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Master Thesis

Chair of Logistics Management

A Study on Lean Implementation at a Humanitarian Organization

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Abbreviations

BPR	Business Process Reengineering
CCBRT	Comprehensive Community Based Rehabilitation in Tanzania
CEO	Chief Executive Officer
CHS	Core Humanitarian Standard
CI	Continuous Improvement
CIP	Continuous Improvement Process
DMAIC	Define-Measure-Analyze-Implement-Control
ELT	Executive Leadership Team
GDP	Gross Domestic Product per capita
HQ	Headquarter
HQAI	Humanitarian Quality Assurance Initiative
IMVP	International Motor Vehicle Program
INGO	International non-governmental organization
ISO	International Organization for Standardization
IT	Information Technology
JIT	Just-In-time
KPI	Key Performance Indicator
LAI	Lean Aircraft Initiative
MIT	Massachusetts Institute of Technology
MSF	Medicines Sans Frontier
NGO	Non-Governmental Organization
NIST	National Institute of Standards and Technology
OECD	Organization for Economic Co-operation and Development
OEE	Overall Equipment Effectiveness
PDCA	Plan-Do-Check-Act
PEM	Process Excellence Manager
PMO	Project Management Office
SMED	Single Minute Exchange of Die
TPM	Total Productive Maintenance
TQM	Total Quality Management
TSO	Third Sector Organization
UN	United Nations
WIMB	We-I-Made-it-Better
WVI	World Vision International

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1 Abstract

This study assesses the applicability of lean for humanitarian aid organizations and what of the lean methodology is useful for humanitarian organizations. A 15 billion USD shortfall in meeting all humanitarian needs motivates humanitarian aid non-governmental organizations (NGO) to improve their efficiency and performance. Lean can reduce the impact of this financial gap and enable humanitarian NGOs to relieve more suffering.

An assessment based on existing literature and a lean expert`s experience investigates how the differences in context between business and humanitarian NGOs affect the applicability of lean for humanitarian work. It shows that humanitarian aid organizations face more challenging obstacles than business organizations to become lean due to the contextual work differences.

Nevertheless, this work asserts that there is an urgent need for lean in the humanitarian aid sector because it provides tools and an organizational culture that can achieve more with the limited funds they receive. The assessment of the applicability of lean tools to humanitarian operations shows that most lean tools are applicable for humanitarian operations. The lean organizational culture can benefit humanitarian organizations because lean thinking is an organizational mindset of continuous improvement which is not specific to any work context.

This thesis also reviews the first organization-wide lean implementation at Medair, an international humanitarian NGO. This case study shows how lean can be adopted to the context and how this lean transformation is being rolled out in a humanitarian NGO.

2 Introduction

Every day we see disturbing images of humanitarian situations on the news: A Syrian mother with her six children that lost her home, now living in poor conditions, in a refugee camp, one of her children has lost one or more extremities, most of them are sick. On the next report, we see a United Nations truck, arriving in a South Sudanese camp, to deliver food. People are jumping on the truck snapping as much food as possible, two aid workers on the truck trying to re-establish order, but failing. Tragedies and situations like this are part of a humanitarian aid worker's everyday life.

Humanitarian operations save lives, alleviate suffering, and maintain human dignity following conflicts, shocks, and natural disasters (OECD, 2016). Humanitarian non-governmental organizations operate in these unstable and unpredictable environments. According to the United Nations (UN), only 62% of the identified humanitarian need has been met, in 2014. This is the biggest shortfall ever, although the raised funding has increased over tenfold over the last 15 years, from 2 billion in 2000 to 24.5 billion USD in 2014. The financial gap to meet all humanitarian needs is estimated to be 15 billion USD (Development Initiatives, 2016, p. 24). To close this gap, there are two possible solutions:

1. Donors provide more funds
2. Humanitarian operations become more efficient

Both solutions must be applied together, to be able to meet all humanitarian needs (Parris, Thoughts on Lean in Humanitarian Aid, 2017). This work studies the efficiency solution to close the gap, by implementing a process improvement methodology, called lean, in a humanitarian NGO.

2.1 Efficiency for Humanitarian NGOs

For humanitarian agencies there are two motivations to become more efficient. Internal motivation, so that the organization is able to relieve more people from suffering, and an external motivation, to satisfy donors. Donors demand increasing levels of efficiency and effectiveness. Effectiveness measures the extent to which the customer needs are met, while efficiency measures how economically resources are utilized to a given a level of

effectiveness (Beamon & Balcik, 2008, p. 13). To translate this to the humanitarian context, effectiveness measures how well specific needs – for instance nutrition, hygiene, health services, and drinking water – are met by humanitarian operations; efficiency measures how many resources, e.g. funds, are needed to reach a level of effectiveness. Since resources are limited for all humanitarian organizations, these organizations have a strong incentive to become more efficient.

Many models and methods have been developed to increase efficiency and performance in the business sector. Business process reengineering (BPR), total quality management (TQM), lean, and six sigma are well-known and widely applied models for improving processes, operations, and the organization's overall performance (Näslund, 2008, p. 271f). All models have some characteristics in common, such as continuous improvement, customer focus, people, and management involvement (Näslund, 2008, p. 273). Nevertheless, the models present important differences due to their different origins and history (Chiarini, 2011, p. 332). Among the several quality management tools, lean is one of the more successful and wide-spread methodologies (Andersson, Eriksson, & Torstensson, 2006, p. 288). Lean and six sigma are by far the most popular methodologies today. To prove this, Baudin (2013) assessed the number of groups on LinkedIn that are found, when searching for the methodology`s name, the results are shown in Table 2-1. To show the trend from 2013, the same is done in June 2017 and added to Table 2-1. Some of the groups are overlapping, but this table still draws a clear picture of the improvements methodology`s popularity.

Table 2-1: Number of LinkedIn Groups for Improvement Methodologies (Baudin, 2013 & LinkedIn, 2017)

Improvement Methodology	**LinkedIn Groups (Baudin, 2013)**	**LinkedIn Groups 2017**
Lean	2.642	2.796
Six sigma	1.411	1.010
TQM	87	63
BPR	16	44

Baudin (2013) argues that TQM and BPR are "dead", and that the only methodology that thrives is lean. This seems to be confirmed, given the numbers of LinkedIn groups in 2017, where there is a clear decline of groups in six sigma. Furthermore, Baudin (2013) states that the LinkedIn group numbers only make a statement about the popularity of the

methodologies and not the technical effectiveness of the approaches, but the numbers indicate that lean has by far the highest market share and is still growing. Sections 2.2 and 2.3 aim to first understand what lean is and then to explain what makes the lean concept so successful and broadly applicable.

2.2 Introduction to Lean

Lean, along with its variant Lean Six Sigma, has become a global management movement in many industries (Liker, 2016, p.9). Processes and all stakeholders of processes such as employees, suppliers, and customers are the topic of lean. The aim of lean is to continuously improve processes towards a state of perfection, the one-piece flow.

Lean was first mentioned by John Krafcik in 1988 (Netland & Powell, 2017, p.xxi), but made popular by the famous book *The Machine That Changed the World* in 1990, which derived from a five-year automobile industry study conducted by the International Motor Vehicle Program (IMVP), a programme of the Massachusetts Institute of Technology (MIT) (Liker, 2016, p.13). The result of this study show that Toyota, other Japanese automobile manufacturers, and their suppliers outperform American and European competitors by managing organizations differently.

The Machine That Changed the World not only revealed Toyota`s outstanding performance, but also tried to study and explain what made Toyota unique. This book provided the impetus for Western manufacturing companies to enter into a new era of production and management practices. And now, after 27 years, it is considered best practice in the manufacturing industry and has been spread into various other sectors such as start-ups, services, health, and construction. (Netland & Powell, 2017, p.xxi)

2.2.1 Definition of Lean

After the introduction of lean in 1990, many researchers, consultants and professors have studied, developed, and taught various versions of lean according to their own understanding (Liker, 2016, p.9). This leads to a broad spectrum of applications, but makes it difficult to find consensus among lean experts about what lean really is. Various

efforts have been made to define lean, but so far there is no commonly agreed definition (Goldensohn, 2015). To better understand lean, it is helpful to look back at origin of this term used in a management context.

John Krafcik, a graduate student who took part in the IMVP, argued that lean means doing more with less (Liker, 2016, p.13). Toyota needed less time, space, employees, and money to develop, produce, and sell automobiles than their non-Japanese competitors. Not only did Toyota use fewer inputs, they also achieved better results in terms of product quality, higher service level, and innovations than non-Japanese car manufacturers (Womack, et al., 1990, p.118).

Another definition from Paul A. Akers (2016) which does not focus simply on efficiency, states: “Lean is about eliminating and about continuously improving” (p.26). The first part of this definition focuses similar to Krafcik`s definition on efficiency, but Akers also highlights continuous improvement, which is established through an organizational culture. The lean culture is a necessity for becoming a lean organization, which was not understood in the early years of studying Toyota (see Section 2.2.2).

The United States National Institute of Standards and Technology (NIST) defines lean as the following: “A systematic approach to identifying and eliminating waste through continuous improvement, flowing the product at the pull of the customer in pursuit of perfection.” (NIST, 2000) This definition completes the two definitions above, because it also states the importance of flow and pursuit of perfection, which are two lean fundamentals.

2.2.2 The Evolvement of Lean Understanding

Lean has significantly evolved since the late 1980s. At first, it was considered a technical approach for manufacturing enterprises to improve efficiency, based on applying Toyota`s techniques such as Just-in-Time (JIT) and Kanban (Holmemo, Rolfsen, & Ingvaldsen, 2016, p. 2). To be able to increase efficiency, a company has to reduce waste. Taiichi Ohno (1998), widely-acknowledged as the father of lean manufacturing (Smith & Hawkins, 2004, p. 7), defines waste as all activity that add costs to the product but not value. The following are his seven types of waste:

1. Overproduction: Producing more than the customer needs right now
2. Transportation: Movement of product that does not add value
3. Motion: Movement of people that does not add value
4. Waiting: Idle time created when material, information, people, or equipment is not ready
5. Processing: Efforts that adds not value from a customer`s perspective
6. Inventory: More material, parts, or products on hand than the customer needs right now
7. Defects: Work that contains errors, rework, mistakes, or lacks something necessary

Womack and Jones (1996) introduced an additional type of waste:

8. Unused Employee Genius: Underutilizing capabilities, delegating tasks with inadequate training

Lean offers tools to eliminate all of these types of waste. A description of 13 imporant lean tools can be found in Section 4.1. Many people mistake lean for only the tools the methodology offers.

Dombrowski & Mielke (2013) did a study on 91 enterprises in industries, mainly in the German automotive sector. Their analysis showed that 92% of the enterprises use the broadly applied lean tools: 5S and continuous improvement process (CIP). 80% say they use lean principles, but only 5% of German participants say that employees live the core values of the enterprises. An improvement culture is hard to determine, but still the company`s values have to be lived by employees and leaders, otherwise an improvement culture will not be successful (Dombrowski & Mielke, 2013, p. 572). Rother (2012) argues that only 1% of companies have successfully implemented a lean culture. This shows the important gap between only applying lean tools and implementing a lean organizational culture of continuous improvement. The improvement culture is an important cornerstone, that is often neglected.

Around 2000s, lean was understood as a management system for the whole organization based on organizational learning and contingencies. Researchers focused on the gap between Toyota and Western companies, which tried to implement lean. Different gaps were identified and books on lean leadership (Liker & Convis, The Toyota Way to Lean Leadership, 2011), lean culture (Liker & Hoseus, Toyota Culture: The Heart and Soul of the Toyota Way, 2008), and lean coaching (Rother, 2009) were published. Furthermore, lean has been described as a general 'philosophy' that can be adapted and translated to different business contexts. (Holmemo, Rolfsen, & Ingvaldsen, 2016, p. 2)

Mike Rother (2009) argues in his book *Toyota Kata* that establishing a lean culture can only be achieved by building capabilities in people through coaching. A lean organizational culture is one where the primary goal is to continuously improve (Rother, 2009, p. 23ff). This work assesses basic conditions that need to be met in order to implement lean. Section 3.3 presents the obstacles that a humanitarian NGO has to overcome to develop a lean culture.

2.3 Lean Applied Outside Manufacturing Companies

Lean has achieved great results for manufacturing companies, word spread out and companies in other sectors wanted to benefit from this methodology too. Netland and Powell (2017) published the book *The Routledge Companion to Lean Management*, a book that's contains of lean application outside manufacturing industries, for instance applications in marketing, IT, education, and even police. This paper will show that lean offers a way of thinking and a tool set to improve performance that can be applied to the humanitarian aid sector as well. This broad applicability makes lean so powerful.

The focus of lean – process improvement – can be applied to areas outside manufacturing, because all work occurs in processes (Parris, Green Belt Training, 2008). Netland (2016) explains why lean is so broadly applicable, in the introduction of *Lean Management Journal*, by stating: "Wherever there is a process, lean can be used to increase efficiency." (p.9) This means that lean can help every organization. To better understand what process means, Parris (2008) provides a definition: "A process is a repeated sequence of actions that transforms inputs into outputs and leads to a value

result for the customer." This definition already provides the customer focus, which is important in lean.

