needs and requirements. Auto OEM (2020) a marketplace could mediate all requirements and information needs of the second life manufacturer, and the automotive OEM subsequently decides whether to engage with the second life manufacturer or not. Auto OEM (2020) also highlights that a marketplace could manage all legal matters around the transaction by setting up contractual agreements.

“And I totally agree that we must decide on whether we want a department that focuses on selling these batteries or that we simply go to a marketplace where you connect us with a partner and we say no and yes and you can do the contracts with us, where you just put up requirements for this applicant he wants this and this information, we want a battery pack and then we can hook on to it depending on what we want [...] It could be like an auction-based place where all the legal issues are managed for you and [...] we can pick among who we want sell to also depending on the volumes we get in.”

Auto OEM

However, Auto OEM (2020) points out that engaging in such marketplace must be cheaper for the automotive OEM than creating an own sales department by, for instance, facilitating a high number of successful transactions.

“You need to ensure that the commercial model is cheaper for me selling maybe ten thousands of ten thousand batteries a year on that marketplace than to create my own department where three people do the same job.”

Auto OEM

Additional Information

Besides that, Auto OEM (2020) expresses that most of the batteries placed in the automotive OEM's plug-in hybrid electric vehicles (PHEV) last longer than the issued warranty period. Also, the batteries are not being removed unless the battery capacity is too degraded (Auto OEM, 2020). PHEVs are usually transformed into a regular car (powered by an internal combustion engine) without removing the battery (Auto OEM, 2020). Auto OEM (2020) highlights the important difference between PHEVs and EVs by stating that "...you always have a plan B when it comes to PHEVs." Moreover, batteries from PHEVs are considered less useful for second life as their performance capabilities are not as high why automotive OEMs "...would not get a penny for them" (Auto OEM, 2020).

"We put the first batteries on the market in 2014 and these were PHEV batteries. For the PHEV batteries, and we have that for all batteries, a warranty of 8 years or 160.000 kilometres, whatever is first, and 8 years to 2014 that means 2022. But does that automatically mean that after the warranty we have huge amounts of batteries coming in no more for second life? No. What we see now is that the PHEV batteries are doing very well and they will probably not be removed from the car unless the capacity is very bad. That means for all the PHEVs we don't see a lot of batteries coming into our loop again."

Auto OEM

Based on the experience with the automotive OEM's BHEVs, Auto OEM (2020) does not expect a large inflow of EOL EVBs by the end of the warranty period. However, for those batteries who come in, the automotive OEM needs to decide whether these should be commercialized or reused within the company, e.g. peak-shaving for production plants to reduce carbon footprint (Auto OEM, 2020).

"For the BEVs [...] the warranty will end 2028. What happens then? Do we see that after the warranty ends loads of batteries are coming into the regional battery centres? We will get some, but we won't get them all. But the ones we are getting in the battery centre that are no more fit for using in a car, here we need to take decision on should we (i) keep the batteries [...] and use them for peak-shaving for our production and reduce carbon footprint or (ii) should we put it up for commercial so we have potential revenues here. "

Auto OEM

As of today, automotive OEMs are not collaborating closely within the area of battery second life as they possess the same core business, namely the production and marketing of cars (Auto OEM, 2020)

"We discuss items, but we are not allowed to discuss in detail what are you doing and what are we doing. That we cannot say anything around."

Auto OEM

Another important aspect that needs to be considered when realizing battery second life applications is the high costs connected to transporting EOL EVBs (Auto OEM, 2020).

"You also have to have the logistics in place ... that is quite costly."

Auto OEM

4.2 BatteryLoop – Buyer’s Perspective

The following findings are illustrated in accordance with the already displayed structure (see p. 45).

General Information

BatteryLoop was founded in 2017 and focuses on transforming EOL EVBs into energy storage system for apartment buildings. The Swedish company is a fully owned subsidiary of Stena Recycling – a Gothenburg-based recycling company. BatteryLoop has established a four-step process related to battery second life: (i) collection; (ii) diagnostics, sorting and pre-treatment; (iii) second use of electric vehicle batteries; and (iv) recycling. At first, BatteryLoop collects EOL EVBs through Stena Recycling’s “branch network” including workshops, vehicle dismantlers and insurance companies (BatteryLoop, 2020). Secondly, the EOL EVBs are transported to the “Stena Battery Center” and subsequently analysed to decide for the further use (BatteryLoop, 2020). Thirdly, BatteryLoop manufactures energy storage system as well as takes responsibility for the batteries including to ensure a “take-back system and optimized recycling” (BatteryLoop, 2020). Also, BatteryLoop strictly monitors the second use to prevent “either uncontrolled second use or illegal treatment.” (BatteryLoop, 2020). Lastly, the EOL EVBs are disassembled from the second life application and recycled at one of Stena Recycling’s facilities (BatteryLoop, 2020).

Transaction of End-of-Life Electric Vehicle Battery from Automotive OEM

Rasmus Bergström (2020) knows about the confidentiality issue that comes with transferring battery-related data from the automotive OEM to the second life manufacturer, but he also notes that the sharing of data is necessary to build a commercial business around EOL EVBs. Even though Rasmus Bergström (2020) states that automotive OEMs are reluctant to share battery-related data, some automotive OEMs started to integrate second use interfaces in their batteries which facilitates a transfer of relevant data for battery second life without facing confidentiality issues.

“In many ways, the BMS is the IP of the OEMs, but to be able to use the batteries for second use you need to actually have several lines to the BMS to really assess the state-of-health of the batteries and that it actually sells [...] The OEMs are very reluctant to open up about the BMS. [...] Some OEMs are building in second use interfaces in their packs. That have the possibility to increase the second use of these packs.”

Rasmus Bergström

Another important aspect is, that the conversion costs are negatively connected to the amount of shared battery-related data from the automotive OEM (Rasmus Bergström, 2020). Hence, it is important “... that the OEM agrees upon that several channels from the BMS are open for second use [...], because if that’s not the case then it generates higher conversion costs from a safety perspective.” (Rasmus Bergström, 2020). Accordingly, the data is especially important for ensuring a safe second life application that does not bear a high risk of fire (Rasmus Bergström, 2020). In theory, anyone could remanufacture EOL EVBs by simply replacing the BMS system with a new system from, for instance, Hitachi (Rasmus Bergström, 2020). However, such repurpose scenarios are connected to high safety concerns and thereby are not desirable for any stakeholder.

“The conversion costs taking a battery pack and put it into an energy storage solution is of course high [...] If they are opening up, then the conversion costs will be lower for the ones who will be considering second use. If they don’t, then small entrepreneurs take [...] Tesla batteries and they

bypass the BMS and they put it on their small cottage in the forest and suddenly we have a risk of fire.”

Rasmus Bergström

Also, most batteries being viable for repurposing are not coming from scrapyards and car dismantles, but from the automotive OEMs directly via, for instance, the withdrawal of test vehicles (Rasmus Bergström, 2020). Consequently, Battery Loop has already established “...several commercial contracts...” with different automotive OEMs (Rasmus Bergström, 2020).

“The batteries that are actually interested for second use are coming from the different OEMs like [...] Volkswagen.”

Rasmus Bergström

Battery Loop applies two main ways of assessing the SOH of EOL EVBs. Either, Battery Loop analyses the data from the automotive OEM’s BMS, or they pursue physical testing on the modules and integrate an own BMS (Rasmus Bergström, 2020). Which testing method is appropriately depends on the automotive OEM (Rasmus Bergström, 2020). Also, Battery Loop has defined 14 data points from the BMS that are needed to assess a battery’s SOH (Rasmus Bergström, 2020).

“We are having both discussions, both signals from the BMS for some OEMs and on other ones we have to [...] take out the modules and put our own BMS into the modules [...] We have defined that we need roughly 14 signals from the battery.”

Rasmus Bergström

Additional Information

Per Rasmus Bergström (2020), one of the main challenges for Battery Loop is the low amount of incoming EOL EVBs through their network of car dismantlers and scrapyards. Only Norway is considered as a mature market for battery second life with a significant number of EOL EVBs that can be repurposed (Rasmus Bergström, 2020). Even China, as one of the biggest markets for EVs, has not reached a high number EOL EVBs that are ready for second life (Rasmus Bergström, 2020).

“The incoming material from scrapyards or car dismantlers is very, very limited ... Except Norway, Norway has quite some volumes [...] Still in China, the income of second life batteries is very limited [...] We could take much more second life batteries, but they don’t exist [...] Because the demand is higher, we are looking into new and second-use batteries.”

Rasmus Bergström

However, Rasmus Bergström (2020) highlights that most automotive OEMs have a lack of control over their batteries after the warranty period has passed, why car dismantlers and scrapyards might establish a strong market position through the possession of large amounts of EOL EVBs.

“The OEMs have no control over the car when it actually reaches end-of-life. This means that access of batteries will be challenge or an opportunity if you see it from a positive side.”

Rasmus Bergström

Moreover, Rasmus Bergström (2020) points out the high logistic costs when transporting EOL EVBs. These costs are considered as an important variable in the economic viability of second life applications (Rasmus Bergström, 2020).

“Moving these vehicles will create high costs from a logistical point of view [...] Logistics will always be a problem from a cost perspective.”

Rasmus Bergström

Moreover, second life applications might become unprofitable due to the ongoing improvement of the price performance ratio for new batteries (Rasmus Bergström, 2020). Besides that, Rasmus Bergström (2020) sees a lack of knowledge within the area of battery second life why Battery Loop shares data with its clients in a transparent way since “... that’s a knowledge base that is building up.”

“There are very few companies that have complete knowledge base over solar panels, battery energy storage system, and charging stations and then the possibility to certify these systems so you could actually sell extra power into the grid.”

Rasmus Bergström

5 Data Analysis – Research Phase 1

The collected information from both the seller's and buyer's perspective is analysed based on the premise to answer whether the inter-organizational uncertainties between the automotive OEM and second life manufacturer are still relevant on the market for EOL EVBs. Besides that, additional findings are conceptualized that are relevant for the objectives of the study.

5.1 Identified Buyer-Seller Uncertainties

The data collected during the initial research phase supported the findings by Bräuer et al. (2019) and thereby proved the existence of the identified inter-organizational challenges between the automotive OEM and second life manufacturer. On the one hand, the main concern on the buyer's side is related to the lack of access to battery related data to appropriately analyse the SOH and build safe second life applications (hidden characteristics) (Rasmus Bergström, 2020). BatteryLoop has defined 14 data points that are needed to appropriately assess the SOH of EOL EVBs. On the other hand, the main concern on the seller's side is to expose sensitive information that is stored in the BMS, but also the fear of irresponsible business practices of the second life manufacturer (hidden action) (Auto OEM, 2020). Hence, the automotive OEM needs a reliable, accountable and trustworthy business partner who does not misuse any battery-related data and repurposes the EOL EVBs in line with high quality standards.

5.2 Additional Findings

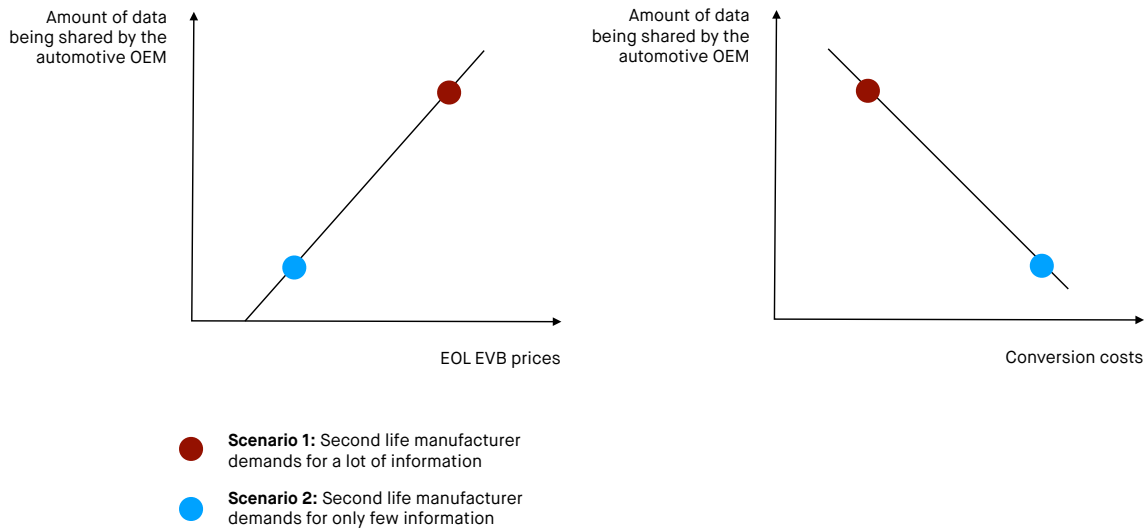
Even though automotive OEMs are aware of the necessity to collaborate with second life manufactures, the perceived risks and uncertainties seem to outweigh the opportunities connected to selling EOL EVBs to second life manufacturers. Additional uncertainties include, for instance, that automotive OEMs do not know how the EOL EVBs perform in the second life application and therefore cannot price them adequately. However, some automotive OEMs have started to integrate second life interfaces into their batteries and thereby show some degree of commitment. Moreover, upcoming policy directives might oblige automotive OEMs to share some battery-related data. If the amount of data is large enough to build safe and powerful second life applications is yet unclear.

Furthermore, the interviews revealed that some stakeholders may take over several roles in the displayed value network by Bräuer et al. (2019). BatteryLoop does not only sell second life applications to real estate owners (second life customers) but also operates own systems in buildings that are part of the Stena consortium. Nevertheless, automotive OEMs seem not to engage as second life manufacturers themselves as the observed automotive OEM has established a pilot project with an external party. After all, the roles within the proposed value network may vary from case to case but the transaction of EOL EVBs from the automotive OEM to a third-party is most likely to emerge since Rasmus Bergström (2020) highlights that the most viable batteries come from the automotive OEMs directly. This strengthens the need for finding an appropriate information system, such as a marketplace, that reduces the uncertainties connected to this transaction.

Besides that, an important trade-off on the buyer's side has been identified (see Illustration 10). More (*less*) battery-related information from the automotive OEM decreases (*increases*) the remanufacturing costs, but also increases (*decreases*) the price that automotive OEMs demand for the EOL EVBs. Which effect outweighs the other is still unclear. However, it can be expected that each additional data point that is being shared decreases the remanufacturing costs (i.e. conversion costs) more than it

heightens the EOL EVB price. Consequently, second life manufacturers are most likely asking for battery-related data instead of pushing the EOL EVB prices down.

Illustration 10: Trade-off End-of-Life Electric Vehicle Battery Prices and Conversion Costs



Source: own illustration

Another important aspect is that automotive OEMs seem to have a lack of control on the EVBs after the warranty period has passed. Most automotive OEMs have established a BOM that does not include any leasing agreement but rather focuses on selling the EV en bloc. This might lead to larger number of EOL EVBs ending up at car dismantlers and scrap yards and a higher likelihood of irresponsible second life practices. Rasmus Bergström (2020) points out that EOL EVBs can be repurposed by simply changing the BMS with a new BMS from companies like Hitachi. Also, both the second life manufacturer and automotive OEM are struggling to predict and anticipate the future inflow of EOL EVBs.

5.3 Conclusion

Even though the main aim of this research phase was to validate or neglect the findings of Bräuer et al. (2019), other important aspects have been identified, such as the trade-off between high (*low*) conversion costs and low (*high*) EOL EVBs prices. Based on the collected information, the inter-organizational uncertainties between the automotive OEM and second life manufacturer are still existing. Therefore, the next research phase can be initiated aiming to detect key areas of activity that reduce or prevent the agency problems of hidden characteristics and hidden action. Also, the introduced value network by Bräuer et al. (2019) seem to depict the reality and thereby provides a good basis to understand the market of EOL EVBs. Only the allocation of roles within the value network might vary from case to case and transaction to transaction. However, the defined processes and tasks within the value network need to be pursued regardless.

6 Empirical findings – Research Phase 2

The following empirical findings illustrate all data that has been collected from the chosen marketplaces (see research phase 2, p. 35). Hereby, the main source of information are semi-structured interviews with the operators of the marketplaces. The position and role of the interview partners are being outlined in Table 4 (see p. 38). Furthermore, the websites of the marketplaces including annual reports served a source of information (see Table 8 , p. 41).²² The collected data form the basis in answering what buyer-seller uncertainties already existing online business-to-business marketplaces face and how they are different or alike to the inter-organizational uncertainties between the automotive OEM and second life manufacturer (research question a.) as well as how already existing online business-to-business reduce or avoid the identified buyer-seller uncertainties (research question b.). The following section focuses only on displaying the collected data not interpreting any information.²³

The empirical findings are illustrated by, firstly, describing shortly the marketplace's background before, secondly, displaying all relevant data related to the information needs of the buyer from the seller and vice versa. Afterwards, information on how each marketplace mediates these information needs is illustrated. Lastly, additional information that goes in line with the research objective of the study is displayed. Direct quotes are depicted in cursive and visually indented when not being embedded within the continuous text. Also, only the most concise quotes are being illustrated.

6.1 Restposten.de

General Information

Restposten.de is an online B2B marketplace connecting buyers and sellers of remaining stock and inventory. Restposten.de focuses hereby on various types of consumer goods, such as fashion, furniture, or jewellery, that are being divided into 121 categories and 762 sub-categories (Restposten.de, 2020). The interview partner and founder of Restposten.de, Stefan Grimm (2020), states that "...the only thing that these goods have in common is that something is not okay." For instance, some parts of the packaging are broken or the items are from former collections or seasons. Currently, hygiene articles experience great popularity due to the corona crisis (Stefan Grimm, 2020). Restposten.de went live in 1997 and can be considered as one of the first B2B marketplaces globally (Stefan Grimm (2020)). As of today, Restposten.de has more than 80.000 members across 97 countries of which 8 percent are sellers and 92 percent are buyers (Restposten.de, 2020; Stefan Grimm, 2020). Various types of buyers are active on Restposten.de, but the clear majority are retailers looking either for ways to buy complementary items to an existing offer (e.g. cutting board as complement to a cutting knife) or to sell each good individually to the end customer via other online channels, e.g. Amazon or Ebay (Stefan Grimm, 2020).

Restposten.de offers three types of memberships ("free", "purchase", "sale") that include different service packages (Restposten.de, 2020). The "purchase" package focuses primarily on the buyers' needs and provides access to all necessary functions to buy remaining stock. Buyers must either pay a monthly fee of 69.90 euros over the period of four months or 99.00 euros over the period of twelve

²² All information obtained from the interviews are marked with "interview partner, 2020" while all information collected from the websites are marked with "company name, 2020".

²³ The data analysis is conducted afterwards.

months.²⁴ Another membership option targets the sellers of remaining stock and includes a premium seller support as well as an automatic offer management. The “sale” package can be purchased at a monthly rate of 39,80 euros over the period of 12 months. Lastly, prospective customers can register for free, but only get access to information and offer alerts and not to buying and selling functions. Stefan Grimm (2020) describes the business model of Restposten.de as being a “digital fair”, where the exhibitor pays an exhibition fee and the visitor pays an entrance fee. Alike in traditional fairs, the operator of a digital fair does not charge a commission on every transaction between the exhibitor and visitor (Stefan Grimm, 2020). It is also important to note that a considerable amount of transactions is being handled outside the platform (Stefan Grimm, 2020). However, Stefan Grimm (2020) notes that Restposten.de “has a good insight” on all transaction processes, as they have been dealers of remaining stock themselves.

Inter-Organizational Information Needs

Basic information is needed by the seller from the buyer and vice versa to enable a successful transaction on the market for remaining overstock. First and most logical, the seller needs a detailed description of the object of purchase (Stefan Grimm, 2020). Stefan Grimm (2020) highlights hereby that “Two or three missing data points out of hundred data points can be enough to prevent a transaction to occur [...], the lower the amount of information the higher the bounce rate.” Next to a description of the object of purchase, the seller needs to define a price (Stefan Grimm, 2020). Since most dealers do business with high quantities, the prices are staggered (price-demand function) (Stefan Grimm, 2020). Most prices, however, are negotiated individually outside the platform after the first non-binding offer (Stefan Grimm, 2020). Furthermore, the available quantity and delivery time are necessary data points needed by the buyer from the seller (Stefan Grimm, 2020). The market of remaining stock is characterized by immediately available products in contrast to traditional sourcing activities that can take place over the course of several months (Stefan Grimm, 2020). Besides that, information related to seller allows the buyer to appropriately assess the seller’s integrity (Stefan Grimm, 2020). Stefan Grimm points out that “...the seller is an essential part of the Transaction” (Stefan Grimm, 2020). Above all, however, stands the product quality since the price, product information and availability do not possess any informative value with knowing the quality level (Stefan Grimm, 2020).

Mediation of Inter-Organizational Information Needs

Restposten.de has implemented several functions that aim at preventing the failure of transactions due to information asymmetries between the seller and the buyer. Hereby, one key element is the onboarding processes of both the seller and the buyer that include an examination of the market participants and the traded products (Stefan Grimm, 2020). When registering on the marketplace the seller must upload not only basic company information, but also its trading licence which is reviewed and verified by the customer support team subsequently (Stefan Grimm, 2020). However, the seller goes live as soon as the uploading process is completed, while the verification process of the trading licence may take some hours (Stefan Grimm, 2020). Accordingly, fraudulent sellers with fake trading licences may be active on Restposten.de for a short period (Stefan Grimm, 2020). Restposten.de, however, runs a blacklist of sellers that can only go live after the verification process, provided by the customer support team, has been finished, limiting the likelihood of reoccurring fraud from the same entity (Stefan Grimm, 2020). Just like the seller, the buyer must prove his status as a company by

²⁴ Value-added tax is charged additionally.

uploading the trading licence, which is then double-checked with the commercial register (Stefan Grimm, 2020). The onboarding of both the seller and the buyer is an effective way to create trust into the marketplace and its participants, and it has been described by Stefan Grimm (2020) as one CSF in sustaining the market position of Restposten.de:

“If we would allow every provider with all products on the marketplace, we would be in the Wild West and then we wouldn’t have existed for 20 years, but 20 days.”

Stefan Grimm

Next to screening the sellers and buyers themselves, Restposten.de analyses the registered products by asking for bills, tracking numbers, or account statements (Stefan Grimm, 2020). This shall prove that the seller is the lawful owner of the good. However, examining the traded products is not a one-time activity since the seller can change any data points at any time as soon as the product is registered (Stefan Grimm, 2020). Consequently Restposten.de has integrated within the software a function that can distinguish between “decisive” changes and “indecisive” changes (Stefan Grimm, 2020). This shall prevent sellers from “changing a coffee cup into an iPhone” (Stefan Grimm, 2020). One of the main problems in the process of placing products on Restposten.de is that sellers may not always have access to all relevant product data as they are not the manufactures themselves (Stefan Grimm, 2020).

Another crucial function of Resposten.de is the existence of thirteen binding quality standards that are integrated in the terms and conditions of Restposten.de (Stefan Grimm, 2020). The definitions of these quality standards are relatively wide to be able to apply them on all product categories (Stefan Grimm, 2020). Every product on Restposten.de is marked with one out of the thirteen levels of quality (Restposten.de, 2020). The levels of quality range from 1A-goods (free of defects and restrictions in terms of, for example, usability) to D-quality goods (declared as scrap and/or as tested defective goods by the manufacturer, supplier or distributor) (Restposten.de, 2020). To get a better understanding on the applied definitions, the original description of 1A-goods can be found below:

1A-goods (A-goods)

Products bearing the 1A-goods label are goods which are free of defects (both in the product and in the packaging) and for which the Supplier has NO knowledge of restrictions, e.g. in usability, product quality, cut, fit or other quality features. Compliance with the applicable EU requirements, e.g. in the form of a CE declaration of conformity, must be demonstrated for 1A goods. Such products are usually traded in wholesale with a guarantee or manufacturer's guarantee. 1A-goods can be sold to other trade levels and end customers, especially consumers, without reference to defects or other quality limiting properties. The customer understands this condition of the goods as free of any restrictions.

Source: Restposten.de (2020)

Each product is labelled by the seller himself as the high amount of daily registered products limits the (physical) examination of the trustworthiness of the claimed level of quality (Stefan Grimm, 2020). Besides, that not every dealer is selling the same product permanently, but trades various kinds of product categories over time (Stefan Grimm, 2020). The implemented levels of quality were transformed into an industry-wide standard and have been taken into consideration during judicial procedures proving their robustness (Stefan Grimm, 2020). In cases of reclamations, e.g. the quality of the delivered good is not in line with the stated level of quality, Resposten.de tries to conciliate between the two conflicting parties by taking on a “mediating role” (Stefan Grimm, 2020). Resposten.de captures hereby the underlining issue and aims at coming to a solution satisfying both

parties. Stefan Grimm (2020) adds that cultural differences are often a challenge when solving conflicts on Restposten.de.

Since some sellers enforce certain sales restrictions or other limitations on their products, Restposten.de implemented the “GKS Admin Tool” serving as a digital centre for managing all orders, purchases and contracts within the platform/marketplace (Stefan Grimm, 2020, Restposten.de). This shall increase not only the usability of Restposten.de, but also the transparency of the contractual agreements and thereby prevent breaches of contract (Stefan Grimm, 2020).

To channel trust between both the seller and the buyer, a marketplace must be in control of the whole payment process (Stefan Grimm, 2020). This allows the marketplace to withhold money in case one of the both sides act not in accordance with the contractual provisions (also commonly known as “conditional payment”) (Stefan Grimm, 2020). Besides that, the market participants must trust the payment system itself, especially within B2B relations (Stefan Grimm, 2020). Hence, marketplaces must either collaborate with trustworthy, reputable payment service providers, such as Wirecard, or establish an own payment system being trusted (Stefan Grimm, 2020). Stefan Grimm (2020), however, highlights that creating an own payment system requires certain licences and high efforts. Also, the hurdle of user acceptance is high why marketing efforts are necessary to create trust into the payment service (Stefan Grimm, 2020). Only when the marketplace reaches a certain transaction volume, it may be reasonable to establish an own payment service (Stefan Grimm, 2020). Creating trust can not only be achieved by establishing a payment service, but also mediating all relevant components of trust between the seller and the buyer (Stefan Grimm, 2020). Each market participant on Restposten.de has an own user profile with relevant information providing a good foundation for assessing the other party’s integrity (Restposten.de, 2020). Stefan Grimm (2020) nevertheless also notes that “the information transmitted is just an initial assertion”, why the final assessment is the responsibility of the market participants.

Additional Findings

The comprehensive interview with Stefan Grimm revealed other important findings being relevant for the digital transaction of EOL EVBs. One important aspect is, for instance, which general requirements a marketplace needs to fulfil in order to be able to mediate an online transaction between two parties. Per Stefan Grimm (2020), a marketplace must establish an online environment that facilitates a “digital sales talk”, answering all purchase-relevant questions. Everything not being directly connected to depicting a digital sales talk is being described by Stefan Grimm (2020) as a “hygiene factor” (i.e. an add-on), but not a necessary component to enable an online transaction. To what degree these purchase-relevant questions can be answered depends, inter alia, on the level of standardization in terms of the product itself and the product definition (Stefan Grimm, 2020). The existence of a common agreement on how to define the product prosperities of a certain product category simplifies the online transaction through an intermediary.

