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Strategic Development Plan for Ontime Courier GmbH

Masters' Thesis

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Abstract

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Ontime Courier GmbH is a medium-sized courier company that specialises in the organisation and implementation of transport services in the field of pharmaceutical and life science logistics worldwide. One mission of this German-based company is accompanied transports of stem cell and bone marrow donations for transplant purposes. This so-called onboard courier business refers to several commercial onboard courier service providers who provide clients with high-end logistic solutions with suitable, dedicated, trained, and well-briefed human couriers. The onboard courier is responsible for the global door-to-door delivery of the shipment.

Ontime Courier GmbH is the commissioner of this study. The clientele of this company is predominantly from Europe, North and South America as well as South Africa. The company faces normal business risks that arise from competitors' activities. However, the situation is moderate, as the barriers to entry into the market for the transport of transplants remain very high. Ontime Courier GmbH is experienced in expanding its market area with the support of organic and inorganic growth strategies in other life science logistic fields. Now, the company targets new clientele exclusively from stem cell and bone marrow registries that are located outside of Europe and North America. This clientele has different needs.

This thesis aimed to identify new logistic markets for transporting donated stem cells and bone marrow for cellular therapy and to analyse whether these markets provide new clientele for Ontime Courier GmbH. The study aimed to answer the question: Where, and under which conditions, can Ontime Courier GmbH find new market potential to grow outside of Europe and North America? Moreover, it was crucial to understand the characteristics and needs of these markets.

This study has a mixed-method approach, and the research strategy of this study is a case study. The data was collected through a market research survey using a questionnaire as the measurement instrument. The survey respondents were selected based on their active membership in the World Marrow Donor Association. Quantitative data collected through the survey was analysed by descriptive analysis. Further, a semi-structured stakeholder interview was arranged to gain diverse perspectives, validate the findings of the questionnaire results, understand the company's internal position, and identify possible unexplored areas or biases. Interviewed persons are selected based on their important role in the logistic value chain and present onboard couriers, staff of Ontime Courier GmbH and HLA laboratories as well as collection and transplant centres. Content analysis was utilised to analyse all the interview answers as well as qualitative data from the survey. PESTEL and SWOT analyses provided support to create a strategic development plan for the commissioner.

The output of this thesis is a strategic development plan for Ontime Courier GmbH. It provides several development suggestions to adjust one part of the commissioner's strategy to better suit the requirements of registries and transports outside of Europe and North America.

Foreword

This work is dedicated to over 41 million volunteer donor candidates worldwide.

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List of Symbols

Allogeneic stem cells	cells that are taken from different individual of the same species and can produce blood cells
Bone marrow / BM	a liquid substance containing stem cells and found in the centre of the bones
Brand	Expressions and images of a company's identity which in optimal condition can build trust and predict the customer loyalty
Collection Centre / CC	a medical facility where the collection of haematological stem cells or bone marrow happens
Corporate identity	Company's strategic decisions and choices as well as its expression thereof
Courier registry	a patient registry or a donor registry who takes a responsibility to ensure that the transplant will be delivered to the patient
DLI	Donor Lymphocyte Infusion, an immunotherapy, where healthy T-cells from a donor are given after hematopoietic stem cell transplant to prevent a relapse
Donor registry	a supplying organisation who recruits suitable donors and lists the donor HLA type on the global database
Global born	an enterprise engaging in international operations since their start-up phase and having strong intercultural capabilities
Haematological	blood-forming
HLA typing	a blood test that identifies antigens and determines whether a donor candidate can donate stem cells to a certain patient
HPC	haematological progenitor cells also called haematological stem cells being present in blood and bone marrow
Inorganic growth	process of increasing the company size by buying or taking over other businesses

Life Science logistics	planning and execution transportation of pharmaceuticals, medical devices, and materials for medical industry
Onboard courier	human courier responsible of the global door-to-door delivery
Organic growth	process of increasing the company size by its operations such as product development, market penetration and customer retention
Patient registry	an organisation initiating the exploration of transplant options such as searching suitable donor
PBSC	Peripheral Blood Stem Cell which can be collected from one's bloodstream and providing advantages, such as ease of collection and faster hematologic recovery
Perfect match	a reference to the biological compatibility between two individuals in the context of inherited HLA types
Transplant Centre / TC	a hospital in which transplant of stem cells are performed
SMART objectives	specific, measurable, achievable, relevant, and time-bound goals
Stakeholder	a person or a group of people that has an interest in a company and can affect or be affected by the company's actions
Supply Chain	a sequence of processes building a product from raw material sourcing, through manufacturing and distribution until the consumer
Value Chain	a process where value is added to a product to enhance its value as it moves along that supply chain until after-sales service
WMDA	World Marrow Donor Association, an umbrella organisation with its over 100 member organisations promote global collaboration and best practice for stem cell donors and recipients

1 Introduction

Allogeneic haematological cell transplantation, colloquially known as stem cell donation is for the time being, the only known curative method of treatment for several haematological and non-haematological diseases like leukaemia (Bracken, 2010, p. 231—238). However, only one-fourth of the patients find a suitable matched stem cell donor within the family (Bethge, 2010, p. 53). A substitute solution for the other three-fourths of the patients is to rely on professional donor registries to find an unrelated donor (Bethge, 2010, p. 53). Besides complex medical processes, time-sensitive and temperature-controlled transportation of the donation from a donor to the patient is required for patients who are lucky to find a suitable donor (Lown et al., 2014, p. 880; National Marrow Donor Program, 2024, p. 1; Ontime Courier Life Logistics Europe, n.d, Rutherford et al., 2017, p. 873).

An onboard courier is in this context a suitable, dedicated, trained, and well-briefed human courier responsible for the global door-to-door delivery of the donated stem cells and bone marrow (Ontime Courier GmbH, 2022, p. 1; Xinke, 2022, p. 308). The onboard courier business, as such, is a relatively new but expanding form of logistics providing tailor-made solutions (Criswell et al., 2022, p. 108; World Health Organization, 2017, p. 3; Xinke, 2022, p. 309). According to Xinke (2022, p. 308), its couple of decades-old roots are from Europe and North America. Generally, life science logistics and especially onboard courier business come with short delivery times, as well as high safety and confidentiality requirements (Xinke, 2022, p. 308).

According to Xinke (2022, p. 308), in the business world, onboard couriers mainly transport parcels for the automobile industry, expensive instruments for musicians, high-fashion clothes, diamonds, and jewelry for catwalks as well as critical documents for executives as a customised service. Some of these goods may very seldom be checked in, especially if the weight or size of the baggage exceeds the limits on carry-on luggage regulations (Xinke, 2022, p. 308). In life science logistics, the growth of the onboard courier business is often explained by the poor success ratio of other life science logistic forms (Criswell et al., 2022, p. 108; WHO, 2017, p. 3; Xinke, 2022, p. 309).

1.1 The Commissioner of this Thesis

Ontime Courier GmbH is a medium-sized courier company that specialises in the organisation and implementation of transport services in the field of pharmaceutical and life science logistics worldwide. The company and its subsidiaries are divided into four different business areas in terms of sales and operational organisation. These are express shipments, express transport of life science products, accompanied transport of stem cell and bone marrow transplants (so-called onboard business) and pharmaceutical transport logistics. (Ontime Courier GmbH, 2022, p. 1.) Ontime Courier GmbH is based in Munich, Germany (Ontime Courier GmbH, 2022, p. 6). The company operates without supra-regional distribution centres. Predominantly, certified subcontractors are commissioned for the transports. This applies also to the transport of stem cells. (Ontime Courier GmbH, 2022, p. 1.)

Under 0.5 percentage of the world population is registered on the global databank to be voluntary blood stem cell donors (World Marrow Donor Association, 2022, p. 1 combined with United Nations, 2023, p.34). Despite of around 40 million registered unrelated donor candidates, registries continue to face difficulties to find suitable donors for their patients and target to recruit more volunteers (WMDA, 2022, p. 1-3). The steady growth of volunteer donors (WMDA, 2022, p. 3) lay the foundation of global stem cell transportation market (WMDA, 2022, p. 22). Ontime Courier GmbH's mission in this field is to collaborate with the industry, to transport HPC products for cellular therapy and contribute to the life-saving treatment process (Schimpf, 2023b). This is essential, as supply-chain and distribution of life science products are extremely complex (Criswell et al., 2022, p. 108).

Ontime Courier supports multiple stem cell donor registries to coordinate onboard transports of bone marrow and stem cell donations. The company provides experience of over 15 years and global expertise based on over 30,000 successfully delivered stem cell donations. Ontime Courier GmbH enables their global transplant centre and donor registry clients to request a medical courier via their website. (Ontime Courier Life Logistics Europe, n.d.)

Ontime Courier GmbH's core competencies are knowledge of the global life-science logistic network with its regional and supra-regional strengths as well as the optimal routing of shipments in terms of transit times, costs and using all suitable transport resources. Further, the company has outstanding expertise regarding the special requirements for temperature-sensitive packaging as well as regulations related to dangerous goods and technical conditions when sending medical and pharmaceutical samples worldwide. The same applies also for shipments of

human stem cells and bone marrow. The company fulfils requirements of ISO 9001 and goods distribution practices from European Medicine Agency. (Ontime Courier GmbH, 2022, p. 1.)

The company networks in the field of stem cell and bone marrow transplantation on global level. This cover also multiple regional organisations like stem cell registers, collection centres and transplant centres. Operational excellence is noticeable in extensive qualifications in the organisation and implementation of worldwide person-accompanied transport of corresponding transplants. The trustworthiness - a crucial aspect in life-science logistic - is gained by fast response times, high accessibility, continuous shipment monitoring and competent service regarding customer requirements. The company has fruitful collaboration with suitable and trained couriers for this type of transport. (Ontime Courier GmbH, 2022, p. 1.)

With regard to the market and customer environment, the clientele is predominantly from Europe, North and South America as well as South Africa. The company faces the normal business risks that arise from competitors' activities. However, the situation is moderate rather than challenging, as the barriers to entry into the market for the transport life-science products and especially transplants remain very high. It remains difficult for competitors to enter this business. (Ontime Courier GmbH, 2022, p. 4.)

1.2 Research Setting

The aim of this study is to identify new logistic markets for transporting donated stem cells and bone marrow for cellular therapy, and to analyse whether these markets provide with new clientele for Ontime Courier GmbH. The purpose is to investigate potential new markets and develop a market entry plan. The research problem is whether and how Ontime Courier GmbH can gain growth outside of Europe and North America. The company is experienced to expand their market area with support of organic and inorganic growth strategies. However, Ontime Courier GmbH strives to gain significant market share followed by market leadership on all inhabited continents.

This case study is market research leading to a strategic development plan for Ontime Courier GmbH. Both, possible imaginations, and critical assumptions which arise from the data analysis of the market research are to be combined as a comprehensive recipe for success and in a form of development plan. The development plan provides the commissioner with possible imaginations as well as critical assumptions. The commissioner may benefit from the

development plan when evaluating and choosing appropriate options, managing risks related to the market entry and allocating resources strategically in order to expand their existing market area. The development plan can be seen as an adjustment to one part of commissioner's existing strategy.

The focus of this market research is solely on the markets of temperature-monitored allogeneic stem cell and bone marrow transport business. The new target clientele refers exclusively to stem cell and bone marrow registries who has a valid membership of World Marrow Donor Association. Product development and innovation are excluded from this work. Although the geographical observation area is generally worldwide, the markets within and between Europe and North America are excluded from the study due to the strong existing market position. The study aims to answer the following research question:

Where, and under which conditions, can Ontime Courier GmbH find new market potential to grow outside of Europe and North America?

Possible conditions in which growth can occur are described as opportunities for organic and inorganic growth. The attention is given on less visible expansion possibilities. As the research question is directed to answer where new opportunities can be found and in which way gained, typical well-measurable marketing objectives like number of clients, retention rate, volume in euro and market share are excluded from this study. Further, the final selection of target customers, creation of an annual marketing plan and detailed sales tactics are excluded from the scope of this research. Therefore, the allocation of the resources and setting the measurement criteria for monitoring are excluded in this study.

Although this study does not target to understand the market position, strategies or other information about the competitors in detail, the market research aims to provide information on a general level about what kind of transportation arrangements are practiced in the world and who are the key corresponding actors outside of Europe and North America. Moreover, it is crucial to understand the characteristics and needs of these markets. The research sub-questions are:

Where does the growth opportunities for the allogeneic stem cell and bone marrow transport market lie?

Which commercial and non-commercial participants transport allogeneic stem cells and bone marrow?

Which tangible and intangible resources are needed to expand commissioner's market area outside of Europe and North America?

How to adjust the commissioner's current strategy to gain new clientele outside of Europe and North America?

The research strategy of this thesis is a case study. The research approach is mixed methods. The data for this study is collected through interviews and a questionnaire. The quantitative data is analysed by using statistical methods and the qualitative data is analysed by content analysis. Geospatial analysis serves as an additional analytical method incorporating both quantitative and qualitative approaches. A development plan is formulated from the results of the market research and interviews with the support of SWOT and PESTEL analysis. Sources and approaches for financing this master thesis work are announced to key stakeholders.

Before data collection and method selection, the research subject and questions are peer-reviewed by the tutor lecturer to ensure alignment with the guidelines of KAMK University of Applied Sciences. Furthermore, descriptive analysis is used for quantitative analysis. Induction serves as a data analysis method for qualitative data so that the statistical connections between the different variables are translated. SWOT and PESTEL analyses are used as development methods when a development plan is formulated from the result of the market research. Where market research brings possible opportunities or threats to commissioner's attention, the development plan ease objectification during decision-making process. In this way, both are useful to the commissioner when planning to expand to distant market areas.