Lean represents an industrial paradigm shift from an internally-focused operations orientation to a customer-focused approach (Bowen & Youngdahl, 1998, p. 215). In lean processes, steps are identified as value adding or non-value adding based on the perspective of the customer. The purpose of a process is to serve a customer. The lean methodology of identifying and eliminating waste by improving continuously is used to improve an organization`s performance. One of the most powerful lean tools called value stream or process mapping, shows that lean can be applied outside its original context. Section 4.1 assesses lean tools and the extent to which they can benefit humanitarian organizations.

2.4 Motivation for Study

As the introduction shows, lean has been applied in various areas outside its origin, the Japanese automobile manufacturing industry. Humanitarian organizations are under tremendous pressure to operate efficiently and to improve their processes. NGOs, especially humanitarian NGOs, are usually 15 years behind their counterparts in business (Van Wassenhove, 2006, p. 476). In line with this, lean has hardly been applied in the humanitarian aid context, one notable exception, World Vision International (WVI), an international NGO, where lean showed significant success: reducing the annual costs by $ 1.5 million and reducing the targeted span times by 59% (Parris, Fighting Poverty in East Africa with Lean Six Sigma, 2015). Still, WVI did not deploy lean globally, but primarily in its East Africa countries.

Considering the different contexts of the manufacturing industry, from where lean originates, and humanitarian aid, it has to be assessed if lean is able to benefit humanitarian aid organizations. This leads to the first research question:

Research Question 1:

1. Can lean be applied to benefit a humanitarian NGO?

To answer this question, this paper assesses the impediments humanitarian NGOs face in order to become lean. Section 3.3 assesses how the contextual differences between the for-profit sector and the humanitarian aid NGO world impact the ease and extent of applicability of lean.

Research Question 2:

2. If so, what aspects of lean are most useful?

Is it beneficial to implement an organizational culture of continuous improvement or better to only apply lean tools that make processes more efficient? Section 4.1 assesses how lean tools can benefit humanitarian operations and a literature review shows how lean tools have already been applied to improve operations. Section 4.2 shows that lean thinking and implementing a lean culture can benefit humanitarian NGOs.

Research Question 3:

3. How has lean been deployed in Medair and other humanitarian NGOs?

There are some lean implementations in humanitarian aid already which this thesis will show. Furthermore, this work studies how a lean initiative has been rolled out recently at Medair, an international humanitarian NGO based in Switzerland. Given the novelty of an organization-wide lean implementation for a humanitarian NGO, this is an interesting topic for academic research. The case study describes how lean is being rolled out at Medair, how successful the first five months of the initiative were, and gives recommendations to Medair and other humanitarian NGOs that want to implement lean.

3 Lean Applicability Assessment

To study if lean can benefit a humanitarian NGO, it is necessary to understand the context in which non-governmental humanitarian aid organizations work. In this chapter, a literature review provides the different contexts to business and defines the specific context for humanitarian NGOs. Later in this section, ten fundamental differences between the business context and that of a humanitarian NGO are identified and discussed. This is done in order to investigate the influence of these differences on the extent to which lean can be applied in the humanitarian aid sector. Some of these differences may impede, enhance, limit, or do not affect the applicability of lean.

3.1 Literature Review

3.1.1 NGO Context

To understand humanitarian organizations better, one has to look closer into the specific context, a humanitarian international non-governmental organization, operates in. There are significant differences between international NGOs and the corporate business world, but even further differences, when it comes to the specific humanitarian aid context.

Before analyzing the differences in contexts, it is worth taking a closer look at the history of NGOs. National NGOs and international NGOs are legally the same organization and have similar contexts, except for the national or international focus of their work. Although organizations which worked in similar contexts as NGOs had been active since the eighteenth century, the term NGO is a post-World War II term, was introduced by the United Nations (UN) Charter Article 71, in 1945 (Lewis, 2009, p. 1057). The English Oxford Dictionary (2017) defines NGO as following: “A non-profit organization that operates independently of any government, typically one whose purpose is to address a social or political issue.” One fundamental difference between corporate businesses and NGOs is the aim of achieving goals without pursuing profit. Non-profit organization is a frequently used term, in the US, referring to a NGO (Lewis, 2009, p. 1052), because for NGOs it is forbidden to make profit. Today, the acronym NGO tends to be used to relate to international or development country work (Lewis, 2009, p. 1052). Due to the origin of

the term NGO in the UN Charter, where the designation for NGOs was awarded to international non-state organization that were given consultative status in UN activities (Lewis, 2009, p. 1052).

Although NGOs are forbidden to make profit, funds are vital and usually accumulated through donations or membership fees. Independence from public or private entities is an important characteristic of NGOs, which is ensured with a certain degree of financial autonomy. NGOs often fill gaps in government services or help certain population groups, therefore a healthy relationship with the government is critical. Although depending too much on a single source, especially a public source, endangers the organization`s independence and might influence the own mission of an NGO towards being or replacing a public service. In this situation, a NGO becomes mainstream and rather than an alternative. (Clark, 1995, p.596)

Clearly differentiating from private and the public sector, there is a third sector, the societal sector, including NGOs, non-profits and voluntary organizations, referred to as *third sector organizations (TSO)* (Billis, 2010, p.4). Inside this sector, organizations vary strongly in size and operating field. From a local charity organization, providing books to students to a global billion dollar NGO, such as Amnesty International. Table 3-1 shows the differences between the private, public, and third sector organizations.

Table 3-1: Distinction between Different Sectors (adapted from Abad, 2013)

	Private	***Public***	***TSO***
Sphere of Operation	Market	State	Local or international Communities
Purpose	Profit	Public service	Public good
Fund Generation	Profit making	Taxation	Donations, Membership fees
To whom accountable	Owners	Public through government officials	Donors and beneficiaries
Client Participation	Through buying of goods or services	Originally as passive recipients	Through receiving of goods and services

3.1.2 Difference between Development and Humanitarian Organizations

Inside the third sector, the NGO sector, some organizations operate in the humanitarian and development sector. To clearly define what a humanitarian NGO is and does, this section shows the differences between humanitarian aid and development NGOs, which are commonly confused. For both, work usually occurs in developing countries, because the local government is not able to provide enough resources to overcome weaknesses. The initial cause for need of humanitarian aid is usually a man-made or natural disaster, for instance, wars, severe corruption, droughts, outbreak of diseases, or earthquakes. Looking at a four phase model of disaster management from Van Wassenhove (2006) it becomes clear, where the differences between humanitarian aid and development work lie.

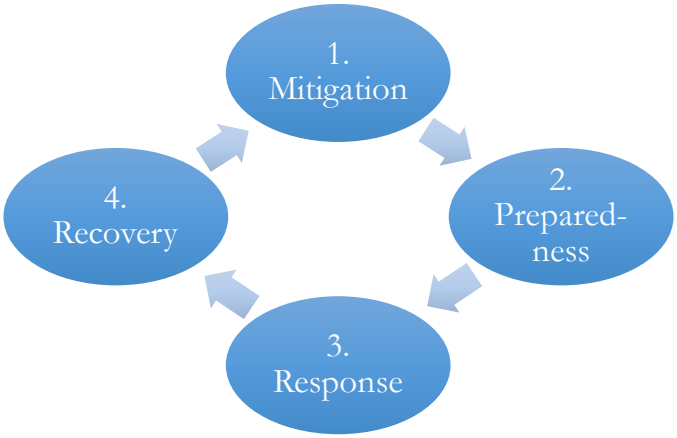

Figure 3-1: Disaster Management Cycle adapted from Van Wassenhove (2006, p. 481)

According to Warfield (2008), humanitarian agencies are called upon to deal with immediate response (stage 3) after a disaster hit. The aim of the emergency response it to maintain life, improve health and provide assistance to relieve human suffering and ensure people's dignity (OECD, 2016). Being prepared as an organization and having stock in the right places to be able to respond rapidly, is also part of the humanitarian area (stage 2). As the emergency is brought under control, the recovery phase (stage 4) begins. There is no clear distinction point where the emergency response turns into

recovery and further into development work. Mitigation (stage 1) can be part of development and humanitarian work, for instance building earthquake resistant houses in endangered by earthquake zones. (Bray, 2001, p.77)

In unresolved protracted crisis, the need of humanitarian aid can last for many years. The relationship between humanitarian response and development aid has been a broadly-debated issue (DARA, 2013, p. 7). Some argue that humanitarian aid has to pave the way for development aid, others say development work stands alone (DARA, 2013, p.7). Problems occur when response programmes transit into development programmes and usually different agencies take on the projects. The nature of projects are different, development projects are usually long-term and have a clear future goal, while humanitarian aid focuses on saving lives immediately. Humanitarian and development NGOs have therefore developed different cultures, thinking, and views on projects.

Ferris (2007) addresses four particular gaps, between the humanitarian and development world:

1. Institutional gaps: Different operational styles and cultures exist between different organizations and governments.
2. Financial gaps: Funding is often either for emergency or development assistance.
3. Temporal gaps: A particular gap emerges after emergency starts to subside and before long-term development work begins.
4. Programme and Funding cycle gaps: Usually development agencies use multi-year planning cycles, while humanitarian organizations use shorter time perspectives.

Looking at these four differences it becomes obvious that different understandings and organizational cultures between the different fields exist. Development work is challenging, because it naturally occurs in underdeveloped regions with low levels of education, security, infrastructure, and health. In situations the local government is not able to develop regions by its own resources, development NGOs provide assistance. Humanitarian aid can be seen as even more challenging than development work,

because the work occurs in the same areas as development work, but right after a disaster. Natural disasters occur in developing and developed countries, but hit developing countries harder due that infrastructure is poorer and governments are overwhelmed, thus NGOs are needed to help. Humanitarian aid is necessary not only after natural disaster, but also during and after man-made crisis, for instance conflicts. Considering these circumstances, humanitarian aid work is psychologically and physically demanding. Burnouts rates are high in the humanitarian aid sector (Eriksson, et al., 2009, p. 671).

3.1.3 Specific Humanitarian Context (Van Wassenhove, 2006)

Figure 3-2 provides a visualization the humanitarian space as dynamic triangular of the three principles of humanitarian organization: humanity, neutrality, and impartiality. The principles of humanity, impartiality, and neutrality are derived from the Fundamental Principles of the International Red Cross and Red Crescent Movement proclaimed in Vienna in 1965 by the 20th International Conference of the Red Cross and Red Crescent; United Nations (UN) General Assembly Resolution 46/182, 19 December 1991; and UN General Assembly Resolution 58/114, 5 February 2004. Humanitarian NGOs are expected to help anyone in need, regardless their religion, nationality, or other factors; not influence the outcome of a conflict; and not favor one group over the other. These three elements define the context in which humanitarian organizations operate.

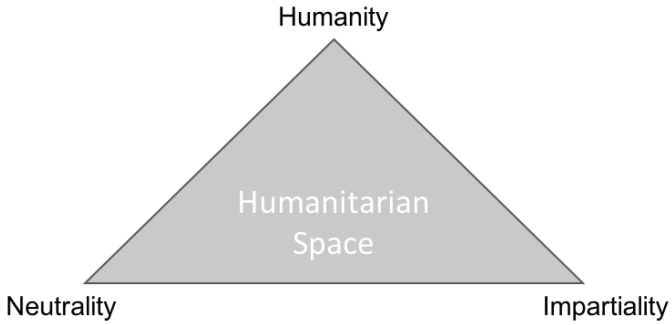

Figure 3-2: Humanitarian Space (Van Wassenhove, 2006, p.478)

This space should define a physical zone of tranquility where aid workers, civilians, and non-combatants can move and operate freely. Under international conventions, political and military actors are prohibited to encroaching this space, or impeding aid work, but in

a conflict situation this is often not respected by war parties. This causes danger for aid workers and civilians. Safety is the number one concern of humanitarian NGOs.

3.1.4 Growing Importance of Humanitarian NGOs in Disaster Relief

The importance of NGOs in responding to disasters has been expanding for some time, although the public opinion is still that national governments and UN agencies lead international disaster responses (Gannon, 2014, p. 2). There are several reasons for this change (Osa, 2012, p. 67):

1. Disasters overwhelm the capacity of national governments, so NGOs are needed to relieve human suffering.
2. NGOs have unique capacities and functions that governments, UN agencies and business lack. NGOs:
    a. Mobilize funds and workers in a way a government cannot
    b. Help to connect various actors to one another
    c. Provide specialized services that communities need to rebuild

Time is the key element in emergency situations (Eriksson, et al., 2009, p. 671) which makes NGOs necessary, because they can mobilize faster.

3.2 The Differences between the Humanitarian Aid and Private Sector

After focusing how humanitarian NGOs work and why they are important, it is now necessary to investigate the differences between the humanitarian aid and the private sector, in order to assess the ease and extent of applicability of lean in humanitarian NGOs, from where lean originates. This section lists the ten most fundamental differences in context. The assessment in Section 3.3.3 will show how these differences influence the applicability of lean.

1. Purpose: Profit may not be the main purpose of commercial organizations, but it is substantial for any kind of business. It ensures the future of the company and provides funds for further investment and income for shareholders. It is the

financial reward for running a business. Humanitarian NGOs do not have this financial incentive because they are forbidden to make profits (Lewis, 2009, p. 1052). The purpose of humanitarian organizations is to assist people in need, save lives, and relieve human suffering.