“The transaction takes always place via the marketplace when you can clarify and convey the purchase-relevant questions on the marketplace [...] and this is especially the case when you have a degree of standardization with regards to product and the product definition [...] The more heterogeneous the offers on the marketplace are, the more difficult it is to answer the questions in their entirety at all.”

Stefan Grimm

Furthermore, Stefan Grimm (2020) highlighted the advantages and disadvantages of having a transaction-based business model versus a market participation fee. Even though Restposten.de facilitates transactions worth a three-digit million figure, the applied stiff business model does not allow to benefit from the transaction volume. However, Stefan Grimm (2020) appreciates “the planning security for not only the marketplace itself, but also the market participants.”

“The big disadvantage is that you have a relatively stable business model, but it doesn't scale up [...] it is a model that is usually almost no longer understood, because buyers in marketplaces are no longer used to paying for access to a marketplace.”

Stefan Grimm

When using a transaction-based business model, two main factors need to be considered. First, a considerable number of buyers (i.e. demand) and sellers (i.e. supply) must be actively trading on the marketplace (Stefan Grimm, 2020). Connected to that, Stefan Grimm (2020) states that being public can increase traffic. Second, the operator must enable a fully digital transaction that can be managed entirely through the marketplace (Stefan Grimm, 2020). The marketplace must be considered “...as being essential for the transaction to occur” (Stefan Grimm, 2020). The latter factor is not fully covered by Restposten.de, partly due to the market characteristics of the remaining stock market (Stefan Grimm, 2020). However, Restposten.de is taking first efforts to introduce transaction-based fees to monetize the marketplace more effectively (Stefan Grimm, 2020). This is not a simple undertaking as the market participants are used to paying a monthly fee (Stefan Grimm, 2020). Besides that, Stefan Grimm (2020) notes that an optimal pricing strategy is essential, since too high commissions fees can incentivize the market participants to trade outside the platform.

“So that means, if you want to start the transaction and you want to have exactly this scaling potential, then you must meet various factors and the most important factor is of course the traffic. So, that means that you are the one who brings together a high level of supply and demand. This is usually relatively easy to achieve in a niche area and the second is that you have structured the sales process so that it can take place fully digitally.”

Stefan Grimm

Another important aspect highlighted by Stefan Grimm (2020) is that most of the work related to the system design is connected to the seller’s side while the buyer’s processes are relatively easy and standardized. A main challenge lays in the input of data, i.e. importing and updating product data (Stefan Grimm, 2020).

“The classic transaction as such is a relatively simple technical structure. The bigger challenge is importing and updating product and offer data.”

Stefan Grimm

Moreover, Stefan Grimm (2020) illustrates another CSF that have been essential for Restposten.de’s success. First, technical ownership is considered as a decisive factor as it allows to update and maintain the system independently (Stefan Grimm, 2020). IoT (Internet of Things) technologies are developing at a fast pace, why a continuous update of the system is necessary to profit from the new opportunities connected to this rapid development (Stefan Grimm, 2020). It also allows to customize the platform on the market participants’ needs and technological set-up (Stefan Grimm, 2020).

“Anyone who hasn't made their system design yesterday has technical debt.”

Stefan Grimm

6.2 Wucato

The following findings are illustrated in accordance with the already displayed structure (see p. 45).

General Information

Wucato is a traditional online procurement marketplace for various types of goods, ranging from chemical-technical products to connection technology (Wucato, 2020). As of today, Wucato comprises of 19 categories, but is extending its assortment continuously (Goran Stanar, 2020; Wucato, 2020). Wucato is an online B2B marketplace for companies residing in Germany, but is expanding its business to other markets soon (Goran Stanar, 2020). The interview partner, Goran Stanar (2020), describes the philosophy of Wucato as being the central procurement platform on which the customer handles all its purchases.

“The philosophy is not to present to the customer a third, fourth or fifth solution and he then chooses from a variety of online solutions or procurement markets, but instead should use Wucato as his central procurement and handle his sales through it.”

Goran Stanar

Wucato was founded in 2015 and is a subsidiary of the industrial conglomerate Würth Group which consists of 84 companies in Germany and 500 companies globally (Goran Stanar, 2020). Wucato was initially founded to consolidate all Würth Group’s products in one digital catalogue (Goran Stanar, 2020). This is also still reflected in the name Wucato which is a short form for “Wuerth Catalogue” (Goran Stanar, 2020). At some point, however, the end-customer expressed his appreciation for Wucato, but stated that he has also needs for other assortments and suppliers, who are not a part of the Würth Group and thereby not included in the online catalogue (Goran Stanar, 2020). This served as starting point for Wucato to add another business area, called “marketplace”, in which external suppliers can place and sell their products to the end-customer (Goran Stanar, 2020). The Würth Group is furthermore not only engaging as a seller on Wucato, but also as a buyer to cover its own procurement needs (especially in the area of RMO - Repair, Maintenance, Operations) (Goran Stanar, 2020). Today, only 15 percent of the assortments on Wucato are coming from the Würth Group. (Goran Stanar, 2020).

“At some point the customer came to say: ‘What you depict on Wucato is interesting, but I also need other assortments and suppliers, of which some are not from the Würth Group.’ That’s how we decided to implement the additional business area “marketplace” and to integrate external suppliers on Wucato.”

Goran Stanar

Wucato has two revenue sources which can be assigned to the business area “shop” and the business area “marketplace”, respectively. First, Wucato earns a margin on every sold product from the Würth Group (Goran Stanar, 2020). Second, Wucato earns a commission fee on every transaction made by external suppliers (Goran Stanar, 2020). The participation is free of charge, for both the demand and the supplier side (Goran Stanar, 2020). All logistics are handled by the vendor, as Wucato does not offer any logistical services (Goran Stanar, 2020). In general, Wucato does not expose any key performance indicators, but Goran Stanar (2020) highlighted that the marketplace reaches new monthly records since September 2020.

Inter-Organizational Information Needs

Per Goran Stanar (2020), the information needs of each market participant are very individually: “The relevant information is depending on who sits in front of the computer and purchases the items”. However, Wucato has established certain minimum requirements regarding the product quality and product description which will be further outlined in the following paragraph.

Mediation of Inter-Organizational Information Needs

Both the Würth Group and Wucato consider quality as one of their core values (Goran Stanar, 2020). Wucato guarantees a high-quality standard across all product categories by, inter alia, pursuing an extensive onboarding process with the suppliers (Goran Stanar, 2020). Hereby, Wucato examines the suppliers by undergoing vis-à-vis visits of the production plants and spot checks (Goran Stanar, 2020). Besides that, Wucato considers widely-accepted certifications, e.g. ISO, as a mean to assess the suppliers’ integrity (Goran Stanar, 2020). Goran Stanar (2020) states that suppliers need to deliver a certain value for the buyers to be eligible for Wucato.

“We would not want to bring every supplier to Wucato at any price.”

Goran Stanar

Wucato also undergoes an extensive onboarding process when it comes to the demand side. This includes visiting the buyer itself and pursuing a credit assessment (Goran Stanar, 2020). Wucato guarantees all sellers that no resellers or outlets are participating on the marketplace (Goran Stanar, 2020). Next to the onboarding, Wucato pursues certain needs and analyses the buyers to see which specific procurement needs are present and which products are not yet part of Wucato (Goran Stanar, 2020). This helps to grow Wucato effectively, as every added product on the marketplace is deriving from a specific procurement need (Goran Stanar, 2020).

Furthermore, Wucato implemented a standardized definition of the product prosperities for each product category (Wucato, 2020). All suppliers must upload certain product information in line with the default standard (Wucato, 2020). For instance, suppliers selling chairs must always provide category-specific data points, such as seat depth, seat height and seat width. The vendors must also ensure that they can provide this information, as missing out on some data points can lead to an upload failure (Goran Stanar, 2020). Goran Stanar (2020) further notices that “the customer buys via the product description”, highlighting the importance of a detailed product description.

“There are certain minimum requirements with regards to quality of product data and these must be fulfilled by each supplier for each category [...] Depending on the product, there are different filter characteristics or properties that a product does not have to have, but which must be part of the description. A product is only uploaded onto the platform when it meets these criteria. And the supplier should ensure that he can also provide this data.”

Goran Stanar

Also, Wucato rewards an extensive product description by illustrating the product as one of the first search results (Goran Stanar, 2020). Wucato does not prefer products of the Würth Group, instead it bases its search algorithm purely on the quality and quantity of product data (Goran Stanar, 2020). This encourages sellers to put the necessary time into delivering a detailed product description and thereby increase the likelihood of successful, smooth transactions (Goran Stanar, 2020).

“And the more precise the information that the product or the product description has, the higher the probability that this article will then also be the first or relatively high in the search results.”

Goran Stanar

Besides that, Wucato offers a comprehensive customer support to both suppliers and buyers that shall help to answer all relevant questions around a transaction (Goran Stanar, 2020). Goran Stanar (2020) points out that the service unit is purely independent and part of the headquarters in Stuttgart. Wucato also runs a field service that supports customers locally in solving various kinds of issues. Goran Stanar (2020) states that the “customer is not being left alone” at any point.

Additional Findings

In contrast to Restposten.de, Wucato bases most of its system design on the buyers’ needs, for instance, preferred billing and ordering methods or favored log-in processes (Goran Stanar, 2020). This is partly due to the heritage of Wucato since the respective owner, the Würth Group, has a strong customer focus since day one (Goran Stanar, 2020). Furthermore, Goran Stanar (2020) highlights the high degree of customization on Wucato allowing buyers to adjust the marketplace in accordance with their requirements, e.g. customizable number of user accounts.

Besides that, the owner and partnership structure of Wucato is identified as one CSF (Goran Stanar, 2020). Wucato was not only able to use resources of the Würth Group, such as the IT department, but also gain advantages from the distinctive reputation of the Würth Group which helped to create initial trust into the business as “marketplace” (Goran Stanar, 2020). Despite the ownership structure, Wucato designed the marketplace completely neutral to ensure a fair competition among all vendors (Goran Stanar, 2020). The high share of external suppliers on Wucato proves the status of Wucato as being a neutral intermediary.

6.3 AllSurplus

The following findings are illustrated in accordance with the already displayed structure (see p. 45). Please note that all collected data is from the website of AllSurplus and Liquidity Services (which is the operator of AllSurplus) including annual reports.

General Information

AllSurplus is an online marketplace for business surplus, covering 11 categories and 65 subcategories that range from heavy equipment to industrial machinery (AllSurplus, 2020). The marketplace AllSurplus is part of Liquidity Services which “manages, values, and sells surplus across the globe in a broad range of asset categories and conditions” (Liquidity Services, 2020). Liquidity Services was founded in 1999 and is a publically traded company since 2006. Several other online marketplaces are being operated by Liquidity Services, such as GovDeals (government surplus), Secondipity (returns and overstock items) or Liquidity.com (consumer product goods and commercial surplus inventory) (Liquidity Services, 2020). In 2019, more than 600.000 transactions have been complemented by Liquidity Services (Annual Report 2019, Liquidity Services). The American company serves more than 3.6 million registered buyers and around 14.000 sellers across the globe (Annual Report 2019, Liquidity Services). Besides its marketplaces, Liquidity Services offers a variety of services on the

selling side that mainly focus on a better and faster capitalization of surplus goods (Liquidity Services, 2020).

AllSurplus is the latest marketplace of Liquidity Services and aims at consolidating all marketplaces and asset classes in one master platform (Annual Report 2019, Liquidity Services). Several types of buyers are active on AllSurplus, ranging from online and offline retailers to recyclers (Annual Report 2019, Liquidity Services). The sellers originate from a broad base of different industries, such as automotive manufacturing, consumer goods, government, retail or transportation (Annual Report 2019, Liquidity Services). All goods being registered on AllSurplus are sold via four distinctive sales types (AllSurplus, 2020):

- (1) Online auction: where bidding starts at a fixed amount and increases by a minimum bid increment (or higher) by different bidders, until the auction end time is reached.
- (2) Make an offer: Buyers offer a purchase price without knowing the selling price or what other bidders are offering. The seller assesses offers and must either reject them or accepts one before the auction end.
- (3) Buy now: When a buyer agrees to pay the published fixed amount, he is awarded the lot.
- (4) Sealed bid: Buyer submits a bid without knowing the amount of any other bids submitted. At the end of the auction, bids are unsealed and the winning bidder is confirmed by the seller.

Online auctions are by far the most popular sales type chosen by sellers (AllSurplus, 2020). Some auctions, however, may be restricted to buyers and sellers that hold certain licenses and certifications (AllSurplus, 2020). Sellers can set up a reserve price as the lowest price the seller is willing to accept (AllSurplus, 2020). If the listing ends without any bids meeting the reserve price, the seller is not required to sell the item (AllSurplus, 2020). The buyer is not shown the reserve price (AllSurplus, 2020). The highest bidder receives a “buyer’s certificate” and must pay the amount within a certain time and remove the item(s) within a certain number of days (AllSurplus, 2020). Furthermore, AllSurplus implemented several features related to online auctioning, such as the “auto-bid” feature automatically placing bids (when the previous bid has been outbid) up to a self-imposed limit. AllSurplus also created a system that automatically sets and adjusts the bid increment for each auction. The increments are based on the starting bid, current bid or reserve price (AllSurplus, 2020). As the current bid increases, the system will adjust the bid increments accordingly. All auctions are time-bounded and in some cases embedded in “events” (AllSurplus, 2020).

The marketplace charges “an industry standard” buyer’s premium fee on every transaction being disclosed in each listing (Annual Report 2019, Liquidity Services). The premiums, however, vary across products and categories (AllSurplus, 2020). Liquidity Service may also act as an agent for the seller and thereby earn a commission from the seller as well (Annual Report 2019, Liquidity Services). Another revenue source comes from the services being offered to each market participant (Annual Report 2019, Liquidity Services). The whole Liquidity Services group earned a total revenue of \$227 million and a gross profit of \$113 million in 2019 (Annual Report 2019, Liquidity Services).

Inter-Organizational Information Needs

As it was not possible to conduct an interview with the operator of AllSurplus, the inter-organizational need between the buyer and seller engaging on AllSurplus cannot be collected. However, it can be

assumed that the information needs are alike on Restposten.de since the traded products are similar across both marketplaces, namely surplus and remaining stock.

Mediation of Inter-Organizational Information Needs

AllSurplus mediates the transaction on the market for surplus goods via several measures. First and most importantly, AllSurplus has defined a standardized framework around the transactions and offers. Each listing includes most of the following elements: (i) the sales type and all its relevant components, e.g. bid increment for online auctions; (ii) the transaction details including, inter alia, the seller's terms and conditions and the buyer's premium; (iii) the product description; (iv) a transparent question and answers (Q&A) section between the seller and interested buyers; (v) the seller information; (vi) whether inspection is possible or not; (vii) the desired payment method; (viii) how the removal process is handled; special instructions; (ix) the bid history; and (x) additional information. Moreover, AllSurplus reviews each listing to "ensure they're optimized to attract buyers" (AllSurplus, 2020). Hence, it can be assumed that AllSurplus makes sure that sellers provide a minimum amount of information needed by the buyer. AllSurplus does not pursue any quality evaluation or quality classification on the registered products why the final assessment of the product quality is subject to seller (AllSurplus, 2020). The seller information includes, inter alia, the contact details of the vendor giving the buyer the opportunity to engage with the seller and receive answers on open questions (AllSurplus, 2020). Also, most buyers do not ship, pack or palletize the items why AllSurplus created a logistics service that connect buyers with third party shipping companies that "have experience and expertise in handling the wide range of product and equipment sold on our marketplaces." (AllSurplus, 2020).

The implemented feature reducing uncertainties specifically on the seller's side is the opportunity for the seller to customize the terms and conditions of the transaction, for instance, regarding the payment and removal process (AllSurplus, 2020). Most sellers demand that the "payment in full is due not later than 5 business days from the time and date of the close of the action" and that "all assets must be removed within ten business days from the time and date of the close of the action" (AllSurplus, 2020). Also, buyers can determine whether they want to be paid directly or through the payment system provided by AllSurplus (AllSurplus, 2020). Furthermore, the marketplace sanctions buyers who fail to pay within the agreed upon time by locking the accounts for default and charging a fee equal to 40 percent of the winning bid amount (AllSurplus, 2020).. AllSurplus also hands out a detailed report after every successful sale that helps to "analyze recovery achieved, number of bids and buyers, and any insights gained (AllSurplus, 2020). This online reporting tool provides you data at your fingertips for current and past sales" (AllSurplus, 2020).

7 Data analysis – Research Phase 2

The data analysis is divided into two sections. The first section focuses on illustrating and comparing the identified buyer-seller uncertainties on each marketplace (research question a.), whereas the second section focuses on the theorizing how the observed marketplaces reduce or avoid the identified buyer-seller uncertainties (research question b.).

7.1 Identified Buyer-Seller Uncertainties

In the following, the buyer-seller uncertainties on each marketplace are analysed and conceptualized by applying the principal-agent theory (see *Principal-Agent Theory*, p.45). Please note that the agency problems of adverse selection and moral hazard emerge in most market but to a different degree. Therefore, the following section focuses on highlighting to what extent these agency problems prevent successful transactions.

7.1.1 Restposten.de

At first, the principal-agent theory is applied on the market for remaining stock to understand to what degree not only hidden characteristics can lead to adverse selection, but also hidden action can cause moral hazard. When assuming the seller acts as the agent and the buyer takes on the role as the principle, an important information asymmetry regarding the remaining stock's quality can be observed (hidden characteristics). In most cases, the buyer of remaining stock sees the transaction "... primarily as a business opportunity" (Stefan Grimm, 2020). A remaining stock, however, can only be classified as a "business opportunity", if a certain degree of quality is being met guaranteeing that the end-consumer has a significant willingness-to-pay. Stefan Grimm (2020) clarifies that the quality is "the most decisive information for buyers" engaging the market for remaining stock. Without any signalling efforts from the seller, the buyer is likely to withdraw from the transaction (adverse selection).

When assuming the seller acts as the principal and the buyer takes over the role as the agent, an information asymmetry regarding the buyer's action can be observed (hidden action). Most sellers of remaining stock want to know "... what is going to happen with their products..." in terms of, for example, the form of distribution and the sales region (Stefan Grimm, 2020). This is especially the case when the seller is the manufacturer himself (Stefan Grimm, 2020). Most manufacturers want to avoid an oversupply of their products to keep the prices on a certain level. That's why large brands, such as Adidas or Hugo Boss, enforce certain distribution restrictions on their retailers that forbid the further sale of remaining stock in specific regions (Stefan Grimm, 2020). Without having the opportunity to monitor and control the buyer's action, the seller is likely to suspend the transaction (moral hazard).

Next to the displayed agency problems of hidden characteristics and hidden action, another important buyer-seller uncertainty can be observed on Restposten.de. The buyer needs to have information about the seller's history to be able to assess the seller's integrity and vice versa. Most buyers and sellers being active on the market of remaining stock have only one-time, short-term business relations why they cannot rely on past, common relationships (Stefan Grimm, 2020). Hence, mechanisms need to be in place that create mutual trust between both parties. This is especially of relevance when bearing in mind the time lag between payment and delivery in online environments as Stefan Grimm (2020) notes: "The problem is that one does not trust the other. The seller does not trust the buyer that in the

end he will pay when he has received the goods. The buyer does not trust the seller that he is actually receiving the goods after a payment.”

7.1.2 Wucato

Alike the previous case, the principal-agent theory is applied to understand to what degree the agency problems of hidden characteristics (may lead to adverse selection) and hidden action (may lead to moral hazard) are relevant for the markets in which Wucato is active. When assuming the buyer acts as the principal and the seller takes on the role as the agent, a crucial information asymmetry regarding the goods' quality can be observed (hidden characteristics). Even though Wucato comprises diverse types of goods, most assortments need to meet one high-quality standard as they are either processed further or represent a tool/machinery to run, for example, a craft business (Goran Stanar, 2020). Hence, these goods need to be durable and reliable as well as meet the same quality requirements over and over. Without any signalling effort of the seller regarding the product's quality, the seller is likely to withdraw from the transaction (adverse selection).

When assuming the buyer acts as the agent and the seller takes on the role as the principal, an important information asymmetry regarding the buyer's actions can be observed (hidden actions). Manufacturers engaging as a seller on Wucato do not want their products to be "... resold somewhere else, e.g. in outlets or similar." (Goran Stanar, 2020). Without being able to monitor or trust the buyer's actions, the sellers are likely to withdraw from the transaction (moral hazard). Most vendors of high-quality goods want long-term business relationships being based on mutual trust and reliability.

7.1.3 AllSurplus

In accordance with the previous cases, the principal-agent theory is applied to understand to what degree the agency problems of hidden characteristics (may lead to adverse selection) and hidden action (may lead to moral hazard) are relevant for the product markets in which AllSurplus engages. When assuming the seller acts as the agent and the buyer takes on the role as the principle, an important information asymmetry regarding the surplus goods' quality can be observed (hidden characteristics). The buyers being active on the market for surplus goods see a business opportunity in buying items possessing a remaining value, either in terms of their remaining functionality or their components (from a commodity perspective). When the item of interest does not possess its core functionalities, the buyer (if it's not a recycling company) is likely to withdraw from the transaction. Thus, the seller must signal the good's quality in a trustworthy way. However, the degree to which hidden characteristics are relevant varies across product categories and buyers as AllSurplus consolidates various types of products in any type of condition.

When assuming the buyer acts as the agent and the seller takes on the role as the principle, an information asymmetry regarding the buyer's action can be observed. Some sellers may have enforced distribution restrictions on their items why the seller must obtain a certain level of control over the buyer's actions. Whenever the seller cannot monitor, control or trust the buyer's actions, the seller is likely to suspend the transaction. The degree to which hidden action is relevant varies due to the heterogeneous product landscape and market participants. Some sellers may have enforced certain restrictions on their items, some may have not.

Next to the displayed agency problems of adverse selection and moral hazard, AllSurplus is also expected to suffer from a mutual distrust between the seller and the buyer. Alike on Restposten.de, the

buyers and sellers vary from entrepreneurs and small businesses to larger corporations. The market is most likely to be characterized by one-time business relationships rather than traditional, long-term supplier-purchaser relationships. Without components that mediate trust between the both trading parties or other mechanisms that prevent fraudulent behavior, the transaction is likely to fail.

7.1.4 Cross-case Conclusions

The collected data revealed that the agency problems of adverse selection are of high relevance in all observed markets. The market of both remaining stock and business surplus goods can be described as “markets for lemons” and are thereby highly dependent on mechanisms that signal the goods’ and market participants’ quality (Akerlof, 1979). Additionally, both markets are characterized by another buyer-seller uncertainty which can be described as a mutual distrust between the buyer and seller. Most market participants have only one-time business relationships and are thereby incapable of drawing trust from past interactions. In contrast, Wucato engages in a market that is characterized by long-term business relationships and mid-sized companies who rely on their integrity and reliability, whereas the market participants on Restposten.de and AllSurplus are often unknown, small businesses or even single entrepreneurs. Hence, the necessity of creating mutual trust is considerably higher on Restposten.de and AllSurplus than on Wucato.

Even though the agency problems of adverse selection and moral hazard can be observed in most markets, the data revealed that the buyer-seller uncertainties on the observed markets match in their nature with the inter-organizational challenges between the automotive OEM and second life manufacturer. This is especially the case for Restposten.de and AllSurplus, who are active in markets for used goods in which the agency problem of adverse selection is highly relevant (i.e. “market for lemons”). The more similar the buyer-seller uncertainties on already existing marketplaces are to the buyer-seller uncertainties between the automotive OEM and second life manufacturer, the more relevant are the identified areas of activity (that reduce or prevent buyer-seller uncertainties) for the market of EOL EVBs.

7.2 Areas of Activity that Avoid or Reduce Identified Buyer-Seller Uncertainties

As depicted in the empirical findings, the observed online marketplaces implemented several measures to mitigate or prevent the identified buyer-seller uncertainties. Indeed, these measures represent core processes and CSFs of a MM and can be divided into six key areas of activity (i.e. themes):

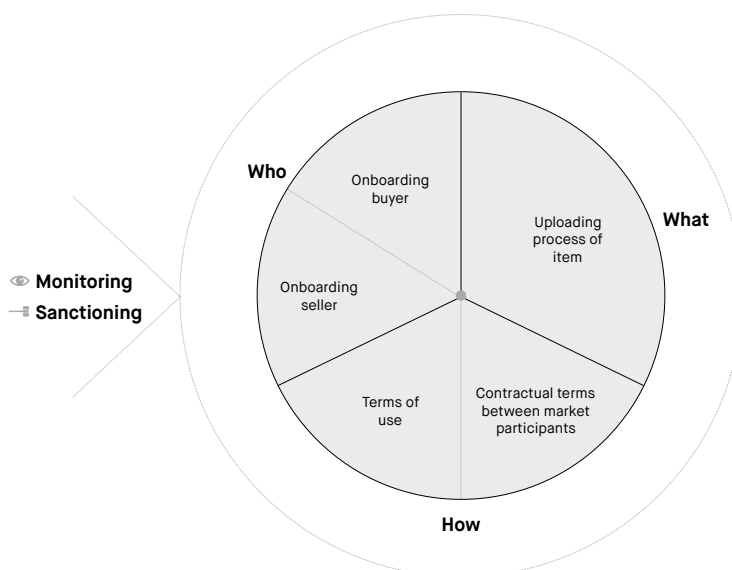
- (1) the implementation and maintenance of market regulations;
- (2) the definition of a standard for evaluating and classifying the product quality
- (3) the definition of a standard for specifying the traded product(s);
- (4) the definition of a standard for specifying each type of market participant;
- (5) the provision of a comprehensive customer support;
- (6) the provision of a trustworthy, secure payment system

In the following, each area of activity is explained and discussed.

7.2.1 Market Regulations

The regulation of the marketplace is being defined as all measures that control and manage (i) *who* participates on the market place; (ii) *what* is being traded; (iii) and *how* the market participants interact with each other (see Illustration 11). The regulation of a marketplace is identified as a key activity, as it enables an efficient and effective matchmaking between buyers and sellers that is superior to traditional sales channels including high search costs. It provides, for instance, the opportunity to introduce certain market entry barriers that can go further than pursuing double checks with the commercial register, alike in Resposten.de's case. For instance, buyers can also be screened upon their creditworthiness (e.g. income statements) and integrity (e.g. through external certifications) and thereby draw conclusions on whether the buyer is likely to act in line with contractual agreements. This provides the seller with a certain degree of security that the buyer can pay as well as acts in line with the, for instance, distribution restrictions. Such market regulations decrease therefore the likelihood of hidden actions leading to moral hazard.

Illustration 11: Determinants of Market Regulation



Source: own illustration

On the other hand, the sellers can be screened upon the quality of their goods by pursuing spot checks or visits of the production plants (Gonar Stanar, 2020). MMs can create hereby certain filter characteristics that go in line with the buyers' procurement needs with regards to the sellers, such as minimum quality standards or production volumes. Consequently, a MM takes over the due diligence process of the buyer and thereby reduces not only the transaction costs for the buyer but also the likelihood of adverse selection.

A marketplace must guarantee at any time that all market participants match the introduced filters and act in line with the terms of use. Hence, a MM must monitor and control all activities on the platform permanently and eventually sanction inadequate behavior (see Illustration 11). In most cases, the terms of use serve as a mean for the MM to exclude any obligation towards the seller or the buyer but solely defines the marketplace as an intermediary that connects to trading parties. Additionally, a MM can design the contractual terms between the buyer and seller and thereby reduce uncertainties on both sides by default. These terms and conditions may also be customizable alike on the marketplace AllSurplus. Giving the vendors the possibility to determine and customize the contractual terms of the transaction in a transparent way provides the seller with the necessary legal safeguards to engage with an unknown buyer.