2 Allogeneic Haematological Stem Cell Transplantation Procedure

The word haematological means blood-forming (Wendler, 2022). Haematopoiesis is a multistep sequence of events in which cell division, differentiation and maturation occur (Howard, & Hamilton, 2013, p. 2; Siitonen & Koistinen, 2015, p. 16; Vilpo, 2010, p. 15). After birth, human haematological stem cells are formed only in the bone marrow (Virtanen, 2017, p. 10). Haematological stem cells can develop into all kinds of blood cells (Porkka, 2004, p. 1391). A single stem cell can divide up to more than 50 times (Siitonen & Koistinen, 2015, p. 19; Virtanen, 2017, p. 11).

Stem cell transplantation is used as a treatment for serious blood diseases after high-dose chemotherapy (Wender, 2022). However, should a patient's survival require a high dose of radiation or chemotherapeutic drugs to wipe out the disease, the bone marrow's vital ability to create stem cells will be damaged (Bracken, 2012, p. 227). After intensive medication has damaged the cancer cells and the bone marrow, the function of the bone marrow can often be restored with the aid of CD34+ stem cells (Hatton et al., 2017, p. 104; Virtanen, 2017, p. 8). In this way, haematological stem cells provide blood cancer patients with a second chance at life (Bracken, 2012, p. 227; DKMS BMST Foundation India, 2023).

2.1 Allogeneic Stem Cell Transplant

A stem cell transplant can be syngeneic, allogeneic, or autologous (Hatton et al., 2017, p. 104). A syngeneic stem cell transplant means that the cells are collected from an identical twin, and in an allogeneic transplant the stem cells come from another person (Hoffbrand & Moss, 2011, p. 298). In autologous stem cell transplant, the patient's stem cells, which have previously been collected from the patient himself, are used as the transplant (Ruutu, 2007, p. 492; Virtanen, 2017, p. 8). An autologous stem cell transplant would be less complex and at the same time safer than an allogeneic stem cell transplant (Raval ym. 2017, 59). However, an allogeneic stem cell transplant has an important benefit when compared with an autologous stem cell transplant (Wender, 2022). Depending on the disease, an allogeneic stem cell transplant seems to better prevent leukaemia from returning (Wiseman, 2011, p. 771).

Allogeneic stem cell transplantation acts as a supportive therapy after chemotherapy, as donated stem cells returned to the patient are able to find a way back to the bone marrow (Golubeva et al., 2014, p. 39). Donated stem cells regenerate the functions of the patient's bone marrow so that the body can continue making blood (Hatton et al., 2017, p. 104; Porkka, 2004, p. 1393; Virtanen, 2017, p. 8). In 2022, over 68,000 new patient searches were initiated to find a suitable unrelated donor. 42 per cent of these searches were initiated outside of Europe and North America. Over 21,000 donations for cellular therapy were shipped globally in 2022. However, only around 28 per cent outside of Europe and North America. (WMDA, 2023a.) Sometimes, an appropriate individual who can provide a transplant for this curative procedure may be the only person available worldwide due to the genetic diversity of humans (Shaw et al, 2013, p.833).

The SARS-CoV-2 pandemic affected to the number of transplanted patients, but not in the same way in all countries (Passweg et al., 2023, p.652). When excluding the pandemic, an annual increase over the years of approximately five per cent has been seen in transplant activity (Passweg et al., 2023, p.656). However, some countries exposed a substantial drop, whereas in other countries variations were marginal during the pandemic (Passweg et al., 2023, p.652). Ideally, patients should be saved regardless of who they are and where they live (Passweg et al., 2023, p. 647).

2.2 Donor Registries and Anonymous Unrelated Donors

Donor registries aim to provide all patients access to treatment (Passweg et al., 2023, p. 647). Despite the large number of unrelated donor registries that improve the chances of finding a donor for many patients, the patients presenting ethnic minorities may have under a ten per cent chance to find a suitable genotypically matched anonym donor (Koh et al., p.119). Sacchi et al. (2008, p. 9) describe World Marrow Donor Association as a global umbrella organisation of registries around the world. WMDA's global donor database is able to identify a patient in need of transplantation and a matching unrelated stem cell donor, also when these are geographically located in different countries (Sacchi et al., 2008, p. 9).

The probability of finding a suitable unrelated donor increases with the number of volunteers registered in the donor registries (Bogucki & Tuszyńska-Bogucka, 2023, p. 1). Although, both women and man are well suited as donors, male donors are generally preferred as their veins are often more easily accessible providing more stem cells to be collected, and males do not have

pregnancy-generated antibodies against marrow cells (New Zealand Bone Marrow Donor Registry, n.a.). Some donor registries have a special intention to recruit ethnic minorities as donor candidates who are under-presented on the registry (NZBMDR, n.d.; O'Leary, 2013, pp. 124-125). Younger donor candidates improve the quality of the registry as their possible donation would offer a better chance of life to patients in need of a transplant (O'Leary, 2013, p. 122). Still, the willingness to become a donor candidate remains to be the individual choice of each adult donor on a voluntary basis (Shaw et al., 2013, p.832). Persons willing to donate stem cells and bone marrow to a stranger are often characterised by age under 40, better education, less conservative mindset as well as a positive attitude towards science (Bogucki & Tuszyńska-Bogucka, 2023, p. 2). In contrast, religious affiliation and negative health state assessment have been reported to be common decision-making restraints (Bogucki & Tuszyńska-Bogucka, 2023, p. 1).

2.3 Patient Registries and Standards to Protect Patients

Besides donor registries, patient registries aim to provide their patients access to transplants. In this way donor registry can be seen as a supplying registry, and the patient registry as a receiving registry. Usually, one of the registries will take the role of courier registry and ensure that the transplant will be delivered with a trained courier from their pool of volunteer couriers or a third party, i.e., a specialised courier company. (WMDA, 2016, p.1.)

Maiers et al. (2010, p. 842) emphasis that rigorous data security and protection standards are particularly important for stem cell registries and all their cooperation partners when collecting, storing, and distributing genetic healthcare data. This also applies to courier service providers (Maiers et al, 2010, p. 842). Furthermore, haematological stem cell transplantation procedures are regulated by international standards, such as the international accreditation organisation JACIE (Joint Accreditation Committee of International Society of Cellular Therapy and European Society for Bone Marrow Transplantation). The aim of the regulations, recommendations, standards and procedures is to improve the quality and safety of stem cell transplantation (Joint Accreditation Committee of International Society of Cellular Therapy and European Society for Bone Marrow Transplantation, 2021, p. 1; Morgenstern et al., 2016, p. 942; Sacchi et al., 2008, p. 9).

2.4 Donation at a Collection Centre

One of the most important factors for successful stem cell transplantation is the number of CD34+ cells (Berens et al., 2016, p. 1326; Virtanen, 2017, p. 9). Allogeneic CD34+ stem cells can be collected from the donor's bone marrow, peripheral blood, and umbilical cord blood (Hoffbrand, & Moss, 2011, p. 298). In an allogeneic bone marrow transplant, the donor's healthy marrow is drawn and given to the ill recipient through an intravenous needle (Bracken, 2010, p. 228). A key advantage of using stem cells collected from peripheral blood over a bone marrow transplant is faster recovery of blood cells after intensive treatment (Bracken, 2010, p. 227; Jantunen et al., 2001, p. 1151). Today, most transplants are collected from peripheral blood (Bracken, 2010, p. 227; Passweg et al., 2014, p. 788).

The donor of a peripheral blood stem cell transplant receives medications to stimulate the growth of stem cells, which are harvested through apheresis some days later. The given substance increases the number of stem cells that are produced in the donor's bone marrow and flushed into the donor's own bloodstream. (Bracken, 2010, p. 228.) The transfer of stem cells from the bone marrow to the bloodstream is called mobilisation. Normally, there is only 0.1 per cent of stem cells in the bloodstream. (El-Ghariani, & Szczepiorkowski, 2017, p. 1097h; Vilpo, 2010, p. 17.) Insufficient CD34+ cell count can impair the effect of the graft and the number of cells collected has therefore clinically significant relevance (Berens et al., 2016, p. 1326; Virtanen, 2017, p. 9).

The Greek word apheresis means a withdrawal, and therapeutic apheresis is a process of pumping peripheral blood into a spinning harness for separation so that some blood components are collected into a collection bag and other ones returned to the donor (El-Ghariani, & Szczepiorkowski, 2017, p. 1097c). In five to ten per cent of stem cell transplant donations, the amount of CD34+ is not sufficient. A subsequent donation of stem cells or lymphocytes may be requested by a stem cell registry. (Confer et al., 2011, p. 1409.) When the required number of cells are collected, the transfer of the donation to the courier happens in a clinical setting (WMDA, 2016, p.1).

WMDA (2016, p. 3) guidance instructs that the collection centre is the location where the centre's transplant coordinator and onboard courier have the product handover. The donation and accompanying tubes are packed into secondary bags and further into a puncture-proof thermally insulated cooler or an isothermal transport box (WMDA, 2016, p. 3). Although the packing with thermometers, data loggers, disposable gloves and various labels may seem to be superfluous

(WMDA, 2016, p. 3), it ensures that the donation to the receiving facility arrives in the necessary quality and quantity (Bleisch et al., 2011, p. 17). Both inadequate but also unnecessary packing leads to higher costs, which in the onboard courier business may be as high as the loss of a patient's life (Bleisch et al., 2011, p. 17). Professional and thorough packing is based on profound awareness of the function of the transport equipment (Bleisch et al., 2011, p. 17; WMDA, 2016, p. 10).

2.5 Transportation of the Donated Stem Cells

Bone marrow in the human body is the best possible habitat for CD34+ stem cells (Howard, & Hamilton, 2013, p. 2; Siitonen & Koistinen, 2015, p. 20). The fresh stem cells or bone marrow collected from a volunteer donor must be transported by a dedicated and trained courier (WMDA, 2016, p. 1). Safe transportation of the gained donation, with as little reduction in CD34+ cell count as possible, is an extremely critical part of the transplantation process and also requires special know-how and top-class travel organisation (DKMS, 2023; Zentrales Knochenmarkspender-Register für die Bundesrepublik Deutschland gemeinnützige GmbH, 2022, p. 8). Therefore, stem cell donation bags and companion tubes are hand-carried in temperature-controlled cooling boxes equipped with temperature loggers (Wiercinska et al., 2021, p.2).

Wiercinska et al. (2021, p. 2) highlight that the transportation must be organised in accordance with national, regional and WMDA guidelines. Product quality can be assessed with respect to CD34+ stem cell viability, concentration, frequency, total dose as well as dose per kilogram (Wiercinska et al., 2021, p. 2). To ensure safe, fast and compliant transport, many registries authorise a commercial onboard courier company that can conduct its own courier training, provide backup couriers and special equipment, trace the transport, manage customs declarations as well as be available 24/7 as the first point of contact (WMDA, 2016, p. 2; ZKRD, 2022, p. 8). The stem cell transport process flow chart in the Appendix 1 illustrates the flow of the procedure to deliver donated cells from donor to a recipient as well as the key actors of this procedure.

In 2022 almost 22,000 unrelated Hematopoietic Stem Cells, regardless of whether marrow or apheresis, were shipped worldwide (WMDA, n.d., p. 8-9; WMDA, 2023a). Almost every second stem cell donation from anonym donors is transported across international borders (Maiers et al., 2010, p. 839; WMDA, 2016, p. 1). Over 11,000 shipments started from Europe (WMDA, n.d.,

p. 11, WMDA, 2023a), which is Ontime Courier GmbH's home continent. However, Asia had a remarkable shipment amount (WMDA, n.d., p. 11), where Ontime Courier GmbH hardly contributed, whereas South America has a remarkable number of registered donor candidates, but comparable low number of transports (WMDA, n.d., p. 4). African market is to be expected to remain minor, as Africa has only few donor registries (WMDA, 2023a), under 150,000 unrelated donor candidates (WMDA, 2023b, p. 4), and very low rate of effectively health insured population (International Labour Office, 2008, p. 1). Oceania also has only few donor registries (WMDA, 2023a), under 250,000 unrelated donor candidates (WMDA, 2023b, p. 4), however populations from Australia and New Zealand have better access to health care such as cellular therapy (Australian Bone Marrow Registry, n.d.; NZBMDR, n.d.). From global stem cell logistic markets this provides lucrative business, as the region relies on international donations from faraway countries.

2.6 Transplant Centres

A transplant centre is a healthcare facility where freshly collected cells or bone marrow are transported (Foeken & Orsini, 2014, p. 268). When the cellular therapy procedures were still new, some employees of transplant centre were assigned to be couriers to transport the freshly collected cells besides their other duties (Foeken & Orsini, 2014, p. 268). Today, transplant centres and search units seek an international donor work through the registry in their country (Shaw et al., 2010, p. 832).

In a transplant centre, a patient receives a transplant with allogeneic haematological stem cells (Foeken & Orsini, 2014, p. 264). The transplant centre provides immediate medical treatment and offers long-term follow-up of the patient. Some transplant centres search unrelated donors to their patients by themselves. These dedicated search units of transplant centres use defined and documented criteria. Other transplant centres use separate search units, which coordinate searches for one or several transplant centres. (Foeken & Orsini, 2014, p. 264; WMDA, 2021, p. 15.) Transplant centres together with regional donor registries are required to consider medical and ethical aspects based on international standards of the World Marrow Donor Association during donation and transport procedures. (Shaw et al., 2010, p. 832).

3 Life Science Logistics

The roots of the term life sciences can be found at least in biology, the study of life, as well as in Ayurveda, Hindu religion's epic about the science of life (Bundesministerium Bildung, Wissenschaft und Forschung, n.d.; Magner, 2002, p. 5). Life sciences involve the scientific disciplines that deal with the processes and structures of living beings, so-called organisms. Life sciences encompasses old and new disciplines which are biology, biochemistry, biophysics, bioinformatics, biotechnology, human biology, medicine, biomedicine, molecular biology, medical technology, pharmacy, nutritional sciences, food research, and veterinary medicine. (BMBWF, n.d.) Although tangible permanent records, like stone tools or weapons, could not be left behind, one of the most important lessons from prehistory relating to human survival is the art of healing (Magner, 2002, p. 1).