2. Staff Availability & Turnover: Unlike the commercial sector where companies try to avoid risk by operating in safe and politically stable environments, humanitarian operations run in challenging to even hostile environments and not all potentially skilled people are willing to work in these dangerous places (Parris, Thoughts on Lean in Humanitarian Aid, 2017). Due to limited financial resources NGOs cannot attract top managers or consultants, which puts them out of reach of best practices in industry (Thakur-Weigold, Stumpf, & Wagner, 2015, p. 25). The working environment and financial limitations lead to a scarce pool of qualified and readily deployable personnel for the humanitarian NGO sector (Tomasini & Van Wassenhove, 2009, p. 551). Demanding work conditions in disaster and conflict areas, long separation from family and friends, limited career perspectives, low job security, and common notion of humanitarian aid as 'volunteering' endeavor contribute to a high number of employee-initiated job exits in the humanitarian aid sector (Henry, 2004, p. 24f). Short funding cycles make it difficult for organizations to offer their employees reliable career perspectives (Korff, Balbo, Mills, Heyse, & Wittek, 2015, p. 524). Therefore, retaining staff is more challenging and staff turnover is much higher compared to the commercial sector. High staff turnover has a negative effect on performance (Tomasini & Van Wassenhove, 2009, p. 551) and leads to higher costs. Costs occur directly in form of separation, recruitment, and induction costs; indirectly in loss of institutional memory and lack of handover (Loquercio, Hammersley, & Emmens, 2006, p. 10).

3. Motivation: Generally, the income level for workers in NGOs is lower compared to the commercial sector (Parris, Thoughts on Lean in Humanitarian Aid, 2017) which reduces the extrinsic motivation for employees to work for NGOs. In addition, financial incentives to work harder, such as paid overtime or end of year bonuses in commercial organization, rarely exist in humanitarian NGOs (Parris, Thoughts on Lean in Humanitarian Aid, 2017). In contrast, the work in

humanitarian aid may be motivated by an intrinsic drive to honor inner values and fulfil basic psychological needs (McCormack & Joseph, 2013, p. 149). A recent study shows that, unlike the commercial sector, most of the external factors and some personal factors do not play a big role in humanitarian NGOs; internal factors and personal readiness of the person for humanitarian work are most critical (Dubey, Gunasekaran, Altay, Childe, & Papadopoulos, 2016, p. 212). A study by Legnerova (2016), confirms Drucker (1996), who argues that employees in the for-profit sector are mostly motivated by monetary rewards, while non-profit workers prefer a meaningful sense of their work (Legnerova, 2016, p. 338). Humanitarian NGOs have to look carefully at the personal fit for the person and try to create an environment where employees' intrinsic motivation can thrive.

4. Customers: To explain this difference, first the term customer need to be defined. This works takes the definition from Business Dictionary:

> Customer: "A party that receives or consumes products (goods or services) and has the ability to choose between different products and suppliers." (WebFinance, 2017)

In the business context, companies usually have suppliers and customers as their main stakeholders or they only provide services and therefore have few suppliers. The customer pays in order to receive a product or service and is therefore both the buyer and the recipient of the product or service. In the humanitarian NGO context, the customer, called beneficiary, of the product or service is not the buyer.

Institutional or private donors "buy" services of humanitarian NGOs so that someone else receives a benefit (Parris, Thoughts on Lean in Humanitarian Aid, 2017), as shown in Figure 3-3. In business transactions, the buyer receives the service or product and thereby gets information of the quality and can decide how well the service or product meets her or his expectations, and decide to buy again or not. In the NGO context the buyer does not automatically receive information about the product or service, and usually does not get direct feedback from the beneficiaries who receive their donations.

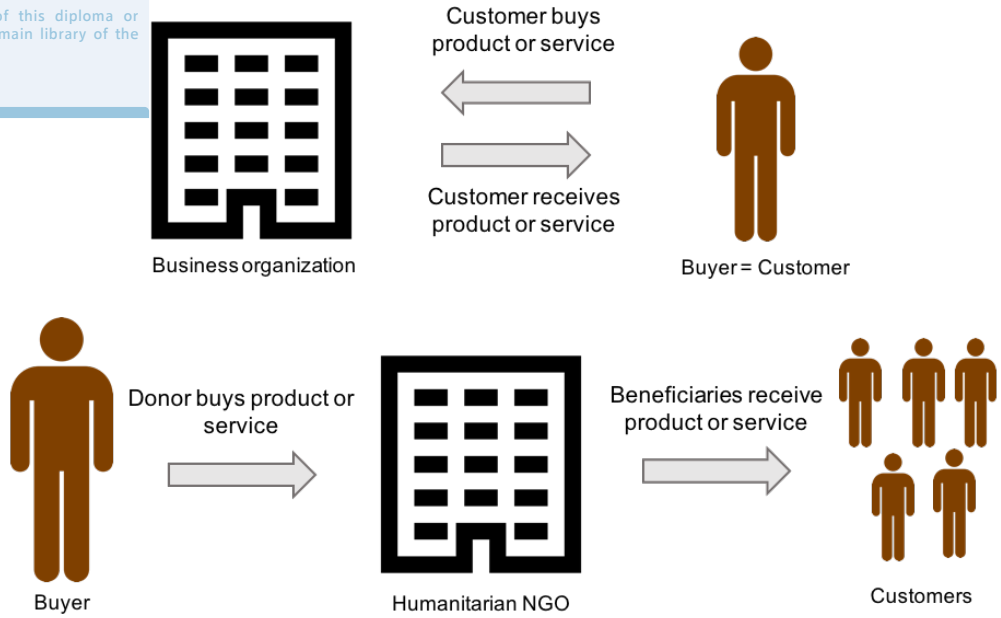

Figure 3-3: Customer-Buyer Relationship in Both Contexts

To get information, donors demand a high level of transparency of NGOs and reporting, to assure that the money is spent to reach the beneficiary in the optimal way (Parris, Thoughts on Lean in Humanitarian Aid, 2017). A humanitarian NGO has to satisfy the two customers – the donor and the beneficiary – to be successful, while the commercial sector only has to satisfy a single customer. Donors are usually more powerful than those affected by disasters which may make the beneficiaries` requirements and perspectives of secondary importance (Oloruntoba & Gray, 2009, p. 490).

5. Stakeholders: Any operation involves stakeholders. The typical stakeholders for commercial operations are: customers, suppliers, employees, distributors, and the focal company. In addition to these stakeholders, humanitarian NGOs have local governmental authorities, other NGOs, donors, and media as stakeholders (Van Wassenhove, 2006, p. 477). This makes the work more complex and difficult for the humanitarian aid sector.

6. Uncertainty: Humanitarian aid, due to their dangerous and unpredictable working environment, faces much more uncertainty than the business sector. Companies usually try to minimize risk exposure in their operations. Therefore,

they look for stable currencies, reliable suppliers, and stable market conditions. In contrast, humanitarian NGOs naturally face demand, supply, and assessment uncertainty often at a very high level, and issues of safety are great because humanitarian NGOs may be working in a politically volatile environment (Van Wassenhove, 2006, p. 477). In addition to causing significant and frequent changes to project plans, this high uncertainty and the time pressure in emergencies lead to high staff turnover or burn-out caused by emotional and physical demands on employees. This results in a short supply of skilled staff (Van Wassenhove, 2006, p. 478).

7. Funds: In commercial organizations, funds can be raised through different channels, but typically through shareholders, bank loans, and operational profit. These funds can stay in businesses for decades. In contrast, humanitarian organization can only raise funds through donations. And there is no operational profit in a humanitarian organization, because savings (unspent funds from institutional donors) are generally frowned upon (because they are generally caused by work not being done) and must be spent or returned to the donor (Parris, Thoughts on Lean in Humanitarian Aid, 2017). Donors want to see their donations spent soon and not to be kept in the organization for long (Parris, Thoughts on Lean in Humanitarian Aid, 2017). The level of flexibility in spending money in business sector is much higher compared to the humanitarian aid sector where funds are usually earmarked for one project, and within the project for specific budget line items. This fixed budget makes it difficult to react to uncertainties for humanitarian NGOs. The only area where underspending budget is rewarded in the humanitarian sector, is overhead expense that is covered by undesignated private funding (Parris, Thoughts on Lean in Humanitarian Aid, 2017). Donors want to see their money spent in direct project expenses that create an impact. If money is not spent according to the agreed-upon budget, this is seen as negative, and the fault of the humanitarian NGO. Institutional donors generally do not cover overspending. Therefore, NGOs strive hard to spend exactly according to budget. (Parris, Thoughts on Lean in Humanitarian Aid, 2017). On the other hand, in

business, investors reward companies for spending less than planned when it results in higher profits.

8. Overhead Costs: In the humanitarian aid sector, donors are interested in the overhead costs of humanitarian organizations and see a low overhead cost as an indicator of operational efficiency (Parris, Thoughts on Lean in Humanitarian Aid, 2017). Institutional donors, buyers (see Figure 3-3), only pay for a certain percentage of overhead cost, while in the commercial sector the customer does not care about the percentage of overhead cost of a product or service (Parris, Thoughts on Lean in Humanitarian Aid, 2017).

This leads to a race to the bottom of overhead costs which, in the end, reduces the efficiency of humanitarian work. Investments in information technology, systems or human capacity building are overhead expenses, which are drastically limited by institutional donors. This puts the NGO sector behind in terms of innovation. For instance, Medicines Sans Frontier (MSF) presents its overhead expenses with 6.3%, compared to the commercial sector where overhead expense is usually between 15-25% (Peterkeni & Bandara, 2015, p. 9). As another example, Charity Navigator, an organization that rates financial efficiency of NGOs, only gives the highest score only to humanitarian NGOs that spend over 92% of their budget on direct programme expense (Charity Navigator, 2017).

9. Location: For-profits can always decide where they want to operate, have their headquarters, or locate their factories and bases of operation. And they can assess and pursue the best places for expansion. In contrast, humanitarian NGOs do not have this freedom of choice. International humanitarian NGOs go to the worst crises. They are often spread throughout many different countries, cultures and continents. Nothing obliges NGOs to respond to a particular disaster, although donors, media, and the public can create pressure on NGOs. In these locations, the human resources, network of suppliers and the infrastructure (IT, roads, and other aspects) are the most limited. And these countries generally have high levels of corruption. NGOs are generally needed most – and thus operate – in the most

devastated and most challenging areas where usually no company would choose to operate. (Parris, Thoughts on Lean in Humanitarian Aid, 2017)

10. Disruptiveness versus continuity: After a disaster strikes, NGOs need to react very quickly, and time is key (Eriksson, et al., 2009, p. 671). NGOs need to deploy people to identify the needs as quickly as possible, to be able to respond properly. After this happens, the programme starts to run. The workload for field programmes starts at a very high level then rises and decreases after a while, except for protracted crises where there is no common pattern of workload over time. Humanitarian programmes run until needed relief has been provided and people have recovered to their (generally fragile) condition prior to the crisis – until communities do not need the assistance of humanitarian NGOs any more. On the commercial side, businesses first start small and then try to grow continuously by developing new products or services and expanding to new markets. The contrast in development of workload over time leads to further differences which will be discussed in the assessment, in Section 3.3.3.

3.3 Assessment of Contextual Differences in Terms of Lean Applicability

3.3.1 Literature Review

To answer the first research question, if lean can benefit a humanitarian NGO, it first necessary to first assess if the humanitarian aid sector fulfils the prerequisites to be able to apply lean. There only has been made a few attempts to study lean implementation in NGOs and they are all very general and do not take the form of academic research (Pieńkowski, 2016, p. 109). Further, Pieńkowski (2016) identifies a lack of studies describing the applicability of lean in the NGO environment. Most of the existing studies only focus on the implementation. Lean4NGO.org is a good source to find studies of lean implementation in NGOs. Pieńkowski (2016, p.127) studied a lean thinking implementation of the Wrocław Food Bank, a Polish local non-profit, and discovered some impediments NGOs face in their lean application that are the similar to the humanitarian NGO context:

- In order to receive donations, NGOs have to agree to terms of their donors, which restricts their operational freedom to make independent choices and adjust their operational models.
- Funding does not always correlate with the performance of the NGO and its organizational efficiency. Due to this, some NGOs do not realize their poor level of performance and need for improvement.
- Most NGOs do work on very limited budget and struggle to perform their core activities. This makes it difficult for them to stop fire-fighting and emphasize on continuous improvement.

Pieńkowski (2016, p.127f) concludes that due to these challenges a full lean implementation may be very difficult for NGOs, and organizations may decide to only utilize some lean tools such a visual management, standardization, and 5S. Further, Pieńkowski identifies strong leadership support and establishing a continuous improvement and problem solving culture as the key aspect of a successful lean implementation. This combination should ensure a successful lean transformation regardless of all these obstacles (Pieńkowski, 2016, p. 127).

There are similarities between local non-profit and international humanitarian NGOs, but given the different operating areas of both contexts, the humanitarian aid sector may face different challenges in lean application. Parris (2013) and GRIPS Development Forum (2009) studied how lean can be applied and adopted to the humanitarian context, but no paper has yet been published that quantified the applicability of lean for humanitarian NGOs. This paper makes an attempt to fill this gap by evaluating all ten major differences between business and humanitarian aid organizations, identified in Section 3.2, in terms of how they positively, negatively or do not influence the applicability of lean for humanitarian NGOs.