7.2.2 Standard for Evaluating and Classifying Product Quality

The definition of a standard for evaluating and classifying the quality is of great importance in decreasing the likelihood of adverse selection, especially in markets for lemons. This goes not only in line with the empirical findings but also with Balocco et al. (2010, p. 1126) who defines a crucial CSF for an orthodox marketplace for second-hand goods and overstock as the necessity to "guarantee the 'credibility' of the sellers and to certify the quality of the products through different mechanisms." A MM can either define own quality classification and evaluation frameworks, apply external frameworks, such as certifications, or follow legal guidelines that may be present in some cases. These quality standards can be either imposed across product categories (low effort) or for each product category individually (high effort). Which approach is suitable depends on the degree of heterogeneity/homogeneity across the product categories that are being traded on the marketplace (see Illustration 12). The main goal, however, is always to provide a high informative value for the buyer. For instance, it is possible to apply the same quality evaluation and classification framework for used cars and for used trucks (high informative value), but not for used cars and used smartphones (low informative value). Especially in horizontal marketplaces (usually heterogeneous product categories), the quality needs to be evaluated and eventually classified individually for each product category as each product category has different quality characteristics. A chair's quality characteristics, for example, are the used materials and workmanship, whereas a computer's quality characteristics are, in most cases, the performance data. In contrast, vertical marketplaces (usually only a few homogenous product categories) can apply a quality evaluation and classification framework across all product categories.

Illustration 12 : General Quality Evaluation/Classification & Product Matrix

Product categories	Heterogenous	High informative value	Low informative value
	Homogenous	High informative value	High to moderate informative value
		Individually, for each product category (high effort)	Across all product categories (low effort)

Standard for evaluating and classifying product quality

Source: own illustration

In general, the narrower or the more homogenous the product landscape is, the easier it gets to define and integrate quality standards and thereby enable a smooth online transaction (Stefan, Grimm, 2020). The main reasons why Restposten.de cannot display the transaction fully digital is because of the heterogeneity of products as well as the quality classification framework which is imposed across all product categories and thereby possesses only a relatively low informative value (see Illustration 12).

Especially markets for used goods need, next to a quality evaluation standard, a quality classification standard, as the same product may have different quality levels. For instance, most online platforms for second-hand clothes have established an own framework on how to categorize the different levels of quality of clothes (e.g. ranging from never worn to fair condition).

7.2.3 Standard for Specifying Product(s)

To expose hidden characteristics, a MM must specify the product prosperities as such that the buyer receives all necessary information to make a purchase decision. When buying a t-shirt, the customer wants to know, inter alia, the size, the material, and the brand. What specifications are relevant depends on the product category and the customers’ information needs. Most product segments have industry standards and/or legal standards that can be adapted (e.g. nutrition table). Most importantly, the specifications must be guided by the buyers’ information needs as well as standardized for each product category to enable comparisons within the same product category. Such standardized specifications display all relevant product prosperities and reveal hidden characteristics that might lead to adverse selection. Hence online marketplaces provide the information architecture that mediates the exchange of information through the input and output of data. Also, a MM must ensure that the seller has access to all relevant data which can be specifically challenging in markets for second-hand goods or remaining stock (Stefan Grimm, 2020). Alike Wucato, a MM can also reward market participants that have product descriptions that go further than the minimum requirement by, for instance, creating a better visibility for sellers on the marketplaces

Alike to the area of activity of defining a standard for evaluating and classifying the product quality, the traded products can be specified by applying a specification standard across product categories or for each product category individually (see Illustration 13. Which way of standardizing is the most

suitable depends, again, on the degree of homogeneity/heterogeneity of the traded product categories. The more homogenous the traded product categories, the easier it is to apply a specification standard across all product categories while still mediating a high to moderate informative value (see Illustration 13).

Illustration 13: General Product Specification & Product Matrix

Product categories	Heterogenous	High informative value	Low informative value
	Homogenous	High informative value	High to moderate informative value
		Individually, for each product category (high effort)	Across all product categories (low effort)
Standard for specifying product(s)			

Source: own illustration

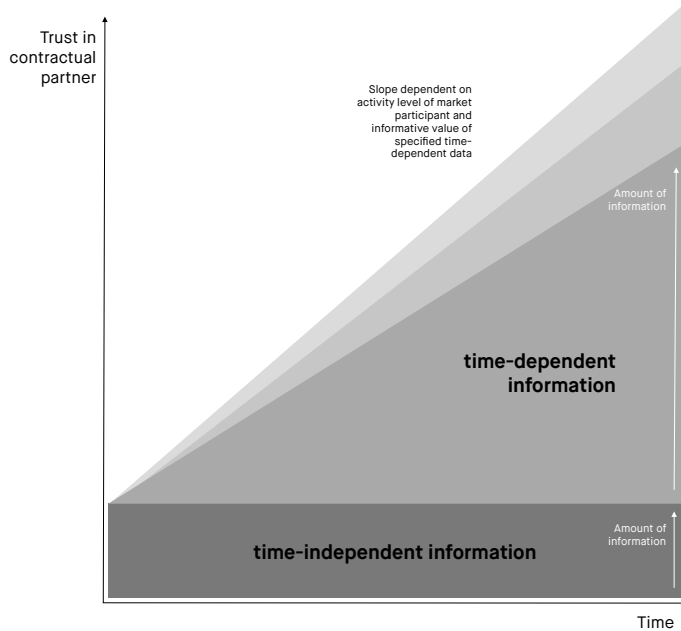
This area of activity touches upon an important expression, namely “PIM”, mentioned by Restposten.de CEO and founder Stefan Grimm during the interview. The so-called product information management (PIM) is “...the process of centrally managing product-related data to sell goods through one or more distribution channels (Abraham, 2014). Per Abraham (2014), a PIM system should include four main core processes and features: collect; consolidate; enrich; distribute (see Illustration 20, Appendix). Such frameworks can help to specify the products in an effective way, meaning all relevant information is transmitted to the potential buyer. PIM systems represent some of the core components of today’s ecommerce platforms.

7.2.4 Standard for Specifying each Type of Market Participant

The need for specifying certain prosperities does not only account for each product (sub)category, it is also relevant for each type of market participant. The buyer does not only want to know what he buys, but also from whom (Stefan Grimm, 2020). Consequently, a MM should define specifications for both the seller and the buyer. This should be guided by the information needs of the buyer about the seller, and vice versa. Most marketplaces display information about the company in user profiles that include all relevant data points, such as contact details, address, website, or certifications. The displayed data can be divided into time-bounded data (e.g. number of successful transactions on the platform) and time-independent data (e.g. company name) (see Illustration 14). Over time, time-bounded data represent the main indicators for assessing the market participant’s integrity and trustworthiness as it reflects the past behavior on the platform. The more active a market participant is the higher the degree of potential trust into the market participant depending on the informative value of the specified data. One informative indicator might be the number of successful transactions. This area of activity touches also upon the fully transparent Q&A section by AllSurplus which can be categorized as time-dependent data. In contrast, time-independent data is considered to create trust in the contractual partner only to a certain degree (see illustration 14). One analogy that suits here is: What

matters is what you do and not what you say. Managing the data related to the market participants' prosperities follows the same processes as in PIM systems. After all, defining a standard for specifying the market participants' prosperities does primarily mediate mutual trust between the seller and the buyer and therefore reduces the likelihood of moral hazard.

Illustration 14: Time-Dependent Vs. Time-Independent Market Participant Specification

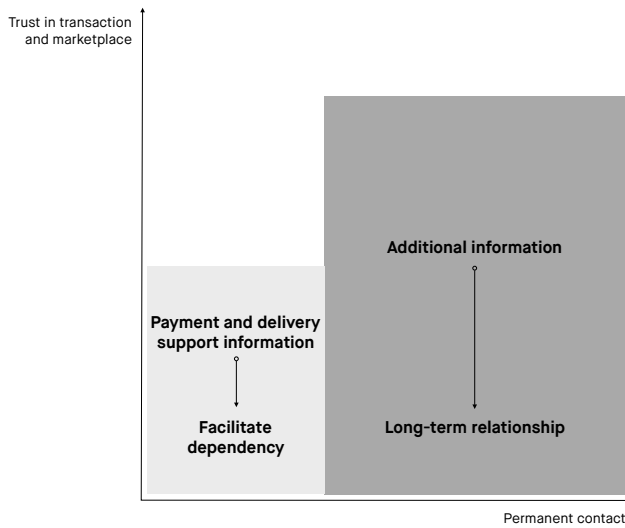


Source: own illustration

7.2.5 Customer Support

A comprehensive customer support can be considered as an essential part in mediating transactions successfully. In some cases, the buyer needs additional information regarding certain products or the payment and delivery process to make a final purchase decision. Supporting the customer in handling transaction helps to build long-term customer relationships and to facilitate the dependency on the marketplace (see Illustration 15). A MM who permanently keeps in touch with its customers can better understand the specific needs of each side and thereby conduct a better match-making between the two trade partners. This is especially the case when additional information is needed in contrast to standardized payment and delivery processes. Moreover, a well-functioning customer support can be the catalyst of trust in not only the marketplace itself but also in the transaction. A comprehensive customer support can potentially reduce any type of information asymmetries and thereby, inter alia, prevent moral hazard and adverse selection. In today's times, a MM can use different online channels to connect with the market participants, however, Goran Stanar (2020) points out the customer-centric approach of Wucato that includes face-to-face visits. Therefore, a MM should use various channels to facilitate the dependency and create long-term relationships.

Illustration 15: Customer Support Value Creation



Source: own illustration

7.2.6 Secure Payment System

The next and last area of activity, namely a secure payment system, helps to reduce both the likelihood of adverse selection as well as moral hazard. Moreover, it can bypass the mutual distrust between the buyer and the seller that has been observed on the market for remaining stock. Hereby, a MM takes over the whole payment process and only pays out money when the contractual agreements have been fulfilled by both parties (see illustration 16). For instance, when the quality standards do not meet the agreed upon standard or the goods have not been delivered, the money is not paid out. Integrating such conditional payment mechanisms prevents fraudsters from engaging on the marketplace and replaces, inter alia, the need for conducting time-intensive credit assessments. However, a MM must create trust into the payment systems by integrating reputable payment service provider that is communicated throughout the payment process. Establishing an own payment system, as Stefan Grimm (202) points out, is connected to high efforts and only worth when mediating high transaction volumes.

Illustration 16: Conditional Payment Mechanism



Source: own illustration

7.2.7 Conclusion

All illustrated measures either mitigate the likelihood of adverse selection or moral hazard, or both (see illustration 17). The most crucial measures are the regulation of the marketplace, the provision of a customer support and the implementation of a secure payment system, targeting both the agency problem of adverse selection and moral hazard. Every introduced area of activity is generalized and provides thereby an added value for any intermediary or marketplace that faces the agency problems of adverse selection and moral hazard. Even though the areas of activity are not unknown they have never been put in the context of reducing the displayed buyer-seller uncertainties. Indeed, the areas of activity can be defined as the minimum requirements a MM must met to enable a successful transaction (i.e. matching services), while other additional features or activities are more related to supporting services (Jullien, 2012).

Illustration 17: Crucial Measures Matrix to Prevent Adverse Selection or Moral Hazard

	Market Regulations	Standard for Evaluating and Classifying Product Quality	Standard for Specifying Product(s)	Standard for Specifying Each Type of Market Participant	Customer Support	Secure Payment System
Hidden characteristics leading to adverse selection	X	X	X		X	X
Hidden action leading to moral hazard	X			X	X	X

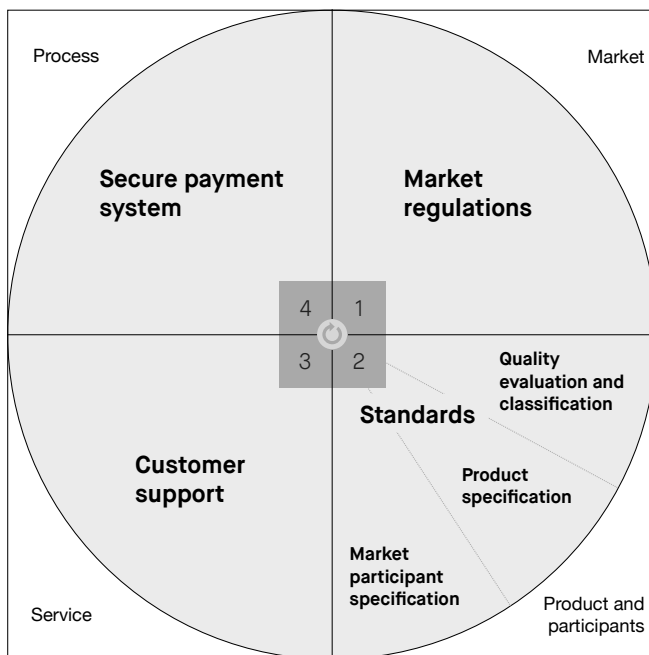
Source: own illustration

The displayed areas of activity can be summarized and conceptualized in one holistic model which is labeled as the “Four-Factor-Model” (see Illustration 18). As already indicated, three of the six areas of activity are related to defining and implementing standards: The definition of standard for (i) evaluating and classifying the product quality, (ii) specifying the product(s) and (iii) specifying the market participants. Hence, these three areas of activity are summarized into one factor – “Standards”. The area of activity “Standards” relates to one CSF that has been identified by Johnson (2013), namely “Rich Content”: The information and other content that makes purchasing the vendor’s products easier. Besides, each factor is related to one aspect of the marketplace, respectively. For instance, the customer support relates to the service of the platform, whereas the secure payment system refers to a process on the marketplace.

Most importantly, however, the factors are following a certain chronological order which relates to the start and the end of a transaction. At first, buyers and sellers need to be matched in accordance with their needs. This is related to the market regulations defining who is allowed on the platform, what are the traded products, and how (i.e. under what guidelines) do the market participants interact with each other. This step can also be considered as “setting the scene” or “bringing two people to one table”. Secondly, the contractual object (i.e. the traded product) and the contracting parties (i.e. seller and

buyer) are specified in accordance with the information needs of each party. In other words: The contractual object is enriched with data as well as the contractual parties. Also, an independent quality evaluation and classification standards defines the quality of the contractual object. Speaking in the corresponding analogy, the two aforementioned people are introduced to each other and the reasons for meeting (i.e. contractual object) are outlined. Thirdly, all open questions are answered from either the seller or the buyer by offering a third reference point, namely the MM. Lastly, the transaction of the contractual object is secured by an independent payment provider that only completes the transaction when both parties act in line with contractual agreements.

Illustration 18: Four-Factor-Model



Source: own illustration

8 Empirical Findings – Research Phase 3

The following empirical findings display the interview with Lennart Paul – an expert on B2B marketplaces. Please note that the collected data is not represent the primarily source to answer to what degree the identified areas of activity can be applied on the market for EOL EVBs (research question c.) but is rather considered as a complementary source to strengthen the robustness of the study.

8.1 Lennart Paul – Expert on Business-to-Business Marketplaces

General Information

Per Lennart Paul (2020), an online marketplace can set up quality standards in two ways, either one develops own criteria or one adapts already existing quality standards, such as certifications. However, Lennart Paul (2020) highlights that designing and implementing own quality standards is connected to high efforts, as the MM needs to have the market power to push through these standards. Also, a MM can determine quality standards and criteria for not only the product quality, but also the market participants. Moreover, these standards need to be fulfilled at any time why the MM must monitor the market participants' activities on the platform and eventually sanction misbehavior.

Additionally, the more homogenous the procurement process across different product categories, the easier it is to build horizontal marketplaces. For instance, the procurement process of pen does not differentiate from a procurement process of lightbulb. Per Lennart Paul the central challenge for online marketplaces is the already described “chicken-and-egg-problem.” A platform can only grow in terms of revenue and transactions, if enough demand and supply exists. Also, a MM must ensure that both the buying and the selling process can be processed in a convenient way. Furthermore, Lennart Paul (2020) highlights that a marketplace needs a clear value proposition that can be delivered effectively.

„You must make it easy for the buyer to buy and just as easy for the seller to sell.”

Lennart Paul

Another important aspect to consider when operating an online marketplace is to stay neutral. Hence, if either a buyer or a seller wants to establish an online marketplace, it must be ensured and communicated that the ownership model won't affect the neutrality.

“A platform only makes sense, if it is open to everyone within the target group from the start [...]. It can be incredibly difficult to build a platform, if you are not neutral [...]. Your big competitor will only sell on your platform under very complicated circumstances.”

Lennart Paul

Battery-Related Information

Besides that, Lennart Paul (2020) notes that the involvement of an intermediary within a transaction between two parties decreases the data security since an additional stakeholder gets access to the transaction details.

“Whenever you triangulate such a relationship as you do in the platform business, an additional player comes into play. So, the data is more vulnerable, because more stakeholders access the data.”

Lennart Paul (2020) sees no limits in depicting online transactions of complex goods, including batteries. What matters most is, that an online marketplace illustrates the data points being relevant for buyers in order to make a purchase decision. Also, one needs to analyse, whether the buyer receives a value from looking in person at the object of interest.

“If you can sell used construction equipment globally, you can also sell batteries [...] A battery has 200 data points, 15 of which are relevant for the buyer, which must then be shown.”

Lennart Paul

Moreover, Lennart Paul (2020) emphasizes an important analogy in the context of automotive OEMs being reluctant to share data of the BMS: “Nobody can sell a house without telling how it looks, where it is located, and how the interiors look like.” Lennart Paul (2020) adds that whether to share data or not is a decision of general principle.

9 Data Analysis and Discussion – Research Phase 3

The following paragraph focuses on analyzing to what extent the displayed areas of activity can be transferred on the market for EOL EVBs and thereby reduce or prevent the agency problems of adverse selection and moral hazard (research question c.). This is pursued by drawing linkages between the empirical findings, theoretical framework and the literature review. After all, the great potentials of two-sided platforms are most likely to unfold in a marketplace for EOL EVBs.

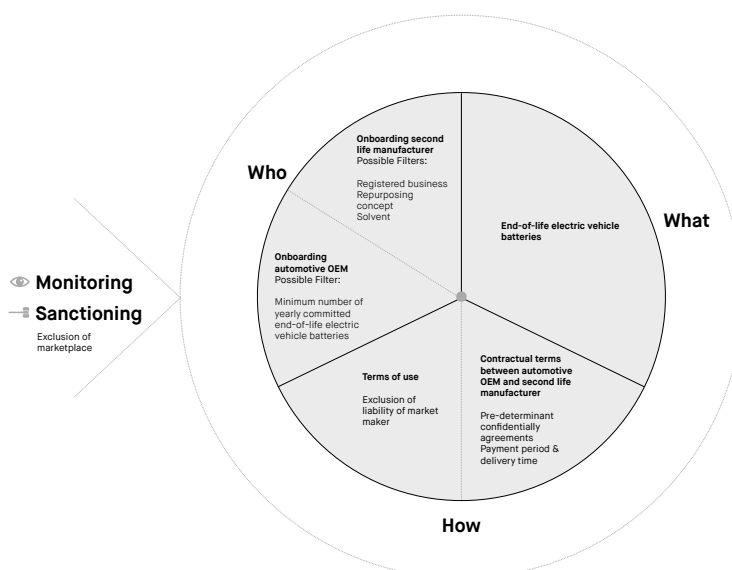
9.1 Transferability

Each area of activity is discussed individually in the context of a MM aiming to mediate the transaction of EOL EVBs between automotive OEMs and second life manufacturers.

9.1.1 Market Regulations

A MM for EOL EVBs can reduce uncertainties on both the automotive OEM's side and the second life manufacturer's side by implementing certain regulatory mechanisms (*who, what, how*). Crucial hereby is a comprehensive onboarding process of the second life manufacturer to evaluate the buyer's integrity (Bräuer et al., 2020). This shall reduce uncertainties on the automotive OEM's side that are connected to an inadequate behavior of the second life manufacturer (hidden actions leading to moral hazard). The MM can guarantee the automotive OEMs to only allow trustworthy partners on the platform who went through a detailed due diligence process. This can include vis-à-vis visits of the remanufacturing facilities and credit assessments as well as the requirement to submit a repurposing concept (see Illustration 19). For instance, Wucato runs a field service screening all market participant upon certain criteria. Moreover, a MM can implement digital reporting channels that allow the automotive OEM to monitor the second life manufacturer's activities as well as the EOL EVBs' second life performance (Bräuer et al., 2019). The onboarding process of the automotive OEMs, on the other hand, does not require an in-depth assessment of the integrity as most car manufacturers follow strict compliance rules. Eventually, automotive OEMs must commit a minimum amount of EOL EVBs that are placed on the marketplace in each year (Auto OEM, 2020).

Illustration 19: Market Regulation End-of-Life Electric Vehicle Battery Market



Source: own illustration

However, a MM must make sure that only EOL EVBs that are suitable for second life are offered for sale on the platform (see Standard for Specifying Product). Next to introducing market entry barriers, a MM can integrate in the contractual terms between the automotive OEM and second life manufacturer confidentiality agreements which oblige second life manufacturers to withhold any transaction details or battery-related data. This goes in line with the first design principle introduced by Bräuer et al. (2020) that aims at guaranteeing the integrity of battery-related data along the whole value chain of repurposing EOL EVBs. Additionally, a MM can pre-determine terms regarding payment period and delivery time that can be adapted by the seller and applied when engaging in transactions with buyers (AllSurplus, 2020). These terms and conditions may also be customizable to match with the, for instance, individual confidentially needs of each automotive OEM. A MM can also sanction any market participants acting against any agreed upon terms (e. g. market exclusion) and thereby prevent any involved stakeholders to act inappropriate, especially second life manufacturers.

9.1.2 Standard for Evaluating and Classifying Product Quality

Determining and classifying the EOL EVBs' quality level in a cost-efficient way is of crucial importance to enable a market for such batteries. The case of Restposten.de revealed that a marketplace can take over the role in levering out a market for lemons by introducing a binding quality classification standard. Accordingly, a MM for EOL EVB can define different quality levels (e.g. from A to C) being based on various parameters drawn from the BMS, such as remaining capacity or charging circles. The most cost-efficient way is to skip physical testing, but provide a software that only requires BMS data to assess the battery's quality level (Baumann et al., 2018). The definitions for each quality level must be totally transparent and created by people with an in-depth technological understanding. Nevertheless, it may be challenging to define robust standards due to the heterogeneity of EOL EVBs in terms of their technical specifications. Also the quality levels must be integrated in the terms of use to ensure the effectiveness of such measure (Stefan Grimm, 2020). Such standardized quality classifications, if created appropriately, have the potential to become widely-accepted and thereby reduce the uncertainties on the buyer's side (hidden characteristics). Defining these standards goes further than simply providing each second life manufacturer with BMS data as proposed by Bräuer et al. (2019). It serves as reference point which reduces any costs related to assessing whether a battery may be suitable or not, both on the buyer's and seller's side. Even though Restposten.de managed to introduce standards within the market for remaining stock, Lennart Paul (2020) points out that signing and implementing own quality standards is connected to high efforts, as the MM needs to have the market power to push through these standards. How likely and to what extent automotive OEMs and second life manufacturer accept an independent standard is yet unclear.

A MM can either develop an own software solution or consult already existing companies that developed cost-efficient ways to assess an EVB's SOH and residual life. Such startups can also help to define the different quality levels. One noteworthy project is the collaboration between the battery analytics startup TWAICE and the certification provider TÜV Rheinland aiming at providing buyers of used EVs with an independent assessment of the battery's SOH and residual value. Such widely-accepted certifications can also be applied on the second life battery market. A relatively high accuracy in predicting the residual life of EOL EVBs may also incentivize insurances to cover risks on the buyer's side by offering warranties or similar. Such insurances and their underlining premiums can be dependent on the quality level and duration. The quality evaluation and classification is also

expected to be of high significance and accuracy as the standard is only applied on product category and not across product categories alike on Restposten.de (see Illustration 20).²⁵

Illustration 20: General Quality Evaluation/Classification & Product Matrix

Product categories	Heterogenous	High informative value	Low informative value
	Homogenous	High informative value	High to moderate informative value
		Individually, for each product category (high effort)	Across all product categories (low effort)

Standard for evaluating and classifying product quality

Source: own illustration

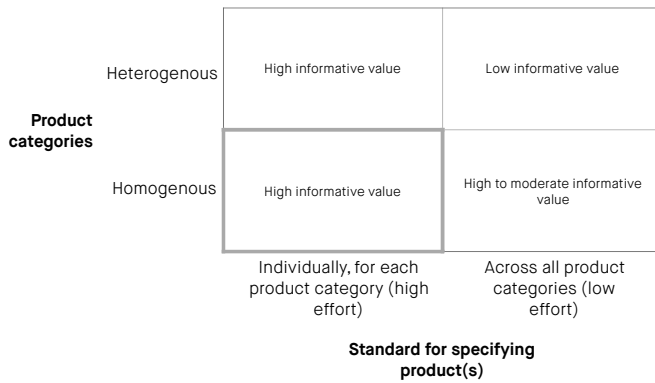
9.1.3 Standard for Specifying Product(s)

Next to the introduction of a quality evaluation and classification framework, a MM can create a standard for specifying the prosperities of EOL EVBs. This goes in accordance with the initially proposed software solution which now not only assesses the battery’s SOH and residual life, but also filters out all data points being relevant for the second life manufacturer. Hereby, either the introduced logging standard by Menne et al. (2019) or the evaluation framework (14 data points) of Battery Loop can serve as a foundation to create a standardized specification being applicable on all EOL EVBs. The battery related data can be managed through a sophisticated PIM system. Most importantly, the BMS data must be easily fed into the (cloud-based) software. Hence, the software must be compatible with the IT infrastructure of the automotive OEMs and their EVBs. The PIM system may transform into a Europe-wide register for all EOL EVBs and thereby increase the transparency of the battery second life market. Specifying EOL EVBs in a standardized way helps second life manufacturers to make holistic purchase decisions as well as to compare between different options. The standard of specifying the traded products is also expected to possess a high informative value as the standard is only applied on product category and not across product categories alike on Restposten.de or AllSurplus (see Illustration 21).²⁶ Moreover, Lennart Paul (2020) highlight that any product can be sold via online channels if all relevant data points are being mediated. Hence, the degree of complexity is not necessary a barrier in adapting online transaction methods.

²⁵ Marked square represents quality evaluation and classification framework for EOL EVBs.

²⁶ Marked square refers to the specification of EOL EVBs.