Business is to a great extent logistics and consequently, logistics play a vital function in the world economy (Benayad et al., 2022). The margins of the various players in the supply chain are increasingly tight, and prices are constantly under pressure (Blanquart et al., 2016, p. 194; Levy, 2023, p. 17; Peltola et al., 2022, p. 186). KPMG's (2023, p. 2) study highlights that resilience is also the key aspect of today's life science logistics regardless of whether delivering pharmaceuticals, medical devices, or other healthcare products. Other important aspects are dynamism, de-globalisation, sustainability, patient-centric supply chain, and interconnection with the healthcare ecosystem (KPMG, 2023, p. 2).

A supply chain deals with building a product. It is formed as a network of companies and individuals as well as integration of all undertakings involved in the process of sourcing raw materials, procurement, conversion, and distribution. Inversely, a value chain refers to the ways to increase the product's value when a product passages along a supply chain. Various business operations are those who enhance the value. (Levy, 2023, p. 7.) Also in life science, the general attention is shifting from supply chain to value chain, so that the focus from outcome changes to patient (KPMG, 2022, p. 3; KPMG, 2023, p. 4). Due to the consumerisation of healthcare, the patient is seen more often as a consumer and a person (KPMG, 2022, p. 3). Although, both supply and value chains highlight the importance of efficiency, the real efficiency comes from managing the logistics value chain. High efficiency correlates with productivity because efficiency enables price competitiveness and better margins than others. In general, the logistics value chain is made

up of primary producers, industry, logistics, procurement, business operations and customer management. The customer is the end of the value chain. (Peltola et al., 2022, p. 186.)

3.1 Onboard Couriers

In life science logistics, onboard couriers carry the shipped products through a tailor-made route (NMDP, 2024, p. 1). Those onboard couriers, who are specialised to deliver stem cells, bone marrow and other transplant-related life science products, are trained as medical couriers (Ontime Courier GmbH, 2022, p. 1; Xinke, 2022, p. 308). The onboard courier bears sole responsibility for the safe and timely delivery of the donation from the collection centre to the transplant centre (NMDP, 2024, p. 1; WMDA, 2016, p. 1). Courier selection and assignment are made collaboratively by national registry, collection centre and transplant centre (WMDA, 2016, p. 1).

WMDA (2016, p. 1) expects a medical courier to be not related to a donor or a patient, and to have independent international travel experience and English language skills. Starting from the moment of the product hand-over, the courier must not have any other obligations until the successful delivery of the donation to a transplant centre (NMDP, 2024, p. 2). During the transport, a courier needs to be equipped with a cell phone with international roaming and a credit card with a reasonable limit (NMDP, 2024, p. 2; WMDA, 2016, p. 1). Special equipment is used to protect the transplant from unwanted environmental influences during transport (Ontime Courier GmbH, 2022, p. 1). WMDA (2016, p. 1) recommends that new couriers collect their experience in transporting donated stem cells within the countries of their residency prior to international assignments.

The courier profession generally is related to increased workload and safety concerns (Pang et al., 2023, pp. 1-4), but on the other hand misses respect and career opportunities (Levy, 2023, p. 21). During the SARS-CoV-2 pandemic, couriers confronted even more challenges in their working conditions and work environment (Jöris et al., 2022, p. 1023). Healthy and safety issues increased couriers' stress and anxiety (Pang et al., 2023, p. 1). The need for education, briefings, debriefings, and training played a key role in job satisfaction and avoidance of courier shortages. (Pang et al., 2023, p. 4). From the resiliency point of view, talent retention is difficult as too many professionals working in logistics plan to switch job or quit in short term (Levy, 2023, P. 21). In respect of stem

cell transports, many couriers are working on a voluntary basis for donor registries and are driven by other values (NMDP, 2020; Antony Nolan, n.d.).

3.2 Logistic Value Chain

An added value refers to actions such as best-in-class performance, operational excellence, and a process to make a company successful (Walters & Helman, 2023, p. 107). The aim of a value chain is to create value predominantly for the enterprise, and in a long-term also for client and vendor (Wictor, 2011, p. 189). According to Oláh et al. (2017, p. 235) value creation in the logistics industry is identified to be associated with so-called value drivers, which are operational efficiency, supply chain management, integration of customer operations and network development. In logistic business, collaboration is an important value creation mode (Oláh et al., 2017, p. 235). Without collaboration, the relationship is not established (Wictor, 2011, p. 189). Besides that, business may find efficiency from transparent collaboration with authorities (Foeken & Orsina, 2014, p. 265; Kalenborn, 2018, p. 44).

Figure 1 illustrates a logistic value chain which is adjusted for the onboard courier business where donated human stem cells are transported. Besides that, all value-drives are named after stakeholders that are typical for sector, rather less visible but fundamental difference is the meaning of the value. When donating a life, a gift-based value chain takes in place, while supply chains are predominantly profit-driven (Cole, 2021, p. 1017). Recovery is the value the patient aims to receive with cellular therapy (Morgon, 2015, p. 2). The value creation, however, may start already years or decades before the patient became ill (Morgon, 2015, p. 4). Therefore, the transplant process as a value chain is both, time-sensitive and time-consuming (Cole, 2021, p. 1008). A donor registry with its donor recruiting actions can be seen as a primary producer, whereas a patient registry places an order for a stem cell or bone marrow donation. (WMDA, 2016, p. 1). HLA laboratory representing a high-tech industry for cellular therapy goes through the entire value chain from start to finish (Virtanen, 2020, p. 9). The most critical moment is the collection and analysis of the donated cells (NZBMDR, n.d.). Onboard couriers provide the door-to-door logistics between the donor and recipient (NMDP, 2024, p. 1). Transplant Centre in the role of business operator is a high-profiled hospital providing cellular therapy for the patient (WMDA, 2021, p. 15). Patient finances the value gained predominantly with the health insurance (Laurentine, & Bramstedt, 2010, p. 22).

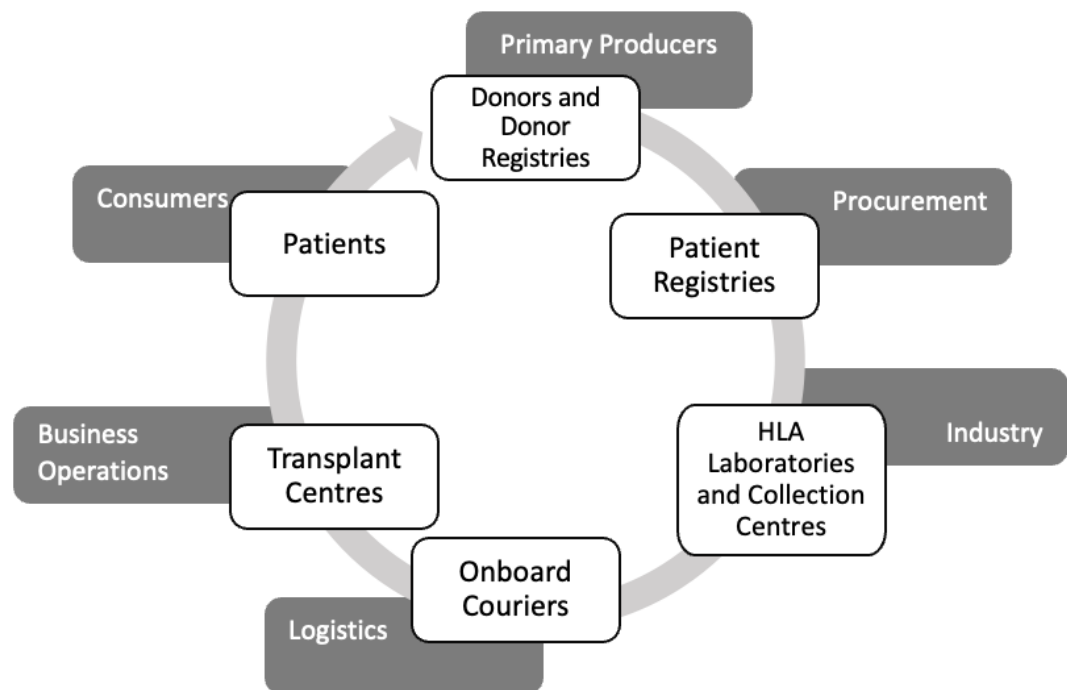


Figure 1. Logistic Value Chain in the Onboard Courier Business. (Peltola et al., 2022, p. 187, modified)

Meffert (2019, p. 64) states that collaboration in the value chain can be vertical, horizontal, and conglomerate. It can bring benefits, like quality and learning effects, but includes also risks, like loss of control (Meffert, 2019, p. 64). Vertical collaboration attempts to optimise interfaces between value creation change (Meffert, 2019, p. 64), and it is a vital approach also in the onboard courier business (Jöris et al., 2022, p. 1023; Schimpf, 2023b). According to Meffert (2019, p. 64) horizontal collaboration refers to situation where competitors are pooling and sharing their competitive risks. It has the major benefit to reducing costs and optimising the resources. (Meffert, 2019, p. 64). However, it is rather seldom used in onboard business as even sharing a taxi with another courier exposes the risk of exchange of transport boxes and consequently, confidentiality and the mission. WMDA (2016, p. 4) highlights the attention in this kind of situations. According to Meffert (2019, p. 64), in conglomerate collaboration, two or more competitors offer, through a joint marketing, products that are complementary from the client's perspective. This kind of collaboration is common between airlines and rental car providers (Meffert, 2019, p. 64). Although this kind of collaboration is minor in onboard business (Schimpf, 2023b), conglomerate collaboration provides opportunities when utilised with agile technology providers (KPMG, 2023, p. 4). A further point is the acceleration of digital shift in forms of tracking,

tracing, and exchanging information during the tailor-made transport. This could provide the next generation of patient care (KPMG, 2023, p. 4).

On the other side, logistics encompasses flows of material, information, and cash. In highly developed countries comprehensive transport systems and information networks are available. Besides, sophisticated banking systems and complex contract terms ease cash flow management. In emerging and developing economies, managing these three flows poses great challenges. (Lee et al., 2013, p. 298.) Levy (2023, p. 23) highlights that achieving a global supply chain resilience requires more than fixing material, information, and cash flows. Especially, geopolitical threats such as inflation, wars, and cyber criminality cannot be ignored (Levy, 2023, p. 23).

3.3 Challenges in the Life Science Logistics

Despite that healthcare provides nowadays high-end treatments for comprehensively insured patients and those able to pay, millions of people are out of any kind of healthcare expertise and treatment reach due to distance to a health centre, poverty, lack of transportation, as well as scarcity of professionals and medicines (Lee et al., 2013, p. 297). Logistics deal on a global level but face regional issues (Lee et al., 2013, p. vii). When considering healthcare in underdeveloped economies, these issues are often insurmountable (Gudmundsson et al., 2022, p. 6; Lee et al., 2013, p. 297). Critical medications and supplies are the top priorities in logistics and therefore, relate to governments' and enterprises' resilience strategies (Levy, 2023, p. 17; Upton, 2022, p. 6).

Regardless of whether a sudden crisis or a long-term stalemate, multiple single cases have accelerated to form a trust, that in the life science logistics business, a successful collaboration between all relevant stakeholders largely improves the customer experience and patient care in challenging and utmost overwhelming disruptions (Benayad et al., 2022; Jöris et al., 2022, p. 1023, Mengling et al., 2020, p. 805; Paul et al., 2021, p. 326). The aim of stakeholder management is to proactively shape relationships with the relevant stakeholder groups. The idea is to create value to satisfy demands that ensure a long-term relationship. The main tasks of stakeholder management are to identify all relevant stakeholder groups as well as their needs, and based on that define stakeholder-specific objectives, strategies, measurements, and control methods. (Meffert et al., 2019, p. 261.)

Delving more into relationships, in life science logistics, as in any other business, the epicentre of commercial success lies in relationships between people. A relationship can be won and lost in key moments. Far too often well-managed customer experience is understood as perfectionism. (KPMG Nunwood Consulting Limited, 2017, p. 2.) The assumption seems to be especially logical in situations where problems have serious implications for patient's chances of recovery (Mengling et al., 2020, p. 798). Indeed, a successful customer experience is something else (Ahvenainen et al., 2017). At the heart of a successful customer experience is a relationship which is built from moments that give the client reason to reflect on the nature of the relationship and consider whether the brand promise has been kept (KPMG, 2017, p. 2-4).

Enterprises that focus on the moments that matter, rather than prepare themselves for any kind of unpleasant surprises, are the ones that succeed in the long-term. Satisfied life science logistic clients are with their happiness alike because their experience across their relationship with the logistic provider has been steadily well-managed and excellent. Unsatisfied clients are each disappointed in their own way as different types of failure lead to an unsatisfied client. (KPMG, 2017, p. 8-11.) A study made by KPMG (2023, p. 4) found out that the strategic tools to improve customer experience and reduce logistical issues in the life science supply chain are surprisingly ordinary. Investments in resiliency, agility, and flexibility, are required, as a global visibility, including end-to-end networks, is seen as the predominant bottleneck (KPMG, 2023, p. 4).

When considering these logistical challenges on socioeconomical level, successful companies have started to accept that their operational methods and performance are being reviewed also from the society perspective (Walters & Helman, 2023, p. 228). According to WHO (2005, p. 44) report approximately 50 per cent of vaccines are wasted globally. Spoiled vaccines due to poor temperature management in transport vehicles cost the healthcare industry more than USD 34 billion annually (Benayad et al., 2022). To be successful, the enterprises are required to manage future operations so that these are balances with interest of citizens and environment (Walters & Helman, 2023, p. 22). Still, the future of life science logistics will be considerably more complex, as the growth in the life science industry will be driven by oncology, cell and gene therapies as well as rare diseases. (KPMG, 2023, p. 4).