3.3.2 Methodology of Assessment

This assessment draws on the findings of existing literature and the expertise of Andrew Parris who has over ten years of experience in lean and humanitarian NGOs. These sources were used to identify the differences in context in Section 3.2. The next section

investigates how these differences affect on the applicability of lean in humanitarian NGOs by drawing conclusion from existing literature and Andrew Parris` expertise. In order to quantify this assessment, a 1 to 5-scale is introduced which is explained in Table 3-2. The lowest possible score, 1, means that this difference to the business world influences the applicability of lean negatively and so strongly that it limits the extent to lean can be applied and impedes humanitarian NGOs to implement lean. Score 2, influences the applicability negatively, or limits the extent of lean, but not critically. Score 3 means that the difference does not influence the applicability of lean. Score 4, enhances the lean applicability compared to the business world, and Score 5 enhances the applicability of lean strongly.

Table 3-2: Score System

Score	Influence
1	Negative, critical
2	Negative
3	No influence
4	Positive
5	Strongly positive

3.3.3 Assessment

Table 3-3 consists of three columns: the first column is the difference between commercial and humanitarian NGO sector, which is explained in Section 3.2, the second column contains the Score, and the last gives the explanation of the score.

Table 3-3: Lean Applicability Assessment

Different Context	Score	Explanation of Score
1. Purpose	**3**	The different purposes are not identified to influence the applicability of lean. As long as the organization`s employees strive for excellence and a culture of continuous improvement is established, it does not matter if the organization makes a profit or not.
2. Staff Availability & Turnover	**1**	Staff turnover is identified as the most critical factor for a lean application in a humanitarian organization. As mentioned in Section 3.2, the staff turnover rate is high due to many reasons. Lean, especially the lean culture of continuous improvement, takes time and can only thrive if the employees are well trained and improve their problem solving skills through experience on the job. Toyota has realized the importance of maintaining employees and the staff turnover rate is one of their biggest concerns. The staff turnover rate at Toyota Japan is under 2% (Womack, Jones, & Roos, The Machine That Changed the World, 1990, p. 213), compared to humanitarian NGOs, for instance MSF where the rate of employees leaving after the first mission is 58.2 per cent (Korff V. P., 2012, p. 94). A high staff turnover rate leads to staff, trained in process improvement and lean, leaving the NGO and the loss of human capital, or employees leave the organization before they could be trained and establish lean thinking. Therefore, establishing and sustaining a lean culture and practice will always be challenging for humanitarian NGOs. Staff turnover is the most critical impediment to establishment a lean culture in humanitarian NGOs.
3. Motivation	**4**	As described in Section 3.2 humanitarian aid workers are, in general, more intrinsically motivated than employees in commercial organizations. This means that if an aid worker can see the benefits of lean and internalizes the concept, great results and improvements can be achieved because lean thrives through intrinsic motivation. Lean thinking can benefit from this higher

		intrinsic motivation that drives humanitarian aid workers. This significantly enhances the development of a lean culture.
4. Customer	**2**	Value identification is critical to lean and is done by defining process steps as value adding or waste from the customer perspective (Pieńkowski, 2016, p. 114). As shown in Figure 3-3, the benefitting customer (the beneficiary) does not pay for the service in the humanitarian sector. To ensure the future of the organization, NGOs have to satisfy donors and not only beneficiaries. This means that a single customer focus is not enough for humanitarian NGOs. The context is more complex compared to the commercial sector, which makes it more difficult to apply lean and is an obstacle NGOs need to overcome.
5. Stakeholders	**2**	A humanitarian NGO needs to consider more stakeholders in their decision making processes and operations. This has an influence on their own processes and organizational culture. Similarly, humanitarian NGOs usually cannot freely choose their suppliers or establish a sustainable relationship which limits their ability to create lean supply chains (Parris, Thoughts on Lean in Humanitarian Aid, 2017).
6. Uncertainty	**2**	The commercial sector tries to avoid uncertainty and risk as much as possible. To establish a continuous flow and just-in-time delivery, a company has to have perfectly takted processes and has to collaborate with reliable suppliers. Usually, companies overcome uncertainties in supply and demand by creating inventory of raw materials and finished products (Chen, 2011, p. 874ff). According to Ohno (1998), inventory is the sixth type of waste. Humanitarian NGOs naturally operate in risky and uncertain environments. Since time is key in emergencies (Eriksson, et al., 2009, p. 671), NGOs need to be able to always deliver goods as fast as possible. This is accomplished in part through pre-positioning relief supplies at strategic locations. The high level of uncertainty humanitarian NGOs face in supply and demand, and the logistical challenges of storing and moving

		goods in disaster contexts, do not permit just-in-time delivery or a continuous flow of goods. This limits the applicability of lean.
7. Funds	**2**	The incentive to save money in operations is not as appreciated or rewarded in humanitarian NGOs as compared to the business sector (Parris, Thoughts on Lean in Humanitarian Aid, 2017). Once a donor provides funds to an NGO, donors want to see their money spent and not saved. This means that improving efficiency is not really rewarded (Pieńkowski, 2016, p. 127) in the humanitarian sector. This circumstance can discourage humanitarian NGOs from making an effort to establish a lean culture.
8. Overhead Costs	**2**	The demanded limitation on overhead costs by institutional donors also limits the potential for staff to build further skills in workshops or training, because these expenses are accounted as overhead costs. If employees are not well trained in problem solving and continuous improvement skills, a lean culture can never develop. The limitations on overhead costs cause less personnel for management and support function tasks. The workload of these employees is so high that they have little time to work on improvements. But it is just these overhead employees that define and improve processes. This hinders a culture of continuous improvement from being established (Parris, Thoughts on Lean in Humanitarian Aid, 2017). It is difficult for any humanitarian NGO to add costs on the overhead side and invest in a lean initiative, although it may provide the key to reduce overhead costs in long term.
9. Location	**2**	The location of any operation, for-profit or not, limits the extent to which the supply chain can be lean, but also influences the lean organizational culture. Wangwacharakul, et al. (2014) studied the influence of the domestic culture in Sweden, and Wong (2007) in Taiwan respectively, on the lean. Both agree that culture has an impact on how lean is received and lived. Lean has to be adapted to the culture, to be received best by the employees (Wangwacharakul, Berglund, Harlin, & Gullander, 2014, p. 135).

		In general, humanitarian NGOs consist of aid workers from different countries and cultures and local staff. The high cultural diversity within one organization makes it difficult to establish a fit for lean to be received by every employee best in the organization and be understood in the same way.
10. Disruptiveness versus Continuity	**2**	Looking at Toyota, a lean best practice company, their working environment looks very different from that of a humanitarian NGO. In Toyota City, Japan, Toyota has been producing cars since 1938 at the same location and plant (Toyota Global , 2017), and car factories generally are used for decades. This makes it easier to work on sustainable continuous improvements compared to humanitarian sector where projects usually last one to three years at one location. As shown, in Sub-item 2, Staff Turnover, only 40% of international staff reenlists for a next project. In the disruptive way, humanitarian operations run, designed as project work, it is challenging to establish sustainable process improvement, and receive benefits from it, if processes are needed for a short period of time.

3.3.4 Discussion

The arithmetic mean score of the ten identified differences is 2.2. The low value leads to the conclusion that the differences of humanitarian NGOs to the business organizations rather impede than enhance lean in this sector. The different purposes of business and humanitarian aid (1) are not identified to influence the applicability of lean.

Staff turnover and availability, with the lowest possible score 1, is identified as the most critical impediment to a full lean implementation. The problem of employee turnover for lean application and implementation is that establishing an organizational culture which is based on training and skills, is very challenging if employees leave shortly after being trained or even before receiving the necessary training. This aligns with the suggestion of Stamm & Neitzert (2008, p.9) who suggest employee turnover rate as Key Performance

Indicator (KPI) for a lean implementation. Womack et al. (1990) also identified staff turnover rate as the most critical KPI for Toyota.

Only one out of the ten differences, the higher tendency for intrinsic motivation for employees in humanitarian NGOs, is identified to enhance lean in this sector. To be able to profit from this potential benefit, a humanitarian NGO has to train people extensively and establish lean thinkers.

The different customer-buyer relationship (4, see Figure 3-3), the lower incentive to improve efficiency (7), the limit on resources for staff development (8), the far geographical stretch and high cultural diversity in humanitarian NGOs (9), and the highly disruptive work environment (10) are identified as obstacles which make it more difficult to implement lean for a humanitarian organization. The financial pressure prevents humanitarian organizations to invest in general, but also in staff capability building. This combined with donors' low appreciation of improvements in efficiency, create one the hand a huge impediments and on the other, a drastically low incentive for humanitarian NGOs to become a lean organization. This circumstance may explain why lean has not been established in this sector.

Dealing with a higher number of stakeholders and not being able to freely choose their working partners (5), and the high level of uncertainty humanitarian NGOs face (7), are identified as limiting factors for a full lean application. For example, lean tools may improve the supply chain efficiency for humanitarian NGOs, but due to time limitations, the low number of possible suppliers, and high uncertainty, the supply chain will never become as lean as Toyota`s.

3.3.5 Conclusion

To conclude, humanitarian NGOs face significant challenges, obstacles and limitations in becoming lean that do not exist for the business sector. The differences to the business sector overall make it much harder to implement lean in the humanitarian sector. Nevertheless, it would be wrong to conclude that because of the existing impediments and limitations lean cannot benefit humanitarian NGOs. This conclusion only states that

it is more challenging for humanitarian NGOs to become lean and lean cannot be applied to the same extent as for commercial companies like Toyota.

4 Potential Benefit and Need of Implementing Lean for Humanitarian NGOs

In order to answer the research question, if lean can benefit a humanitarian NGO, Chapter 1 assesses the ease of application of lean for humanitarian NGOs. Considering the different context, there are challenges to apply lean in humanitarian NGOs, identified in Section 3.3.3, and lean can only be applied to a limited extent. Still, the above chapter does not include the potential benefit of lean for NGOs and the need for NGOs to apply lean.

Let us consider that a humanitarian NGO can overcome the challenges to start a lean initiative, and now asks how can lean be adopted and implemented to be most beneficial for their operational performance. Lean offers various improvement tools and an organizational culture of continuous improvement (see Section 2.2.2). The first part of this chapter contains a lean tool assessment for humanitarian aid purposes. Section 4.1.1 contains a literature review of lean tools that have already been implemented in the humanitarian aid sector. Section 4.2 investigates if the lean culture of continuous improvement can benefit humanitarian agencies. Section 4.3 identifies that there is a need for lean in the humanitarian aid sector.

4.1 Lean Tools for NGOs

Work content in humanitarian aid usually occurs in two very different parts. One part is office work. Donors demand high transparency and therefore humanitarian NGOs must document and account all orders and expenses carefully. Marketing, writing proposals, human resource, logistics, and finance work occur in offices. The other part, operations, is very different. Staff members go out to the field to build homes, dig drinking water wells, provide medical care, give training, or hand out aid kits, and nutrition. As discussed in Section 2.2.2, lean offers tools to improve efficiency and performance of operations and office work.

Chandra (2013) summarizes the twelve most critical lean manufacturing tools to know which are shown in Table 4-1. One lean tool, value stream analysis, is added to these 12

because of its importance and applicability for humanitarian NGOs. Table 4-1 contains a description of the lean tools and how applicable it is to the humanitarian aid context. The assessment of applicability in column 3, is drawn from examples of existing lean applications in literature, given in Section 4.1.1, and the expertise of Andrew Parris.

Table 4-1: Lean Tools and Their Applicability for Humanitarian NGOs (adapted from Chandra, 2013)

Lean Tool	**Description**	**Applicable for humanitarian NGO:**
1. Cellular Manufacturing	Cellular manufacturing is an approach in which all equipment and workstations are arranged based on a group of different processes located in close proximity to manufacture a group of similar products. The primary purpose of cellular manufacturing is to reduce cycle time and inventories to meet market response times.	Partly. Humanitarian NGOs do not manufacture, but distributions of goods can resemble an assembly plant.
2. Takt Time	This is the "heartbeat" of the customer. Takt time is the average rate at which a company must produce a product or execute transactions based on the customer's requirements and available working time.	Yes. A useful methodology to investigate capacity and find bottle necks for processes in humanitarian NGOs.
3. Standardized Work	A documented description of methods, materials, tools, and processing times required to meet takt time for any given job. This aids in standardizing the tasks throughout the value stream.	Yes. Very useful to eliminate variance and mistakes in processes for NGOs. It makes work simpler and easier to learn, which is beneficial for high turnover rates.
4. One Piece Flow or Continuous Flow	This concept emphasizes reducing the batch size in order to eliminate system constraints. A methodology by which a product or information is produced by moving at a consistent pace from one	Partly. Small batch sizes and continuous flow improve operational performance

	value-added processing step to the next with no delays in between.	for NGOs. However, procurement and transportation over long distances and distributions can make small batches inefficient.
5. Pull Systems and Kanban	A methodology by which a customer process signals a supplying process to produce a product or information or deliver product/information when it is needed. Kanban is the signal used within a pull system through scheduling combined with travelling instruction by simple visual devices like cards or containers.	Partly. Beneficiaries needs are assessed and then a humanitarian NGO can deliver supply, but with a long lead time. Still, preposition is necessary. Very uneven demand limits applicability.
6. Five Why's	A thought process by which the question "why" is asked repeatedly to get to the root cause of a problem.	Yes. Methodology applicable to every sector and problem to find the root cause of problems in any process.
7. Quick Changeover / SMED	A 3-stage methodology developed by Shigeo Shingo that reduces the time to changeover a machine by externalizing and streamlining steps. Shorter changeover times are used to reduce batch sizes and produce just-in-time. This concept aids in reducing the setup time to improve flexibility and responsiveness to customer changes.	Partly. Taking this concept out of manufacturing, streamlining and smaller batches are beneficial to a humanitarian NGOs as well.
8. Mistake Proofing / Poka Yoke	A methodology that prevents an operator from making an error by incorporating preventive in-built responsiveness within the design of product or production process.	Yes. Applicable to many processes including logistics, and filling in forms.
9. Heijunka / Leveling the Workload	The idea that, although customer order patterns may be quite variable, all of our processes should build consistent	Partly.