Illustration 21: General Product Specification & Product Matrix

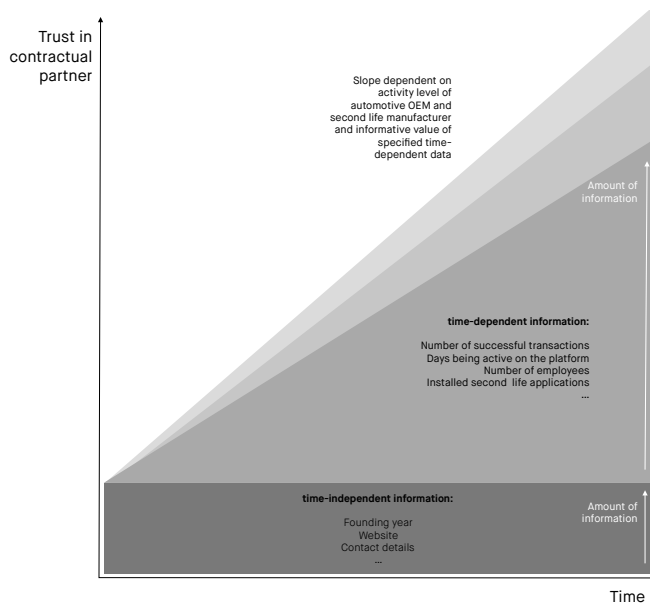


Source: own illustration

9.1.4 Standard for Specifying Each type of Market Participant

A MM can facilitate the creation of a battery second life market by specifying not only the EOL EVB’s prosperities but also the market participants’ characteristics. The market for EOL EVBs is most likely to be of interest for all kinds of different companies ranging from domestic energy storage manufacturers to large utility companies. To give automotive OEMs a better insight on the potential buyers of EOL EVBs, a MM can implement, for instance, standardized user profiles that include information regarding the buyer’s company and history, e.g. website, contact details, certifications (time-independent data) or the number of successful transactions (time-dependent data) (see Illustration 22). Similar specifications can be applied on the seller’s characteristics which are then also displayed in a user profile. Such mechanisms are components of trust and transparency reducing information asymmetries and their negative consequences on the transaction.

Illustration 22: Time-Dependent Vs. Time-Independent Automotive OEM/Second Life Manufacturer Specification



Source: own illustration

9.1.5 Customer Support

Another important measure a MM can undergo to reduce buyer-seller uncertainties on the market for EOL EVBs is the provision of an experienced customer support that aims at overcoming any barriers connected to the transaction of EOL EVBs. This may go further than solving issues regarding payments, contracts or logistics, such as providing technical support. There are most likely questions of technical nature (e. g. what battery to choose for what type of application) on the buyer's side demanding answers. A MM must possess sophisticated knowledge around battery second life to create credibility into the marketplace but also to be able to provide consultancy services. Giving access to a neutral information source decreases the likelihood of moral hazard and adverse selection as any uncertainties can be resolved through the expertise of the customer support.

9.1.6 Secure Payment System

A MM can also provide a secure payment environment around the transaction of EOL EVBs. In contrast to the market for remaining stock, fraudulent behavior in terms of withholding money or suspending the delivery is most likely to be rare. That's why providing a secure payment system raises rather the convenience level than reducing buyer-seller uncertainties on the market for EOL EVBs. A MM can collaborate with trustworthy payment service providers, e.g. Wirecard, and acquire one of the white-label solutions. Being in control of the payment flows also allows a MM to charge commission fees more effectively.

9.2 Additional Points of Discussion

Next to the displayed factors, other variables need to be considered in the context of designing, launching and operating a marketplace for EOL EVBs.

9.2.1 Not Everything Can Be Standardized

After all, a MM can simplify the transaction around EOL EVBs by, inter alia, introducing various standards. One part that cannot be standardized by a MM, however, is the battery itself. As of today, EVBs vary not only across car brands, but also across models within the same car brand.

Manufacturers may struggle to combine batteries across models or brands and thus must most likely focus on one brand or car model. This prevents the exploitation of all the great opportunities coming along with the repurposing of EOL EVBs. It is hereby the EU which must enforce design regulations for the manufacturing of EVBs. This is at the moment unlikely, since the battery represents one of the main features of a car and a standardization may harm the competitive position of some automotive OEMs.

9.2.2 Logistics

Even though none of the observed marketplaces offer logistics services, it is of high relevance for EOL EVBs due to their classification as hazardous goods. Hence, a MM must either provide an own logistics service or mediate logistic services for hazardous goods. The market maker must hereby bear in mind the high costs connected to transporting EOL EVBs (Auto OEM, 2020; Rasmus Bergström). However, a MM can match buyers and sellers based on their locations and thereby reduce any potential shipping costs. It may also introduce shared shipping costs between the automotive OEM and

second life manufacturer, as Rasmus Bergström (2020) highlighted the high costs for second life manufacturers related thereto.

9.2.3 Revenue Model

A MM also needs to decide on an appropriate revenue model that is being accepted by both the second life manufacturer and automotive OEM (Johnson, 2013). As the number of incoming EOL EVBs is expected to grow significantly over the next few decades, the MM should implement a transaction-based business model to profit from this growth. This requires, that the marketplace "... answers all purchase-relevant questions by depicting a digital sales talk" (Stefan Grimm, 2020). A MM that acts in line with the introduced areas of activities is likely to answer these questions. On which side the transaction fee should be charged, depends upon the side creating more network externality (i.e. network effect) surplus to the other side (Bakos & Katsamakas, 2008). Due to the low volumes of EOL EVBs, the indirect network effects are currently higher on the buyer's side than on the seller's side. This will change as soon as the volumes start to scale up, meaning an automotive OEM will receive a higher utility from each additional second life manufacturer than vice versa. In the mid- to long-term future, a MM for EOL EVBs should invest in second life manufacturers to maximize their participation and invest in automotive OEMs to maximize revenues.

9.2.4 End-Of-Life Electric Vehicle Battery Pricing

Another important aspect not being discussed yet, is the optimal pricing mechanism for these batteries. Neubauer et al. (2019) introduced already one possible pricing strategy that assigns each EOL EVBs a fixed price. Another possibility is to implement online auction mechanisms (alike AllSurplus) for both individual EOL EVBs and bundles of EOL EVBs. The pricing model and strategy may also be designed as such that automotive OEMs can achieve higher prices when sharing battery-related data that exceeds the minimum requirements.

9.2.5 Business Model

As already displayed in the literature review, Balocco et al. (2010) introduced nine different business models of how to deliver value to the seller's and buyer's side in B2B contexts. Which business model is appropriate for a MM engaging on the market for EOL EVBs, is still unclear. A possible strategy is to start with an orthodox model being partly publically available and focusing purely on matching services. By doing so, a MM can gain first traffic and merge a considerable number of buyers and sellers on one platform. Imaginable is also a consortium-based marketplace which is owned by different automotive OEMs to distribute their EOL EVBs. The marketplace might then experience a large leadership participation which is defined as one CSF by Johnson (2013). However, even though this business model would allow automotive OEMs to obtain a high level of control, it might experience a low acceptance from the buyer's side, as it could be perceived as not being neutral (Lennart Paul, 2020). Additionally, the experience of Wucato shows that a relevant and well-made platform for system-relevant goods in a certain market is not only interesting for a closed group of founders/makers, but also should be ready to open-up for more participants and further markets.

9.2.6 Market Size

Due to the high uncertainties connected not only to the number, but also to the condition of incoming EOL EVBs in each year, MMs should closely monitor the developments on the EV market (e.g. sales

figures) to get a better understanding of future waste flows. This also includes to monitor the automotive OEMs' battery collection mechanisms, since they can influence in which time and condition EOL EVBs return from the EV owner (Canal et al., 2017). Being able to anticipate the monthly, quarterly and annual number of incoming EOL EVBs gives MMs the opportunity to manage all resources and capabilities in an effective and efficient way (i.e. chosen the right strategy and the right time). As of today, the volume of EOL EVBs is still low why the focus should be on creating a few success stories that prove the feasibility of such market form. Moreover, it is yet unclear how big the market for EOL EVBs is. Hence, a comprehensive market analysis needs to be conducted to capture the number of potential buyers in and outside Europe.

9.2.7 Critical Mass and Network Effects

A MM needs to develop a well-defined growth strategy to overcome the chicken-and-egg-problem and reach a critical number of buyers and sellers (Klein & Quelch, 1997; Lennart Paul, 2020, Johnson, 2013). This strategy can derive from the analysis and understanding of the potential network effects within the market for EOL EVBs. On the long-run automotive OEMs are expected to reach a higher utility from each additional second life manufacturer than vice versa. MMs should base a considerable part of the platform design process on the second life manufacturers' needs. For instance, MMs could co-develop the platform with several second life manufacturers and only one automotive OEM. When reaching a significant number of potential buyers, MMs can focus on getting other OEMs on board. At the beginning, MMs should try to collaborate with an automotive OEM that has a strong brand name and reputation as it strengthens the credibility of the platform. It also allows to create more trust into the quality of EOL EVBs, as second life manufactures associate the quality of the EOL EVBs to the automotive OEM's reputation.

10 Conclusion, Limitations, and Recommendations

10.1 Conclusion

The study aimed to answer to what extent an online B2B marketplace can reduce or avoid the inter-organizational challenges between the automotive OEM and second life manufacturer. Based on a multiple-case study considering already existing online B2B marketplaces, six areas of activities have been identified that reduce the agency problems of adverse selection and moral hazard:

- (i) the implementation and maintenance of market regulations;
- (ii) the definition of a standard for evaluating and classifying the product quality;
- (iii) the definition of a standard for specifying the product(s);
- (iv) the definition of a standard for specifying each type of market participant;
- (v) the provision of a comprehensive customer support;
- (vi) the provision of a secure payment system.

These areas of activity represent general subject areas within marketplaces can engage to tackle potential buyer-seller uncertainties and can be conceptualized in one universal model, namely the “Four-Factor-Model” (see p. 73). The model can serve existing and new marketplaces as a guideline in overcoming buyer-seller uncertainties that originate from information asymmetries. Accordingly, a MM that aims to connect automotive OEMs and second life manufacturer can reduce the underlining inter-organizational challenges by operating along the illustrated areas of activity. However, to what extent these six trajectories reduce or prevent the agency problems of adverse selection and moral hazard between the automotive OEM and second life manufacturer is still uncertain. Some areas of activity are harder to integrate, such as the definition of a standard for evaluating and classifying the quality of EOL EVBs, and thereby potentially limited in their effectiveness. Hence, further research is necessary that analyses the effectiveness of the areas of activity in reducing the agency problems between the automotive OEM and second life manufacturer (see Recommendations).

One objective of the study is to draw conclusions on whether a marketplace represents a feasible solution for exchanging and trading EOL EVBs. The research revealed that there are only few limitations in building such marketplace per se, however various uncertainties are still remaining (see Additional Points of Discussion). For instance, the number of EOL EVBs in each year is still unknown as well as the number of potential buyers within the EU. Nevertheless, the study can serve intra- and entrepreneurs as a knowledge base in finding, designing, and creating market forms that scale up the share of repurposed batteries and thereby contribute to a more environmental and circular economy. Indeed, the study can help any markets for used goods in overcoming the hurdles of adverse selection (i.e. market for lemons).

10.2 Limitations

One weakness of the study is that some independent variables (i.e. areas of activity) might be left out. This is especially the case for AllSurplus as no information is obtained from an interview with the operator. Moreover, the sample of the study is relatively small due to the scope and underlining time constraints. Consequently, crucial knowledge that might have been relevant for the study is not internalized in the introduced theory. Also, whether the identified areas of activity reduce the agency problems of adverse selection and moral hazard have not been tested by using quantitative research

methods. Therefore, further research is needed to measure the degree of effectiveness (see Recommendations).

There are only few limitations concerning the generalizability of the identified areas of activity. In contrast, the Four-Factor-Model is applicable on all markets and types of MMs. Even though the findings are most likely to be replicable today, they might not be tomorrow. As already highlighted, the versatility and rapid developments of IT allows to design new, unique features and functions every day. One concise quote from Stefan Grimm (2020) highlights this circumstance: “Anyone who hasn't made their system design yesterday has technical debt.”

10.3 Recommendations

As already displayed, the effectiveness of the identified areas of activity remains uncertain. Therefore, future research is necessary that analyse the effectiveness of the areas of activity are the in reducing the agency problems between the automotive OEM and second life manufacturer. This can be pursued by, for instance, testing the areas of activity on the demand and the supply by using both qualitative (e.g. interviews) and quantitative research methods (e.g. surveys). Furthermore, the six areas of activity need to be compared with existing literature to investigate how these areas of activity go in line with known theories and concepts. Hereby, the focus should lay on mechanisms that reduce information asymmetries between two contractual partners. This increases the robustness of the introduced theory as well as its effectiveness in guiding a MM to reduce or prevent the inter-organizational challenges between the automotive OEM and second life manufacturer. Finally, the study calls for action in finding a market setting that aims for reducing the environmental impact of EVBs while maximising the economic value.

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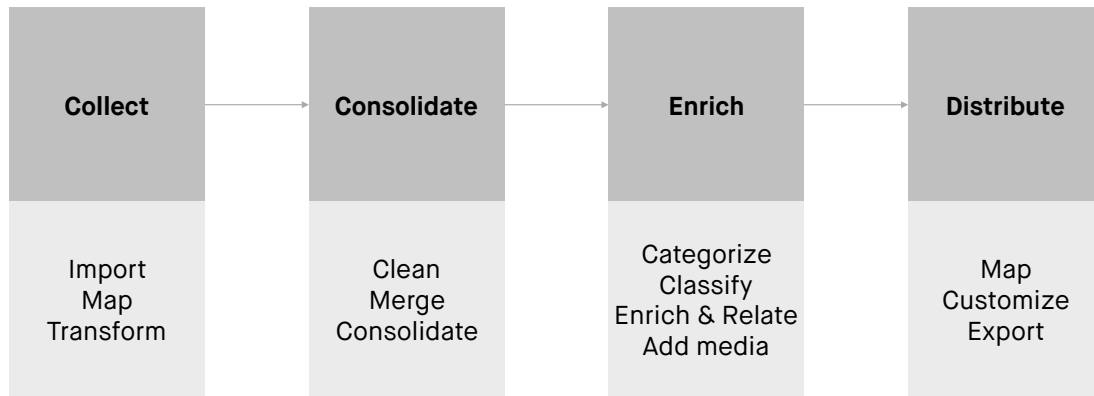
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1 Illustrations

Illustration 23: Product Information Management Process



Source: own illustrated based on Abraham (2014)

2 Interview Guides

2.1 Interview Guide: Buyer's Perspective

Question	Notes
Volumes and collecting scheme	
1. <i>How do you get hold of end-of-life electric vehicle batteries?</i>	
2. <i>How many end-of-life electric vehicle batteries do you receive and/or collect monthly/quarterly/yearly?</i>	
3. <i>What are the main challenges connected to accessing end-of-life electric vehicle batteries?</i>	
Buying end-of-life electric vehicle batteries from automotive OEMs	
4. <i>Are you in contact with any automotive OEMs regarding battery second life? If yes, how is the relationship characterized?</i>	
5. <i>Do you buy end-of-life electric vehicle batteries from automotive OEMs? If not, why not?</i>	
6. <i>What information do you need from the seller of end-of-life electric vehicle batteries to make a purchase decision?</i>	
7. <i>Are there any requirements a seller of end-of-life electric vehicle batteries needs to fulfil?</i>	
8. <i>What are the main risks and opportunities when buying end-of-life electric vehicle batteries from automotive OEMs?</i>	
Additional data	
9. <i>What are currently the main challenges with regards to repurposing end-of-life electric vehicle batteries? Including all relevant processes.</i>	
10. <i>Anything else you want to add that seems relevant for my research?</i>	

2.1.1 Interview guide: Seller's Perspective

Question	Notes
Volumes and tack-back scheme	
1. <i>How many end-of-life electric vehicle batteries do you currently collect?</i>	
2. <i>How do you maintain control over the waste flows of end-of-life electric vehicle batteries? What is the underlining collection scheme?</i>	
3. <i>What are the main challenges connected to collecting end-of-life electric vehicle batteries</i>	
Buying end-of-life electric vehicle batteries from automotive OEMs	
4. <i>Are you in contact with any second life manufacturers regarding battery second life? If yes, how is the relationship characterized?</i>	
5. <i>Do you sell end-of-life electric vehicle batteries to second life manufacturers? If not, why not? If yes, how is the transaction characterized?</i>	
6. <i>What information do you need from the buyer who is interested in purchasing of end-of-life electric vehicle batteries?</i>	
7. <i>Are there any requirements a buyer of end-of-life electric vehicle batteries needs to fulfil?</i>	
8. <i>What are the main risks and opportunities when selling end-of-life electric vehicle batteries to second life manufacturers?</i>	
Additional data	
9. <i>Do you see any trends in the automotive sector regarding battery second life?</i>	
10. <i>Can you imagine engaging in an independent marketplace for end-of-life electric vehicle batteries?</i>	
11. <i>Are you collaborating with any other automotive OEMs regarding battery second life?</i>	
12. <i>Anything else you want to add that seems relevant for my research?</i>	

2.1.2 Interview Guide: Multiple-Case Study

Question	Notes
General information	
1. <i>When was (company name) founded?</i>	
2. <i>How is the rightful owner of (company name)?</i>	
3. <i>How many sellers and buyers are active on (company name)?</i>	
4. <i>What products are traded on (company name)? Is there anything that cannot be traded?</i>	
5. <i>What is the underlining business model of (company name)?</i>	
6. <i>What were the main reasons behind creating (company name)?</i>	
7. <i>What is special about (company name)?</i>	
8. <i>Anything else one needs to know about the history of (company name) or in general the marketplace?</i>	
Information needs from buyer and seller	
9. <i>What information does the seller need to provide to the buyer?</i>	
10. <i>What information does the buyer need to provide to the seller?</i>	
11. <i>Is there any sensitive information the seller and/or the buyer does not want to share? Or at least not publically.</i>	
12. <i>Does the buyer need to report any information after the transaction took place and vice versa?</i>	
13. <i>Does (company name) have problems with fraudulent behavior of the sellers and/or buyers?</i>	
Mediation of information needs	
14. <i>How does (company name) mediate the information needed by the buyer from the seller?</i>	
15. <i>How does (company name) mediate the information needed by seller from the buyer?</i>	
16. <i>How can buyers trust both the quality of the traded goods and the seller?</i>	
17. <i>What are the most important features (company name) offers to buyers?</i>	
18. <i>What are the most important features (company name) offers to sellers?</i>	

Additional Information

<i>19. What makes (company name) a success?</i>	
<i>20. Anything else you want to add that seems relevant for my research?</i>	

2.1.3 Interview Guide: Expert on Business-to-Business Marketplaces

Question	Notes
General information	
1. <i>How can and should an online business-to-business marketplace set up quality standards?</i>	
2. <i>What are the challenges connected thereto?</i>	
3. <i>Are there any limitations for marketplaces mediating the exchange of high-tech, complex products?</i>	
4. <i>What are the advantages/disadvantages of having a vertical marketplace?</i>	
5. <i>What are the main challenges for business-to-business marketplaces?</i>	
6. <i>Are there any specific data protection mechanisms in business-to-business contexts in place?</i>	
7. <i>What are the risks of having consortium-based marketplaces?</i>	
Additional information	
8. <i>Anything else you want to add that seems relevant for my research?</i>	

1 3 Transcribed Data

3 3.1 Stefan Grimm

5 [...]

7 *H: Ich habe schon gelesen, was du abgedeckt hast. Was ich schon interessant fand, dass rund*
8 *90 Prozent der Transaktion nicht auf der Plattform selber stattfinden. Wie ich das denn*
9 *richtig verstehe, ist Resposten.de eine Plattform, wo man sich trifft und dann alles*
10 *Vertragliche außerhalb der Plattform bespricht. Weißt du dann ungefähr wie das abläuft oder*
11 *habt ihr da gar keinen Überblick?*

13 S: Doch, doch, wir haben da einen sehr guten Einblick. Erstens, weil wir ja selber Händler
14 waren und zweitens, weil wir natürlich viel mit den Händlern sprechen. Das ist ja auch die
15 Basis unserer Projekt- und Produktentwicklung für die Plattformelemente. Wir wissen schon
16 ganz genau wie der Handel dort stattfindet. Es gibt andere Beispiele, es gibt ein Marktplatz
17 für Schrott zum Beispiel, der funktioniert sehr gut auch transaktionsgebunden, weil er halt
18 sehr viel spezifizierter ist. Das heißt also, die verschiedenen Kategorien der Produkte können
19 in ihrer Nische sehr viel besser detailliert werden. Und die Transaktion findet immer genau
20 dann über den Marktplatz statt, wenn du auf dem Marktplatz, die kaufentscheidenden bzw.
21 relevanten Fragestellungen klären und vermitteln kannst. Das ist insbesondere dann möglich,
22 wenn es halt weniger weit gefasst ist. Bei Neuwaren, wie z.B. bei SAP Ariba, wo über eine
23 Schnittstelle and die SAP Systeme Millionen von Produkten verkauft werden - bis hin zum
24 Motor für eine Förderanlage beim BMW am Band. Wo wir einen klassischen B2B-Handel
25 haben, der Einkäufer ist gar nicht der Verbauer und der Verkäufer ist im Zweifel gar nicht der
26 Hersteller. Da läuft das ja auch, aber du hast dann immer ein hohes Maß an Standardisierung
27 der Produkte bzw. eine Definierung der Produkte. Das heißt also der Motorenbauer – da gibt
28 es die Normen und die Leistungen, und entsprechende Anforderungen, die dafür gemacht
29 worden sind. Und beim Posten ist es halt so, dass er erstmal nur gemein hat, dass irgendwas
30 nicht in Ordnung ist. Und was nicht in Ordnung ist, haben wir jetzt z.B. versucht über 13
31 Ware Zustände zu definieren in dem wir halt sagen von 1a bis geprüft defekt sein und das ist
32 zumindest schon mal eine Hilfestellung, was die Praxis aber zeigt ist, dass der Einkaufende
33 dann tatsächlich immer noch darüberhinausgehende Fragen hat, die über den Datenfeed nicht
34 beantwortet werden. Und das ist das zweite Problem, das ist spezifisch für unseren Markt,
35 dass die Händler in der Regel nicht die Hersteller sind und die Hersteller diese Händler nicht
36 unterstützen, Das heißt also wir haben es mit einer Zwischenstufe zu tun. Das heißt der, der
37 jetzt im Bulk 20 Paletten Amazon Retouren kauft, der kann jetzt den Clatronic-Wasserkocher
38 der da drin ist, von dem kriegt er keine Produktdaten von Clatronic, da er mit Clatronic in
39 keiner Geschäftsbeziehung steht. Und kann die vor allem nicht automatisiert runterziehen und
40 ist technisch auch gar nicht in der Lage, in aller Regel, selbst wenn er diesen Support kriegen
41 würde, dann eben genau diese Elemente zu liefern. Das heißt also ein Learning für uns als
42 Marktplatz ist, wenn man transaktionsbasiert sich finanzieren möchte, muss man eine
43 gesicherte Transaktion abbilden können. Und die gesicherte heißt nicht, dass ist SSL-
44 verschlüsselt oder sonst irgendwas, da ist ein Payment-Service Provider dahinter etc. Das sind

45 alles hygienische Faktoren. Diese hygienischen Faktoren sind sowie Grundvoraussetzung
46 damit man überhaupt seinen Marktplatz anbieten kann. Abgesicherte Transaktion heißt da,
47 dass die relevanten Fragen, des Einkäufers, da müssen wir immer aus der Einkäufersicht
48 schauen, die relevanten Fragen des Einkäufers über den Verkäufer erklärt werden können. Je
49 heterogener die Angebote sind, die auf dem Marktplatz angeboten werden, desto schwieriger
50 ist es, die Fragen in Ihrer Gesamtheit überhaupt zu beantworten. Und dann ist die Frage wer
51 ist der Anbieter, ist der technologisch überhaupt gut genug aufgestellt und er Zugang zu den
52 nötigen Datenquellen. Und da müssten wir halt bei uns zweimal nein sagen, der
53 Postenhändler ist in der Regel technologisch relativ schlecht aufgestellt und nein er hat keinen
54 Zugang zu den nötigen Datenquellen. Und wenn du diese zwei Eingangsfaktoren nicht hast,
55 dann kannst du das beste System dieser Welt machen, aber es nutzt die halt kein riesen API
56 was, wenn da nur Tröpfchenweise irgendwie eine Artikelbeschreibung mit 52 Zeichen
57 reinkommt. So das sind die Bewertungsfaktoren, damit man halt Transaktionen über seinen
58 Marktplatz ziehen kann, das abgesehen von den hygienischen Faktoren,
59 Transaktionssicherheit,-geschwindigkeit, Zahlungsprozesse usw. Das ist aber alles nicht mehr
60 Begeisterndes, das ist klar, dass das funktionieren muss. Und er Eingang ist tatsächlich die
61 Informationsbasis, die halt entsprechend sein muss bei einem Marktplatz für gebrauchte
62 Batterien, glaube ich, kann man mit hohem Maß an Expertise, die man aufbauen muss, den
63 Rahmen schaffen für welche Arten gibt es denn, ist das ein lithium-Ion, ist das was Anderes,
64 wie viel kW haben die, und wie viel Laufleistung, wie viel Rest, und wie misst man das.
65 Unter Umständen braucht man da auch ein geordnetes eigenes Prüfverfahren. Ich glaube, dass
66 man vielleicht so eine Prüfkiste im Verleih haben muss, das also jemand der die Batterie
67 anbietet, das ist ja dann wahrscheinlich ein Einzelner, der die Batterie von seinem Auto
68 vielleicht anbietet.

69
70 *H: Da kann ich noch mal eingreifen. So wie ich das jetzt antizipiere, gehe ich davon aus, dass*
71 *es eine B2B Plattform wäre, die wäre auch im Zweifel nicht öffentlich, sondern, dass große*
72 *Automobilhersteller, dadurch, dass sie verantwortlich sind für diese Batterien, sie irgendwo*
73 *sammeln, und dann entweder sagen sie haben große Recyclingunternehmen an die sie das*
74 *weitergeben können oder es besteht die Möglichkeit diese über eine Plattform an Dritte*
75 *weiterzuverkaufen, die diese Batterie nehmen und daraus z.B. Energiespeicher für*
76 *erneuerbare Energien bauen. So das ist schon mal ein Szenario. Es geht rein um B2B und die*
77 *ist im Zweifel nicht öffentlich, weil, wie du schon sagst, man muss einmal Qualitätsstandards*
78 *festlegen, ob das jetzt durch externes Zertifizierungsverfahren kommt oder eben nicht, das*
79 *muss man dann eben schauen, aber was eben auch ein bisschen einzigartig ist, dass diese*
80 *Daten extrem sensibel sind für diese Automobilhersteller, weil das ist sozusagen deren IP. So*
81 *das wollen sie auch nicht an jeden weitergeben, im Zweifel möchten sie auch nicht alle*
82 *weitergeben, aber wenn sie die weiterverkaufen wollen, muss da ein Datenfluss stattfinden. So*
83 *da muss es eben verschiedene vertragliche Konstrukte geben, die verhindern, dass diese eben*
84 *an Dritte weiterverkauft werden, an Wettbewerber oder sowas. Das sind z.B. Bedenken die*
85 *der Automobilhersteller hat. Aber was du schon gesagt hast, man könnte dadurch, dass ich*
86 *jetzt eine sehr spezifische Produktkategorie habe, dass man das gut standardisieren könnte.*

87
88 *S: Ja genau richtig. Also ich glaube, dass das so spitz ist. Ich mein Amazon kann auch große*
89 *Produktkategorien spezifizieren ausreichend, wenn sie halt mit genug Herstellern arbeiten,*

90 wenn an eben 5000 Leute im Team hat. Das halt vor allem, was mit den Betriebskosten des
91 Marktplatzes zu tun und der Teamgröße. Je kleiner das Team desto spezifischer muss der
92 Markt sein, damit man dann halt tatsächlich auch den Detaillierungsgrad hat an
93 Qualitätsstandards hat, definieren kann wie er nötig ist und das ist bei uns halt nicht möglich.
94 Das haben wir jetzt in 20 Jahren nicht geschafft.