3.4 Shipping Substances of Human Origin

Around 100 million substances of human origin are used worldwide each year for patient treatment procedures (Rutherford et al., 2017, pp. 873-874). These so-called SoHO products are blood components, like red blood cells and plasma, for transfusion, but also tissue, like heart valve and skin, for transplant as well as solid organs, like kidneys and liver (Rutherford et al., 2017, p. 874). SoHO products are used for cellular therapy, and they have a higher degree of material variability than other life science products, like vaccines. In addition, their manufacturing processes and clinical effects are not uniform. (Rutherford et al., 2017, pp. 873.) Four common manufacturing processes are minimally manipulated cellular therapeutics, genetically modified cellular therapeutics, reprogramming, and tissue engineering products. The first one is used for example for human stem cell transplantation when CD34+ cell populations are enriched. (Rutherford et al., 2017, pp. 876-877.)

Life science supply chain is increasingly more person focused (KPMG, 2022, p. 2). The complexity of the supply chain together with a lack of standardisation are the known challenges related to the advanced therapy medicinal products (Rutherford et al., 2017, p. 886). From a logistical point of view, the nature of the products plays a key role when planning proper supply chain strategies and designing a logistic value chain. Where platelet concentrate requires constant agitation at +22°C for a seven-day shelf life, plasma can be cryo-preserved for years but requires an accurate thawing procedure in a clinical environment. On the other hand, some O RhD-negative red cells can be administered to almost 100 per cent of patients whilst allogenic human stem cells require detailed matching. (Rutherford et al., 2017, p. 875.) From life science logistics and supply chain points of view, this means considering and developing efficient tailor-made logistic solutions and high specialisation (Rutherford et al., 2017, p. 878). Some enterprises have adapted an artificial intelligence to ease their work on data analysis, compliance audits as well as supply chain and logistics management (Levy, 2023, p. 37).

3.5 Adapting to The Course of Research and Development

Many innovations change the idea of the target group of assumed users. Instead of manufacturing one generalised product type like vaccines for a group of individuals, innovations in the life science industry are born in increasing numbers as hyper-personalised to patient's cells or genes, so that the product offering will be rather one-to-one. This change requires a transformation of

the supply chains, both in the manufacturing and commercialising phases. Traditional cost-based value chain models are better to be shifted to value chains so that identification of sources and opportunities for growth is possible. Furthermore, automation and digitalisation can smoothen many manually intensive and paper-based documentation methods. (KPMG, 2023, p. 4.)

An entrepreneur has a central role in building a suitable culture in accordance with the company's vision (Wictor, 2011, p. 191). KPMG (2023, p. 4) emphasis that the future workforce of life science logistics needs to have a different set of personal competencies and skills. It is necessary to gain and maintain an organisational culture which is willing to adapt to changes (KPMG, 2023, p. 4). In addition, Benayad et al. (2022) note that cooperation between healthcare distributors and life science logistic providers is beneficial to building structured, specialised and temperature-controlled supply chains with high resilience. In contrast, for the people and economies that depend on medicine, inefficient supply chain management, which delivers spoiled or damaged products, is particularly costly (Benayad et al., 2022).

3.6 Utilizing The Newest Technology

Life science supply chain in a today's reality require more platform-enabled business models, digitally enabled operating models (KPMG, 2022, p. 2). This covers aspects such as resilience, sustainability, and agility (KPMG, 2022, p. 3). In recent years, also drones have been used in many sectors of healthcare to transfer biological samples. Short flights are suitable for delivering blood products at room temperature or cooled. Drone-shipped samples have shown no significant influence on the accuracy of routine chemistry, haematology, and coagulation analyses. Cost-effectivity, time savings, workaround strategies and suitability for on-demand needs are reasoning the introduction of drone usage for life science logistics also in remote and economically weak areas. Fast delivery routes have been associated with better availability of healthcare products and cost savings. (Benayad et al., 2022.) Indeed, operational excellence in extreme conditions makes the difference between life and death (Lee et al., 2013, p. 300).

In the short term, drones are not able to replace onboard couriers. However, there is increased interest in the operational excellence of logistics management in extreme conditions and situations. This includes particularly general humanitarian logistics in inadequate conditions, disaster relief operations, and operating in very challenging or continuously changing environments. (Lee et al., 2013, p. 300.) In recent years, extreme conditions caused numerous re-

routings in life science logistics and onboard courier business also in highly developed countries (Jöris et al., 2022, p. 1021). Specifically, this was due to the pandemic and geopolitical uncertainty, for which the latter in the form of closed airspaces and ports is estimated to remain a long-term challenge (Allianz, 2023, p. 6; Jöris et al., 2022, p. 1021; Upton, 2022, p. 6).

4 Strategy

According to Pindyck and Rubinfeld (2015, p. 658) in business, which can be seen as a never-ending game, the rules and the players change, and uncertainty is part of nature. There are no final winners or losers as the game continues although some will leave the game, for example, when they run out of strength (Pindyck & Rubinfeld, 2015, p. 658). Ritakallio and Vuori (2018, p. 14) emphasize that it is management's task is to keep their company in the game. For this, the management needs a continuous and flexible assessment of the company's operating environment, the appropriate strategy and structure (Pindyck & Rubinfeld, 2015, p. 658; Ritakallio & Vuori, 2018, p. 14). A strategy defines how a company reaches its goal in its environment despite of the competition. With a good strategy a company is able to reach its clientele and meet their needs. (Robbins et al., 2014, p. 241.) Strategy is a collection of guidelines set out by a management on how to tackle long-term challenges (Olfert & Rahn, 2011, p. 865). This tool set helps a company to negotiate, define, and achieve its target (Pindyck & Rubinfeld, 2015, p. 658; Hakala & Vuorinen, 2020).

A strategy should provide a company with direction, meaning, and brand identity as well as aid employees in acting in a rational manner (Hakala & Vuorinen, 2020). Although there is no specific recipe for the company's success, the strategy aims for success. Technology has influenced the development of the world decisively by way by driving development forward. However, technology is not the source of success. Technology is rather an accelerator of success and an aid. The most important success factors for companies are strategy, management, know-how and interaction. (Kamensky, 2009, p. 9.) A successful strategy addresses the most enormous challenges to which a company is exposed (Olfert & Rahn, 2011, p. 865). Uniqueness is a key hallmark of strategy, as the situational factors, which a company faces, are always unique (Olfert, 2011, p. 296). Furthermore, strategy describes how the different business units and teams of an organisation should contribute to the company's offering (Olfert & Rahn, 2011, p. 865).

4.1 Strategic Management

The three key strategic questions are where we are, where we like to go and how we are going to get there (Kennedy, 2020, p. 32). The answer to the first question is the company's mission, which states why the company's business exists and why the company is important to society.

Therefore, it reflects the history and present-day of the company. The answer to the second question is the company's vision and describes what the company seeks to become in the future. (Kennedy, 2020, p. 38.) The answer to the third question is the company's strategy referring to the heart of the company's strategic management (Kennedy, 2020, p. 33). The company's current position can also be viewed through the target hierarchy. It distinguishes the company's values, mission, vision, and strategy into clear landmarks, and like a pyramid, so that concrete strategic goals can be developed for each organisational level. (Meffert et al., 2019, p. 280; Reisinger et al., 2013, 135.) Ontime Courier GmbH's target hierarchy is illustrated in Figure 2. The tasks written with blue font strongly relate to this research.

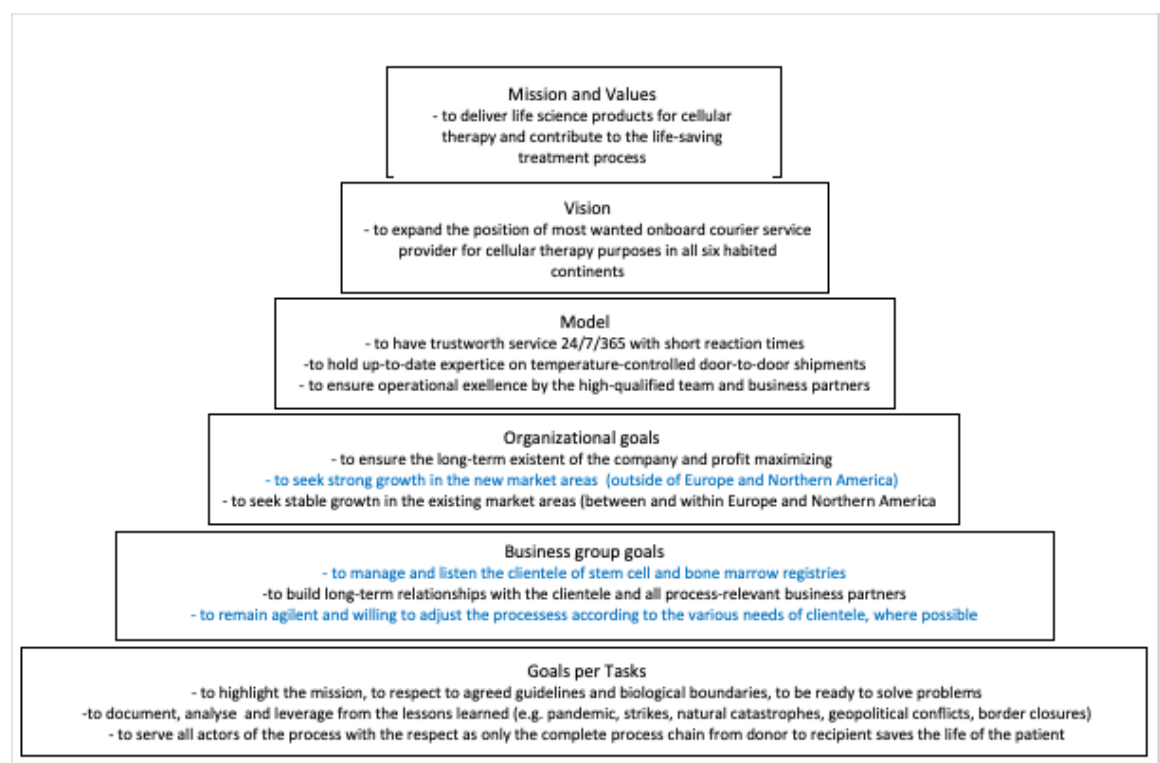


Figure 2. Ontime Courier's Target Hierarchy. (Meffert et al., 2019, p. 280; Reisinger et al., 2013, 135; Schimpf, 2023b, modified)

Strategic Management refers to the activities of managers to develop organisational strategies. These activities include planning, organisation, leadership and controlling. (Robbins et al., 2014, p. 240.) Increased dynamics and complexity have accelerated the importance of strategic management, and it is therefore a fundamental part of Corporate Management (Reisinger et al., 2013, p. 18). Many decisions like date and place of establishment, the choice of optimal legal form, the type of products to be designed, and the way how product should be sold, are met to secure the company's existence (Wünsche, 2010, p. 9). Therefore, at the top of the target

hierarchy is a basic idea of the desired role of the company in society (Wünsche, 2010, p. 10). Consequently, strategies need to be built to support goals at different levels, so that the company's overall strategy is also broken down into various business unit strategies and further through to employees' job descriptions (Reisinger et al., 2013, p. 146).

4.2 Strategic Management Process

A strategic management process is a six-step process that includes strategic planning, implementation, and evaluation. Planning describes four activities to identify the actual situation, to perform intern and extern analysis as well as to formulate a strategy. Although planning involves four steps, implementation and evaluation of results are more important. (Robbins et al., 2014, 243.) Figure 3 illustrates the strategic management process and the activities during each step. The tasks with blue font strongly relate to this research.

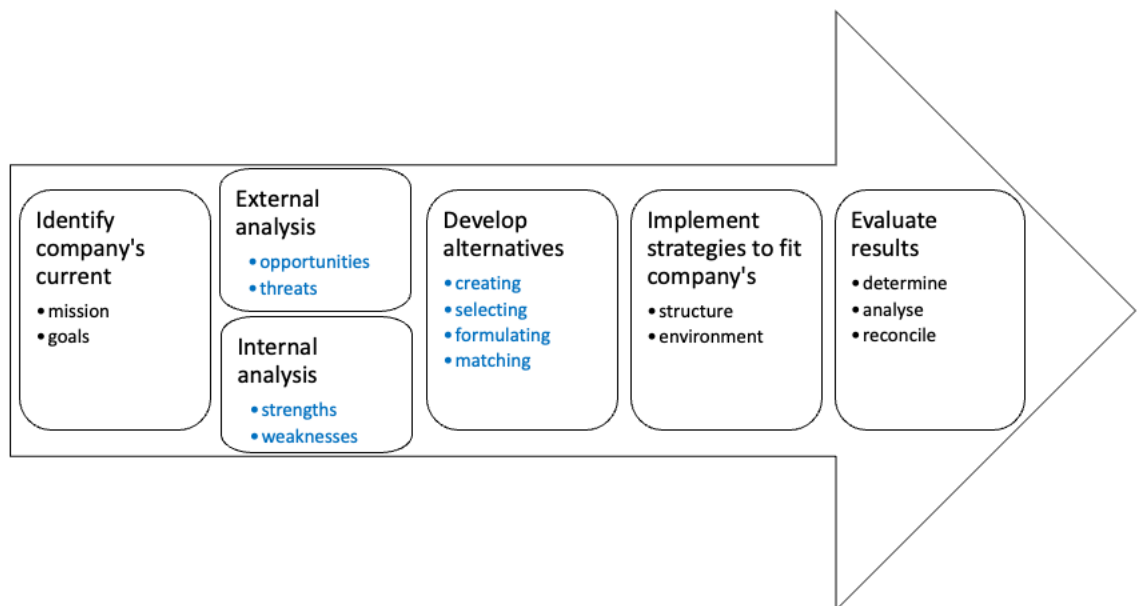


Figure 3. Strategic Management Process. (Robbins, 2014, p. 243, modified)

According to Olfert (2011, p. 289), the company management must make every effort to achieve organisational goals, so that the overall success occurs. Holtbrügge (2018, p. 94) states that for the successful implementation of the company's strategy, a staff structure needs to be quantitatively and qualitatively precisely tailored to the requirements of the market niche the company operates. The outcome is a high degree of individualisation, and human resources management needs to be implemented based on the situation and needs of the company

(Holtbrügge, 2018, p. 94). In the logistics industry, performance measurement is a vital method to evaluate the results and, in that way, improve the competitiveness of the overall supply chain (Oláh et al., 2017, p. 234). Several commonly used key indicators in the field of logistics are long-term relationships and a built history of favourable experiences (Oláh et al., 2017, p. 235).