	quantities of work over time (day to day, hour to hour). This strategy is adopted by intelligently planning different product mix, and its volumes over period of times.	Levelling workload is often not possible with the unpredictable nature of humanitarian needs.
10. Total Productive Maintenance (TPM)	A team-based system for improving Overall Equipment Effectiveness (OEE), which includes availability, performance, and quality. This aids in establishing a strategy for creating employee ownership autonomously for maintenance of equipment. The goal of the TPM program is to markedly increase production while at the same time increasing employee morale and job satisfaction.	Partly. This can mainly be applied in fleet management (internal) and with wells and other equipment that is transferred to communities to use (all of which require maintenance).
11. Five S	5S is a five step methodology aimed at creating and maintaining an organized visual workplace. This system aids in organizing, cleaning, developing, and sustaining a productive work environment. 5S stands for sort, set in order, shine, standardize, and sustain.	Yes. Methodology is applicable for every work environment, especially offices and storages.
12. Problem Solving / Plan-Do-Check-Act (PDCA)	The PDCA cycle is four step method for solving problems. It helps to think that every activity and job is part of a process, that each stage has a customer and that the improvement cycle will send a superior product or service to the final customer.	Yes. A general methodology to solve problems and improve processes that is not specific to any sector, but applicable to every work process.
13. Value Stream Analysis Process Mapping	VSA focuses on the analysis of specific value streams. It breaks one process down into many process steps which can be analyzed separately in a manageable manner.	Yes. A very powerful tool to analyze and improve any process regardless the context.

4.1.1 Literature Review of Existing Implementations

This section provides a review of lean tools and concepts that have already been implemented in the humanitarian aid sector.

4.1.1.1 Lean Six Sigma in World Vision East Africa (Parris, Fighting Poverty in East Africa with Lean Six Sigma, 2015)

WVI was the first development and humanitarian NGO to ever start a major lean six sigma initiative in their East Africa region, as mentioned in the introduction. A lean six sigma master black belt was hired to lead the lean initiative and train lean six sigma green and black belts. An explanation of the green and black belt training is given in Section 6.2.2. The work done was lean six sigma, but primarily lean. The initiative at WVI shows that lean can have great success in NGOs. The initiative resulted in 56 trained LSS green and 11 LSS black belts. Honsha, a lean consulting group, helped to find volunteer trainers for some of the black belt training which shows that the commercial lean practitioners have interest in providing their experience for free. The benefits of this lean six sigma initiative for WVI are:

- 1.5 Mio USD reduction of annual costs
- An average of 59% reduction of span time of targeted processes
- Reduced of underspending, better reputation, mobilization of resources, and transformed culture

This example proves that lean six sigma can benefit a development NGO. WVI stopped the initiative because of a lack of leadership buy-in.

Another example of lean in East Africa is the lean implementation in the Comprehensive Community Based Rehabilitation (CCBRT) in Tanzania, a governmental health institution. Michael Grogan, a lean six sigma expert, worked at CCBRT for two years and lean showed success at their clinic. For further information, see: https://www.lean.org/LeanPost/Posting.cfm?LeanPostId=342 (2017).

4.1.1.2 Food for the Hungry in South Sudan (Ndihokubwayo, 2015)

Darine Ndihokubwayo, a lean six sigma black belt candidate trained in WVI, showed in her project that lean tools can be applied to benefit food distributions. In her project she

used visual management to make it easier visible for beneficiaries where they have to queue depending on their household size. She mapped the current distribution process, found waste and improved it, made a new distribution area layout and rearranged batch sizes in order to simpler distribute the goods in the right amount. These changes resulted in:

- Fewer process steps for beneficiaries to get food
- Reduced waiting time
- Reduced handling costs
- Reduced workload for aid workers
- Less effort for reporting and control

This application of the lean tool, process mapping, worked for food distribution in humanitarian aid.

4.1.1.3 Toyota Meals per Hour (EL-Naggar, 2013)

The Food Bank for New York is the biggest anti-hunger charity in the United States of America, feeding over 1.5 million people a year. The Food Bank is mostly funded by businesses, but Toyota had a new idea for helping Food Bank. Instead of donating money, Toyota showed them how to improve their processes. Toyota engineers applied lean tools to streamline their process. The achieved great results:

- Reduced dinner waiting time from 90 to 18 minutes in their Harlem soup kitchen
- Reduced time to fill bags from 11 to 6 minutes in a Staten Island food pantry
- Reduced time to pack a box of supplies for victims of the Hurricane Sandy from 180 to 11 seconds in a warehouse in Bushwick, Brooklyn.

This is an example another example of how lean helped in distribution of non-profits.

4.1.1.4 Value Stream/Chain Mapping (Taylor, 2009, p. 27ff)

The theoretical framework on which this application of lean is built is called ‘lean thinking’. Lean offers methodologies to improve processes in procurement, distribution, supply chain management, and manufacturing. Lean has spread through different sectors

including healthcare, defense, financial services, and local governments, but the research outlined in this publication, is as far as known the first application of lean within the humanitarian aid sector.

Value chain analysis was applied for a humanitarian was applied to improve the supply chain of an emergency kit with twelve items for Africa. KPIs of the supply chain were identified, then the current state was mapped, after that four different alternative supply chains, and an improved version of the existing supply chain were mapped. The conclusion states that “Lean and value chain analysis have significant potential to facilitate the improvement of existing international humanitarian supply chains and in helping to develop efficient African-based alternative supply systems. (Taylor, 2009, p. 29)”

Another implementation of a value chain analysis of an Indian charity in 2014 can be found at lean4ngo.org.

4.1.1.5 Lean Humanitarian Logistics

Cozzolino et al. (2012) did a case study on the United Nation Worlds Food Programme to examine if agile and lean principles are needed in the humanitarian aid supply chain and at what specific stages. Lean and agile principles are both needed in specific stages of the humanitarian aid logistics process (Cozzolino, Rossi, & Conforti, 2012, p. 29). Lean principles are needed in the reconstruction phase because there the objective is efficiency, while agile principles are needed in the stage right after the disaster (Cozzolino, Rossi, & Conforti, 2012, p. 28). Still, there has not yet been a case study on a lean supply chain in humanitarian aid. Probably because of the reasons discussed in Section 3.3.3.

4.1.1.6 Five S (Grunden, 2013)

Global Links is a medical relief and development NGO. The organization applied 5S to a storage area of medical equipment, such as suction machines, ophthalmoscopes, nebulizers, surgical clippers, electric thermometers, and blood pressure equipment. The room was not organized and it took employees and volunteers a long time to find equipment which wasted time and caused frustration of staff. The 5S method was used to resolve this problem.

1. Sort: The room was cleaned out and photographs of the equipment were posted to right places, since not all staff knew how a nebulizer looks like.
2. Set in order: The equipment was eyeballed. Some of the equipment was not working, has run out of date, or was not useful and then sorted out.
3. Shine: The storage room was cleaned and equipment was put into place according to their pictures. One shelf was identified for incoming items, and staff trained how to identify, clean and put those items away.
4. Standardize: The handling and placement of items was standardized and the color-coding and photographs helped to avoid mistakes.
5. Sustain: This was more interpreted as continuously improving by identifying large equipment that was used rarely and took a lot of the limited storage space. Such items were replaced by smaller items with constant demand.

Garcia, the deputy director of Global Links, concluded: “Staff time and volunteer time are precious commodities for an organization like Global Links. Finding new and creative ways to reduce wasted time not only improves their efficiency, but shows respect to the people who work there, and ultimately, to their recipients.” Further she concluded that 5S even helped Global Links to focus better on their mission by providing more frequently demanded items than before.

4.1.1.7 Interest in Lean for Humanitarian Work

There are several institutions which are offering lean training, especially for humanitarian NGOs and are interested in bringing lean or six sigma to humanitarian aid. The following lists the three most important ones and their websites to look for further information:

- Lean4NGO: http://lean4ngo.org
- NGO pulse: http://www.ngopulse.org
- Lean Six Sigma for Good: http://www.leansixsigmaforgood.com

4.2 Lean Thinking for Humanitarian NGOs

The answer to the question if lean thinking is applicable to humanitarian aid context is given by James P. Womack, former President of the Lean Enterprise Institute who states: “Lean thinking works everywhere!” (2006). This work draws on the idea that an organizational culture that has continuous improvement of processes and quality as main daily tasks, is not applicable specifically to manufacturing or service industry, but to all organizations in any field. Mike Rother describes such a lean thinking organization in the introduction of his book, *Toyota Kata*: “Imagine you have a way of managing that generates initiative among everyone in the organization to adapt, improve, and keep the organization moving forward.” (2009, p. 3). This quote does not give information on the specific work field. It describes a mindset of an organization. Section 4.2 investigates how to best implement lean in the humanitarian aid sector.

4.2.1 Implementing Lean Thinking

Organizations that want to implement lean thinking must undergo a process of significant organizational change (Helten & Lindemann, 2012, p. 51). Two main types of models exist for organizational change: prescriptive and emergent change (Liu, 2009, p. 234). The prescriptive change is planned, while the emergent change takes place unintendedly, due to ongoing adaptations (Liu, 2009, p. 51). Lean change is prescriptive. Liker (2003) describes in his book, *The Toyota Way*, Toyota`s business principles which are shown in Figure 4-1.

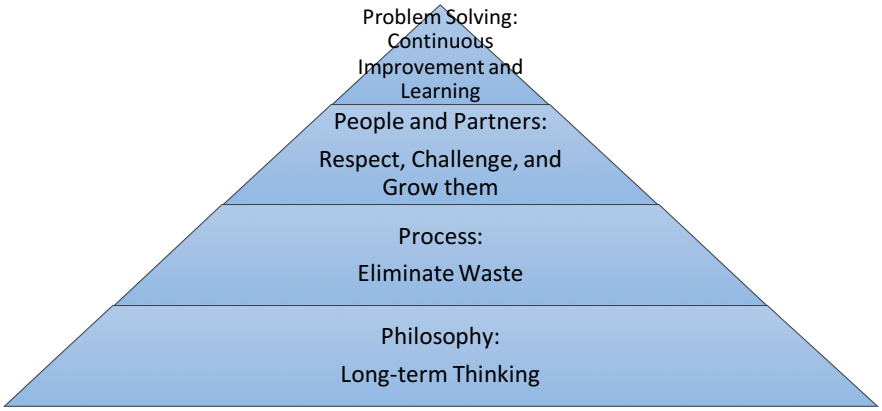

Figure 4-1: Business Principles of Toyota (Liker J. , The Toyota Way: 14 Management Principles from the World's Greatest Manufacturer, 2003)

Toyota builds capacity in people and business partners to enable the organization and the whole supply chain to establish a culture of continuous improvement. If an organization applies lean tools and all employees are lean thinkers, it has successfully established a lean culture (Parris, Thoughts on Lean in Humanitarian Aid, 2017). Zarbo (2012) quotes Liker (2009) that 90% of those who attempt lean, fail. The explanation for this is that many organizations fail to understand Toyota`s culture which is dedicated to developing human talent throughout the enterprise to continuously improve the organization (Zarbo, 2012, p. 321). This means that implementing lean tools is easier than establishing lean thinking. But why?

To become a lean, an organization has to understand that continuous improvement is a daily task. As Akers says: “Lean is hard work that makes everything else easy. (2016, p.96)” One major obstacle is the duration of an organizational culture change such as lean. Establishing a full lean culture takes about a decade (Zarbo, 2012, p. 321). This long duration of change may cause frustration of team members and executives (Zarbo, 2012, p. 321). It is critical to be patient, keep energy behind the initiative the whole time, and further develop lean in the organization. One problem can be that during a lean implementation the executive leader changes and the new Chief Executive Officer (CEO) wants to implement a different organizational culture which may destroy all the efforts that have been achieved during the lean implementation.

Lean must be incorporated into the existing business model to further support the organization`s strategic objectives. Every implementation will be unique due to existing culture, organizational values, context, organizational structure and other factors. There exist no standard step-by-step guidelines, no textbooks to follow. (Ortiz, 2012, p. 151)

4.2.2 Lean Leadership

The missing link between waste reduction through lean tools and a continuously improving lean organization could be leadership (Dombrowski & Mielke, 2013, p. 565). The most critical factor for a lean successful lean thinking implementation (Byrne, 2017, Pieńkowski, 2016 & Zarbo, 2012).

Although improvements are made by every employee, leadership has to motivate and encourage employees to work on improvements (Zarbo, 2012, p. 323). Mike Rother`s, *Toyota Kata*, studies Toyota`s culture and how leaders act as mentors. At Toyota, lean leaders spend more than 50% of their time on coaching people. It is the main part of their supervisor`s evaluation (Rother, 2009, p. 188f). Coaching is something organizations have to realize and implement thoroughly when they apply lean.