95

96 *H: Aber wer kauft diese Restposten? Sind das Einzelhändler?*

97

98 S: Also das ist im Moment von der Bundeswehr, die Masken bei uns kauft. Bis hin zu
99 Beschaffungssämter von Bundesländern, Deutsche Rote Kreuz. Aber auch zu Zeiten der
100 Flüchtlingskrise waren Retouren, Matratzen, im Bereich Lebensmittel, angetatschte Dosen,
101 mit Konserven die eben nicht mehr an LEH verkauft werden konnten, und zu sehr günstigen
102 Preisen Ende verkauft worden sind, ans Übergangsheim in München, die haben halt gesagt
103 wir müssen 18.000 Essen pro Tag machen. Wir müssen versuchen Geld zu sparen und ob die
104 Dose eine Beule hat oder nicht ist uns völlig egal, kommt nur auf den Inhalt an. Aber das
105 klassische Anwendungsszenario unseres Marktplatzes ist, Wiederverkäufer. Das heißt also,
106 Online-Händler, Amazon Verkäufer, Ebay Verkäufer, Filialisten, Einzelhändler, kaufen und
107 nicht ihr Normalsortiment, sondern kaufen Sortimentsergänzungen über uns ein.

108

109 *H: Ich habe mir auch SAP Ariba angeschaut, nur da ist der externe Zugang leider [...]*

110

111 S: Und genau da ist eben die Frage der technischen Infrastruktur. Wenn du halt sagst, wen
112 adressierst du, wenn du halt Automobilhersteller adressierst, die für die Rücknahme der
113 Batterien zuständig sind, dann bist du in solchen Systemwelten. Du brauchst dann
114 wahrscheinlich ein System, was zu mindestens eine Schnittstelle dazu produziert, sowohl im
115 Eingang als auch im Ausgang.

116

117 *H: Die Frage ist halt, was für ein System benutzen sie für die ganzen Batteriedaten [...]*

118

119 S: Ich vermute am Ende ist es ein Produkt, was über die normale Beschaffung läuft. Das ist
120 am Ende ein definiertes Produkt, das ist in der Warenwirtschaft drin und dann ist eben
121 Batterie 2712 und dem System ist das völlig egal, ob das eine Batterie oder ein Autoreifen,
122 oder Ventil ist. Das ist erst mal nur ein Produktdatensatz und der unterliegt einer genauen
123 Spezifizierung, die dahinterliegt und dann ist es glaube ich egal ob das eine Batterie, ein
124 Lenkrad, oder eine Kopfstütze ist.

125

126 *H: Jetzt zu dem Geschäftsmodell. Ich habe gesehen, dass ihr neben den Mitgliedsbeiträgen
127 auch Werbung habt, das macht also auch ein Teil der Einnahmen aus?*

128

129 S: Wir finanzieren uns weitestgehend über die Mitgliedsgebühren. Das ist der allergrößte Teil
130 unserer Finanzierung. Das ist halt ein Abo-Modell und sind halt Flatrate-Konditionen. Das ist
131 an dieser Stelle sehr schön, weil es halt einfach berechenbar ist, sowohl für den Einkäufer als
132 auch für den Verkäufer. Ist aber ein Modell, was üblicherweise fast gar nicht mehr verstanden
133 wird, weil Einkäufer es auf Marktplätzen mittlerweile nicht mehr gewohnt sind für den Zutritt
134 auf einem Marktplatz zu bezahlen. „Aber Moment ich kaufe doch ein, warum muss ich denn

135 Zutritt bezahlen?“ Wir müssen dann immer den Vergleich einer Handelsmesse bemühen, weil
136 es halt am ehesten dem entspricht, dass wir halt eine digitale Messe sind. Einkäufer und
137 Verkäufer zahlen, der Aussteller sozusagen seine Ausstellungsgebühr, die ist höher als der
138 Eintritt für einen Besucher/Einkäufer. Und wir stellen nur den virtuellen Messeplatz zu
139 Verfügung und dann findet die Transaktion direkt zwischen den Marktteilnehmer statt, ohne
140 dass wir daran partizipieren, weil am Ende ist es ja nicht so, dass wenn ich auf der
141 Eisenbahnmesse in Köln ausgestellt habe, oder auf der IAA, das am Ende einer von der
142 Messe kommt, ok wie viele Aufträge haben sie heute geschrieben, damit wir ihnen eine
143 Provisionsrechnung schreiben. Der große Nachteil ist es, man hat zwar ein relativ stabiles
144 Geschäftsmodell, aber es skaliert halt nicht. Das heißt also der Zuwachs ist relativ gering,
145 wenn denn tatsächlich Transaktionen starten. So jetzt wissen wir von anderen
146 Marktteilnehmern oder Marktbegleitern, die halt auf Transaktionsmodellen sind, wenn du halt
147 einen Warenkorb über auch nur 5 oder 6 tausend Euro auslöst und du weißt du bezahlst 5
148 Prozent Provision, dann ist das schon wieder so viel Geld, dass Verkäufer die ganze Zeit
149 versuchen den Einkäufer dazu zu bringen „Mensch, bestellt doch direkt bei mir!“ Kurz bei
150 meinem B2B Shop oder meinem Online-Shop da kriegst du noch mal 4 Prozent Rabatt. Dass
151 dann halt gar keine Erlöse stattfinden. Wenn du halt komplett transaktionsbasiert bezahlt
152 wirst, dann besteht halt immer die Gefahr, dass du halt die Transaktion versuchst außerhalb
153 des Marktplatzes abzuwickeln. Und dann musst du als Marktplatz halt in der Lage sein, den
154 Einkäufer davon überzeugen, dass du so viel Service bietest, dass er gar nicht gewillt ist
155 außerhalb des Marktplatzes abzukaufen und das ist insbesondere eine Absicherung der
156 Transaktion, das heißt also, dass du halt dann dafür gerade stehst wenn der Verkäufer nicht
157 liefert und du dich nicht mit irgendeinem Verkäufer aus Großbritannien, Vietnam, Holland,
158 Polen, oder Bayern rumschlagen musst, sondern dass der Marktplatz bzw. die Plattform dafür
159 die Sicherheit gibt. Das ist bei kleinen Sachen auch relativ problemlos möglich. Der eine
160 Drucker klar, wenn der eine jetzt 10,000 Drucker verkauft und die sind alle defekt, dann ist es
161 auch schon wieder schwieriger, aber der, der den Geldfluss unter Kontrolle hat, der kann halt
162 auch Sicherheit bieten. Zumindest für alles das was früh auftritt, was weiß ich, das fällt sofort
163 auf, wenn der Drucker nicht funktioniert, dann habe ich das Geld als Marktplatz vielleicht
164 noch nicht ausgezahlt oder ansonsten muss ich halt finanzkräftig genug sein, dass ich da halt
165 eine Absicherungsfunktion bringen kann. Das geht bei uns nicht, wir haben Warenkörbe
166 schnell über eine halbe Million von völlig unterschiedlichen Dingen. Wir haben da schon alle
167 möglichen Sachen versucht das abzusichern. Da geht auch keine Versicherung ran.

168

169 *H: Wenn die Beträge so hoch sind, ist das wahrscheinlich auch teuer [...]*

170

171 S: Ja genau richtig, wir sind für den Außenumsatz sicherlich im mittleren dreistelligen
172 Millionen Euro Bereich und im Moment würde ich sagen ist es sogar noch massiv gestiegen.
173 Allein was ich halt sehe, was jetzt über die Masken die lieferbar sind, Atemschutz,
174 Hygieneartikel oder sonst irgendwas, also das was jetzt lieferbar ist, da sind, weiß ich nicht,
175 da ist jetzt ein Verkäufer, der hat irgendwie 1 Millionen Maske in zwei Tagen bei uns
176 verkauft. Die haben 2,85 Euro gekostet. Das heißt also er hat knapp drei Millionen Euro
177 Umsatz gemacht in zwei Tagen. Das ist nur ein Verkäufer gewesen, wenn wir da drei Prozent
178 Provision bekommen hätten, dann wäre das natürlich sehr schön gewesen. Machen wir aber

179 nicht, der hat halt nur, das ärgert einen dann ein bisschen, seine 39,80 Euro bezahlt und hat
180 nicht nur die Masken verkauft, sondern noch andere Sachen.

181

182 H: Aber versucht ihr es transaktionsbasiert zu machen?

183

184 S: Ja also wir haben da so paar Modelle, die wir jetzt launchen werden. Eins heißt halt
185 QuickDeal. Wenn man jetzt anfängt das Angebot bei uns auf dem Marktplatz ist ja erst mal
186 formal gesehen Invitatio Ad Forendum juristisch gesehen. Das heißt also der Verkäufer hat
187 ein Angebot eingestellt und dieses Angebot ist ja erst mal nur die Aufforderung zum
188 Absenden eines Kaufangebotes. Das heißt also, der Einkäufer soll ein Kaufangebot
189 abschicken und der Verkäufer nimmt das dann an, weil wir ja im Bereich Vertragsverhalt im
190 B2B sind. Ob man jetzt tatsächlich an den verkauft oder nicht verkauft, ist einem selber
191 obliegen. So, das ist halt da schon mal eine Schwierigkeit, weil es gerade im Bereich
192 Konsumgüter und auch gerade im Bereich, wenn es ein Markenprodukt ist oder
193 Markenprodukte drin sind, gibt es oft Vertriebsbeschränkungen. Das kann man technisch
194 auch alles lösen, das wird dann aber irgendwann mal ein ganz fettes System. Das heißt also,
195 wenn man diese ganzen Vertriebsbeschränkungen abbilden will, dann geht das vielleicht und
196 sagt dann okay der ein oder andere bekommt das Angebot gar nicht angezeigt. Dann must du
197 halt aber dann noch über die Bestimmungsadressen, das heißt also die Lieferadressen gehen
198 und nicht über die Einkaufsadressen. Wir haben ganz oft ausländische Einkäufer, die nach
199 Chana exportieren, aber einen deutschen Einkaufssitz haben. Die haben eine deutsche
200 Einkaufsagentur. So jetzt könnte der Deutsche vielleicht gar nicht die Ware in den Warenkorb
201 legen, es sei denn wir sagen okay die Lieferung soll nach Chana sein. Dann müssen wir sagen
202 wir wissen alles wie das funktionieren würde, da reicht unsere Teamgröße aber nicht aus. Das
203 heißt also wir wüssten wie wir das theoretisch hinkriegen, dafür bräuchten wir aber sowohl
204 vom System als auch vom Team sicherlich dann eher 150 Leute als 15 Leute, um dann
205 vielleicht in 1-1,5 Jahre, den Stift hinzukriegen das wir sagen, okay wir sind jetzt
206 transaktionsbasiert. Und dann haben wir es aber auch nur theoretisch gelöst und dann wissen
207 wir noch nicht wie die Akzeptanz ist. Oder versuchen es dann wie die Händler bei unseren
208 Marktbegleitern um den Marktplatz drum her rum. Das heißt also, wenn man auf die
209 Transaktion will und man möchte genau dieses Skalierungspotential haben, dann muss man
210 halt verschiedene Faktoren erfüllen und der wichtigste Faktor ist natürlich der Traffic. Das
211 heißt also, dass man halt, der ist der tatsächlich ein hohes Maß an Angebot bzw. Nachfrage
212 zusammenführt. Das lässt sich im Nischenbereich normalerweise relativ einfach realisieren
213 und das zweite ist, das man halt den Verkaufsprozess so strukturiert hat, das er halt voll
214 digital stattfinden kann.

215

216 *H: Die eine Seite ist, wie du schon gesagt hast, dass gerade auf Käuferseite immer viele*
217 *Informationen wichtig sind, damit er eben eine Kaufentscheidung treffen kann. Ob das jetzt*
218 *auf er Plattform selber oder außerhalb lasse ich jetzt mal außen vor. Aber ist denn auch das*
219 *ganze Plattformdesign, was die ganzen Funktionen und Features angeht, nach der*
220 *Käuferseite ausgerichtet? Also sagt ihr, an sich haben wir genug Verkäufer, worum es uns*
221 *jetzt geht ist es wirklich zu versuchen den Nutzen der Käufer zu erhöhen?*

222

223 S: Nein, also vom Systemdesign investieren wir deutlich mehr Arbeitszeit in Verkäufer als in
224 Einkäufer, weil der Prozess des Verkäufers sehr viel schwieriger als er des Einkäufers. Der
225 Einkäufer hat einen relativ einfachen Prozess. Der hat Informationsanforderungen, aber am
226 Ende, wenn er irgendwas in den Warenkorb reinschmeißt und das was in dem Warenkorb drin
227 ist, ist ja schon ein Datensatz der da ist. So das heißt also, dem geht es jetzt nur noch darum,
228 wie habe ich den Datensatz designet, wie verheirate ich den Warenkorb mit einer Summe und
229 übermittle den an den Einkäufer und sage hier habe jetzt eine Transaktion geklärt und wie
230 packe ich vielleicht noch ein Payment Service hinten dran. Das heißt also, die klassische
231 Transaktion als solche ist ein relativ einfaches technisches Gebilde. Die größere
232 Herausforderung ist tatsächlich der Import und die Aktualisierung von Produkt- und
233 Angebotsdaten. Das heißt also das PIM oder wie komme ich an ein PIM ran oder habe ich ein
234 eigenes PIM, wie aktualisiere ich die Daten und wie kann ich aus einen sehr heterogenen
235 System an Informationsquellen...Es gibt Verkäufer von uns die machen im mittleren bis
236 hohen zweistelligen Millionen Euro Betrag Umsätze und die haben eine Warenwirtschaft die
237 ist selbst gebaut über Excel. Und die läuft, die funktioniert. Die erfüllt alle Anforderungen,
238 die sie haben, die ist irgendwann mal historisch gewachsen bei uns auch. Wir haben ein
239 großes Ausmaß an technischen Schulden. Jeder der nicht gestern erst sein Systemdesign
240 gemacht hat, hat technische Schulden. Mit dem zweiten Tag hast du technische Schulden, mit
241 der zweiten Woche erst recht. Und die, die halt jetzt noch auf Excel arbeiten, haben halt mehr
242 technische Schulden. Dadurch, dass wir eine sehr heterogene Zulieferlandschaft haben, für die
243 die Datenquellen. Das ist halt einer der wichtigen Faktoren, wo komm meine Datenquellen
244 her und ist das homogen oder ist heterogen? Ist das strukturiert oder ist das unstrukturiert?
245 Und wenn man sich diese Fragen beantwortet, dann weiß man wie komplex ist es das
246 Angebotsdesign zu machen. Und bei uns ist halt das Angebotsdesign sehr komplex. Wir
247 müssen von der manuellen Produkteingabe über eine eigene Mittelware, also eine
248 angeschlossene Mittelware, bis hin zu dem Kunden, der tatsächlich ein CSV oder eine API
249 bedienen kann. Also wir haben API und die wird von keinem einzigen Kunden bedient. Ich
250 wüsste nicht mal, ob die jetzt noch heute funktionieren würde, weil ich glaube, der letzte
251 Kunde der da drauf war, war vor 5 Jahren da drauf – auf der API. Heute ist jeder
252 Multichannelhändler, der mit einem System wie JTL, mit so üblichen
253 Multichannelhandelssystemen arbeitet, hat natürlich Echtzeitverbindung zum Marktplatz über
254 Amazon über Ebay mit Bestandsmeldungen und Auftragsynchronisation etc. Das ist aber
255 tatsächlich auf der Händlerseite normal auf der Großhändlerseite und auf der Herstellerseite
256 hat man ganz unterschiedliche Systeme, die teilweise sehr alt sind und die muss man halt
257 geonboardet bekommen und deswegen müssen wir dafür sehr viel mehr Zeit und Ressourcen
258 investieren.

259
260 *H: Wenn man jetzt auch ein bisschen nachhaltig-orientiert denkt und wenn man generell*
261 *langfristig Ressourcen effizienter nutzen will, dann muss es auch Marktplätze wie*
262 *Restposten.de geben, die eben sehr heterogene Produkte haben, im Zweifel auch sehr*
263 *heterogene Verkäufer haben.*

264
265 S: Wir arbeiten seit 20 Jahren daran und die Akzeptanz ist nach wie vor sehr bescheiden.
266 Insbesondere auf der Herstellerseite. Das was wir ja immer beklagen, dass mehr Ware
267 geschreddert wird, als dass sie bei uns auf dem Marktplatz landet. Es gibt ja

268 unterschiedlichste Gründe, warum du nicht ressourcen-effizient arbeitest. In einer perfekten
269 Welt haben wir alle ausreichend hohe ethische Ansprüche an uns und die Nachhaltigkeit
270 unseres Handelns. Und deswegen ist Ressourceneffizienz natürlich wichtig. Ich weiß nicht, ob
271 im klassischen BWL Studium Ressourceneffizient mittlerweile ein Pflichtfach ist oder
272 überhaupt erst mal sozusagen als Grundausbildung dazu gehört. Im Handelsbereich ist das
273 nicht der Fall. Adidas möchte natürlich seine Ware verknappen und wenn das Modell „Speed
274 3“, das es hoffentlich nicht gibt und auch von keinem anderen gibt, von der Farbkonstellation
275 oder Sole oder sonst irgendwas nicht der Knaller war, aber davon trotzdem 385.000
276 produziert worden sind, die nicht in den Vertrieb gegangen sind, das heißt die sind nicht
277 abgeflossen an den Endkunden, dann werden die ja nicht zum halben Preis auf den Markt
278 geworfen, sondern dann sind die einfach weg. Weg heißt die werden entweder exportiert nach
279 Afrika, die werden exportiert in den Nahen Osten und werden da dann halt verschleudert,
280 damit sie hier den Markt nicht belasten und es halt nicht zu einem Preisverfall kommt. Die
281 Funktionssteuerung von Markenprodukten ist natürlich, dass es einen knappen Markt geben
282 muss, es darf also kein deutliches Überangebot geben, weil das direkte Überangebot immer
283 direkt auf den Preis durchschlägt und auf die Akzeptanz der Marke. Das heißt also wenn es
284 für deine Marke ständig Streichpreise gibt im Konsumgüterhandel, dann leidet deine Marke
285 darüber und kannst dann halt auch im nächsten Schritt und der nächsten Kollektion weniger
286 gut deine Preise durchsetzen. Deswegen betriebswirtschaftlich kann ich es verstehen, das
287 gesagt wird, wir sprechen da von Marktentfernung, die Marktentfernung hört sich erst mal
288 wie ein neutraler Begriff an, hinter der Marktentfernung versteckt sich aber ganz oft, die
289 thermische Verwertung oder die Vernichtung der Ware. Oder der Export und da ist es weder
290 sinnvoll, wenn die Ware 4 oder 5 tausend Kilometer unnötig mit dem LKW oder dem Schiff
291 durch die Gegend gekarrt wird. Dann werden lokale Märkte auch noch darüber zerstört, weil
292 die Ware ja so günstig angeboten wird, dass lokale Anbieter weder dafür selber importieren
293 noch die Ware selber fertigen könnten. Das heißt also wir machen einmal die lokalen Märkte
294 kaputt, in dem wir sie halt mit dem was wir nicht mehr haben wollen überschwemmen und
295 zweitens sind wir halt nicht ressourceneffizient. Erstens nicht beim Export und schon gar
296 nicht wenn wir es schreddern oder zerstören. Die Marktentfernung über die Marktentnahme
297 stattfindet und zwar über die Weltmarktentnahme. Also, dass das Produkt vom Markt
298 insgesamt entwindet. Solange das billiger ist, wird es das geben und dem kann man halt
299 tatsächlich nur, in 20 Jahren haben wir gesehen, dass sich der Markt nicht verändert. Das
300 heißt also, diese Ressourcenverantwortung die ist echt nur ein Label. Das heißt also, wenn es
301 irgendein Projekt gibt, wo ich Ressourcenverantwortung marketing-technisch spiegeln kann,
302 dann wird das gerne gemacht. Im Kern findet die nicht statt. 20 Jahre Erfahrung – findet nicht
303 statt. Das einzige was stattfindet ist Maximierung von Gewinnen und nicht Effizienz. Die
304 Effizienz kommt nur über Verpflichtung, ausschließlich, nicht über Selbstverpflichtung.
305 Wenn es eine gesetzliche Grundlage gibt, die verhindert, dass du thermisch verwertest, dann
306 werden die Leute anfangen, entweder anders zu disponieren, das heißt also das weniger
307 Posten auftreten oder werden halt einen Weg drum herum finden und dann ist halt die Frage,
308 ob der Export sozusagen zum Dumping-Preis die neue Entsorgung wird. Dann wird es
309 allerdings doppelt schlimm, weil dann halt in Ländern mit viel schlechteren Standards Ware
310 vernichtet wird. Und dann wird die vorher noch 3,000 Kilometer durch die Gegend gefahren.
311 Aber was wir regeln können, können wir halt auch nur für die EU regeln. Und ansonsten ist
312 das halt ein tiefer Eingriff in Vertragsfreiheit. Was sind die Ziele der Marktbeteiligten?

313 Ressourceneffizienz ist als Ziel, als wirtschaftliches Ziel dahinter zu setzen. ist ein wackliger
314 Anspruch, weil es eben genau betriebswirtschaftlich Gründe gibt, die sehr oft
315 dagegensprechen. Und Ressourceneffizienz ist nach wie vor ganz oft nur eine Etikette. Das
316 geht vom Dieselskandal über die Arbeit der Automobillobby für Verbrauchszyklusmessungen
317 bis hin zu Waschmaschinen CE Verbrauchswerteffizienz. Da wird dann für die
318 Waschprogramme 60 Grad was ermittelt und da stehen dann irgendwelche Verbrauchswerte
319 drinnen und dann hat die A+ Maschine auf einmal A++ gekriegt, aber da steht halt nicht drin,
320 dass das Waschprogramm 60 Grad tatsächlich auch nachgemessen 60 Grad haben muss und
321 dann wäscht es auf einmal nur noch mit 42,5. Da wird technisch überhaupt nichts geändert,
322 plus die Waschprogrammbezeichnung wird halt so ein bisschen weichgespült damit man dann
323 halt nicht sagt okay das ist die 60 Grad Wäsche, sondern das ist die so und so Wäsche, die
324 entspricht 60 Grad, da steht vielleicht auch 60 Grad drin, aber die wird einfach nicht mehr
325 erreicht, sondern nur noch 50 oder 42,5 Grad.

326

327 *H: Habt ihr denn mal mit den Marken gesprochen über die Problematik? Weil du eben sagst,*
328 *dass sie auch keine Geschäftsbeziehung mit den Händlern haben.*

329

330 S: [...]

331

332 *H: Was für Informationen sind relevant für den Käufer, also welche Informationen muss der*
333 *Verkäufer dem Käufer bereitstellen, damit man zumindest in Kontakt treten kann? Ich gehe*
334 *davon aus je höher der Informationsgehalt desto wahrscheinlicher ist eine erfolgreiche*
335 *Transaktion. Kannst du ungefähr sagen, was auf auch jeden Fall essentiell ist?*

336

337 S: Essentiell ist das überhaupt erst mal eine möglichst detaillierte Beschreibung des Produktes
338 selber. Das heißt also der Kaufgegenstand und das ist so essentiell, das wird aber ganz oft als
339 wichtig (unklar) wahrgenommen. Das ist das, was ich vorhin schon mal erklärt habe, da hast
340 du halt ganz oft je nach dem mit wem du als Einlieferer des Datenangebotes hast, hast du da
341 halt schon so eine Hürde, das du halt von der eine Handelsstufe zur nächsten ein hohes Maß
342 an Datenqualität verloren gegangen ist. Das heißt du brauchst als aller erstes Mal eine relativ
343 umfassende Beschreibung des Kaufgegenstandes. Je weniger umfassend der ist, desto mehr
344 wächst die Absprungrate von der Transaktion, da sinkt die Transaktionswahrscheinlichkeit
345 auf dem Marktplatz exponentiell, mit fehlenden Informationen. Da sind zwei, drei wichtige
346 Informationen unter 100 Informationen die ausreichen können, dass sie eine Transaktion
347 verhindern. Für jede Kategorie sind die unterschiedlich, deswegen ja je kleiner die Kategorie
348 desto eher ist das beherrschbar. Also das erste und wichtigste ist der Kaufgegenstand, ist die
349 Produktinformation oder die Information der Dienstleistung, muss ja nicht immer ein Produkt
350 sein. Da wir mit Produkten handeln, ist Punkt 2 die verfügbare Menge und Lieferzeit. Wir
351 sind ein Marktplatz für sofort verfügbare Lagerwaren. Das heißt also, aus welcher Intention
352 heraus wird der Marktplatz genutzt. Unser Marktplatz wird nicht genutzt, um etwas zu
353 „sourcen“ was in 6 Monaten vielleicht kommen soll. Das heißt also hier wird jetzt nicht im
354 Januar die neue Weihnachtskollektion produziert, sondern da ist halt die Frage wie adressiere
355 ich den Kunden und welchen Bedarf möchte ich decken und bei uns ist es halt der kurzfristige
356 Warenbedarf. Das ist unser Kernbereich, wir sind Marktplatz für sofort verfügbare
357 Lagerwaren. Dementsprechend ist die Verfügbarkeit, der Warenstandort extrem wichtig.