4.3 Strategy Tools

One of the most popular business strategy tools is Porter's (1980) Five Forces Model which helps decision makers to better understand the main competitive forces influencing an enterprise's competitive position in the market. Figure 4 illustrates the five forces which include competitive rivalry, supplier power, buyer power, threat of substitutions and threat of new entries. The tool encourages the decision makers to consider these broader environmental forces, instead of focusing solely on competitors (Marburger, 2016, p. 127; Porter, 1980).

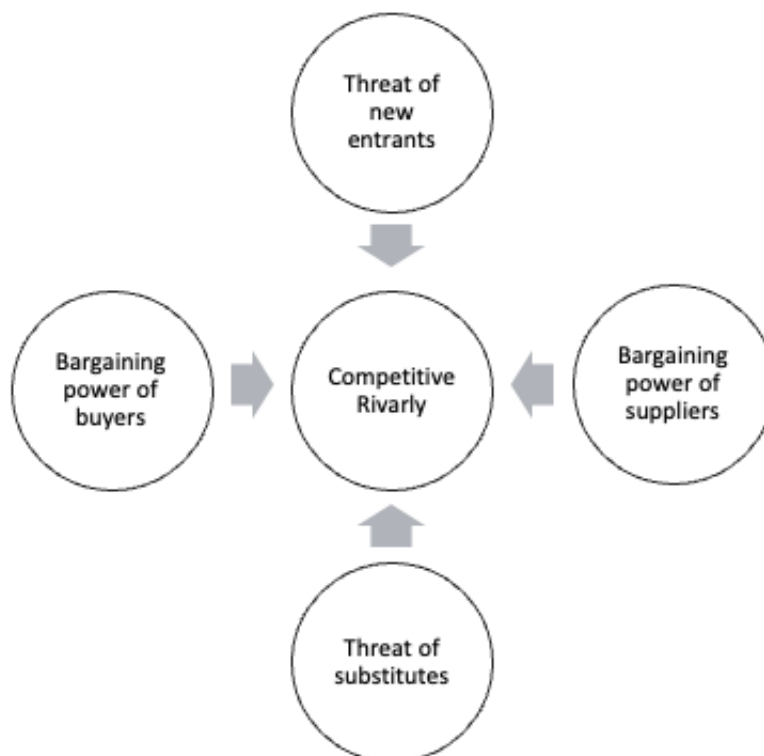


Figure 4. Porter's Five Forces. (Porter, 1980, modified)

Based on the Five Forces Model, when a business starts to be lucrative, it will entice other entrepreneurs (Marburger, 2016, p. 55). These new entries may cut the prices and offer more fascinating options (Meffert, 2019, p. 73). Suppliers get bargaining power if the entrepreneur

cannot choose between multiple suppliers (Marburger, 2016, p. 81). Both customer and business to business clients can get a bargaining power when there are only a few potential buyers who have several suppliers to choose from (Marburger, 2016, p. 98). The threat of substitute refers to the fact that the customer can spend the same money only once and, therefore, decides whether to buy a particular product or use the money in alternative ways. The more similar the substitute is, the greater the influence of the price is in the purchase decision. (Marburger, 2016, p. 33.) The force of competitive rivalry in the middle of the figure tends to be the largest determinant of a lucrative business since it is affected by the other four previously described forces. In perfect competition characterised by free entry and exit, rivals will compete among others on price, quality, service, and advertising to capture their market share. (Marburger, 2016, p. 107.)

Robbins (2014, p. 240) states that with the help of an effective strategy, the upcoming opportunities can be utilised. Strategic management is especially important when a company aims to take or maintain market leadership (Robbins, 2014, p. 240). This means the evaluation and mapping of entrepreneurial actions, their recordings, measurement, and assessment (Reisinger et al., 2013, p. 230). Strategic management enables successful navigation in a complex and changing world (Reisinger et al., 2013, p. 11). Strategy tools support this task from analysis to implementation with selected key figures and indicators (Reisinger et al., 2013, p. 230).

Reisinger et al. (2013, p. 11) highlight that the means and tools of strategic management should be part of the management's toolbox. The more strategic management tools are managed, the less often there are only limited means of action available. In turn, extensive strategy knowledge enables efficient operation (Reisinger et al, 2013, p. 11). Figure 5 exemplifies several common strategy tools for each step of the strategic management process. Each tool is tailored to specific step of the strategic management process. The tools with blue font are to be used in this case study.

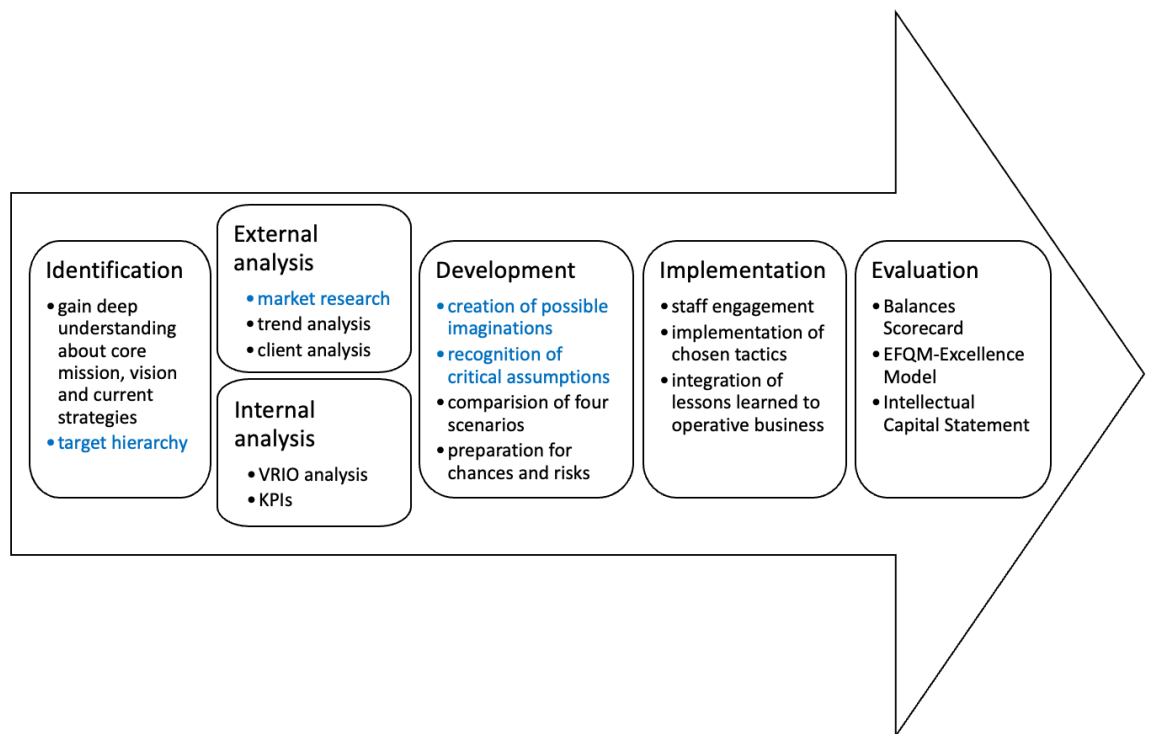


Figure 5. Strategy Tools. (Robbins, 2014, p. 243; Reisinger et al., 2013, pp. 100-230; Ritakallio & Vuori, 2018, p.22, modified)

4.4 Strategy Process

A strategy process refers to a process within an organisation, where a strategy comes into existence. The organisation goes through key questions how, who and when. How describes how strategy is considered, formulated, applied, and evaluated. Who determines the individuals that are involved. When gives the organisation a timeline, when the defined actions take place. (Elshamly, 2013, p. 45.) Wünsche (2010, p. 19) mentions that strategies are formulated and developed based on the desired goals, and the measures are selected to achieve these goals. Therefore, the strategy includes goals, the measures required to achieve these goals and the designation of the resources required for this (Wünsche, 2010, p. 19).

Reeves et al. (2018) highlight the importance of picking the right strategy for the prevailing business environment. The different business environments have their unique challenges. Therefore, each environmental situation requires a strategy process. In a classical business environment, stable growth happens along with GDP and the growth is easier to predict. In a classical business environment, planning with detailed financial forecasts and action plans is

reasonable. Whereas, in environments like life science logistics and onboard courier business where innovative technologies drive the demand, and the organisation needs to experiment to see what works, an adaptive strategy may suit better. The strategy process for an adaptive environment should include the capability to gather and understand signals to discover business opportunities. Only if the organisation has a major influence over the business environment there is a place for a visionary strategy and a game-changing product. However, if the market is frustrated that its need is not being met, a position with a visionary strategy with a richness of models and iteration cycles can be driven to market. (Reeves et al., 2018.) When looking at the past, the roots of the onboard courier business are from a visionary strategy to overcome the weak performance of conventional life science logistics (Xinke, 2022, p. 309).

A profit-making principle is in the interest of investors. Maximising the profit is based on the economic principle which can be represented in two forms: the maximum and minimum principles. On the one hand, to achieve a goal as well as possible maximum with the given means. On the other, to achieve a given goal with the minimum use of means. Still, a definition of profit maximising should not be used as a company's top goal since it is only formal and practically irrelevant. (Wünsche, 2010, p. 9-10.) The biggest and most important conflict of objectives is between securing a company's existence and maximizing profits. Generally, these goals are on the same level as the company's target hierarchy. (Wünsche, 2010, p. 11.)

Reisinger et al. (2013, p. 13) reminds that when formulating the strategy, the first step is to identify which strategic options are available for a company. Once there is clarity about the potentially available strategies, a decision must be made as to which of them should be implemented (Reisinger et al., 2013, p. 13). When making a choice, focus should be given to those strategic options that offer the company profitability in the long term (Reisinger et al., 2013, p. 146).

4.5 Strategic Options for Global Born Companies

Three basic strategic options for international market development are distinguished as international, multinational, and global strategies (Meffert et al., 2019, p. 331). The goal of an international marketing strategy is to secure a domestic portfolio through the pursuit of a lucrative business. (Meffert et al., 2019, p. 331; Reková, 2018, p. 88). For life science this can happen among other methods through research and development while aiming to create unique

products for target markets or through utilisation of distribution markets (Zeilon & Lindén, 2022, p. 88). International marketing strategy is often characterised by early stage and limited ability to adapt country specific approach. A controversial, multinational marketing strategy aims to secure company success with the help of a large number of national markets. Multinational companies often have multiple subsidiaries, which have the freedom to adjust their national strategy to the requirements of the respective foreign market. A global marketing strategy aims to improve international competitiveness by integrating all company activities so that these cover all business operations. Less attention is given to local requirements and needs, to gain optimal strategy for a global level. (Meffert et al., 2019, p. 331.) The fourth and somewhat more recent international strategy option can be described by observing the nature of the strategies of global born companies (Ferguson et al., 2021, p. 272; Knight and Cavusgil, 1996; Reková, 2018, p. 88).

Ontime Courier follows none of the three classical international strategies, but indeed has implemented its strategy suitable for its characteristic (Schimpf, 2023b). Various national regulations are process relevant and must be followed in onboard courier business (Schimpf, 2023b). On the other hand, Ontime Courier GmbH's operational environment is truly global. Its foreign subsidiaries, however, do not follow any of the three classical international marketing strategies (Ontime Courier GmbH, 2022, p. 1) The umbrella organisation, WMDA (2016, pp. 1-11) has set several high-level requirements to transport stem cells and bone marrow. To stand out as the most trusted onboard courier service provider, the company must meet current WMDA requirement as well all national and regional regularities in each transport (Schimpf, 2023b). Reková (2018, p. 90) determinates that a global born company has clear evidence of operating in multiple countries since the first years of its existence, utilising several new technologies in mobility, product safety and tracing in its processes. Ontime Courier GmbH has these characteristics (Ontime Courier Life Logistics Europe, n.d.) Furthermore, Ontime Courier GmbH is founded and led by innovative doctoral entrepreneur, and its services are targeted to be value-adding for its clients. (Ontime Courier GmbH, 2022, pp. 4-5). These are known characterises of global born companies (Knight & Cavusgil, 1996; Reková, 2018, p. 88).