Lean leadership has 5 major characteristics (Balle, 2009):

1. Challenge employees: Giving employees difficult tasks, shows that a leader respects them and trusts their abilities to find good solutions
2. Kaizen: Good enough does not exist. No process is ever perfect and there is always room for improvement
3. Go and See: Going to the source of the problem
4. Develop: Coach employees to develop their skills
5. Teamwork: Clear responsibilities for individuals and teams to maximize performance and build mutual trust

To show the difference between a lean and a conventional leader, Parris (2017) defines eight different leadership traits or habits between a conventional and a lean/continuous improvement (CI) leader, shown in Table 4-2.

Table 4-2: Different Leadership Traits (Parris, Thoughts on Lean in Humanitarian Aid, 2017)

Conventional Leader	**Lean Leader**
Delegate Lean/CI	Personally lead Lean/CI
Lean/CI is secondary	Lean/CI is primary
From a distance	From the Gemba
Problems are bad	“No problem” is bad
Solve problems	Grow problem solvers
Give answers	Ask questions
Fight fires	Find and address root cause
Result oriented	Process and results oriented

These differences mean that the whole leadership team has to develop this leadership traits during a lean implementation. Some leaders may not be in favor of lean from the start, because they had bad experiences or heard stories of failure. Therefore, it is very important to convince and incentivize all leaders to get on board a lean implementation, in order to be successful. Leaders have to be the ones pushing the initiative (Zarbo, 2012, p. 323).

4.3 Need of Lean for Humanitarian NGOs

This section contains the need of lean in the humanitarian aid. There are incentives for humanitarian NGOs to become lean:

- Lean has enabled many organizations to increase their performance. Humanitarian NGOs that have better processes in place are able to increase their performance, which leads to the ability to fulfil their mission better and reach more beneficiaries. Due to the context humanitarian NGOs work in, the application of lean does not only impact NGO`s efficiency, service quality or effectiveness, but lean can enable humanitarian NGOs to save more lives and relieve more humans from suffering around the world. Lean, implemented and adapted in the right way, can improve the standard of living for the poorest in the world.

- As mentioned in the introduction, the word lean comes from doing more with less. Efficiency is very important for humanitarian NGOs, especially because of the common donor opinion that overhead costs are a sign of efficiency. In order to reduce overhead, processes need to be improved and made easier, so that less time is needed to fulfill the same tasks. As shown in Section 4.1, lean provides many process improvement tools which can help to reduce time of processes, and as a result reduce overhead costs. Low overhead costs attract donors which leads to growth for humanitarian NGOs.

- Lean helps to simplify processes, which is very helpful considering the high turnover rate humanitarian NGOs have. If processes are simple, new employees can be introduced faster into their new tasks. Simple processes ease the work of employees and make them feel better about their work which results in less

frustration and higher job satisfaction (Parris, Thoughts on Lean in Humanitarian Aid, 2017). Legnerova (2016) did a study on demotivation factors for non-profit organizations and the results show that 'difficulty of work' (62%) is the most critical factor for demotivation under non-profit staff, even higher than 'low financial reward' (51%), and 'manager`s behavior' (20%). To ease the work for employees is one of the most important benefits of lean for humanitarian NGOs that can be used to address the high staff turnover rate.

4.3.1 Lean and the Core Humanitarian Standard

Quality work in humanitarian aid which will now be certified by an institution called the Core Humanitarian Standard (CHS). The CHS consists of nine different commitments and quality criteria (Core Humanitarian Standard, 2014, p. 9), shown in Figure 4-2. "The CHS describes the basic essential elements of principled, accountable and high-quality humanitarian action (CHS Alliance, 2016)." To prevent any conflict of interest the certification for CHS is verified by the independent organization the Humanitarian Quality Assurance Initiative (HQAI, 2017). In terms of how the CHS aligns with lean, special attention should be given to criteria 7 which is about continuous improvement, the core of the lean organization, as discussed in Section 4.2.1.

Figure 4-2: CHS Standards on Quality and Accountability (Core Humanitarian Standard, 2014, p. 4)

Parris (2017) investigated the nine commitments of CHS in terms of how these fit with the principles of lean, shown in Table 4-3. The CHS aligns well with the principles of lean (Parris, Thoughts on Lean in Humanitarian Aid, 2017). The term Process Excellence, used in the table, is an adapted version of lean for the humanitarian context by Parris. Every process of a humanitarian organization should be (Parris, Green Belt Training, 2008, p. 112):

Figure 4-3: Process Excellence

If a process fulfils all attributes shown in Figure 4-3, it can be considered to be excellent. That does not mean it has reached a state of perfection, because there is always room for improvement. A more detailed explanation of process excellence can be found in the Appendix. In Table 4-3, Parris shows how the five attributes of Process Excellence (basically lean) match the CHS principles.

Table 4-3: Process Excellence Match with CHS (Parris, Thoughts on Lean in Humanitarian Aid, 2017)

Process Excellence on CHS Commitments	**Effective**	**Efficient**	**Appropriate**	**Empowering**	**Continuously Improving**
1. Communities and people affected by crisis receive assistance appropriate and relevant to their needs.	✓		✓		
2. Communities and people affected by crisis have access to the humanitarian assistance they need at the right time.		✓			
3. Communities and people affected by crisis are not negatively affected and are more prepared, resilient and less at-risk as a result of humanitarian action.	✓			✓	
4. Communities and people affected by crisis know their rights and entitlements, have access to information and participate in decisions that affect them.		✓		✓	
5. Communities and people affected by crisis have access to safe and responsive mechanisms to handle complaints.			✓		✓
6. Communities and people affected by crisis receive coordinated, complementary assistance.		✓		✓	
7. Communities and people affected by crisis can expect delivery of improved assistance as organisations learn from experience and reflection.					✓
8. Communities and people affected by crisis receive the assistance they require from competent and well-managed staff and volunteers.		✓		✓	
9. Communities and people affected by crisis can expect that the organisations assisting them are managing resources effectively, efficiently and ethically.	✓	✓	✓		

The assessment of Parris (2017) shows lean or the humanitarian NGO adaption of lean, Process Excellence, aligns very closely with the CHS and thus can help get a CHS certification. Especially, looking at number 7, about continuous improvement, the core of lean. Quality certifications are of high importance to NGOs, because they are recognized by donors. CHS has obviously realized the need of continuous improvement in humanitarian aid, like the International Organization for Standardization (ISO) 9001 certification for quality management, has continual improvement as requirement number 8.5.1 (ISO 9001 Checklist, 2015).

4.4 Conclusion

The lean tools assessment for humanitarian NGOs in Section 4.1 shows that many tools that were originally developed in a very different context can benefit humanitarian NGOs too. They are not all fully applicable as at Toyota, but can be adapted to the humanitarian aid context. The literature review shows that there are not many applications of lean in the humanitarian context yet, but lean already showed success in this sector. The few applications may be because of the entry barriers for lean in the humanitarian aid sector, discussed in Section 3.3.3. Implementing lean thinking and in long-term an organizational culture of continuous improvement is shown to be beneficial for humanitarian NGOs. Section 4.3 shows that there is a clear need to establish lean in the humanitarian aid sector. Donors and standards institutions for humanitarian NGOs have realized that continuous improvement and organizational learning is necessary. Implementing lean is a proven and effective way to establish this culture of continuous improvement. Humanitarian NGOs are under great pressure and have very limited resources to improve their performance, given the low funds for investments. Lean implementation is a low cost way to improve efficiency, given that no expensive investments have to be made. Lean implementation takes time and steady managerial support to be sustainable, as discussed in Section 4.2. Overall, this chapter shows that lean provides enormous potential benefits for humanitarian NGOs, but it needs to be adapted and implemented carefully. The lean implementation always needs active participation from all employees, starting with senior leaders and extending to front-line workers, to be successful.

5 Case Study: Medair

Medair, a humanitarian international non-governmental organization (INGO), started a lean initiative in 2017 which is studied in this section. Section 5.1 provides information about the organization`s identity, operations, financials, and structure. Section 5.2 assesses the unique context and challenges the organization faces.

5.1 Overview of Organization Under Study

Medair is a Swiss non-governmental organization delivering humanitarian aid globally. Founded in 1989, out of a single project in Uganda, it developed into a globally operating organization, responding to crises in 14 different countries, delivering aid to over 1.8 million people (Medair, 2016). It is a faith-based organization, responding to humanitarian crises, especially, in remote areas.

5.1.1 Vision & Mission

Medair`s vision, released in 2017: “That the world’s most vulnerable and difficult to reach people live in dignity, free from human suffering and with hope for a better future.” According to Collins and Porras (1996), the vision statement represents the organization`s envisioned future. For Medair this means that there is no human suffering anymore and people have hope of change for the better. To achieve this goal, the company needs to work towards achieving this state. The desired state is defined by the vision.

In contrast, the mission states the core purposes of the company and therefore provides reasons for its existence. It defines a company’s ideology and character and is the glue that holds it together (Collins & Porras, 1996). Medair`s new mission statement (2017): “Medair is an impartial, independent, and neutral humanitarian organization inspired by Christian faith to relieve human suffering in the world's most difficult-to-reach and devastated places.”

As discussed in Section 3.1.3, the principles of humanity, impartiality, independence and neutrality are derived from, the Fundamental Principles of the International Red Cross

and Red Crescent Movement proclaimed in Vienna in 1965. In addition, the adjectives "impartial" and "neutral" resemble two of the three principles of the humanitarian space model developed by Tomasini and Van Wassenhove (2004), shown in Figure 3-2: Humanitarian Space (Van Wassenhove, 2006, p.478). The third principle, "humanity ", is mentioned in the second sentence. The humanitarian space model defines the context in which humanitarian aid is possible. This means that the mission statement characterizes Medair as a humanitarian aid organization. The organization`s ideology lies in its Christian faith. Helping those in need is one of the cornerstones in Christianity. A Bible verse that shows this, can be found in Luke (10:27b): "Love your neighbor as yourself." There are other parts in the Bible that instruct Christians to care for those in need. International Medair employees have to be committed Christians which inspires Medair staff to help people in need.

One strategic decision, mentioned at the end of the mission statement: "(…) in the world's most difficult-to-reach and devastated places.", is to concentrate its efforts on the most remote and devastated places in the world. The operating conditions in humanitarian aid are especially complex (Van Wassenhove, 2006, p.477). Medair has committed itself to focus on the hardest-to-reach places in this already critical operating environment – a highly challenging task. Furthermore, strategically this means that the organization focuses on a niche in the humanitarian aid sector. The costs and efforts to reach beneficiaries are therefore higher and the environment is often even more dangerous.

5.1.2 Growth & Financials (Medair, 2016)

The operating income in 2015 amounted to 64 Million USD, whereas in 2012 it had been 39 Million USD, which shows the rapid growth of Medair in income of about 64.8% in three years. The humanitarian aid sector has been growing, for three consecutive years, in funding from 18 Billion USD in 2012 to 28 Billion USD in 2015, see Figure 5-1, which is an increase of about 55.6% in the same period. This shows that Medair has been growing faster than the overall humanitarian aid sector, but still is a small organization in the market with a market share of 0.23%.

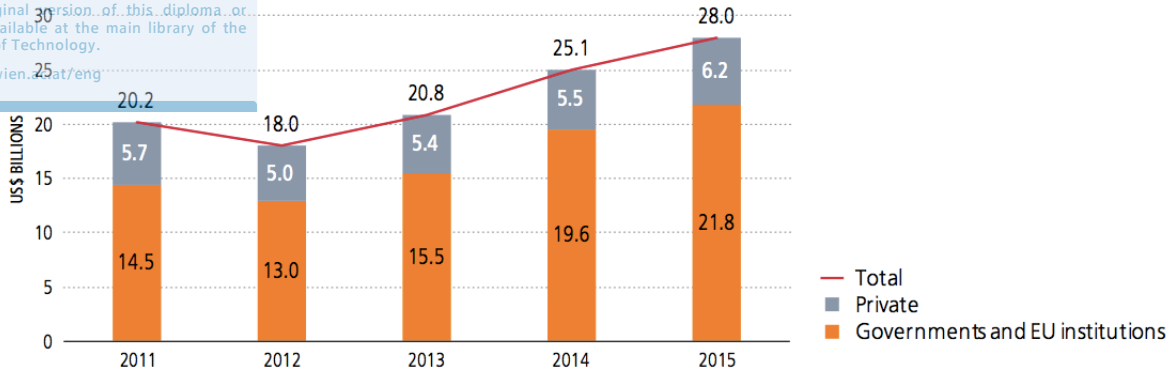

Figure 5-1: International Humanitarian Response, 2011-2015 (Development Initiatives, 2016, p.36)

The share between institutional donors and private donors is very important for Medair. In 2016, 18.4% of the funds Medair raised came from private donors, while the humanitarian sector average is 22.1%. Private donations are vital to humanitarian organizations, because they are usually not dedicated to specific projects. These unrestricted funds give organizations freedom to spend them where they are most needed (on underfunded budget items). On the other hand, institutional donors fund specific projects and money has to be spent only for designated “allowable” costs. This is important because institutional donors generally underfund, or sometimes do not fund, indirect or overhead costs, and unrestricted private donations are the only possible source of funds to cover these costs. Further details on funds are discussed in Section 3.2.