358 Noch wichtiger als der Preis, der kommt als nächstes. Und über allem steht die Warenqualität,
359 weil Verfügbarkeit und Preis sagt erst mal gar nicht aus, wenn ich nicht und das gehört zu
360 Produktinformation, trennen wir aber, denn das Produkt, die Produktinformation ist erst mal
361 was ist das Produkt, ist das ein Monitor, ist das eine Batterie, ist das ein Auto, ist das ein
362 Schuh mit seinen Funktionen/Features und danach kommt dann halt in welchem Zustand
363 befindet sich das beschriebene Produkt und da ist auch wieder von Marktplatz zu Marktplatz,
364 von Handelssegment zu Handelssegment unterschiedlich. Wenn du ein Marktplatz für Rohöl
365 machst, dann gibt es auch da unterschiedlichste Zustände, aber wenn du halt ein Marktplatz
366 für Konsumgüter machst, dann gibt es auch da unterschiedlichste Warenzustände und damit
367 es halt, weil die Marktteilnehmer so ein schlechten Digitalisierungsgrad haben, haben wir es
368 beschränkt auf 13 verschiedene Warenzustände, die relativ einfach zu beherrschen sind, die
369 wir mit einer Rechtsanwaltskanzlei und mit unserer Expertise designed haben und das ist
370 dann halt der große Unterschied von uns zu anderen ist eben genau, dass wir diese
371 Kerninformation, die Warenqualität, führen. Preis ist nicht ein Preis ist gibt dann
372 üblicherweise Preis-Mengen-Absatz Funktionen, nennt sich bei uns Staffelpreis, die dann halt
373 hochgeht bis zur Individualpreisvereinbarung. Die Individualpreisvereinbarung findet dann
374 aber in einem zweiten Schritt statt. Das heißt die findet nicht direkt auf der Plattform selber
375 statt, das heißt ich lege die Waren nicht in den Warenkorb und bestell die, sondern ich frag sie
376 an. Frag dann vielleicht noch irgendeine Funktion dabei an. Ein Element was die
377 Transaktionswahrscheinlichkeit erhöht, wenn du die Preisverhandlung versuchst zu
378 digitalisieren und innerhalb des Prozesses zu automatisieren und in deinem Warenkorb mit zu
379 integrieren. Ansonsten ist das dann der Absprungpunkt, und du willst halt möglichst wenige
380 Absprungpunkte bieten. Und dann halt die Information des Verkäufers, der Verkäufer ist ein
381 ganz wesentlicher Bestandteil eines Angebotes, nämlich genau die Seriosität des Verkäufers
382 Beim Handel mit Posten ist es ganz oft so, dass du keine langfristige Geschäftsbeziehung
383 hast, weil du handelst mit Messern und Messer Z und du suchst halt für die Bundlebildung
384 jetzt noch ein Schneidebrett dazu und wer das eine Messerset kauft, der kriegt jetzt noch ein
385 Schneidebrett, und jetzt kannst du irgendwie versuchen ein Lieferanten für Schneidemesser zu
386 finden oder du sagst ach Mensch vielleicht gibt es ja irgendwelche fertigen, sofort
387 verfügbaren Schneidebretter, weil wir wollen jetzt frisch so eine Aktion machen und dann
388 findest du 1850 Stück und dann sagst du ach Mensch super alles klar für 75 Cent super echt
389 toll Schneidebrett, kauf ich. Und dann hast du halt keine gewachsene Geschäftsbeziehung, die
390 den Faktor Vertrauen aufbauen konnte, sondern du hast eine einmalige Geschäftsbeziehung
391 und da ist halt immer das Problem eine vertrauensbildende Maßnahme, und das ist halt die
392 nächste Funktion, die da sein muss, weil du ansonsten auch die Transaktion verhinderst. Das
393 du Maßnahmen schaffst, die dem Käufer über den Verkäufer, also dem Nachfrager über den
394 Anbieter, dann halt informieren und da es schaffen die relevanten Vertrauensbestandteile zu
395 kommunizieren. Dass die Information, die übermittelt worden ist, die ja erst mal nur eine
396 Behauptung ist, dann sowohl über den Marktplatz, als auch über den Verkäufer, sozusagen
397 soll vertrauensvoll aufgeladen wird und die Transaktion dann als Zusatz in der Regel dann
398 halt noch über irgendeine Versicherungsmaßnahme abgesichert wird, dass eben genau diese
399 einmal Geschäfte stattfinden. Zeigt sich bei Amazon wunderbar, bei vielen Verkäufern von
400 Amazon würde man nie gekauft haben, selbst wenn man deren Shops gefunden hat, weil du
401 dich dann immer bei diesem Shop registrieren musst, weil du nicht weißt, ist denn dieser
402 Shop überhaupt groß genug oder ist der zu klein, liefert der, und weiß ich nicht was alles.

403 Dadurch, dass du aber sagst du hast jetzt Amazon im Hintergrund und die garantieren dafür
404 und schon allein erst mal für das Onboarding, dass der Verkäufer gewisse Qualitätsstandards
405 erfüllt und zweitens durch die Transaktionsabsicherung, mir kann nichts passieren, also ich
406 kann auch bei diesem kleinen Käufer kaufen, ich habe da halt Sicherheit. Und Sicherheit ist
407 ein riesen großer Faktor und die gehört halt auch in die Information, die wir an den Käufer
408 kommunizieren.

409

410 *H: Also, ich habe jetzt Information zum Kaufgegenstand, verfügbare Menge und Lieferzeit,*
411 *Preis, Warenqualität und Information zum Käufer[...]*

412

413 S: Warenstandort noch.

414

415 *H: Okay. Und die zweite Frage wäre dann sozusagen umgekehrt, was der Verkäufer über den*
416 *Käufer wissen muss?*

417

418 S: Der muss vor allem erst mal die Vertriebsart wissen. Das ist der häufigste Punkt.
419 Insbesondere im Konsumgüterhandel ist es halt einfach so, dass der Verkäufer wissen will,
420 was mit seiner Ware passiert. Wenn es dann halt ein Hersteller ist, der bei uns mal tätig wird,
421 Importeur oder sonst irgendwas, das sind meistens keine großen Marken, B- oder C-Marken
422 oder Privatlabel-Hersteller, die möchten trotzdem wissen, was mit ihrer Ware passiert. Ein
423 Adidas will halt wissen, dass die Ware nicht bei uns ist. Das ist dann halt noch mal was
424 Anderes. Das heißt also, wir müssen dem Verkäufer oder dem Anbieter gegenüber jetzt erst
425 mal kommunizieren, was ist die Bestimmung des Kaufes. Das heißt also, welche
426 Vertriebsgebiete gibt es, ist der ein Onlinehändler, oder ist der stationär, ist das eine Kette,
427 was auch immer ist das für ein Einkäufertyp.

428

429 Dann zweitens müssen wir halt absichern, dass er Einkäufer tatsächlich auch ein Unternehmer
430 ist, weil wir ansonsten bei einem digitalen Vertragsschluss auf einmal unter Umständen dann
431 Verbraucherschutzrechte haben, wie Widerrufsrecht oder sowas, die dann bezogen werden,
432 wenn nicht abgesichert worden ist. So simpel wie das klingt, so schwierig ist das auch, dass
433 halt im Onboardingprozess tatsächlich erst mal die Information übermittelst. Es ist die
434 definierte relevante Kundengruppe, und die definierte relevante Kundengruppe im B2B heißt
435 erst mal ich bin ein Unternehmen. Heißt aber halt auch, dass du im Onboarding so qualifiziert
436 arbeiten musst, dass du auch einen Gewerbeausweis aus dem Senegal von einer
437 Kaufrechnung von einer Waschmaschine unterscheiden kannst und weißt welche
438 Gemeindeämter dann halt Gewerbebeanmeldungen noch abstempeln und unterschreiben und bei
439 wem es halt einen Internetausdruck gibt. Und dass du das Onboarding so genau machst, dass
440 die Fälschung und der Betrug dann halt erkennen kannst. Das der Einkäufer überhaupt die
441 gewünschte Kundengruppe ist, ist die Information, die wir übermitteln. Dass er den
442 gewünschten Status hat, also, dass er Unternehmer ist, dann das Vertriebsgebiet übermitteln
443 wir und dann übermitteln wir halt wie lang ist er schon bei uns auf dem Marktplatz tätig. Das
444 heißt also, scheint er aufgrund seiner Historie sicher zu sein oder nicht sicher und was dann
445 außerhalb unseres Bereiches ist, wäre dann halt, wenn auch Zahlungsziel geliefert werden
446 sollte, ist er zahlungssicher. Das würden wir gerne mit anbieten, habe wir aber nicht. Ist aber
447 eine Funktion, die bei einem Marktplatz entweder Transaktionsboost oder -killer ist. Wenn die

448 Transaktion nicht abgesichert ist, dann bleibt halt nur die Vorkasse übrig, das ist auch die
449 üblichste Zahlungsbedingung bei uns, und dann ist eben genau das Problem, dass der eine
450 dem anderen nicht vertraut. Der Verkäufer vertraut dem Einkäufer nicht, dass er am Ende
451 bezahlt, wenn er die Ware bekommen hat. Der Einkäufer vertraut dem Verkäufer nicht, dass
452 er nach einer Zahlung auch tatsächlich Ware bekommt. Und dann hast du halt einen
453 Transaktionskiller. Das heißt also dieses Spannungsfeld musst du auflösen. Das löst man am
454 besten auf, indem man die Transaktion über sich zieht. Das heißt also, dass man als Dritter
455 das Geld einsammelt und dann wieder ausgibt. Dann bist du allerdings im PSP-Bereich, das
456 heißt also du bist ein Service-Payment-Provider oder hast ein angeschlossenen Service-
457 Payment-Provider und dann bist du halt BaFin-Genehmigungspflichtig, ist auch nicht ganz
458 trivial, ist aber ein wichtiges Element, wenn man die Transaktion über sich ziehen will, ist,
459 dass man abgesicherte Zahlungsmodalitäten bietet.

460

461 *H: Gibt es hierfür EU-Standards oder müsste ich für jeden Markt eine neue Lizenz*
462 *beantragen?*

463

464 S: Es gibt EU-Standards und es gibt auch Anbieter die Whitelabel-Lösungen haben. Das heißt
465 da gibt es einen Markt für. Selber machen ist schon eine große Sache, da brauchst du eine
466 Banklizenz selber für und das ist halt schwierig. Geht auch, Real hat das gerade geschafft, die
467 haben ihre Banklizenz gemacht. Das heißt man bezahlt jetzt an Real und nicht mehr an die
468 Kunden/Verkäufer. Das ist aber wie gesagt ein Marktplatz, der so groß ist wie Real.de, der
469 macht 600 Millionen Euro Umsatz und der hat jetzt erst sein eigenes Zahlungssystem
470 integrieren können, weil er jetzt diese Reife und Größe hat. Das ist für kleinere sehr viel
471 schwieriger und deswegen sucht man sich da üblicherweise für einen Partner und dann kann
472 man das machen. Das hatten wir mal über einen, Trackspay hießen die, nannte sich dann
473 „conditional payment“, hatten wir dann mal versucht im Markt zu etablieren, hat auch
474 unglaublich viel Geld und Arbeit gekostet, mehrere 10.000 Entwicklungsstunden auf allen
475 Seiten. Hieß dann, dass du so einen Prozess hast, der Vertragsschluss findet statt, es gab also
476 ein definiertes Produkt, einen definierten Vertragsgegenstand mit definierten Konditionen, der
477 Einkäufer sendet das Geld. Das ist aber kein Treuhandkonto, weil der Treuhänder dem
478 Treugeber verpflichtet ist. Das heißt der Treuhänder muss tun, was der Treugeber sagt und
479 wenn der Treugeber, nämlich der Zahlende sagt, nein zahl das Geld nicht aus, darf der
480 Treuhänder nicht auszahlen. Deswegen es darf eben kein Treuhandkonto sein, sondern es
481 muss dann halt eben der unabhängige Dritte sein. Das lief dann über die Net-M-Bank, war ein
482 amerikanisches Zahlungsdienststartup, wo ein deutscher Gründer mit drin war und die hatten
483 das eingesetzt zum Beispiel für den Handel mit Öl und da sind dann halt bestimmt
484 Konditionen, deswegen „conditional payment“, definiert wurden, das war eine modernere
485 Form von so LC-Zahlungen und halt alles voll elektronisch und wenn dann halt tatsächlich
486 irgendwer gesagt hat, okay dieses Konditionen sind jetzt eingetreten, dann wird das Geld
487 ausgezahlt. Das Geld, wenn es dann einmal auf dem conditional payment Konto war, nicht
488 mehr zurückrufbar. Das hört sich jetzt sehr einfach an und gerade wenn du Zahlungsprozesse
489 hast gibt es für uns eine Regel du musst 90 Prozent deiner Entwicklungszeit investieren für
490 die 2-5 Prozent der Transaktion, die nicht funktionieren. Weil ein Zahlungsprozess, ich sende
491 das Geld, das Geld ist da, der andere sagt ja ich habe es bekommen, der nächste sagt ja die
492 Ware ist okay, du schickst es weiter, der ist ganz einfach designed. So, aber du genau jetzt

493 Widersprüche hast und Fristen und Erinnerungen und Nachlieferungen usw. dann wird es
494 kompliziert und das halt alles mit finanzrechtlichen Elementen zu versehen und
495 vertragsrechtlich, international gesehen, das war ein dickes Brett, was dir versucht haben zu
496 bohren. Wir haben das Produkt auf den Markt gebracht, mit Trackspay zusammen, und es ist
497 grandios gescheitert. Das war ein Rohrkrepierer und die Erkenntnis daraus war, dadurch das
498 Trackspay nicht die Traktion am Markt bekommen hat, dass die Leute am Markt ein
499 Trackspay-Konto hatten, ist der Zeitvorteil, dass das alles in Echtzeit stattfindet, verloren
500 gegangen, weil die Leute an Trackspay hätten überweisen müssen. Das heißt die schicken
501 eine Überweisung an Trackspay und danach geht es dann erst schnell weiter und wenn dann
502 halt die Trackspay Transaktion weitergelaufen ist, dann muss es auch wieder zurück auf das
503 Konto des Empfängers überwiesen werden. Dann wurde dem conditional payment auch nicht
504 ausreichend vertraut. Das heißt also, gerade wenn man Zahlungssystem hat, ist die Hürde der
505 Akzeptanz auch beim Marktplatz sehr hoch. Das heißt also da muss man sehr viel Arbeit
506 leisten, dass man das tatsächlich im Markt etabliert bekommt. Deswegen ist es meistens ganz
507 oft so, dass man halt dem Partner mit dem man das macht, da halt vom Marktplatz auch
508 kommuniziert wird, wie mit Wirecard, wo man einen PSP dahinter hat, der etabliert und
509 seriös ist und das strahlt dann halt auf den Prozess aus. Aber das ist tatsächlich auch eine
510 wesentliche Information, die Zuverlässigkeit des Einkäufers und Absicherung einer
511 potentiellen Transaktion.

512

513 *H: Mit welchen Partner arbeitet Resposten.de zusammen?*

514

515 S: Wir haben einen. Das ist die Firma NovalNet, mit der machen wir unsere
516 Mitgliedsgebühren. Die stellen wir aber wie alle Dienstleister regelmäßig in Frage. So 1- bis
517 2-mal im Jahr und dann gucken wir uns halt immer den Markt an, wer ist da. In unserem
518 Segment gibt es Wirecard und Heidelpay. Das sind zwei größere Marktteilnehmer, die
519 durchaus sehr gute und innovative Produkte haben, gerade im Bezug Fraud-Protection. Das
520 ist halt immer dann, wenn du eine Transaktion hast, überall da wo du ein Geldfluss hast, hast
521 du Fraud. Das ist immer so. Da musst du ein hohes Maß an Prozessdesign haben. Auch für
522 den Marktplatz investieren wir viel in Sicherungsmaßnahmen. Wenn wir jeden Anbieter mit
523 allen Produkten zulassen würden, dann wäre bei uns aber wilder Westen und dann würde es
524 uns nicht 20 Jahre, sondern 20 Tage geben. So und dann wärst du weg vom Marktplatz.
525 Genauso wie du nicht alle Nachfrage zu lassen darfst. Das heißt also, das
526 Marktplatzmanagement ist da ein wesentlicher Faktor und der ist halt auch sehr aufwendig.
527 Die internen Prozesse, Filter, Meldelisten, die wir als Marktplatz ja gar nicht haben müssten
528 zwingend, sondern wir stellen ja nur den technischen Marktplatz zur Verfügung. Wenn du die
529 aber nicht hast und nicht etablierst, also ohne Gesetzesgrund, dann hast du aber das Problem,
530 dass es natürlich Betrug bei dir geben wird und weil dann eben genau dieser Betrug der da ist
531 publiziert wird, schlägt das halt für dich auf den Marktplatz zurück. Und da ist 1,2 oder 3
532 Verkäufer, die betrügerisch sind oder 1,2 oder 3 Einkäufer, die betrügerisch sind und ja die
533 unterschreiben, dass die Ware exportiert wird nach x,y,z und dann verkaufst du sie doch in
534 Deutschland auf Amazon. Können halt, wenn diese publik werden, einen Marktplatz
535 verbrennen. Deswegen ist dieses Marktplatzmanagement ein Überlebensinstinkt der
536 Plattform. Hygienische Faktoren muss man haben, das sind Informationen, die man an
537 Einkäufer und Verkäufer publiziert, dies ist aber Abseits der Produktinformation. Das ist

538 sozusagen die Information, dass der Marktplatz als solches, das heißt der Ort, zu dem ich
539 mich für meine Handelsaktivität hinbegebe, den ich nutze, das Vehikel, dass das sicher ist.
540 Das müssen wir immer wieder jeden Tag neu beweisen.

541

542 *H: Wie prüft ihr denn jedes Mitglied? Ruft ihr da an? Geht ihr eine Checkliste ab? Habt mir*
543 *sozusagen ein Blacklist, wo ihr jetzt Unternehmen/Käufer draufsetzt?*

544

545 S: Wir haben Meldelisten für Produktnamen, -kategorien usw., wo Produkte in redaktionelle
546 Kontrolle laufen. Das heißt, die sind erstmal live, laufen aber dann in eine redaktionelle
547 Kontrolle rein. Es gibt tatsächlich auch Blacklists, wo Anbieter erst nach manueller Sichtung
548 und Freischaltung angebotsaktiv werden können. Dann ist es natürlich wichtig, dass ein
549 Angebot, das einmal freigeschaltet worden ist, nicht die unverfängliche Kaffeetasse danach
550 dann auf dem Marktplatz zum iPhone gemacht wird. Das hört sich auch ganz einfach an, ist
551 aber trotzdem technisch nicht trivial. Das heißt also du musst wissen, welche Änderung ist
552 eine wesentliche Änderung und nicht weil er da irgendwie ein Schreibfehler draus gemacht
553 hat, ist der Artikel auf einmal 5 Minuten, 5 Tage, oder 10 Tage in irgendeiner Warteschleife,
554 weil alle redaktionelle Kontrollen, die du machst, musst du auf Unter- und Überlast prüfen
555 und designen und dafür halt auch Prozesse zur Verfügung stellen. Kurze Antwort, ja wir
556 haben Meldelisten, Blacklisten, wir haben Listen, wo wir uns die Angebote angucken. Wir
557 lassen uns Nachweise von Anbietern über den Einkauf ihrer Ware und das ist nicht nur die
558 Rechnung. Mit Photoshop kann jeder eine Rechnung machen, sondern zu einer Rechnung,
559 was weiß ich Warenfluss, eine Tracking-Nummer. Dass man online prüfen kann, dass er
560 tatsächlich von dieser Adresse zu dieser Adresse 25 Paletten gefahren worden ist. Ein
561 Kontoauszug, dass tatsächlich eine Zahlung geleistet worden ist. Das ist dann Arbeit der
562 Sicherheitsabteilung und was wir halt sicherstellen, ist im Onboarding-Prozess schon, dass
563 wir Gewerbenachweise als solche erkennen und dann halt so erfahrene Mitarbeiter haben,
564 dass sie halt genau einen Unterschied in der Typo oder in der Typogröße, also bei
565 Sichtprüfung des Gewerbenachweises erkennen und sehen Moment mal, da ist dieser Text
566 nicht auf der Linie. Da ist der Abstand anders und da ist die Typo anders und deswegen ist
567 das hier vielleicht eingefügt. Und je schlechter die Qualität ist, also das üblichste ist dann halt,
568 dass solche Sachen gefaxt oder schlecht gescannt werden, und wenn sie immer schlecht
569 gescannt werden oder gefaxt werden, da gehen bei uns dann schon immer die Alarmlampen
570 an und dann weißt du...der einfachste Betrugsversuch ist eine schlechte Qualität ein Nachweis
571 zu übermitteln, damit Manipulationen einfach nicht so gut erkennbar sind. Und dann musst du
572 halt entweder sagen, nein tut mir leid die Qualität ist zu schlecht oder du erkennst die
573 Manipulation trotzdem. Aber genau für solche Prozesse musst du halt wissen, was du tust,
574 weil es halt überall da wo Transaktionen abgeschlossen werden, gibt es auch einen
575 kriminellen Antrieb, den musst du halt aufschließen, das ist halt eine deiner Arbeiten als
576 Marktplatz.

577

578 H: Gibt es irgendwelche Informationen, die der Verkäufer nicht öffentlich auf dem
579 Marktplatz teilen möchte, die sozusagen erst im zweiten Schritt, wenn eine Anfrage gestellt
580 wird, geteilt werden?

581

582 S: Wir sind zu allererst ein Sonderfall, weil wir zwar ein geschlossener Marktplatz sind, der
583 ist aber frei im Netz verfügbar. Das heißt du siehst alle Großhandelspreise, alle Produktpreise,
584 die Produktangebote, siehst du. Das hat einen ganz einfachen Grund. Trafficgenerator mit
585 nicht unmaßgeblichen Anteil ist einfach die Produktsuche über Google. Egal wie bekannt wir
586 sind, gibt es halt immer noch Leute, die uns nicht kennen, und da ist es halt erst mal so, wenn
587 du Reichweite schaffen willst über organische anstatt werbliche Reichweite, dann musst du
588 ein digitales Verkaufsgespräch abbilden. Jeder kann auf seine Website schreiben, wir haben
589 tolle Hygieneartikel und tolle Masken zu super Preisen und sind lieferbar. Dafür meldet sich
590 heute aber niemand mehr an. Das ist Quatsch, das ist ein Werbeversprechen. Wenn du eben
591 genau die Produktinformation, bei denen wir vorhin waren, oder die Einkäuferinformation
592 kommunizierst. Nämlich da ist ein Verkäufer, sitzt in Deutschland, ist seit 12 Jahren bei uns,
593 hat jetzt 2078 Masken, das ist der Staffelpreis, das ist die Lieferzeit, das ist die Beschreibung.
594 Dann ist das das digitale Verkaufsgespräch und das ist die Warenqualität, dass die
595 entsprechenden Informationen kommuniziert und dann findet eine Anmeldung stand und das
596 ist bei uns halt basierend auf Gebühren und nicht Transaktionen und dann findet der
597 Absicherungsprozess statt.

598

599 *H: Wie oft habt ihr Betrugsfälle?*

600

601 S: Jeden Tag mehrfach. Da war einer, der war vielleicht drei Stunden online, der hat in drei
602 Stunden über 50,000 Euro in Vorkasse eingesammelt und liefert die Ware nicht aus. Der ist
603 uns zum Beispiel durch unsere Mechanismen durch die Lappen gegangen. Der ist relativ
604 schnell erkannt worden, aber nicht sofort und in den drei Stunden hat er 50,000 Euro
605 eingesammelt

606

607 *H: Und das ist jetzt weg?*

608

609 S: Genau das ist weg. Die Einkäufer sind geschädigt. Ein paar waren dabei, Mensch der Preis
610 ist so gut, vielleicht hat er ja doch, und no risk no fun. Das heißt also auch da ist es so, dass
611 der Verlust auch immer zum Argwohn führt. Manchmal ist es auch eine Wette auf mehr
612 Gewinn und da gibt es auch Kunden, nein ich überweis dem die 10,000 Euro, aber wenn ich
613 die Ware kriege, dann ist das so geil, dann mache ich aus meinen 10,000 Euro 40,000 Euro.
614 Und das ist halt eine Wette und diese Wette geh ich ein.

615

616 *H: Und das ist auch den Teilnehmern bewusst?*

617

618 Das ist den Teilnehmern dann auch bewusst. Das war eben genau bei dem gestrigen der Fall.
619 Da hat nämlich genau einer gefragt, war bei unserer Sicherungsabteilung aufgeschlagen und
620 die hat dann dem gesagt, ja aber der ist erst seit zwei Stunden online. Wenn sie dem jetzt
621 irgendwie das Geld überweisen, wir können gar nichts sagen über den. Da ist noch nicht mal
622 die Adressprüfung ausgewiesen, da war der Brief noch nicht mal raus mit dem
623 Sicherheitscode. Das heißt also die Adresse ist nur anhand einer Wattnummer, dem
624 Gewereregister geprüft gewesen, aber es war noch kein Brief der an diese Adresse gesendet
625 worden ist, weil unter Umständen ist auch die Adresse bösgläubig geklaut und das gibt es ja
626 auch. Das heißt also Handelsregisterauszug ist geklaut, die Adresse ist die richtige von der

627 richtigen Firma, aber die Emailadresse firmennamen@dot.net oder dot.io anstatt dot.com.
628 Aber auch mit Firmennamen. Das heißt da wird dann auch eine Domain angemeldet. Da ist es
629 dann halt einfach so, der Kunde hat gesagt, nein ich überweise jetzt einfach die 10,000 Euro,
630 ich gehe das Risiko ein, wenn der liefern kann dann wäre das mega und wenn nicht dann habe
631 ich mich halt verzockt, aber andere haben gedacht, dass sie die Ware bekommen. Sind da aber
632 reingefallen und das fällt natürlich auf uns als Marktplatz zurück. Also wir müssen uns täglich
633 und zwar mehrfach täglich und auch am Wochenende darum kümmern. Die Betrüger
634 versuchen ihren Betrug auf dem Marktplatz auch gerne 1,2,3,4 bis 5-mal und haben auch eine
635 relativ schnelle Lernkurve. Das heißt also, wer betrügerisch handelt, versucht die
636 Sicherheitssysteme zu durchleuchten. Das ist ja der Punkt und dann halt eben genau die
637 Lücken festzustellen. Die meisten Leute sind so intelligent, dass ich denen auch großen
638 wirtschaftlichen Erfolg im regulären Handel zugesehen würde, aber das scheint nicht deren
639 Antrieb zu sein. Die Betrüger im E-Commerce Handel kommen in der Regel nicht einmal,
640 sondern die kommen mehrfach. Das heißt also, die haben eine hohe Lernkurve und du musst
641 auch rotierende Sicherheitssysteme haben. Das heißt nicht immer nach dem selber
642 Mechanismus vorgehen, ansonsten wirst du sofort durchleuchtet. Dann hältst du einen zwei-
643 Mal ab und beim dritten Mal macht er richtig viel Schaden. Und dafür brauchst du halt auch
644 erfahrenes Personal für. Das ist halt auch eine Information die wir für Käufer und Verkäufer
645 kommunizieren, ist das wir halt eine Sicherheitsabteilung haben, das heißt wir sind ein
646 gemanagter Marktplatz.

647
648 *H: Habt ihr mal in Blockchaintechnologien reingeschaut?*

649
650 S: Nein nicht gar nicht. Müssten wir vielleicht mal tun, haben wir aber noch nicht gemacht.