Ferguson et al. (2021), Knight and Cavusgil (1996); Madsen and Servais (1997) as well as Reková (2018) have researched global-born companies. Global-born companies are born in unstructured market conditions, predominantly technology-focused and engaged in international operations since their start-up phase (Knight & Cavusgil, 1996; Reková, 2018, pp. 88-90). Madsen and Servais (1997) noticed that global-born companies often arise in novel market conditions caused by technological advancements in communications and transportation fields. Their founders

predominantly have out of box mindsets and intercultural capabilities. Founder's, organisation's, and business environment's effects are three key aspects leading to the creation of a global-born company. (Madsen & Servais, 1997.) Ferguson et al. (2021, p. 259) noted that global born companies are often described to have started their operations as export-driven start-ups. Reková (2018, p. 90) note that successful global-born companies tend to focus on innovation and growth by promoting and selling the products and services digital, but directly. Building a brand in internet by standardising the products, entering cooperating agreements and evaluating products lowers the threshold of uncertain customers to connect with a global-born company (Reková, 2018, p. 90). Reková (2018, p. 91) states that when choosing a strategy for a global-born company, the selection of a marketing strategy is the most crucial and the focus is on knowledge of international environment. In practise this means participation in expositions, conferences, and international trade fairs, free of charge after-sales services, strong stakeholder management as well as collaboration in value chain to share risks and ease the development and make common promotion (Reková, 2018, p. 91). Ferguson et al. (2021, p. 271) found out that strategy related risks and expenses of a global born companies far too often cancel out any of the profits or other benefits associated with reaching more foreign markets. Therefore, entering to the new markets gradually rather than following an aggressive global export strategy, does not necessarily mean less growth (Ferguson et al., 2021, p. 272). As the market conditions in the field of life sciences change very fast, a proactive identification of opportunities are sources of value creation (Reková, 2018, p. 91). Victor (2011, p. 191) highlights the importance of a holistic view of the value chain and the focus on core business when a global born company expands.

4.6 Ontime Courier GmbH's Existing Strategy

Rutherford et al. (2017, p. 880) mention that supply chain strategies are often created for a couple of different product types and are either agile, lean or hybrid. Numerous pharmaceutical products have adopted an "off the shelf" supply chain strategy, where manufacturing is centralised, and the sales network decentralised (Rutherford et al., 2017, p. 880). However, for life science logistics for innovative low volume products and especially when transporting substances of human origin in hand luggage, an optimal combination of sourcing, manufacturing and distribution strategies needs to be ensured (Rutherford et al., 2017, p. 879). This starts with a consideration of the impact of supply and demand uncertainty on the supply chain and continues with a configuration of the physical supply network (Rutherford et al., 2017, p. 880).

Porter (1980) introduced the term competitive strategy and claimed that enterprises need to search a favourable competitive position in their industry. Three generic strategies which are built on previous findings are cost leadership, differentiation, and focus (Eldring, 2009, p. 6). Figure 6 illustrates Porter's Typology and Generic strategies. Porter claims that enterprises need to choose between one of the three generic strategies or else they will end up going around in a circle without success (Porter, 1980, p. 40).



Figure 6. Porter's Typology and Generic Strategies. (Eldring, 2009, p. 7, modified)

The first of the generic strategies, cost leadership refers to a low-cost producer or service provider selling standardised products on a wide range (Eldring, 2009, p. 6). In logistics, a public postal mail business delivering letters and providing stamps could be seen as a low-cost service provider. With differentiation, enterprises provide buyers with more value and create loyalty to the brand (DeFoe, 2022; Eldring, 2009, p. 8). A well-functioning brand provides higher sales margins, competitive barriers to entry and price inelasticity within specific clientele (Eldring, 2009, p. 8). United Parcel Service is an international package delivery service provider which is led by a differentiation strategy (DeFoe, 2022). With the third generic strategy alternative, focus, enterprises adopt a narrow competitive scope to find a niche (Eldring, 2009, p. 9).

Ontime Courier GmbH 's niche is a narrow range of products which are accompanied transport of stem cell and bone marrow transplants (Ontime Courier GmbH, 2022, p. 1). In addition, a niche could also be a certain kind of clients as well as a limited geographic market. Regardless, of which niche is selected, the focus alone is not adequate for a competitive advantage. Wider strategy optimisation to cost focus or differentiation is required. (Eldring, 2009, p. 9.) Overtime Courier GmbH, with its operational excellence expertise, has successfully optimised their strategy to focused differentiation (Schimpf, 2023b).

Ontime Courier GmbH intends to structure the company's strategy in more detail, both in written format as well as in terms of tactics. Overtime Courier GmbH aims to grow and, in this way, ensure

its long-term survival. Based on the current strategy, a sales team regularly visits the company's clients to expand existing business. For the time being, several registers operate on a dual-channel supply. By using parallel two competing onboard courier service providers a registry can reduce the risk of capacity shortages. This forces Ontime Courier GmbH to compete on both price and service level. The company aims to always reach the larger part of the dual-channel business and retain every new client. (Schimpf, 2023b.) As the client, and not the competitor, is the one who defines the company's success, an effective business strategy starts from the client and its needs (Korkiakoski, & Gerdt, 2016, p. 10). Therefore, Ontime Courier GmbH, like other companies known for utilizing the customer experience, first focuses on the client's needs and consequently, defines its processes, operating methods, and priorities accordingly (Schimpf, 2023b).

Schimpf (2023b) describe that several registries search onboard courier service providers for their logistic needs both from domestic and international sources. Ontime Courier GmbH's strategy is globally stand out through operational excellence expertise, authentic polite service, extraordinary responsiveness, and solution orientation (Schimpf, 2023b). However, the possibility to benefit from a customer experience is not the same in every business environment (Korkiakoski, & Gerdt, 2016, p. 16). Still, onboard courier service providers have an opportunity to make full use of their leading advantages in system relevant logistics. An onboard courier business model that can better cope with the challenges of traditional life science business, regardless of whether regional or periodical issues, will provide clients with alternative solutions. This is particularly relevant in critical situations. (Xinke, 2022, p. 312.)

5 Growth and Expansion Theories

Corporate strategy determines in which business areas the company is active. Furthermore, it describes what the company offers to its clients in a selected business area and how this is done. It is based on the mission and goals of the company as well as the function of each division of the company. The three essential forms of corporate strategy are growth, stability, and resilience. (Robbins et al., 2014, p. 246.) From a profit creation point of view, logistic companies work more efficiently when they are led by a growth strategy (Oláh et al., 2017, p. 233).

The growth strategy is used to increase the markets the company serves or the products it offers, either through existing or new business units (Robbins et al., 2014, p. 246). A stability strategy is used to keep the size of the company unchanged by maintaining the existing strategy (Reisinger et al., 2013, p. 114; Robbins et al., 2014, p. 248). This often rather transitional strategy is needed for extreme industry uncertainties to win time until a new strategy is developed and implemented (Reisinger et al., 2013, p. 114). Resilience strategies are developed to reduce declining performance, either through restructuring operations to eliminate minor performance problems or making a full turnaround to repair serious problems and recover (Paul et al., 2021, p. 316; Robbins et al., 2014, p. 248).

5.1 Growth Strategies

If the company choose to create a growth strategy, the growth can be defined by revenue, headcount, or market share, or all of these (Robbins et al., 2014, p. 246). In general, organisations grow through concentration, diversification, as well as horizontal and vertical integration (Reisinger et al., 2013, p. 106; Robbins et al., 2014, p. 246). In the concentration strategy, the aim is to gain organic growth and the focus is on the number of products and markets with whom the company does business (Robbins et al., 2014, p. 246). The growth through diversification describes the risky moves a company takes into business areas that are different but related to the industry (Robbins et al., 2014, p. 247). Diversification is often reasoned as a solution to escape from legacy industry forms, expand the market position and exploit synergies (Reisinger et al., 2013, p. 11). Vertical integration refers to growth, where the company controls its inputs or outputs, like processing online payments by itself or building its own brand flagship stores (Pindyck & Rubinfeld, 2015, p. 960; Reisinger et al., 2013, p. 107; Robbins et al., 2014, p. 247).

Isoherranen (2020, p. 8) describes that growth can be created inorganically through corporate restructuring but inorganic growth can also be achieved successfully by buying companies or businesses or by taking over businesses through business transfers. Strategic partnerships are also good ways to grow other than growing through sales (Isoherranen, 2020, p. 8). In horizontal integration, a company grows through the acquisition or merger of its competitor (Pindyck, & Rubinfeld, 2015, p. 952; Reisinger et al., 2013, p. 107; Robbins et al., 2014, p. 247). Mergers and acquisitions are common in life science logistics, and there are no signs of change in this (KPMG, 2023, p. 2). Among logistic service providers, companies led with the horizontal integration strategy achieve on average significantly higher revenue compared to their competitors having only an organic growth strategy (Oláh et al., 2017, p. 243). It is to note, that several antitrust authorities monitor mergers and acquisition transactions in order to rule out consumer disadvantages (Robbins et al., 2014, p. 247).

5.2 Taking Advantage of Opportunities

One of the most relevant decisions for a company planning to expand at an international level is the choice of market entry mode. In general, entry mode decisions are characterised by uncertainty and unfamiliarity of the extraterritorial markets. In order to gain dimension for the decision process, four major supportive questions need to be considered within the limited resources of the company. These questions are why, how, when, and where. The “why” opens the motivations and objectives behind the intention. The “how” relates to which entry mode is the most reasonable in a new environment and the “when” highlights the importance of the right timing. The “where”, that is at the heart of this research, emphasises that the selection of the location needs to be proper and sustainable. (Fuchs, 2022, p. 137.) Unfortunately, entry mode decisions are often biased by former experience and limited to information that is readily available. A further challenge is to make objectives precisely defined. (Fuchs, 2022, p. 137).

Several market entry strategy theories are available to realize business opportunities. Especially alternatives like licencing, joint ventures, strategic alliances, and subsidiaries are also disposal of logistic service providers. When selecting the appropriate one, capital investment, controlling possibilities, cooperation dependency, costs and risks are the key selection criteria. When the opportunities are in an international environment, the cultural and legislative differences need to be part of the consideration. (Zerres & Zerres, 2006, pp. 108-109.) This also includes

consideration of what kind of activities and how much personnel need to be transferred to the targeted market area (Meffert et al., 2019, p. 333).

5.3 Competitiveness Through Innovations

Innovation is a main factor for competitiveness in Europe and logistical innovations are needed as transport continues to grow, regardless of its negative impact on the environment and citizens' health (Blanquart et al., 2016, p. 193). However, all companies and business sectors are not equally capable to innovate and invest in innovation (Fuchs, 2022, p. 86). While other industry sectors, like life science, are growing rapidly in productivity, the logistics industry has so far experienced only minor efficiency improvements. In addition, other business sectors are able to invest even double-digit percentages of their revenue in research and innovation, but small margins of the logistics industry enable logistic service providers to invest only a little more than one per cent contribution to research and innovation. Still, the main reason for the low adaption level of innovative solutions in logistics is the lack of clarity on what type of innovation improves the operational excellence and efficiency. (Blanquart et al., 2016, pp. 193-194.) Technological developments which ease track, trace, and process safe and secure identification need to be better integrated and connected. Also, administrative innovations, like just-in-time deliveries, have shown a positive impact on logistics. (Blanquart et al., 2016, pp. 31-32.)

Robbins et al. (2014, p. 207) note that creativity refers to the ability to combine several ideas in a unique way and create untypical associations between different ideas. Innovation is a process where a given creativity is transformed into useful products or solutions (Robbins et al., 2014, p. 207). Innovations can be created for existing and new markets (Zerres & Zerres, 2006, p. 67). Operational innovation activity has a positive effect on company performance. When innovation activities are taken as part of the company strategy, three choices need to be made. Decisions relate to whether the company aims to be a first mover or a follower, whether the company's innovation activities are technology pushed or market pulled ones and whether the focus is on closed or open innovations. The closed innovations require company's internal know-how. (Reisinger et al., 2013, p. 110.)

5.4 Blue Ocean Strategy

With the Blue Ocean strategy, a company aims to eliminate the competition and, in this way, ensure future success. The market areas can be either Red or Blue oceans. Red Oceans refer to the markets which are known and existing. On the contrary, Blue Oceans are to be discovered or even created. In Red Oceans the various actors know the rules of competition and boundaries. (Isoherranen, 2012, p. 34.)

For time being, Ontime Courier GmbH operates predominantly in Red Oceans, in highly competitive markets of Europe and North America. However, Ontime Courier GmbH has discovered and gained several Blue Ocean market areas from both geographical and a special know-how point of view. In Red Oceans, the possibilities to grow are limited due to the offer surplus (Isoherranen, 2012, p. 34). Blue Oceans are for characters far away from red oceans where predefined rules exist (Isoherranen, 2012, p. 34). When considering the onboard courier business, the blue oceans, if existing, are geographically over the world oceans. On the other hand, as life science technology develops and increasingly more diseases are healed with substances of human origin (Rutherford et al., 2017, p. 878), the significant Blue Ocean can be conquered by staying at the top of technology, including the development of both, life science and management of value chain. Should the company choose to follow the Blue Ocean strategy, it is essential to find out the key competition factors of the existing markets and the foremost investments of the competitors (Isoherranen, 2012, p. 34).

5.5 The Conditions of the Market Entry

In the market of free entry and exit, a company enters the market when it can make a positive long-term profit and exits when it expects a long-term loss. Should one company make zero economic profit it does not make the company seek to leave the industry. However, there is no incentive for other companies to enter this kind of market. Consequently, there is a long-term competitive balance when three conditions are affected at the same time. The balance applies when all companies in an industry maximise their profits, there is no incentive for any company to enter or exit the market and the product price is such that the quantity offered is equal to the quantity demanded. (Pindyck & Rubinfeld, 2015, p. 414.)

A company first on the market can profit from first mover advantages like strong brand recognition and customer loyalty (Meffert, 2019, p. 73). Additionally, a company that is already on the market can defer itself from potential competitors entering a market by convincing competitors that entering the market would be unprofitable (Pindyck & Rubinfeld, 2015, p. 689). Porter (1980) names seven entry barriers. These are scale advantages, capital requirements, access to supply chains, inexperience, expected reactions of the rivals, legislations, and differentiation.