Overhead costs are the costs for coordinating projects, marketing, fundraising, human resources, and other efforts that are necessary to operate successfully, but do not directly help the beneficiary. In Medair, the overhead costs are divided between fundraising activities and general management, which accounted for 3% and 7%, respectively, of the operating expenses in 2016. Figure 5-2 shows the distribution of costs. Costs, which occur at the headquarters, which are humanitarian expense, but indirect for instance, shelter assistance management, accounted for 7% in 2016; 83% was spent on direct humanitarian expense meaning at the field.

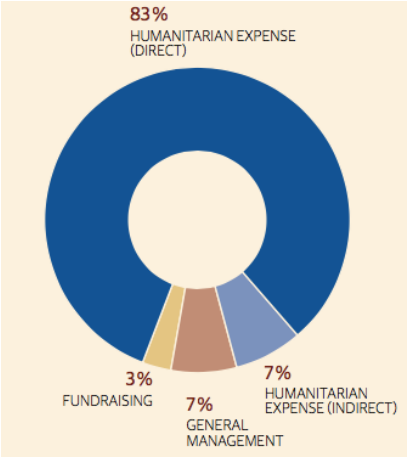

Figure 5-2: Operational Expense Medair 2016

5.1.3 Working Areas and Organizational Structure

Medair runs 14 different country programmes, international headquarters (HQ) in Ecublens, Switzerland, and six affiliate offices. Figure 5-3 shows a more detailed overview of the organization. The HQ with around 110 employees in Ecublens supports the country programmes in staff, marketing, recruitment, logistics, and finance. Affiliates` main tasks are raising funds, marketing, finding new donors, and attracting staff.

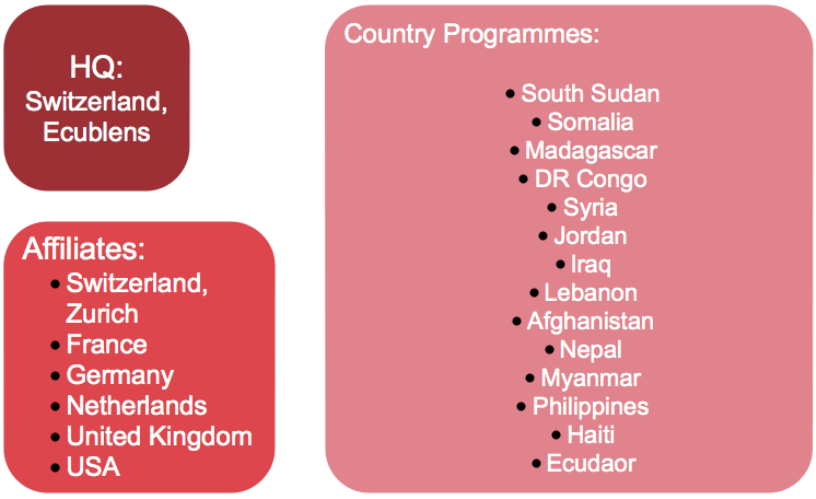

Figure 5-3: Medair Overview (Medair, 2016)

Country programmes have a main base, usually in the capital or a big city of the respective country, to manage all legal issues and then one or more bases in the areas they work in. Medair runs only humanitarian aid projects. Some may consider its work in

Madagascar development because of the project`s length, but it helps people prepare for and respond to recurring crises. The difference between humanitarian aid and development work lies in the focus. While the aim of humanitarian aid is to prevent human casualties in conflicts and (slow or sudden onset) disasters and to assure the basics for survival, development work assistance aims to reconstruct infrastructure, institutions, and economy after a disaster or war (Branczik, 2004), as discussed in Section 3.1.2. Therefore, humanitarian aid projects can transform over time into development projects (and vice-versa), but there is no clear distinctive line between them.

According to the identified need in the region, Medair offers different assistance, shown in Table 5-1.The biggest operating area by beneficiaries is Health & Nutrition.

Table 5-1: Medair Programmes (Medair, 2016)

Programmes	Activities	Direct Beneficiaries
Health & Nutrition	• Treat patients at Medair supported clinics • Teach people on life-saving health/nutr. practices • Treat malnourished patients	• 989.002 • 448.657 • 35.585
Water, Sanitary & Hygiene	• Deliver safe drinking water access • Deliver access to new latrine or bathing facility • Teach people about life-saving hygiene practices	• 416.597 • 122.405 • 276.724
Shelter & Infrastructure	• Improve and build infrastructure • Teach people construction methods • Deliver shelter assistance	• 229.057 • 16.994 • 13.459
Cash Assistance	• Provide cash assistance for people in need	• 43.298

5.1.3.1 Organizational Structure at Headquarters

Medair has a functional structure at its Headquarters. There is a clear hierarchy, and responsibilities are top-down. There are five different levels: advisory board, Chief Executive Officer (CEO), Directors, Managers, and Team members. In Figure 5-4 the manager and team member levels are joined and outlined as department for better visibility. The CEO and the Directors form the Executive Leadership Team (ELT). The ELT steers the organization and makes major decisions, for instance to deploy a team into an emergency or open a new country programme, and reports to the advisory board. Every Director, except of the Executive Office Director, manages one department. The Executive Office Director has only the Process Excellence Manger who reports to him. This relationship will be explained more detailed in Section 6.1.2.

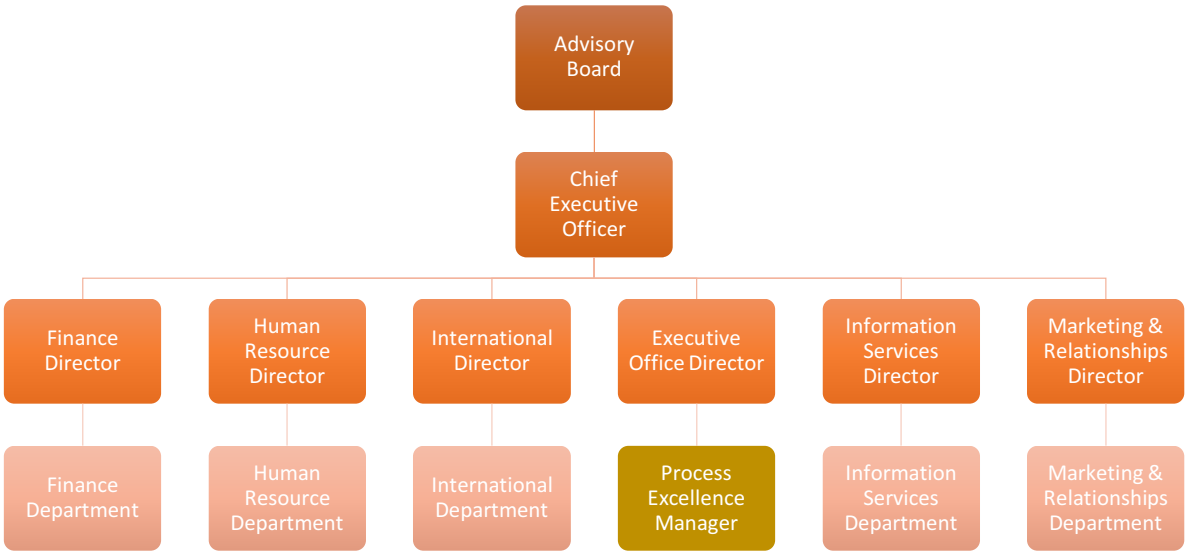

Figure 5-4: Organizational Chart Medair (July 2017)

A functional organizational structure has typical advantages: efficiency and high specialization, and disadvantages: silo-thinking and high degree of bureaucracy (Davoren, 2016). To achieve the gain from the benefits of a functional structure, it is necessary that every role in the system is understood and that staff are experienced in their job positions (Joseph, 2017). This is a problem for Medair, because staff turnover is high. It needs time for new staff to know all the necessary bureaucratic steps and to be efficient in fulfilling tasks in this system. To become a specialist, experience is critical.

High turnover reduces the benefits of this organizational structure and aggravates its disadvantages.

Another disadvantage of this organizational structure is that if the organization grows, it can be a challenge to maintain control, because decision-making has to be delegated and functional areas become more and more independent, making coordination among areas more difficult (Joseph, 2017).

5.1.3.2 Organizational Structure at Field Programmes

Around 1100 of the 1200 Medair employees work at the field. At this level Medair distinguishes between international recruited staff and national recruited staff. National recruited staff are usually members of the communities Medair works in. They do not necessarily have to have high skills or education, but play an important part in the success of country programmes. In some programmes, Afghanistan for instance, international recruited staff is not allowed to leave the compound, due to the risk of kidnapping. Therefore, national staff are sometimes the only way to distribute goods and provide services to beneficiaries, meaning that national staff execute most operational tasks in country programmes.

In contrast, international staff are recruited for special skills, and usually hold managing positions in programmes. Staff come from all over the world and are selected through various stages. Medair selects applicants according to their organizational fit. Applicants need to own the organization`s values.

5.2 Unique Humanitarian Context – Medair

Knowing now what the organization does and its values, it is time to specify the unique context for Medair. Medair is an international faith-based NGO, according to Section 3.1.1, a third-sector organization demonstrates the stepwise differentiation to the unique context. Table 5-2 shows a step-wise differentiation to the specific context Medair works in.

Table 5-2: Medair Characteristics

1. Pursuit			
☐ profit	☒ non-profit		
2. Organizational sector			
☐ public	☐ private	☒ non-governmental	☐ other
3. Operating area			
☐ local	☐ national	☒ international	
4. Working field			
☐ development aid	☒ humanitarian aid	☐ other	
5. Faith			
☒ faith-based	☐ not faith-based		
6. Staff			
☐ volunteer-based	☒ salaried		
7. Providing			
☒ goods	☒ service		

Given this specific context, Medair faces typical challenges of humanitarian NGOs, assessed in Section 3.3.3, and some specific challenges due to the organization`s history and strategic choices. Many characteristics and the deriving challenges are interrelated. The following will explain Medair`s challenges.

5.2.1 General Challenges for Medair

1. Staff Turnover: As other humanitarian NGOs, Medair faces this challenge and has to spend a lot of effort to recruit, introduce, and train new staff every year. Medair identifies reducing staff turnover as a strategic objective for the next years.

2. Unpredictability: Medair`s strategic decision to “go the extra mile” to reach the most remote communities and operate in the most challenging environments brings additional challenges for the organization. Medair runs programmes in Somalia and South Sudan, which are ranked as the two most corrupt countries on the Global Corruption Index (Transparency International, 2016). South Sudan is Medair’s largest country programme. Looting and ongoing conflicts are issues Medair has to face in these countries. This unstable environment causes enormous psychological stress for employees and makes operational planning very difficult.

3. Communication: The infrastructure in developing countries is usually poor, and going to the most remote places makes transportation and communication very challenging. Information flows through the organization are interrupted and real time data is usually not available to Headquarters. For further reference, Rominger (2017) did a study on information flows for humanitarian aid operations.

4. Recruiting Staff with Organizational Fit: Medair is a faith-based organization and looks for people who fit into the organization`s values of Christianity and are able to live in the challenging environments where Medair works. This means that Medair looks for committed Christians for their internationally recruited staff. The percentage of committed Christians in Europe, where Medair usually recruits, is declining (Stourton, 2015). According to Pew Research Center (2011), the percentage of weekly church attendees is 11% in Germany, 10% in France, and 9% in the United Kingdom. The percentage decreases when taking only the working age population into account. This means that Medair focuses on less than 10% of the already limited available human resources for humanitarian work. Medair does not permit internationally recruited staff to bring their families with them, and they do not wish to split up families. Therefore, internationally recruited staff cannot have children living at home, and if they are married, their spouse must also work for Medair. In addition to these restrictions, few people are willing to take the risks and endure the challenges of living and working in crisis contexts. Furthermore, few people are able to deal with the uncertainty and short (1-2 year) employment commitments of humanitarian work. All these factors together make it very challenging for Medair to find highly qualified internationally recruited staff.

5. Low use of Technology and Management Trends: The decision to only operate in humanitarian aid projects, makes it more difficult to get funding for investment in any technology or staff training. In development projects there is more flexibility to fund such investments (Parris, Thoughts on Lean in Humanitarian Aid, 2017).

6. Underspending and Earmarked Funding: Short spending deadlines and inflexible cost components can generate inefficiencies in humanitarian operations

(IASC, 2016, p. 9). NGOs are under pressure to spend all earmarked funds due to a deadline, which does not contribute to effective spending of funds, and which may even hinder cost-reduction improvements. As mentioned in Section 5.1.2, earmarked funding determines in which programme and budget line items the funds must be spent. Medair's percentage of earmarked funding is higher than the sector average which makes Medair`s financials not flexible enough in this dynamic environment. In addition, some institutional donors required NGOs to raise a percentage of private funding in order to provide their own funding for a programme. As for many NGOs, raising enough private funds is a challenge for Medair.

7. Short Funding Cycles: Humanitarian operations are meant to reduce suffering during and after crises. Therefore, the time frame is short and usually about 12 months. Still, protracted crises exist, where communities need assistance for a longer period. The funding for humanitarian aid is still based on a 12-month cycle for less. To fund country programmes for another year, NGOs have to make a huge effort to attract and maintain funding. This consumes significant energy and time. Organization for Economic Co-operation and Development (OECD) has realized this problem and tries to shift donors from annual to a multi-annual funding cycles (OECD, 2017, p. 2ff), but the common practice is still 6-12 months.