651
652 *H: Findet nachdem die Transaktion stattgefunden hat noch ein weiterer Informationsfluss*
653 *statt?*

654
655 S: Üblicherweise nicht. Also wir machen da üblicherweise keinen Aftersales, außer dass wir
656 nachfragen, ob die Transaktion gut gelaufen ist oder gibt es Beschwerden oder wenn die
657 Transaktion stattgefunden hat, dann eben halt ein Konfliktmanagement über den Marktplatz
658 anbieten. Das wird beidseitig benutzt, nämlich einmal über die Ware ist nicht die Ware, die
659 ich bestellt habe. Mit dem Abschluss der Transaktion fängt der Ärger erst an. Du hast einen
660 Vertragsschluss und der Käufer bezahlt nicht. Das heißt er kommt also seiner
661 Verkaufsverpflichtung nicht nach. Genau so kann der Verkäufer seiner Vertragsverpflichtung
662 nicht nachkommen, bzw. der andere behauptet immer vom Vertragspartner, dass dieser der
663 Vertragsverpflichtung nicht nachgekommen wäre und dann musst du halt über eine
664 Sicherheitsabteilung einen First-Level-Support anbieten und sagen okay, was ist hier passiert
665 und was ist denn da passiert. Da gibt es objektive Mängel. Die eine Palette hat der Spediteur
666 einfach nicht zu geschickt, das sind die üblichsten Probleme. Die lassen sich relativ schnell
667 auflösen und da fragt man sich manchmal auch, wenn man einen B2B Marktplatz hat, also
668 alle sind zumindest schon mal Unternehmer, wie niedrig kann der Informationsgrad an
669 Handelsrecht sein und da es ist aber einfach ganz oft so, dass man da von vorne anfangen
670 muss. Das heißt da machen wir erst mal einen First-Level. Wir prüfen, entspricht das unserer
671 Meinung dem was versprochen worden ist oder einer der Vertragspartner in welcher Weise

672 seinen vertraglichen Verpflichtungen nicht nachgekommen ist und ein Verstoß gegen
673 vertragliche Verpflichtungen führt dann halt zu einer Marktplatzsanktion, sowohl für
674 Einkäufer als auch für Verkäufer im finalen dann halt den Ausschluss vom Marktplatz. Das
675 heißt also, nein es tut mir leid die Verfehlung war so groß, wir können den oder die nicht
676 mehr auf dem Marktplatz zulassen. Das ist halt bei Betrügern, die ihre Ware nicht liefern so
677 oder bei Bestellern, die dann zwar Bestellungen und verbindliche Verträge auslösen, aber am
678 Ende ihrer Zahlungsverpflichtung nicht nachkommen oder halt ihrer Zahlungsverpflichtung
679 nachkommen, aber immer anfangen irgendwie die Ware zu bemängeln. Es gibt diese, die es
680 als Hobby haben Querulant zu sein. Alle Elemente der Psychologie, die es gibt, findet man
681 auf einem Marktplatz, wenn er nur groß genug ist. Wäre bei deinem Batteriemarktplatz
682 glaube ich auch weniger wichtig. Wir haben insgesamt 80,000 Interessenten und Mitglieder
683 auf unserem Marktplatz aus 97 Ländern, die untereinander handeln. 75 Prozent ist die DACH-
684 Region, aber schon in der DACH-Region gibt es schon große Unterschiede. Schon allein
685 zwischen dem Schweizer an sich, der immer Recht haben muss und den anderen.

686

687 *H: Was für Funktionen/Features benutzt Resposten.de, um die Informationen von dem*
688 *Verkäufer and Käufer zu übermitteln?*

689

690 Technisch gesehen benutzen wir keine Standardsoftware, was eine besonders große
691 Herausforderung ist, wenn man in einem kleinen Team Standardprozess abbilden muss, jetzt
692 wir aber in einem speziellen Nischenbereich gestartet, damals, heute würden wir sicher auf
693 eine Standardsoftware setzen, wenn wir nicht schon so viele alte Software hätten, die so
694 schwierig ist abzulösen, das sind dann die technischen Schulden. Wenn wir heute neustarten
695 würden, würden wir Commerce-Tools wie Striker, Oro oder irgendwas Anderem arbeiten,
696 aber haben wir halt nicht und scheuen uns halt jetzt einmal alles nach links umzukrempeln.
697 Das heißt also, es gibt erst mal ganz verschiedene Eingangselemente, die ich vorhin schon
698 beschrieben hatte, ACSV, manuelle Produkteingabe für die Angebotsherstellung. Das heißt
699 erst mal müssen wir das Angebot auf den Marktplatz kriegen, die API wird nur entstaubt, und
700 ab und zu mal laufen gelassen, damit wir gucken, dass sie noch funktioniert. CSV und
701 manuelle Produkteingabe sind die am häufigsten genutzten Elemente, um Produktangebote
702 auf den Marktplatz zu bekommen. Da ist es halt wichtig, was ich schon vorhin schon mal
703 erklärt hatte, wir haben heterogene Datenquellen. Das heißt wir müssen ein relativ offenes
704 Format haben. Haben natürlich sehr strenge Vorschriften, welche Daten wir am Ende
705 brauchen und deswegen benutzen wir halt eine Middleware. Das heißt also wir haben ein Tool,
706 das wir dann einsetzen, damit wir Daten dann halt verfeinern oder anreichern können. Das ist
707 insbesondere der Warenzustand zum Beispiel. Das ist Kategorie-Matching, weil natürlich die
708 Verkäufer nicht die Kategorien haben wie wir, die Verkäufer aber üblicherweise nur ihre
709 eigenen Kategorien übergeben können und nicht Fremdkategorien in ihren Systemen noch
710 führen. Das machen Amazon und Ebay, sodass man natürlich in deren System führt. Bei uns
711 ist es so, dass man, wir müssen die Kundensysteme übernehmen und dann selber übersetzen.
712 Das heißt also, da muss es dann halt Matching-Systeme geben für Kategorien und bei CSV
713 dann halt irgendwie Bestandsaktualisierung, -optimierung. Bilder müssen SEO optimiert
714 werden usw. Am Ende haben wir halt einen ganz klassischen Warenkorb. Das heißt es endet
715 bei uns in einer Funktion und da unterscheiden wir uns wenig von Ebay oder Zalando. Der
716 Warenkorb besteht aus den Transaktionsdetails, Käufer, Lieferadresse, vereinbarte

717 Konditionen, die sind dann halt noch mal ein bisschen differenzierter, als „ich will das sofort
718 geliefert haben“, die Zahlungsbedingungen. Es gibt halt mehr Dinge, die Vertragsfreiheit
719 haben. Wir tauschen untereinander Einkaufsbedingungen, AGB, Vertragsbedingungen aus. Es
720 müssen Vertriebsgebietswünsche und Verbote kommuniziert werden. Das heißt die sind Teil
721 des Angebotes. Es darf zum Beispiel nicht verkauft werden in der DACH-Region, damit das
722 ein Vertragsbestandteil werden kann, weil wir da das doppelte Problem haben, wir haben
723 zwar ganz wenige Transaktionen über unseren Marktplatz, wir wollen aber die Transaktion
724 natürlich nicht komplett verhindern. Das heißt wir müssen alle Elemente dann tatsächlich
725 auch mitführen, die notwendig sind, damit wir einen vernünftigen juristischen Vertrag über
726 den Kaufgegenstand abbilden können und stellen dafür halt, was bei Amazon ein Seller-
727 Centre ist, ist bei uns das GKS. Ein Admin-Tool, indem ich genau diese Verkaufsanfragen,
728 Angebotsprozesse stattfinden lassen. Das heißt, dass was reinkommt, kann ein verbindlicher
729 Auftrag sein, kann aber auch eine unverbindliche Anfrage sein. Wenn es dann halt der
730 verbindliche Auftrag ist, dann kann er halt vom Verkäufer angenommen werden, weil das
731 Angebot ist ja ein *Invitatio ad Offerendum*. Der Einkäufer sendet jetzt erst mal seine einseitig
732 bindende Willenserklärung, okay ich würde 240 von diesen Jeans kaufen, zum Preis von XY
733 und das ist die Anlieferadresse und der Verkäufer entscheidet sich dann, ob er an diesen
734 Einkäufer verkauft. Das heißt, ob er das Angebot zur Kaufübernahme annimmt oder ob er es
735 nicht annimmt. Das ist jetzt erst mal die erste formaljuristische Besonderheit. Das Angebot,
736 das offeriert ist, ist erstmal dem Zwischenverkauf vorbehalten und der Zustimmung zum
737 Kaufangebot vorbehalten. Das heißt der Verkäufer muss nicht an den Käufer verkaufen. Das
738 ist bei anderen Marktplätzen teilweise anders geregelt. Bei Handelswaren ist es sehr oft so,
739 dass man eben genau diese Marktbeschränkungen und das würde bei dir auch sehen. Da wird
740 es ganz sicherlich sowohl von den Herstellern, als auch vom Produkt her, wird es da
741 Beschränkungen gehen. Wenn die Batterie zum Beispiel nicht mehr funktioniert dann kann es
742 sogar sein, dass es formaljuristische Beschränkungen gibt. Das es dann zum Beispiel gar nicht
743 mehr als Produkt definiert ist, weil die wesentlichen Funktionen fehlen, Batterie hat keine
744 Kapazität mehr. Dann wäre es Elektroschrott, dann darf es zum Beispiel in ganz bestimmten
745 Ländern gar nicht exportiert werden, weil es halt eben Schrott ist. Und da gibt es halt diverse
746 Vorschriften, die man beachten muss und Informationen, die man dann zur Verfügung stellt.
747 Aber ganz grundsätzlich haben wir tatsächlich ein mobil oder über Desktop zu benutzendes
748 System, das halt hinter dem Marktplatz dann noch dieses Interface zur Verfügung stellt,
749 welches einmal die Warenangebote reinholt, dann strukturiert, optimiert, mit Suchbegriffen
750 anreichert, abspeichert, dann in eine NoSQL-Datenbank überträgt, damit wir halt
751 entsprechende Performance haben, alle Bilder werden komprimiert, re-sized usw., werden
752 dann nach verschiedenen Backbones synchronisiert, damit mobile Zugriffe schneller sind.
753 Aber das ist so dieser ganze technische Background. Das Frontend, das was man sieht, das
754 sind vielleicht 25 oder 30 Templates, das ist zwei Prozent der Programmierarbeit. Der Rest
755 sind die Prozesse dahinter und nicht das Frontend. Das heißt also, wie Speicher ich die Daten,
756 wo kommen die Daten her und wie kann ich die Daten so abspeichern und abrufbar machen,
757 dass sie auch auf Last verfügbar sind. Und es da halt nicht zu Ausfällen führt oder allzu
758 langen Ladezeiten. Und dann haben im Moment schwer mit zu kämpfen, weil wir halt einen
759 erhöhten Zugriff auf der Plattform haben. Alle möglichen Leute suchen nach Masken usw. Da
760 müssen wir sagen, da müssen wir noch ein paar Sachen dranmachen, um da Serverlasten zu
761 erhöhen.

762

763 *H: Wie wichtig sind diese Käufer/Verkäufer Profile? Wird sich das angeschaut? Und ihr habt*
764 *kein Ratingsystem, richtig?*

765

766 S: Nein, wir haben kein Ratingsystem. Das ist auch ganz blöd. Wir würden dann aber,
767 dadurch, dass 90 Prozent der Transaktionen außerhalb unseres Marktplatzes stattfinden, diese
768 10 Prozent, die ein Rating abgeben können, wir wissen, dass sie stattgefunden haben,
769 dargestellt werden wie 100 Prozent. Und da die Gruppe M halt so klein ist, das heißt die Zahl
770 der gewerteten Transaktionen im Vergleich zu den Gesamttransaktionen halt so klein ist, ist
771 da halt der Missbrauch relativ einfach. Das heißt man muss davon ausgehen, dass das Rating
772 nicht deswegen stattfindet, weil der Kunde gekauft hat und deswegen ein Rating
773 stattgefunden hat, sondern es gibt ja da auch dann Black-Hat-SEO. Das heißt also es wird
774 dann beim Wettbewerber oder Marktbegleiter gekauft, der kriegt schlechte Bewertungen, weil
775 es halt billiger ist, dass Geld in genau solche Bewertungen reinzusetzen und dann vielleicht
776 eine Kontosperrung zu provozieren, selbst nur über einen gewissen Zeitraum, als sich über ein
777 Preistool sozusagen in den Absatzpreisen auf dem Marktplatz zu fetzen. Das heißt also die
778 Intention der Benutzung ist da halt auch immer eine ganz wesentliche und wo man sich als
779 Marktplatzbetreiber auf jeden Fall von Verabschieden muss als aller erstes ist, dass der
780 Mensch gut wäre und dass die Handlung so wie sie auf dem Marktplatz vollzogen wird
781 wahrheitsgetreu ist. Und einem moralisch, kaufmännischen Grundsatz entspringt, der
782 tatsächlich tolerabel ist. Das ist nicht der Fall, sondern leider muss man immer fragen, wenn
783 man so eine Meldung bekommt und da stumpft man ziemlich bei ab, bis wer will hier wen
784 gerade betrügen. Also, Betrug ist in unterschiedlichsten Ausprägungen ist eine der
785 wichtigsten Aufgaben des Marktplatzes, des Marktplatzmanagements. Das heißt, wenn du ein
786 Bewertungssystem einführst, dann geht es nicht darum wie kann ich das Bewertungssystem
787 möglichst gut machen, sondern wie kann ich das so sichern machen, das mir auffällt, dass
788 gerade irgendwie einer vom Markt geschossen werden soll. Indem ich 30-mal über 30
789 Kunden jeweils über 200 oder 100 Euro bei dem einkaufe, dafür kriegt der eben eine
790 schlechte Bewertung. Dann ist der weg, und dann fällt der mir aber die nächste 200,000 oder
791 300,000 Euro eigenen Umsatz nicht mehr als Wettbewerber auf dem Markt auf. Das sind
792 dann halt eben die Systeme, die dahinter funktionieren. Also, Bewertungssystem nein wegen
793 der zu niedrigen Transaktionshöhe. Wir überlegen da immer wie wir andere Systeme
794 bewerten können, die halt was zu dem Thema Kontakt usw. bedeuten, aber das sind dann halt
795 Bewertungen, die wir selber machen, nämlich das ist die Erreichbarkeit. Das heißt wir rufen
796 regelmäßig bei Kunden an. Wir stellen denen Probeanfragen über Demoaccounts, gucken wie
797 schnell kriegen wir ein Angebot oder eine Anfrage oder eine Reaktion. Das sind wird aber
798 über unseren Kundenservice gemacht. Das sind eben Sachen wie Adressüberprüfungen, die
799 regelmäßig stattfinden. Das wird da halt sicher sind und zwei Funktionen haben: Wie schnell
800 antwortet der? Wie ist er erreichbar? Und sitzt er tatsächlich an dem Ort, an dem er sitzen
801 sollte.

802

803 *H: Die Information, die der Verkäufer vom Käufer haben will, bezieht er dann hauptsächlich*
804 *aus dem Profil?*

805

806 S: Ja, wobei da ist, das Profil ist ja erst mal nur das geschriebene Wort, nichts ist so alt wie
807 die Zeitung von gestern. Da ist es auch einfach so, der Verkäufer dem Käufer oft auf den
808 Zahn fühlt und da abseits unseres Marktplatzes noch mal eben genau das persönliche
809 Gespräch sucht und dann noch mal Details abstimmt. Das ist eben genau die Lücke die wir
810 haben. Das wir die Transaktion nicht sauber genug vorbereiten können bzw. die Vorbereitung
811 nicht abgesichert genug haben und selbst wenn die Information da ist oder gegeben, wird ihr
812 erstmal nicht vertraut

813

814 *H: Resposten.de hat ja einen mehrstufigen Qualitätsstandard festgelegt. Wie genau prüft ihr*
815 *welche Ware welcher Qualität entspricht? Könntest du bitte das Konstrukt des gesamten*
816 *Systems erklären.*

817

818 S: Was wir im Eingang gesagt haben, welche Informationen habe ich für den Käufer -
819 Verfügbarkeit, Preis usw. All diese begleitenden Informationen sind nur etwas wert, wenn ich
820 den Warezustand habe. Die Frage ist welche Verfügbarkeit und welchen Preis für was,
821 nämlich welches Produkt und wie ist der Warezustand. Und da ist es halt ein großer
822 Unterschied, ob du 1a Ware hast. Das heißt also Ware die in Originalverpackung ist, die lange
823 Benutzbarkeit und Verwendbarkeit hat oder ob du eine 1b Ware hast, wo halt schon eine
824 leichte Beule oder wo der Karton zerkratzt oder verstaubt sein kann bis hin zu es ist eine C-
825 Ware, ist es eine Retoure, ist es eine generalüberholte Ware, gibt es bei Fernsehern relativ
826 häufig, das da Platinen ausgetauscht worden sind oder ein neues Pendel reinkommt oder es ist
827 ein kurzes MHD - das „best before“ Nutzungsdatum, das es für unterschiedlichste
828 Nutzungsbereiche gibt: Für Autoreifen, genauso für Silikon, Kuchen, Konserven oder
829 Medikamente. Wobei Medikamente nicht bei uns gehandelt werden. Und da haben wir halt
830 versucht zu mindestens ein grobes Raster, mehr ist es nicht, zu schaffen und dieses grobe
831 Raster halt so allgemeingültig zu formulieren, dass es über den gesamten Bereich, dieser
832 Konsumgüter, die bei uns gehandelt werden, drüber stül-p-bar ist und über unsere AGB haben
833 wir sowohl die Käufer als auch die Verkäufer dazu verpflichtet dieses Konstrukt
834 anzuerkennen, als Basis für ihre Angebote und ihrer Angebote aufgrund dieser
835 Beschreibungen zu formulieren und in unsere AGB steht drin, dass es eben genau ein Verstoß
836 gegen die Warezustandsdefinitionen einen Mangel darstellt. Das heißt also wir müssen für
837 den Marktplatz dann auch noch die Regeln schaffen, wo wir dann sagen, es gibt dieses
838 Konstrukt der Warezustände, damit der Preis überhaupt in Relation zum Produkt gesetzt
839 werden kann und zweitens müssen wir dann noch allgemeingültig erklären, dass sowohl der
840 Einkäufer, als auch der Verkäufer sich an diese Regeln, an diese Warenqualitäten halten, dass
841 sie die anerkennen. Es gibt die Regel, wie wird sie durchgesetzt und sanktioniert, sanktioniert
842 wird sie dann insbesondere vom Einkäufer, weil der sagt: Moment mal, was da geliefert
843 worden ist, entspricht nicht dem Angebotsstand und dann haben wir eben die Käuferrechte
844 wegen mangelhafter Lieferung, die im gewerblichen so möglich sind - Umtausch,
845 Schadenersatz. Das Konstrukt ist erstmal das Raster schaffen, dann die vertragliche
846 Grundlage schaffen, dass dieses Raster Gültigkeit hat. Zweitens, dass die Gültigkeit dieses
847 Rasters für die Angebote als verpflichtende Information vom Verkäufer anerkannt wird und
848 dass ein Verstoß gegen seine Verpflichtungen vom Verkäufer als Mangel anerkannt wird und
849 der Einkäufer das auch als Mangelgrund benennen kann und dass wir dann formal feststellten
850 und das hatten wir auch schon öfters, dass sich am Ende vor Gericht getroffen worden ist.

851 Und dann das Angebot oder die Transaktion, die abgeschlossen worden ist auf Restposten.de
852 dann zur Bewertung des Mangels herangezogen worden ist und da gibt es dann genaue
853 Warenzustände und da habe ich ein Angebot und indem wird versprochen: Ich habe eine 1a
854 Ware und ich habe eine Definition von 1a-Waren und ich habe da ein paar
855 Anwendungsbeispiele wie das zu bewerten ist. Das ist relativ grob gehalten, aber das gibt
856 zumindest schon mal ein Indexfaktor und der ist auch bisher gerichtssicher bewertet worden.
857 Also bisher konnte alle Fälle geklärt werden. Das ist am Ende so gut geworden, dass es
858 mittlerweile Marktstandard ist. Fast alle anderen haben unsere Warenzustände übernommen,
859 die bei uns im Markt tätig sind.

860

861 *H: Und die Warenzustände gebe ich als Verkäufer selber an?*

862

863 S: Richtig, genau. Das ist eine Eigenerklärung. Wir haben an schlimmen Tagen 50,000 neue
864 Produktangebote auf unserem Marktplatz, an schlechten Tagen 5,000. Die sind nicht
865 kontrollierbar. Da geht es nur um Stichprobenkontrollen. Die Stichprobenkontrollen finden
866 vor allem nicht vor Ort statt. Was wir schon mal kriegen, sind Fotos von der Ware oder mal
867 ein Video, was gedreht worden ist, aber eine persönliche Besichtigung kann halt nicht
868 stattfinden. Ansonsten halt die Hygiene des Marktplatzes, der erste der beschissen worden ist,
869 ist halt der, der die Alarmkette auslöst.

870

871 *H: Wie viele Produkte sind im Schnitt auf Restposten.de platziert?*

872

873 S: Ja der Schnitt ist relativ breit. Wir bewegen uns zwischen 100,000 und 240,000
874 Produktangeboten auf den Marktplatz

875

876 *H: Du hattest auch einmal von saisonalen Effekten gesprochen. Wie kann ich mir das
877 vorstellen?*

878

879 S: Das ist halt wenn eine Saison für Feuerwerk durch ist, dann werden halt die
880 Produktverbote aktiviert. Das heißt also, wenn Garten durch ist, ist Garten durch, dann kommt
881 vielleicht was Anderes. Oder wenn Garten durch ist, kommt Garten. Die Produkte werden
882 häufig zum Ende der Saison in den Vertriebskanal gegeben. Das sind jetzt Produkte, die mal
883 weniger oder mal mehr da sind, aber gerade zum Anfang oder zum Ende des Jahres, wenn
884 sich da überlegt wird, dass Lagerleichen abgelöst werden sollen oder was nimmt man jetzt
885 noch mit in die Inventur rein oder was wird abgeschrieben, was wird als Deadstock gesetzt
886 und landet jetzt im Vertrieb und da ist halt zum Jahresanfang und –ende ganz oft der Punkt,
887 wo halt Inventurvorbereitungen sind, wo dann der ein oder andere Verkäufer sagt: Nein, die
888 Sachen müssen jetzt einfach weg. Über die wollen wir uns nicht nochmal unterhalten, warum
889 die nicht gelaufen sind, sondern wir wollen die einfach raushaben. Nutzen wir halt ein
890 Vehikel wie Restposten.de, um diesen Posten zu clearen. Oder versuchen es. Das ist ja
891 erstmal nur ein Angebot, was reingestellt ist. Ein schlechter Artikel zum hohen Preis verkauft
892 sich auf keiner Plattform.

893

894 *H: Woran glaubst du liegt es, dass Restposten.de ein Erfolg ist und sich über so lange Zeit
895 behaupten konnte?*

896

897 S: In Summe haben wir mehr Dinge richtiggemacht als falsch. Ein wesentlicher Teil ist
898 tatsächlich Reichweite. Wir haben die Richtigkeit von SEO früh erkannt und setzten die auch
899 konsequent um und investieren auch sehr viel Geld da rein. Auch in die Fachexpertise von
900 SEO-Beratern, da laufen ständig Projekte im Hintergrund. Das heißt also, Reichweite ist ein
901 ganz wesentlicher Faktor. Transaktionssicherheit ist ganz wesentlicher Faktor. Das heißt also,
902 es findet Betrug statt, aber nicht in so hohem Maße, dass er uns reputationstechnisch zerstören
903 würde, sondern es gibt mehr gute als schlechte Geschäfte. Es wird auch mehr über gute als
904 schlechte Geschäfte gesprochen. Dann ist auch ganz wichtig, dass man als Marktbestandteil
905 wahrgenommen wird. Das heißt also, wir sind auf allen wichtigen Branchenmessen, solange
906 es sie noch gab. Sind da auch meistens relativ groß vertreten. Auf der Aktionswarenmesse in
907 Köln, das ist unsere Leitmesse, da haben wir 300m2 Stand mit Arena und Vortragsprogramm,
908 da trommeln wir richtig. Die Wahrnehmung auf dem Markt ist ganz wesentlich. Das dauert
909 halt auch relativ lange bis du als relevanter Marktteilnehmer angesehen wirst und das
910 Angebot als relevant angesehen wird. Und haben wir früh den Unterschied ausgemacht haben
911 zwischen anderen Marktplätzen, die eben genau diese Spezialbereiche unseres Marktplatzes
912 nicht, also die Warenqualität nicht möglich machen. Und dann tatsächlich der Verzicht auf
913 Transaktionsgebühren. Ich glaube das nach wie vor, dass das einer der wesentlichen Faktoren
914 ist, warum es uns noch gibt. Das ist aber auch leider einer der wesentlichen Faktoren, dass wir
915 trotz Skalierungseffekten wenig and dem Skalierungswachstum partizipieren können. Aber
916 wenn wir die Transaktion closen würden und sagen nein du bekommst die Verkaufsdaten des
917 Verkäufers nicht, dann würde unser Marktplatz glaube ich nicht mehr da sein. Das ist eine
918 subjektive Meinung, haben wir halt nicht getestet, ist meine Überzeugung. Die Monetisierung
919 des Marktplatzes darf man nicht so weit treiben, dass die Nutzenstiftung aufgefressen wird.
920 Wenn der Postenhändler denn so ein Postenhändler ist, ansonsten müssen wir uns für unser
921 System einen anderen Markt aussuchen. Aber wenn da so viel „personal business“ und
922 Handschlag, Preise sollen verhandelt werden. Es geht halt um die Ware, womit der Kunde
923 sein Geld verdient. Es geht nicht darum, dass er möglichst effizient C-Ware einkauft. Das heißt
924 also, dass ich nicht über Amazon-Business mein Kopierpapier einkaufe. Das ist ein ganz
925 anderer Prozess als Handelsware. Bei Handelsware ist halt der Ertragsfaktor hoch und bei C-
926 Ware ist halt der Antrieb, dass ich meine Beschaffungsprozesskosten minimiere. Da geht es ja
927 weniger um den Produktpreis, weil für ein günstigeres Produkt einen neuen Lieferanten ins
928 System zu nehmen halt meistens schon teurer wäre. Da geht es ja um die Effizienz der
929 Transaktion und das muss man halt erkenne, was sind die wesentlichen Treiber für die
930 Benutzung und diese wichtigen Treiber der Benutzung muss man halt tatsächlich bedienen,
931 selbst wenn es schwerfällt. Wir versuchen Transaktionsgebühren einzuführen, werden wir
932 auch zukünftig machen. Bisher haben wir es aber noch nicht geschafft und müssen halt jetzt
933 damit leben und wir sind zwar arm, aber sexy.