The latest developments in technology have made global expansion easier and for all sizes of enterprises achievable (Hopkins, 2017, p. 3). International business remains the engine that runs most of the economies (Hopkins, 2017, p. 5). Before the era of the internet, companies entering to global marketplace needed months to market their products in foreign countries. Today, the support of trading companies and the establishment of subsidiaries are no longer categorically necessary. Especially, in international markets, the focus is on the marketing mix. (Hopkins, 2017, p. 36.) Walters and Helman (2023, p. 228) mention that one increasingly important market entry aspect is the regulatory compliance. The ability to stay on market and grow requires that the enterprise fulfils all the aspects of compliance such as punctual statutory reporting and healthy cash flow, but also their corporate social responsibility (Walters & Helman, 2023, p. 228).

Marketing-mix is a basic concept of marketing that outlines key components a company needs to consider when marketing or selling its products or services (Meffert et al., 2019, p. 20). These elements, named 4 Ps, include the instruments of product, price, promotion, and place (Hopkins, 2017, p. 36). Meffert et al. (2019, p. 20) emphasises that the marketing-mix needs to be designed based on operational sub-goals for each element. In service marketing, an additional interpretation of further three aspects is carried out. People, processes, and physical facilities form together with the general aspect of the 7 P service marketing approach (Meffert et al., 2019, p. 20).

The global economy gives an indication of a new era of multipolar growth, meaning that three or more contenders are capable of shaping the world economy and there are multiple centres of power and influence. When looking for an excellent growth platform and prospects with strong growth potential it is to note that the old superpowers, like the United States, China, or Russia, are most likely not among the winning economies. Where Vietnam and Poland are investing in manufacturing and technology, Brazil together with Saudi Arabia produce commodities and Indonesia competes with India in use of digitalisation. (Sharma, 2022, p. 8.) Hopkins (2017, p. 53) states that solid market research assists enterprises in identifying cross-country similarities and

differences as well as supports decision-makers in making accurate marketing conclusions and effective promotions. This in turn contributes to reducing the risk of substantial loss on investment and consequently, to withdraw from a targeted market (Hopkins, 2017, p. 53).

When considering Ontime Courier GmbH's intention to enter deeper into markets outside of Europe and North America, emerging and developing countries play a significant role. Whether a market is advanced, emerging, or developing is defined based on factors such as high per capita income, greater integration into the global financial system as well as exports of differentiated goods and services (Arizala, & Yang, 2021, p. 7). Gudmundsson et al. (2022) from the International Monetary Fund have studied the prospects and challenges of emerging markets, and the outcome was, that many emerging markets have been able to withstand a heavy shock, like a pandemic, and avoided an economic collapse. Still, emerging markets recover slowly and unevenly. This creates downside risks also for future investors (Gudmundsson et al., 2022, p. 17).

6 Research Methodology

The research problem defines the type of research, the research strategy as well as the researcher's approach to the topic (Tuomi & Sarajärvi, 2018, p. 56). Quantitative research determines numerical values about the market and provides insight into sales, market shares, price structures, but also consumer income levels. Quantitative data is objective. Qualitative market research intends to identify certain motivations behind a behaviour in the specific market. In addition, qualitative research can be used to determine prevailing attitudes and expectations. Qualitative data is subjective. (Olfert & Rahn, 2011, p. 595-597). Tuomi and Sarajärvi (2018, p. 56) highlight that beliefs are present when formulating the research problem. Therefore, even the formulation of the research problem is not independent of theories and values (Tuomi & Sarajärvi, 2018, p. 56).

World Marrow Donor Association annually publishes figures for stem cell transport on a global scale (WMDA, 2022, p. 22). Schimpf (2023a) notes that thus, the number of transports made by the commissioner and all participants in general is comparable. The divergence of these numbers is the area where the research question arises (Schimpf, 2023a). The research design is created with the help of research literature and a conversational artificial Intelligence program called ChatGPT. Artificial intelligence is utilised before the data collection for ideation and to get an overview of data analyse methods. However, collected primary data is not entered into or analysed with any artificial intelligence program. The goal of the thesis is to achieve an appropriate strategic development plan for Ontime Courier GmbH. The research question and sub-questions are determined to cover strategic goals. The theoretical framework, which analyses and presents collected data from literature and previous research, focuses on the theory of strategy as well as the procedure of allogeneic haematological stem cell transplantation from donor to recipient.

6.1 Case Study as Research Strategy

A case study is predominantly utilised to explore and explain circumstances, where processes are the object of interest. By researching the case, the aim is to increase the understanding of a given phenomenon without an intention to generalise gained information. However, a consideration of the research results on a wider scale helps to understand how the results of a case study may be

beneficial aid for the planning of possible larger studies. (Saaranen-Kauppinen & Puusniekka, 2006, Chapter 5.5). Hashmi and Akca (2012, p. 11) notify that a case study work is characterised with information anarchy. Other known challenges are to filter relevant information and supplement the missing information appropriately so that the whole is reliable. (Hashmi & Akca, 2012, p. 11). Case studies do not have an across-the-board standard structure (Hashmi & Akca, 2012, p. 14).

This research is a case study, in which a potential market opportunity of Ontime Courier GmbH is investigated using versatile data obtained with market research. In this case study a structure of the market research process is used, and the results of the market research are examined using some common strategic development tools which are the creation of possible imaginations and recognition of critical assumptions with the help of SWOT and PESTEL analysis. This arrangement is in line with the rough structure of three key components of the case study. Hashmi and Akca (2012, p. 15) highlight that an executive summary, a problem statement, and a proposal to solve the research problem are relevant parts of a case study.

6.2 Market Research Process

Scharf et al. (2009, p. 101) list numerous decisions that need to be made as part of strategic planning. When entering to the new markets, relevant information about current and future market situation serves as an indispensable basis for these decisions regarding (Scharf et al., 2009, p. 101). Market research is a systematic information acquisition, processing, data analysis and knowledge interpretation of a company's internal and external information about buying and selling markets (Scharf et al., 2009, p. 101-102; Weis & Steinmetz, 2005, p. 16; Zerres & Zerres, 2006, p. 39). The goal of market research is to obtain market-related information (Olfert & Rahn, 2011, p. 595; Scharf et al., 2009, p. 101-102; Weis & Steinmetz, 2005, p. 16). The analysis serves as a basis for operational decisions (Scharf et al., 2009, p. 101-102; Weis & Steinmetz, 2005, p. 16; Zerres & Zerres, 2006, p. 39). Buying markets include aspects, like capital, raw materials, and labour (Zerres & Zerres, 2006, p. 39). The task of market research is to bring possible market opportunities or threats to the researcher's attention (Zerres & Zerres, 2006, p. 40). Often these are calculable and allow precise objectification during the decision-making process. (Zerres & Zerres, 2006, p. 40).

Every market research investigation can be divided into several successive phases, regardless of the characteristics of the decision problem (Berekoven et al., 2006, p. 34; Scharf et al., 2009, p. 109). Careful planning is required for each phase as mistakes in earlier stages generate mistakes in further phases and affects to the research result (Berekoven et al., 2006, p. 34; Scharf et al., 2009, p. 110). Planning keeps the market research on schedule and at a reasonable price (Hopkins, 2017, p. 59). When market research is done to find a strategy to expand the business on a global level, it is essential to perform the research as thoroughly as on the domestic market and to narrow the focus on the clientele in the target market area (Hopkins, 2017, p. 33). A sharp understanding about how competitors are working to reach their clientele is beneficial for market entry (Hopkins, 2017, p. 34). Figure 7 presents all successive phases of a market research process and tasks related to these phases.

Process phase	Area of responsibility
1. Definition	- definition of research problem - determination of the goals of the market research
2. Design	- building hypothesis - determination of key information sources and data collection method - scheduling
3. Data Collection	- organizing and implementing data collection - verification of data quality
4. Data Analysis	- evaluation and compression of the data obtained - implementation of analysis
5. Documentation	- creation of a research report - presentation of the research results

Figure 7. Successive Phases of a Market Research Process (Scharf et al., 2009, p. 110, modified)

Scharf et al. (2009, p. 109) states that the market research process starts with the definition phase when the research question is determined and formulated. Furthermore, the need for relevant information is considered (Scharf et al., 2009, p. 109). The design phase includes the decisions about the data collection method and key information sources (Scharf et al., 2009, p. 110). The most relevant decisions are made in the design phase (Vilkkä 2007, p. 170). In the context of data collection, Scharf et al. (2009, p. 112) highlight two common approaches than can be distinguished. Where in primary research new data will be processed to solve the research

question, in secondary research the data, which is already collected at an earlier point for other purposes is analysed in the light of a newly defined research problem (Scharf et al., 2009, p. 112).

This study is in accordance with the market research process phases. Ontime Courier GmbH has a rough understanding about the target market they pursue. This generic idea about overseas target markets serves as a starting point for this study. Variables like transplant registry type and size as well as whether experienced or fresh initiated are just some of innumerable definitions related to the target clientele. In respect of expected thesis outcome, primary research turns out to be more suitable. Secondary data about the volumes of the HPC transports on a global scale is available (WMDA, 2023a), and serves as supporting material for the theoretical and empirical parts of the thesis.

6.3 Data Collection Methods

Scharf et al. (2009, p. 110) describe how in the collection phase, field work is done. This includes organizing and monitoring designed activities like posting a questionnaire and collecting the answers from respondents (Scharf et al., 2009, p. 110-111). Meffert et al. (2019, p. 167) note that formerly the focus of the market research has been on primary research where the task was to collect and evaluate new data. Since the era of digitalisation, secondary research has increased its popularity, as possibilities to access and process existing data easier (Meffert et al., 2019, pp. 167-168). The collected data differs into primary and secondary data depending on the underlying form of information acquisition. Depending on the data structure, the collected data is available either in structured or unstructured form. (Meffert et al., 2019, p. 180.)

More commonly the collected material is categorised to quantitative or qualitative data. According to Vilkka (2007, p. 18), the goal of quantitative research is to formulate a research problem, to use theory in measurement, and through this to find variances and explain them. Keegan (2009, p. 12) highlights that whereas in a quantitative study, data is often collected from a large group of respondents, in a qualitative study a small group of people is selected, representing either the entire population or a certain sample of it. In qualitative research, the activity between the researcher and the subject is more informal, creative, and spontaneous. Qualitative research is person-centred, and the aim is to gain a deeper understanding of the studied matter. (Keegan 2009, p. 12.) Alasuutari (2011, p. 131) states that the goal of qualitative research is to gain a deeper understanding of the phenomenon under study from a chosen

perspective. When a case study combines aspects of qualitative and quantitative research, it is essential to be able to interpret also the qualitative results obtained (Eronen et al., 2007, p. 8).

Good theoretical representativeness describes material that has essential features in terms of the research problem and the phenomenon being studied (Jokivuori, 2013, p. 5). Regardless of the extent of the data collection area, the researcher faces ethical concerns (Hopkins, 2017, p. 59; Malhotra, 2020, p. 800). A measure can be considered valid if it represents a characteristic appropriately, correctly, and meaningfully (Jokivuori, 2012, p. 6). In the international arena, equivalence, in terms of scales and measures, is more challenging (Hopkins, 2017, p. 59). Special attention is necessary as cultural environment, bias and language can influence how the questions and answers are understood (Malhotra, 2020, p. 800). Thus, in international market research it is essential to determine the comparability of measures and scales used to obtain data from different countries, so that examination of linguistic, operational, measurement and construct equivalences can be done (Malhotra, 2010, p. 795).

In this research the gained data is both in structured and unstructured form, but predominantly from primary sources as categorised in Figure 8. This case study is predominantly primary research. However, some secondary data is utilised to support data analysis.

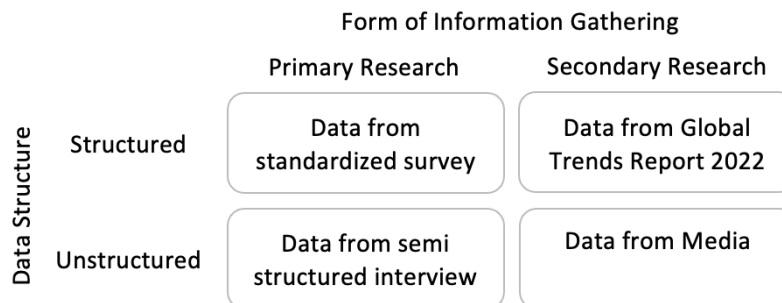


Figure 8. Market Research Data in Context of Data Structure and Information Acquisition (Meffert, 2019, p. 180, modified)

Before data collection and method selection, the research subject and questions are peer-reviewed by the tutor lecturer. This ensures the alignment with the guidelines of KAMK University of Applied Sciences.

6.3.1 Survey

Survey is the most widespread and developed information gathering method used by market research (Meffert et al., 2019, p. 193). When a survey is made with a questionnaire, a large spatial area can be covered without having influence of the interviewer. Furthermore, survey can be cost-efficient when high amount respondents are expected (Meffert et al., 2019, p. 195). Generally, it is possible that technical issues and attitudes linked to internet and digital surveys may intimidate respondents resulting in non-response bias and thus affect the participation rate (Hopkins, 2017, p. 59). Pickard (2013, p. 208) states that questionnaire design, too, has an influence on the response rate and the amount of data gained. Prolonged engagement ensures that sufficient time in the study field is used to understand the work culture, organisational setting, and examined phenomenon (Cohen & Crabtree, 2006). It is essential to gain various aspects, reach the range of specialists, to become oriented to the studied situation and understand the context (Lincoln & Guba, 1985).

In this thesis, a self-report questionnaire is emailed to contact persons of all stem cell registries who are listed as WMDA members on the website of the World Marrow Donor Association. The email announcement contains a URL link to a questionnaire delivered via Webropol, which is an accepted research standard. The collected data includes completed questionnaires from registry representatives who voluntarily participate in a study concerning life science logistic solutions for allogeneic haematological cell transplantations. Participating organisations do not receive any remuneration for answering the questionnaire. The inclusion criterion is a registry membership of the World Marrow Donor Association. The time for completing the form is not limited. However, a deadline for participation is set for March 24th, 2024.

The questions of the survey are listed on Appendix 2. All participants are asked the same questions. The survey includes questions for both qualitative and quantitative research methods. The questionnaire includes typically formulated questions concerning current service providers as well as possible challenges related to the transports where the shipping or receiving facilities, or both are physically located outside of Europe or North America. The intention is to gain insight where all over the world do allogenic stem cell and bone marrow logistic markets exist and which kind of actors take care of these logistics for cellular therapy products. Other intention is to better understand whether there are stem cell donor registries which would profit from a high-end onboard courier service provider. Lastly, which are the main reasons that stem cell registries outside of Europe and North America use other solutions than Ontime Courier GmbH's offering

for their logistical needs related to the cellular therapy. Topics related to stem cell transplantation are less known among the public. Though, the questions contain specialised and scientific vocabulary, which is assumed to be used by the survey respondents.

6.3.2 Interviews

An Interview is flexible method to collect data because questions can be asked in an order that makes sense. In addition, questions can be repeated or refined according to the situation. The third advantage is the possibility of observation. (Tuomi & Sarajärvi, 2018, Chapter 3.1.) The advantage of the interview is that it allows the respondent to describe the matter of time vice from different perspectives so that the experience is reconstructed, the present interprets, and based on that, the future can be predicted (Pickard, 2013, p. 196). Malhotra (2010, p. 436-437) categorises interviews into structured and unstructured interviews. Then the structured interview follows an interview plan and questions will be asked according to a pre-planned sequence. This approach is suited for situations, where the interviewer checks the boxes that reflect the respondent's answer. In unstructured interviews, new spontaneous questions may arise during the interview to gain detailed data about the phenomena. (Malhotra, 2010, p. 437.)

In this study, a semi-structured stakeholder interview is arranged with given structured questions order but allowing additional spontaneous questions, if beneficial. Ten persons are interviewed to gain diverse perspectives, validate the findings of the questionnaire results, understand the company's internal position and identify possible unexplored areas or biases. These individuals do not predominantly represent stem cell or bone marrow registries, but some key stakeholders of the commissioner. Two of the interviewees are the commissioner's active onboard couriers and one commissioner's former couriers. Other two are commissioner's internal employees. The last five of interviewees represent transplant coordinators and HLA laboratory staff, where three work at collection centres and two at a transplant centre. In the selection of the interviewees, attention is given to the representativeness of targeted markets outside of Europe and North America. Each interview is limited to pre-defined thematic questions. Spontaneous questions may arise. The questions are listed on the Appendix 3. All interviews are recorded, so that respondents' verbatim including spontaneous, but for the research often very valuable comments can be collected completely. The validation of the findings from the questionnaire results with help of interview happens through uncovering factors and nuances that may not have been

captured by the quantitative survey. Participants may offer insight to interpret results and explain how behind quantitative results.

6.4 Data Analysis Methods

Scharf et al. (2009, p. 111) describes that when the survey is completed, the data gained is analysed for logical consistency and completeness with computer-aid. The objective of the study plays a key aspect when condensing the data for interpretation (Scharf et al., 2009, p. 111). The data analysis strategy arises from the initial steps of the market research process and aims to address the research problem at hand. Having this as a springboard, the known characteristics of the gained data and statistical techniques can ease to selection of suitable data analysis strategy with several techniques. (Malhotra, 2020, p. 465-466).

The data analysis of the collected data includes three evaluation tasks. It starts with the creation of the data analysis plan to serve the investigation structure and the study objectives. The second task is the selection and implementation of the evaluation procedure in a way that the answer to the research question will be possible to gain. The last task is the interpretation and evaluation of calculated and acquired results. (Meffert, 2019, p. 202.)

SWOT and PESTEL analysis are used as development methods when a development plan is formulated from the result of the market research. Where market research brings possible opportunities or threats to commissioner's attention, the development plan ease objectification during decision-making process. In this way, both are useful to the commissioner when planning to expand to distant market areas.

6.4.1 Quantitative Analysis

The structured primary data is often suitable for quantitative evaluation immediately (Meffert et al., 2019, p. 181). Quantitative analysis can be analysed in three levels. These are descriptive, observing connections and explanatory levels (Jokivuori, 2013, p. 8). Jokivuori (2013, p. 3) describes how statistical representativeness refers to the way in which the distribution of the background variables of the collected material corresponds to the basic population. Therefore, it is essential to always analyse whether the collected data is still representative in relation to the

group from which it is taken (Jokivuori, 2013, p. 3). Loss refers to those who do not respond to the survey. Loss is a proportion of the group to which the survey was sent (Jokivuori, 2013, p. 4).

Description is always the first stage of analysis, even if the research aims to utilize other levels of analysis as well (Jokivuori, 2013, p. 9). Jokivuori (2013, p. 9) states that descriptive analysis is distinct from explanatory analysis in the way that it answers questions such as 'what', 'what kind' or 'how much'. The idea of descriptive analysis is to describe what kind of phenomenon the subject of the study is or how common the phenomenon under investigation indeed is (Jokivuori, 2013, p. 9). With descriptive analysis the researcher can investigate evaluate what 'logistical frustrations' means in various contexts and how often a certain type of adverse event occurs in different geographical areas (Jokivuori, 2013, p. 9; KvantiMOTV - Menetelmäopetuksen tietovaranto, 2009). Secondary data often clarifies, and frames new information obtained from the survey (Hopkins, 2017, p. 59; Meffert et al., 2019, p. 181).

In this study, the quantitative primary data is analysed with descriptive method. The main variables are set to be location, or existing logistic solutions. Furthermore, cross tabulation is used to find out differences between Ontime Courier GmbH's current and target market areas. The analysis is performed using statistical software programs, Excel and PSPP. The secondary data from WMDA (2023) is large and detailed in quality but is evaluable immediately and serves as supporting material later when interpreting research results. Answers to open questions gained from survey are analysed with qualitative methods.

6.4.2 Qualitative Analysis

Unstructured primary data from semi-structured interviews require various data preparation steps including transcription before applying qualitative data analysis methods (Meffert et al., 2019, p. 181). In the qualitative part of the research, the results are interpreted in such a way that the statistical connections between the different variables found in the quantitative analysis are interpreted using explanatory models obtained earlier (Alasuutari, 2011, p. 2). Saunders et al. (2012, p. 74) note that common methods for qualitative analysis are deductive and inductive reasonings. The main difference between these two methods is that while deductive reasoning starts with the theory, and continues with observation and confirmation, inductive analysis begins with an observation and continues with patterns and theory (Saunders et al., 2012, p. 74). Saunders et al. (2012, p. 52) mention that with an inductive approach various meanings can be

highlighted to emerge from collected qualitative data, to identify patterns and relationships as well as to build a theory. Theoretical framework supports to identify concepts to explore (Saunders et al., 2012, p. 52). The solution to the puzzle is the interpretation of the meaning of the studied phenomenon, and it takes place in the phase of forming the structural unit (Alasuutari, 2011, p. 2).

When conducting market research, it is to note that markets are often initially segmented based on geographical characteristics, regardless of whether distinguished by macro or microgeographic criteria. Macrogeographic segmentation involves dividing the market at the country level. Microgeographic segmentation focuses on residential areas, and is linked with demographics, employment, and infrastructure. It is based on neighbourhood affinity. (Meffert et al., 2019, p. 225.) Vilkkä (2007, p. 147) mentions that the results come out when analysing the research material, but their purpose is not to remain in numbers. The idea of analysis is to outline and explain the significance of the results in terms of the research problem (Vilkkä 2007, p. 147). Eronen et al. (2007, p. 99) states that when the analysis is complete, the collected theory is placed around the conclusions. This consists of three aspects which are process, time, and tools (Eronen et al., 2007, p. 99). The final phase is the documentation phase where the new information is written down and presented in the form of research results (Scharf et al., 2009, p. 111).

In this thesis, the common guidelines of this research are followed in the analysis of the material, in the way that the selected analysis methods have been approved by the tutor lecturer and studied from method guidance literature. An inductive approach is adopted to this data driven study to explore a topic and develop a theoretical explanation.

Secondary data from public sourced is used to support the creation of the development plan to self-review the matter through theory. As the most important research question in this research is neither the “what” nor “how” question, any of the common data analysis methods for quantitative and qualitative data do not serve here alone. A simplified geospatial analysis with a web-based tool, called MapChart is used together with a common spreadsheet tool, Excel to analyse and visualise the gained data. The analysis is based on direct variables and aims to spot the regions with a concentration of potential clients. The existing logistic solutions are set to be the most relevant variables.

6.5 Development Methods

Before starting a development activity, a commonly recognised need for development, a jointly formulated goal, participation, and management are the factors which culminate the content of development work (Salonen et al., 2017, p. 16). Multiple development methods are available, and these can be categorised in various ways (Salonen et al., 2017, p. 55).

In this thesis, two strategic development tools are utilised to shape the form of Ontime Courier GmbH’s strategy. PESTEL analysis is utilised to understand generic opportunities and risks related to the market entry. The SWOT analysis is to evaluate commissioner’s competitive position and then to develop a strategic plan to address these areas.

6.5.1 PESTEL Analysis

Markets are part of a company’s microenvironment, which is embedded in a superordinate, macroenvironment (Meffert, 2019, p. 65). When analysing an international environment, the focus is predominantly on factors that affect many companies, regardless of the sector. Generally, companies have very limited possibilities to influence these macro-environmental factors. When analysing the business environment of the company on a large scale, the objective is to recognise existing changes and risks, and to adjust the basis of the strategy by considering these changes and risks. Relevant influencing factors can be identified using the PESTEL framework. (Reisinger et al., 2013, p. 56-57.) The PESTEL approach provides a possibility to become aware of the dimensions of an environment and is especially helpful in situations when entering a new market (Fuchs, 2022, 161). A classification of possible environmental factors into six areas, as seen in Figure 9, offers a comprehensive systematisation of the complex environment. It is essential to identify the most important influencing factor in each category that can lead to success or failure (Reisinger et al., 2013, p. 56-57). Fuchs (2022, p. 162) states that the PESTEL approach provides only a general impression which does not cover possible future changes in the environment. Besides, any missed opportunity generated because of selecting a less risky target cannot be evaluated by PESTEL (Fuchs, 2022, p. 162).

P	E	S	T	E	L
political	economical	social	technological	environmental	legal

Figure 9. Categories of the influencing factors (Reisinger et al., 2013, p.56, modified)

Ontime Courier GmbH as part of Life Couriers brand, operates as a market leader in a global environment, where very few competitive companies cover most of the stem cell and bone marrow transport market (Life Couriers, n.d.; Otime Courier Life Logistics Europe, n.d.; WMDA, n.d.). In this research, a PESTEL analysis is used to support the selection and dimension of the market research questions as well as to build a comprehensive understanding when reporting market research results, creating possible strategy imaginations as well as recognise critical assumptions. Examining the results of the research from six points of view produces sufficiently different strategy suggestions from which a development plan can be created.

6.5.2 SWOT Analysis

In a commonly utilised SWOT analysis, the strengths and weaknesses of the company are compared with external opportunities and risks (Meffert et al., 2019, p. 273). The SWOT analysis provides information about the extent to which the company's internal strengths can be used to exploit market opportunities and avert risks (Zerres & Zerres, 2006, p. 14). The comparison allows a structured derivation of suitable marketing strategies (Meffert et al., 2019, p. 273). The idea and approach of the analysis is simple (Isoherranen, 2012, p. 26; Salonen et al., 2017, p. 57). Nevertheless, some attributes may be difficult to fit into the right section of the four-field matrix, as these can be observed as threats, but also as worthwhile opportunities (Isoherranen, 2012, p. 26).

SWOT analysis is able to combine the thoughts of the resource-oriented perspective with those of the position-oriented approach (Reisinger et al., 2013, p. 90). Strengths in combination with opportunities frame a phase in which the strategic window is open, and the company must make every effort to seize the opportunity for market entry and a long-term breakthrough. On the other hand, when combining strengths with risks, the decision maker is aware of the risks which need to be neutralised. Simultaneously, the decision maker may combine weaknesses with opportunities in order to build up a conversion strategy. (Meffert et al., 2019, p. 273.) Should the company's existence be threatened, a defence strategy can be gained when combining weaknesses with threats. From the resilience point of view, any risk which cannot be neutralised due to existing weaknesses should be eliminated. (Meffert et al., 2019, p. 274.) Besides the SWOT analysis, various theories and concepts are created for business expansion opportunities.

7 Market Overview

This part of the thesis is confidential.

8 Business Development

This part of the thesis is confidential.

Discussion

This part of the thesis is confidential.

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Stem Cell Transport Process Flow Chart

This part of the thesis is confidential.

Survey Questions:

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Interview Questions

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Registries' Experience of Logistical Frustrations

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Logistical Frustrations and their Frequency Stem Cell and Bone Marrow Registries Have Faced.

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Preferred Evaluation Criteria When Selecting a Logistic Provider for Allogeneic Stem Cell and Bone Marrow Transports

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The Ways a Commercial Courier Company Can Serve Their Registry Better

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Ontime Courier GmbH's Strengths

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The Risk Related to the Weaknesses of Overtime Courier GmbH or Its Competitor

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A Recipe to Remain Agile When Life Science, Technology and Mobility Are Changing

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Generic Opportunities and Risks Related to The Market Entry

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Results From Ontime Courier GmbH's SWOT Analysis

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Ontime Courier GmbH's Current Market Area (MapChart, n.d.; Schimpf, 2024)

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The Division of the Global Transport Market as OnTime Courier GmbH's Current And Target Market Areas for This Study (MapChart, n.d.)

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Countries With No Or New Transplant Activities (MapChart, n.d.)

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Frequency Distributions Related to the Survey

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