934

935 *H: Ich habe mir auch schon bisschen Gedanken gemacht wie jetzt das Geschäftsmodell*
936 *aussehen könnte auf so einer Plattform und das man davon ausgehen kann, dass das*
937 *Transaktionsvolumen am Anfang relativ gering ist. Dass man jetzt sagt, dass man lieber am*
938 *Anfang Mitgliedspreise, wie jetzt bei Restposten, hat und dass man ab einen bestimmten*
939 *Punkt, wenn der Skalierungseffekte greift, auf ein Transaktionsgebühren wechselt. Glaubst du*

940 *es ist einfach diesen Wechsel zu schaffen oder sollte man sich von Anfang an auf ein*
941 *Geschäftsmodell festlegen?*

942

943 S: Da eine globale Aussage zu treffen, ist nahezu unmöglich. Ich für uns kann sagen, dass der
944 Wechsel für uns extrem schwierig ist, wenn man schon solange etabliert ist und sich die
945 Kunden an ein System gewöhnt haben. Das er aber manchmal nötig ist. Es gibt ein
946 Geschäftsmodell, mit dem startet man heute, unter dem Status Quo den man heute hat.
947 Morgen können die Marktbedingungen schon wieder anders sein und wenn wir eins gelernt
948 haben, das wichtigste für uns ist technical ownership und Agilität. Wir müssen nicht an einem
949 System dranhängen, dass irgendwie ein Update aufspielt und auf einmal funktionieren
950 irgendwelche Kernprozesse, die für uns wichtig sind, nicht mehr. Wir sind ein kleiner Laden
951 und haben mehr Entwickler als kaufmännische Mitarbeiter. Technical ownership ist einer der
952 Treiber überhaupt. Wer einen Marktplatz startet und meint irgendwie, die Digitalisierung zum
953 Festpreis, da gibt es auf Kassenzone einen sehr schönen Podcast zu. Die Digitalisierung zum
954 Festpreis ist, dass solche Versuche entspringen, Einkaufsabteilungen, die Felgen
955 üblicherweise gekauft haben mit einem Pflichtenlastenheft, Prozesse die sehr lange einem
956 festen Anspruch genügen müssen. Wie zum Beispiel im Automobilzulieferbereich oder
957 Werkzeugmaschinen, Kabel oder sonst irgendwas. Das muss sehr lange genau einem
958 bestimmten definierten Anspruch erfüllen. Das ist eben genau bei einem Marktplatz ganz
959 anders. Du musst morgen vielleicht ganz andere Sachen machen als heute und du kannst sie
960 nicht voraussehen. Das heißt also technical ownership, Agilität, und in der Agilität heißt
961 natürlich auch die Agilität des Geschäftsmodells. Wenn du ein Modell lange gestartet hast,
962 wenn wir zwei große Fehler haben, dann erstens wir sind viel zu billig gestartet. Das hat uns
963 Kathi hoch und runter gebetet, schon vor zwanzig Jahren, verschenken kann jeder. Du musst
964 die finden, die dein Produkt wollen und die, die sagen naja kostet nichts, ich versuch es mal.
965 Die Koalition der Billigen ist extrem wichtig, weil man wissen muss und realisieren muss,
966 dass technische Prozesse sehr kostenintensiv sind. Das heißt also, man brauch Entwickler und
967 man ist niemals fertig. Und deswegen ist agiles Vorgehen, ständige Entwicklung, und
968 technical ownership sind überhaupt die wichtigsten Faktoren. Das sollte aber für jedes
969 technische Produkt sowieso gelten und deswegen weißt du heute nicht, was aus deinem
970 Geschäftsmodell morgen wird. Wir haben viel zu billig angefangen. Bei uns hat die
971 Verkäufermitgliedschaft irgendwann mal 49 Euro im Jahr gekostet. Da waren wir noch viel
972 kleiner da hat sich das gerechnet. Think BIG, man muss immer größer denken. Und wenn
973 man ein wertvolles Angebot anbietet dann muss man das wertvolle Angebot auch adäquat
974 bepreisen. Wir sind mittlerweile auf 38,90 Euro pro Monat. Das heißt also wir haben unseren
975 Preis verzehnfacht, von 50 auf 500 Euro. Das hat viel Kraft und Diskussion gekostet. Wir
976 hätten ihn aber nicht verzehnfachen, sondern verhundertfachen müssen. Weil die Leute auch
977 ganz oft, je nach dem wen du adressierst, haben die Kunden überhaupt keine Ahnung, wenn
978 sie eben nicht digitalisiert genug sind, ob der Preis angemessen ist oder nicht. Und das ist
979 eben auch ein ganz wesentlicher Punkt, ist die Angemessenheit des Preises, einmal der
980 eigenen Bewertung nach und der Bewertung der Kunden nach. Die Bewertung der Kunden
981 impliziert, sind die über solche Leistungen mit denen in Kontakt getreten und kennen sie
982 Preisbereiche oder komme ich mit einem ganz neuen Produkt und mit einem ganz neuen Preis
983 und die können nicht einschätzen, ob der Preis jetzt gerechtfertigt ist oder überzogen. Die
984 Preisbereitschaft, also den Preis zu zahlen, den ich als Preis für mein Produkt am Ende

985 verlange, ist ein wesentlicher Faktor und wir haben früher viel zu billig angefangen und wir
986 adressieren einen ganz schlecht digitalisierten Kundenkreis, insbesondere auf der
987 Verkäuferseite und die wissen einfach nicht, weil sie gar keine GoogleAdwords Kampagnen
988 machen für ihre Onlineshops oder für ihre B2B, weil sie halt vorher mit Reisenden unterwegs
989 waren. Ich hoffe, dass die das jetzt alle machen, die kriegen von uns so ein
990 Anbieteraktivitätsbericht, wo wir mit einem Klickpreis von 38 Cent rechnen. Das ist, wenn du
991 ein gut gemanagte Google-Kampagne hast oder wenn du auf dem Preisvergleich drauf bist
992 wie Idealo oder Billiger oder sonst irgendwas. Im B2B Umfeld für Konsumgüter ist 38 Cent
993 schon ein guter Preis von einem mittleren fünfstelligen Werbevolumen, das du im Monat hast.
994 Dann hast du 38 Cent, wenn du Sofortkredit optimieren willst, kommst du vielleicht auf 28
995 Euro. Da versuchen wir unseren Verkäufern halt zu vermitteln, dann schicken wir denen
996 einen Anbieteraktivitätsbericht, dann gibt es halt auch einfach Verkäufer, die kriegen im
997 Monat Werbeleistungen von uns.

998

999 *H: Jetzt noch mal zu technical ownership. Ihr sammelt ja viele Daten, macht ihr irgendwas
1000 damit? Monetisiert ihr diese Daten in irgendeiner Form? Oder hauptsächlich nur zur
1001 Prozessoptimierung der Plattform selber?*

1002

1003 S: Genau, richtig. Prozessoptimierung, Suchergebnislisten-Design usw. Die Monetisierung
1004 von Daten wird ja, wenn man sich rechtskonform verhält einem nicht leichter gemacht
1005 zunehmend. Wir könnten da in Bezug auf Personalisierung bestimmt sehr viel mehr machen.
1006 Die Preisbereitschaft hängt davon ab, wie klar kennt sich mein Adressat mit dem Angebot
1007 und dem Preis für das Angebot oder Vergleichsangeboten aus. Wenn du ein ganz neues
1008 Produkt bringst, ist die Preisbereitschaft manchmal sehr schwierig und es ist ähnlich
1009 schwierig sich für das ganze...also, wenn man zu billig rangeht, hat man Leute, die einem
1010 Arbeit machen und einen bremsen. Dann sagen die: Ja, ich versuche es mal, aber weil es
1011 nichts kostet. Dann wird aber hinter die Benutzung des Marktplatzes nicht die Ressource
1012 gestellt, die ein effektives Output dann am Ende realisieren würde. Wenn es aber kosten, oh
1013 Moment mal, wenn wir jetzt hier 2,000 Euro im Jahr bezahlen, dann müssen wir auch
1014 sicherstellen, dass die Mitarbeiter die Sachen darein spielen usw. Bei 49 Euro, jaja schließen
1015 wir mal ab. Dann ist Jasagen um Verhinderungs- oder Diskussionszeit zu sparen. Dann sag
1016 ich lieber mal ja, habe 20 Minuten an Gesprächen mit denen gespart, machen aber am Ende
1017 nichts. Und das ist an dieser Stelle ein ganz schlechter Antrieb. Und deswegen ist es so, dass
1018 wir den Fehler gemacht haben, dass wir viel zu billig gestartet sind, aber frühere war die
1019 Preisbereitschaft halt niedrig und die Information über die Realisierung des Marktes halt und
1020 die Kosten von solchen Systemen war halt schlecht und die ist heute nach wie vor schlecht.
1021 Alleine die Tatsache, dass wir, wenn wir ein Bild hochgeladen bekommen, das heißt ein Feed,
1022 da sind fünf Bilder drinnen. Jedes Bild, dass wir hochgeladen bekommen wird erstmal
1023 komprimiert. Das kostet Geld. Da braucht man einen Dienst für. Dann gibt es re-sized, das ist
1024 der nächste Dienstanbieter. Der kostet auch Geld. Dann wird es in sieben verschiedenen
1025 Größen abgespeichert, weil es ein Vorschaubild gibt, dann gibt es fünf verschiedene
1026 Breakpoints für die Seite für die mobilen Ansichten und dann gibt es noch eine weitere
1027 Ansicht. Das heißt also, dieses eine Bild was wir hatten, was vielleicht ein schönes,
1028 hochaufgelöstes, 15 MB-Bild ist. Das muss einmal runtergeladen werden, wird dann re-sized,
1029 wird komprimiert, wird in sieben anderen Größen gelegt und wir dann auf

1030 Hochverfügbarkeitsservern in der AWS dann gespeichert. Das ist der Prozess, den wir für
1031 jedes einzelne Bild machen. Und jetzt ist der Verkäufer, der lädt uns vielleicht 1,000 oder
1032 2,000 Produkte am Tag immer neu hoch. Jetzt haben wir dann mittlerweile immer so eine
1033 Quersumme am Bild, das heißt also wir erkennen, ist das ein neues Bild oder ein altes Bild.
1034 Auch dieses technische Know-how muss auch erstmal haben. Das man überhaupt erstmal
1035 weiß, dass man Quersummen bilden kann oder ob man das für jedes Bild dann immer wieder
1036 neu macht und dann halt auch entsprechende Dienstleisterkosten dahinter hat oder das nicht
1037 macht und dann aber ein 20 MB Bild in einer mobilen Ansicht im Hintergrund laden will und
1038 sich fragt warum ich den von Google abgestraft werde. Das sind also komplexe
1039 Wirkungszusammenhänge und die bedeuten, dass man schon gar nicht so günstig anbieten
1040 kann, wie wir das damals gemacht haben und wie wir das heute tun und wir müssen halt
1041 deswegen auch auf die Transaktion drauf. Bei dem Erlösmodell ist meine Empfehlung muss
1042 man mutig sein. Lieber, man ist etwas mutiger und die Leute zu überzeugen, fällt schwerer,
1043 als man stellt hinterher fest, man hat viel zu wenig Budget, Aufgaben erledigen muss von
1044 denen man bei der Planung nicht wusste, dass es sie gibt und die werden kommen. Also auf
1045 der grünen Wiese, auf der weißen Wand gemalte Marktplätze sind immer schön, du vergisst
1046 aber ein Haufen Prozesse, vor allem die, die nicht die offensichtlichen sind und die nicht
1047 offensichtlichen sind halt ganz oft Betrug, SEO Optimierungen, Dienstleistungsoptimierung,
1048 sind Produkthanreicherungen usw., die aber nötig sind, die aber meistens auch aufwendig zu
1049 gestalten sind und kommt immer noch Workload dazu, den man halt vorher nicht absehen
1050 konnte, deswegen sollte man sich in seiner Planung Puffer einbauen und man sollte auf gar
1051 keinen Fall zu billig ran gehen.
1052
1053 *H: Vielen Dank für deine Zeit [...]*

1 3.2 Goran Stanar

2

3 *H: Seit wann existiert Wucato?*

4

5 G: Seit fünf Jahren. 2015 gegründet.

6

7 *H: Und ist Geschäftsmodell transaktionsbasierend oder habt ihr so etwas wie*
8 *Mitgliedbeiträge?*

9

10 G: Auch hier sind wir im Umbruch. Es gibt eine neue Neuausrichtung oder Optimierung der
11 Beschaffungsplattform und aktuell ist das eine transaktionsabhängige Provision, die in
12 Richtung Lieferant abgerechnet wird bzw. wir haben ja zwei Geschäftsbereiche in Wucato.
13 Also, der zweite Geschäftsbereich ist Marktplatz, so wird das bei uns genannt, da gibt es die
14 Vermittlerprovision, die in Richtung des Lieferanten abgerechnet wird auf Basis der Umsätze,
15 die der Kunde dann auch tätigt oder der andere ist im Shop-Bereich wo wir Käufer und
16 Verkäufer der Produkte sind. Da gibt es dann das klassische Handelsgeschäft über eine
17 Marge.

18

19 *H: Und dadurch, dass es Würth gehört, sind das dann Würth-Produkte?*

20

21 G: Da kann ich mal ein bisschen weiter ausholen. Also ursprünglich die Namensgebung
22 Wucato kommt auch daher, dass man ursprünglich Würth Produkte konsolidiert hatte bzw.
23 eine online Katalog bereitgestellt hatte. Viele Kunden, die aus der Würth-Gruppe sind, es gibt
24 ja nicht nur Würth, sondern bei Würth selber gibt es aktuell 84 Handelsgesellschaften alleine
25 in Deutschland, weltweit sind das über 500 und man hat Kundenüberschneidungen gehabt,
26 die bei Würth gekauft haben, bei Hano Kolt, Feger & Schmidt, bei dutzend anderen noch.
27 Und diese Gesellschaften wurden in Form von Lieferanten ... auf Wucato konsolidiert. Da
28 haben wir die Artikel gekauft aus der Würth-Gruppe und wiederverkauft an die Kunden und
29 irgendwann kam der Kunde ja das was sie auf Wucato abbilden, das ist interessant, aber ich
30 habe noch Bedarfe an anderen Sortimenten, Lieferanten, teilweise auch nicht aus der Würth-
31 Gruppe. Und so sind wir eben auch zu der Entwicklung gekommen um den zusätzlichen
32 Geschäftsbereich Marktplatz zu implementieren und eben auch externe Lieferanten zu
33 Wucato onzuboarden.

34

35 *H: Dazu direkt anschließend. Also wie stellt den Wucato einen gewissen Qualitätsstandard*
36 *für externe Lieferanten sicher? Gibt es dann einen Standard über alle Kategorien hinweg?*

37

38 G: Es gibt über alle Produkte hinweg einen gleichen Qualitätsstandard. Wie gesagt wir
39 gehören zur Würth-Gruppe, sind eine hundertprozentige Tochter, und so viel Startup und so
40 viel Kreativität wie man mag, aber gewissen Werte sind dann bei uns dann auch oberste
41 Priorität und Qualität steht bei uns schon sehr, sehr groß geschrieben. Deswegen schauen wir
42 uns die Lieferanten im Vorfeld ganz genau und gehen da auch schon geprüft teilweise, ISO
43 Prüfungen ... teilweise Qualitätsprüfungen und Produkte und wenn wir sicherstellen, dass die
44 Kunden auch nur mit Qualitätsware zu tun haben. Wir würden auch nicht um jeden Preis

45 jeden Lieferanten zu Wucato bringen wollen, wo wir nicht davon überzeugt sind, dass der ein
46 gewisses Niveau dann auch mit sich bringt, ohne dies zu werten.

47

48 *H: Gehen Sie denn auch zu den Produktionsstätten selber oder machen sie es alles digital?*
49 *Oder kommt es drauf an.*

50

51 G: Man macht eine gewisse Mischung, weil es gibt gewissen Lieferanten, da gibt es natürlich
52 gewisse Zertifikate, da kann man schon sicher davon ausgehen, dass da alles Hieb- und
53 Stichfest ist, bei manchen kann man da auch Stichprobenkontrollen ... verlangen, bei manchen
54 ist man dann bei den Pitches mit dabei und geht dann durch die Produktionsstätten oder
55 besichtig die Industrieanlagen und so kann man sich dann auch ein Bild davonmachen. Und
56 bei denen, die im Marktplatzbereich praktisch an den Kunden in Richtung
57 Vermittlungsgeschäft gemacht werden. Da obliegt die, sag ich mal, letzte Instanz der Prüfung
58 dem Lieferanten selber, da wir ja lediglich als Vermittler und die Haftung liegt da beim
59 Lieferanten komplett. Dann würden wir diese Tests in dieser Tiefe gar nicht machen

60

61 *H: Ist Wucato nur in Deutschland aktiv?*

62

63 G: Aktuell sind wir nur in Deutschland aktiv. Es gibt Pläne ins Ausland zu gehen. Die sollten
64 innerhalb der nächsten 12 Monate auch umgesetzt werden, da sind wir schon in konkreten
65 Abstimmungen. Welche Länder das sein werden und welches das erste ist, da können wir
66 aktuell noch keine Info darüber geben. Deutsch-ansässige Lieferanten für deutsch-ansässige
67 Kunden.

68

69 *H: Jetzt zu der Transaktion selber. Können sie vielleicht grob sagen, was für einen Käufer,*
70 *des jetzt auf Wucato aktiv ist, was sind die essentiellen Informationen, die er von dem*
71 *Verkäufer bekommen muss, um eine fundierte Entscheidung machen zu können. Was sind die*
72 *Grundvoraussetzungen?*

73

74 G: Generell geht es darum, dass es verschiedene Merkmale gibt, ... halt verschiedene
75 Verkaufskategorien. Wir haben aktuell 19 Verkaufskategorien auf unserer Plattform und die
76 werden auch sukzessive erweitert. Und ich sag mal es geht je nach dem wer an der Maus oder
77 dem Rechner sitzt und der die Artikel bezieht, welche Informationen ihn dazu bewegen dieses
78 Produkt zu kaufen. Von Artikel zu Artikel gibt es da Abweichungen, aber es gibt gewisse
79 Mindestanforderungen, was die Produktdatenqualität angeht und die müssen dann pro
80 Kategorie auch von jedem Lieferanten erfüllt sein. Also verschiedene Merkmale, ob das jetzt,
81 man kann das meinetwegen an der Maus feststellen, Ladezeit, Infrarot, kompatibel, stärke,
82 länge, höhe, breite, tiefe weiß ich nicht, Qualitätsstandard, Einsatzart usw. Je nach Produkt
83 gibt es verschiedene Filtermerkmale oder Eigenschaften, die ein Produkt nicht haben muss,
84 die aber einfach Teil der Beschreibung sein müssen. Dieses Produkt wird eben erst dann auf
85 die Plattform geladen, wenn es diese Kriterien erfüllt. Und der Lieferant sollte dafür sorgen,
86 dass er eben auch diese Artikel oder diese Daten zu Verfügung stellen kann.

87

88 *H: Würden Sie sagen je höher die Informationsfülle desto wahrscheinlicher kommt es zu einer*
89 *Transaktion?*

90

91 G: Das würde ich nicht nur sagen, sondern das ist Fakt. Wir sagen letztendlich, dass der
92 Kunde über die Produktbeschreibung kauft und unser Algorithmus bzw. unsere Suchmethode
93 ist so, dass derjenige der den passendsten Inhalt zu der Suchanfrage, die der Kunde dann
94 eingibt, der eine Artikelnummer eingibt CRN-Code, das sind dann 1 zu 1 Fragen ... aber
95 Artikelbeschreibungen oder Fachjargon und je genauer die Informationen, die das Produkt
96 oder die Produktbeschreibung hat desto höhere die Wahrscheinlichkeit, dass dieser Artikel
97 dann auch als erstes oder ziemlich weit oben ausgegeben wird, also in der
98 Suchergebnisausgabe. Dann halten wir die Lieferanten auch immer wieder darauf an
99 möglichst voll umfängliche Produktdaten abzugeben, wenn die natürlich als erstes genannt
100 werden wollen. Das heißt also, wir favorisieren keine manipulierten Ausgaben, also wer am
101 freundlichsten zur Würth-Gruppe ist oder zuerst kommt Würth, das war noch nicht so der
102 Fall. Wenn man sich auch anschaut wir haben jetzt ca. nur noch 15 Prozent des Sortiments in
103 Form von Lieferanten kommt aus der Würth-Gruppe. Alles andere sind externe Lieferanten,
104 die mit Würth keinerlei geschäftliche bzw. familiäre Beziehung haben, unternehmerisch
105 gesehen. Von daher gesehen ist uns auch eigentlich relativ egal, oder wir sind neutral, der
106 Kunde soll das Produkt finden wonach er sucht und er findet es dann am ehesten, wenn das
107 Produkt dementsprechend auch beschrieben ist oder alle Merkmale und
108 Produktbeschreibungen innehat.

109

110 *H: Wie ist der Anmeldeprozess des Kunden?*

111

112 G: Also generell ist es so, dass sich der Kunde einmal einloggt, wenn er den Login bekommt
113 und das Interessante, oder vielleicht das was uns ausmacht und uns abgrenzt zu anderen
114 Plattformen, wobei ich mich da nicht so wirklich auskenne. Wir schauen nicht wirklich auf
115 andere, sondern wir schauen schon auf uns, denn wir kommen schon irgendwie aus der
116 Würth-Gruppe und es geht über 7-Jahrzehnte mittlerweile so, dass der Kunde derjenige ist,
117 der das Geschäft antreibt und so haben wir die Plattform auch aufgebaut. Das heißt der Kunde
118 hat ganz klar vorgegeben welche Produktprozesse, welche Tools, welche
119 Abrechnungsmethoden, wie möchte er ein Produkt finden, wo soll das eingegliedert werden,
120 wir haben uns danach gerichtet und das heißt, der Kunde bekommt dann seinen Login und
121 kann das auf seinem Unternehmen anpassen, auf seine Einkaufsprozesse, auf seine Art und
122 Weise wie er beschafft, ob da ein User ist oder tausend User, Freigaben, Kostenstellen,
123 Arbeitsplatzbelieferung, individuelle Preise usw. stellt das alles auf seine Bedürfnisse ein und
124 sollte ein Produkt nicht auf Wucato online sein in Form des Lieferanten der dahinter steht,
125 dann sorgen wir dafür, dass wir das von einem anderen Lieferanten der Würth-Gruppe selber
126 oder aus einer anderen Art zur Verfügung stellen können. Das heißt in Form eines neuen
127 Onboardings und der Prozess gilt für jeden Lieferanten gleich und der Kunde bestellt und wir
128 haben keine eigene Logistik oder so, sondern der Lieferant liefert dann direkt an den Kunden
129 aus und alles andere, außer dieser Auslieferung, wickelt dann Wucato ab. Das heißt der
130 Kunde wird sich nicht selbst überlassen, in irgendeiner Art und Weise Online-Anonymität,
131 sondern was uns auszeichnet ist unsere Service-Plus-Level. Das heißt wir haben eine eigene
132 Serviceabteilung, die sitzt hier direkt auf Zentrale in Stuttgart bei uns ihm Team. Also wird
133 auch nicht irgendwie fremdgesteuert bei allen Anfragen die da reinkommen. Ob das jetzt
134 Kundenanfragen sind oder Lieferantenanfrage, habe sie Produkte kriegen sie da noch mal eine

135 Rechnung, bei einer Bezahlung ich habe hier noch ein Anliegen, noch mal 50 User usw. Das
136 wird alles von unserem Team mitaufgenommen und wir haben einen eigenen Außendienst,
137 der den Kunden auch langfristig betreuen kann.

138

139 *H: Das heißt die Bezahlung wird auch komplett über Wucato abgewickelt?*

140

141 G: Wenn der Einkauf über den Shop-Bereich platziert wurde, da wo wir als Käufer und
142 Verkäufer sind, da auf jeden Fall. Perspektivisch da wo wir auf dem Marktplatzbereich sind,
143 wo wir der Vermittler sind, da werden wir ein Zahlungsprovider einschalten dieses Jahr noch.
144 Aktuell ist der Stand so, dass der Kunden im Marktplatzbereich noch direkt an den
145 Lieferanten bezahlt und der Lieferant die Abwicklung der Bezahlung mit dem Kunden dann
146 auch regelt. Perspektivisch wie gesagt bauen wir einen Payment-Solution-Provider mit ein,
147 der aller Voraussicht nach 2020 dann auch live gehen wird.

148

149 *H: Sind irgendwelche Informationen wichtig für den Verkäufer über den Käufer? [...]*

150

151 G: Zur Aufnahme von Wucato gibt es einen Kundenaufnahmeprozess. Wir besuchen den
152 Kunden auch, machen gewisse Bedarfsanalysen, welche Artikel, welche Lieferanten sind
153 gesetzt, was hätten ihr schon zur Verfügung, was muss noch zu Wucato gelangen und der
154 Kunde wird auch auf Bonität geprüft, wir sichern unseren Lieferanten zu, keine
155 Wiederverkäufern/Garagenhändler oder irgendwelche Outlets zu präsentieren hier als
156 Kunden. Darauf ist die Plattform auch nicht ausgelegt, denn das ist keine zusätzliche
157 Online-seite als Vergleich, wo kann ich den besten Preis kriegen. Das ist gar nicht unser
158 Konzept, das ist halt eine ganzheitliche Beschaffungslösung. e, denn der Prozess davor, das
159 Suchen, das Implementieren und der Prozess danach – das ist was das Produkt so teuer macht.
160 Und mittlerweile im Onlinebereich ist die Transparenz so groß, dass jeder weiß was ein
161 Faber-Kastell Bleistift in H025 kostet und derjenige entscheidet halt aus dem Bauch heraus 75
162 Cent dafür zu zahlen oder 1,75 Euro. So und dieser Unterschied von dem Preis macht eben
163 der Lieferant einen USP über die Beschaffungsplattform aus. Unsere Kunden sind keine
164 Kunden die erst mal vor dem Rechner schauen wo kann ich diesen Bleistift am günstigsten
165 kaufen und wo logge ich mich dann ein und wo ist das Passwort, wie lange brauche ich für
166 die Lieferung, sondern unsere Kunden sind die Kunden, die sagen ich brauche Bleistifte ich
167 kaufe sie über Wucato, fertig.

168

169 *H: Existiert Betrug auf Wucato?*

170

171 G: Sowas haben wir nicht. Es gab bisher noch keinen Fall in den ganzen fünf Jahren. Wir
172 haben bisher auch keine Reklamationen oder solche Geschichten in Richtung Produkte. Wir
173 hatten mal, das war glaube ich das fünfte Mal, dass irgendein Paket doppelt bestellt wurde
174 oder von dem Versanddienstleister beschädigt angekommen. Also solche Dinge, aber
175 gravierende Reklamation zwischen Lieferanten und Kunden haben wir nicht.

176

177 *H: Inwiefern hat sich die Zusammenarbeit zwischen Würth und Wucato bezahlbar gemacht?*

178

179 G: Seit September Rekordmonat nach Rekordmonat. Jetzt fängt es sich an bezahlbar zu
180 machen die ersten Entwicklungsjahre. Das ist auch so, dass wir mittlerweile, also es ist nicht
181 so, dass wir mit ... gestartet sind als Sortimentgeber, sondern dass die Würth-Gruppe selber
182 erkannt hat. Mensch, wir haben ja selber auch Bedarfe in Richtung MRO, also Maintenance,
183 Repair, und Operations, diese T-Teilemanagementbeschaffung kostet Millionen-Beträge,
184 zweistellige pro Jahr und die sollten auch eine Plattform besuchen wieso nicht Wucato. Das
185 heißt wir haben jetzt seit über einem Jahr die Würth-Gruppe als aktiven Kunden, weil Würth
186 hat natürlich auch erkannt, dass es Sinn macht bei Wucato einzukaufen...

187

188 *H: Zusammenhang Würth und Wucato [...]*

189

190 G: Nein, wir wären auf jeden Fall nicht so schnell da wo wir heute sind. Auf gar keinen Fall.
191 Und Qualität ist auch was, was mit Würth in Verbindung gebracht wird und da sind wir auch
192 froh drüber. Es gibt natürliche gewisse Abteilungen, oder wir sagen dazu Services, die wir
193 Tag ein Tag aus nutzen und wir müssen diese Abteilungen und Menschen nicht bezahlen, das
194 ist Teil der Familie, ob das jetzt die Personalabteilung, Buchhaltung, Rechtsgrundkontrolle.
195 Also die ganze IT beruht auf der Würth-Familie, die Würth IT, ist unser Pate, der uns da auch
196 tatkräftigt unterstützt und wir sind alle ziemlich happy, dass wir zur Würth-gruppe gehören.
197 Und das Würth bei uns auch einkauft, nicht nur ihre Sortimente zur Verfügung stellt über die
198 ganzen Unternehmen, sondern auch einkauft und natürlich für uns nicht jetzt mit win-win-
199 Situation, das ist jetzt vielleicht für den ein oder anderen Lieferanten oder Kunden
200 beeindruckend, aber für uns ist das natürlich schon so ein riesen großer Vertrauensrückhalt,
201 nicht jetzt irgendwie monetär, 5 Jahre wurde da investiert, Kapazitäten frei gegeben, sondern
202 jetzt kommt auch der Respekt zurück. Das ist für uns natürlich schon ein Adelstitel.

203

204 *H: Vielen Dank für deine Zeit [...]*