8. Headquarters in Switzerland: The HQ located close to the UN in Geneva has advantages for humanitarian NGOs, but is also a challenge for overhead costs, due to the high salaries of Switzerland which has the worldwide fourth highest gross domestic product per capita (GDP) after Liechtenstein, Monaco, and Luxemburg which are considerably smaller countries (UN, 2015). Employees at headquarters are more expensive for Medair than in other countries.

5.2.2 Faith-Based Organization and Lean

Section 3.3.3 assesses the applicability of lean for humanitarian NGOs and Section 1.3, assessed the need of lean for humanitarian NGOs. All of these assessed needs or challenges for lean hold true for Medair, being a humanitarian INGO. One specific factor, namely being a faith-based organization is found to promote lean. Lean aligns well with

the Bible and Christianity in general (Parris, Thoughts on Lean in Humanitarian Aid, 2017). If someone truly believes in something and is able to make the link between lean and his or her beliefs, this may help to internalize lean easier and appreciate it more.

Considering that Medair is in general a humanitarian NGO operating in more remote places, which puts even more pressure on operations and staff, the need for having optimal processes in place is even greater. This leads to an even greater need of lean for Medair. This means that Medair has and greater need of lean and a possible advantage to implement lean, if the connection to Christian faith can be shown to the employees.

6 Medair`s Lean Roadmap

In 2016, Medair`s top level management realized that the organization has problems with their bureaucracy and processes, due to their rapid growth over the last years. In Medair's 2017-2019 strategy, they identified operations as a vulnerability and set Strategic Objective 7 – **Operational Excellence and Leadership:** "Build a healthy, agile, and sustainable organization that is known for excellent leadership and rigorous implementation." Process improvement and cultivating a culture of continuous improvement are initiatives within this objective. Medair wants to grow further and the plan is to optimize processes and make work easier so that the organization`s capacity grows without adding costs. Basically, Medair wants to increase their performance and efficiency to be able to reach more people in need and deliver higher quality to beneficiaries. Therefore, lean can be the methodology to achieve this outcome.

6.1 Process Excellence Manager

In order to become a lean organization, Medair created a position called Process Excellence Manager (PEM) and recruited Andrew Parris, a Lean Six Sigma Master Black Belt with NGO experience, to fill the position.

6.1.1 The Person

Andrew Parris is a process improvement expert with over 20 years of experience and a PhD degree in Mechanical Engineering from MIT. He earned his PhD as part of the Lean Aerospace Initiative (LAI) which came out after the success of the IMVP. After finishing his PhD, Andrew Parris worked for Lockheed Martin as Process Improvement Lead for 11 years. In this time, he got certified as a Lean Six Sigma Black Belt in 2003. In 2008, he changed industries and moved to the development and humanitarian NGO sector, to join World Vision International, where he worked for nearly nine years. Three years of his time at WVI, he lived in East Africa and achieved remarkable results for WVI East Africa: $1.5 Mio cost cut in recurring costs, and reducing lead time of recruitment and procurement by 40-80% (Parris, Improving Processes for Good in East Africa, 2013, p.

458). In January 2017, he started to work for Medair, as Process Excellence Manager, in the Ecublens Headquarters.

6.1.2 The Role

As shown in Figure 5-4, the PEM reports to the Executive Officer, and is a manager that has no direct team to manage. The task of the PEM is to assist all departments in improving their processes. To achieve this, the PEM has three main functions:

1. Build improvement capabilities of employees to enable them to improve their own processes. This is done by training, facilitating workshops and coaching employees.

2. Provide expertise and guidance to employees during their improvement projects and in the application of lean concepts and tools. The PEM is not an expert in specific departments, but an expert in improving processes and making them lean. Usually teams work on process improvement projects, so the PEM coaches a process mapping session for instance.

3. Design and manage the overall lean transformation initiative so that it achieves strategic change and measured impact. This means getting everyone from senior leadership to the front lines field staff actively involved, making improvements, and sharing impact and learning.

The PEM and the Executive Office Director recently established and will lead the Medair Project Management Office (PMO). This creates a synergy, because all projects are about improvement, and all the process improvement projects need to be overseen by the PEM anyway. Although the negative effect is that the PMO work draws time and attention away from the lean initiative.

The PEM was assigned to a third task. Medair wants to get certified by the Core Humanitarian Standard on Quality and Accountability. To achieve this, the organization has revise or create new policies, systems and processes to meet the standard. The CHS draws together nine key elements of existing humanitarian standards, as shown in Section 4.3.1. Number seven states that humanitarian actors commit to continuously improve and learn (Core Humanitarian Standard, 2014, p. 9). This aligns perfectly with

Medair`s plan to become a lean organization and makes sense that the PEM owns this task, but again draws away time and attention from the actual task the PEM was hired for, the lean implementation.

6.2 The Lean Roll-Out

To transform Medair into a lean organization, the lean initiative will be first rolled out at Medair HQ and in later stages will be brought to the country programmes. The first stage of the initiative is to build awareness of what lean, continuous improvement, and operational excellence means as shown in Figure 6-1: Medair`s Lean Roll-out under Stage 1. The completion of how the adapted version of lean, called Process Excellence, is defined by how the processes should be, which is shown in the Appendix.

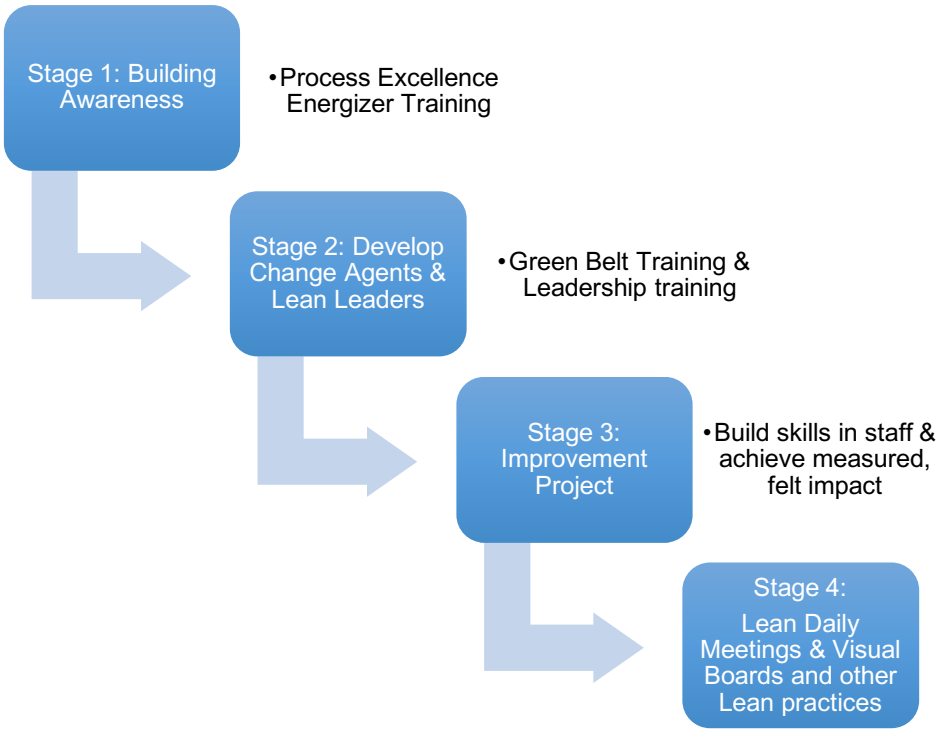

Figure 6-1: Medair`s Lean Roll-out

6.2.1 Process Excellence Energizer Training (Parris, Process Excellence Energizer, 2017)

Stage 1 of the lean roll-out, is achieved through training staff in the Process Excellence Energizer Training. It introduces participants to process improvement and lean in the humanitarian NGO context. It is a one-day training that starts with a hands-on simulation in the morning that shows the difference between a bad and an excellent process. The afternoon contains of teaching process improvement tool sets such as visual management, 5S, and the 8 ways of waste. After the training the participants should know about the basic concepts of lean, process improvement, and should be able to apply the tools taught in the training.

By the end of 2017, over 80% Medair Headquarters staff should have gone through this training to ensure that all members know and are able to apply the basics of process improvement. The training creates awareness of the lean initiative and is the first step to equip Medair`s staff with process improvement capabilities and to begin to build a culture of continuous improvement.

6.2.2 Lean Six Sigma Green Belt Training

There is no one globally agreed on standard on lean six sigma certification, but some common understandings of different skill levels. The scale is taken from martial arts, and one can commonly get certified at four (ASQ, 2017):

1. Lean Six Sigma Yellow Belt
2. Lean Six Sigma Green Belt
3. Lean Six Sigma Black Belt
4. Lean Six Sigma Master Black Belt

Medair is training and certifying Green Belts in the second stage of the lean initiative. Andrew Parris, as certified Master Black Belt, has the authority to certify Green Belts.

The International Association for Six Sigma Certification (IASSC) defines a certified Lean Six Sigma Green Belt as: “a professional who is well versed in the core to advanced

elements of Lean Six Sigma Methodology, who leads improvement projects […] A Lean Six Sigma Green Belt possesses a thorough understanding of all aspects of the Lean Six Sigma Method including competence in subject matters contained within the phases of Define, Measure, Analyze, Improve and Control (DMAIC) […] A Lean Six Sigma Green Belt understands how to implement, perform, interpret and apply Lean Six Sigma at a high level of proficiency." (2017)

To become a certified Green Belt, a participant has to fulfil three different requirements.

1. Attend all training sessions
2. Pass the final Green Belt exam
3. Complete the Green Belt Project

The aim of the training is to build Change Agents in the organization. After being certified, these Green Belts should drive and carry the lean initiative in the organization, improve processes, and help their colleagues to improve processes providing their expertise gained through the training.

6.2.3 Building Lean Leaders

As mentioned in Section 4.2.1, to successfully implement a lean culture, management is the single most important determinant. Therefore, Medair has to build lean leadership capabilities in the top level management. The plan to achieve this is still being developed. Before the lean initiative started, Medair already planned to develop its leadership style and training, not considering lean at this point. Now the question raises of how the agreed leadership style aligns with being a lean leader. To become a truly lean organization the leadership has to commit to the lean leadership style. This is a major element in the lean implementation for Medair.

6.2.4 Deploy Lean to the Field

All operations of Medair run in different country programmes, and this means Medair has to bring lean initiative to each country programme. To deploy the initiative to the field, generally, it is very difficult, as mentioned in Section 3.2, to get funding for overhead expense which this would definitely be. Another challenge is to find the right people and

place to train staff. Staff turnover in the field is very high and it does not help the organization to build capacity in people that leave soon. Medair operates in very remote and dangerous places, the work units are usually very small. It is necessary to get people of different country programmes to one easy to reach location to facilitate training there. This assures that many employees get training, but adds travel costs and additional time away from their valuable work.

7 Review of Medair`s Approach

This chapter assesses how successful the lean roll out at Medair has been until 20th of August 2017. The Process Excellence Manager started to work for Medair in the Beginning of 2017. The time frame of the assessment is therefore 33 weeks. As mentioned above, a lean transformation takes about 10 years (Zarbo, 2012, p. 321). This study has a considerably short time frame to observe an organizational cultural change. Still, there are already some interesting insights about the kick-off and early phase of the implementation. The following sections are in the order of the lean roll-out shown in Figure 6-1.

7.1 Stage 1: Process Excellence Energizer Training

Until mid of August 2017 the PEM trained already 85 Medair employees, and an additional 10 external participants from various institutions, such as ETH Zurich, Kühne Help Logistics, and others. 57 out of the 85 trained Medair staff work in Headquarters. At headquarters there around 110 employees, meaning that in 33 weeks already half of the staff at Headquarters have participated in the one-day training, the content explained of the training is explained in Section 6.2.1. This means that stage 1 of the initiative, building awareness and small improvement skills in staff, can be already seen as successful from a training at headquarter ratio. Training skills, however, does not automatically mean that people use them and that Medair benefits from it.

One event that may shows how staff that has participated in the training, is likely to use the trained skills, is the I/We-Made-it-Better challenge. It is an opportunity to show other employees in Medair how someone or a team made a small, documented improvement using the improvement methodology learned in the Process Excellence Energizer Training or Green Belt Training. A deadline was set to upload the documentation of improvements, but it was not mandatory for employees to upload an improvement. The deadline was in mid-August 2017; some people were on vacation which may lower the amounts of improvements made, shown in Table 7-1. Out of the 57 trained staff, 34 improvements were uploaded, and the table also shows how many employees in every department were trained and uploaded their improvements.

Table 7-1: I-We Made it Better (WIMB)-Improvements

Department	Number Who Took Full PE Energiser	Number of WIMB Improvements	% with documented I-We Made It Better
Finance	11	9	82%
Human Resources	9	5	56%
International Programs	10	2	22%
Information Systems	5	4	80%
Logistics	7	8	100%
Marketing & Relationships	9	5	56%
Executive Leadership Team	6	1	17%
Total	**57**	**34**	**60%**

In total 60% of the employees who were asked to do improvement, did so. This is not a high percentage, but it does show that small improvements are being made and documented. The most problematic is probably that only one of the executive leader team has uploaded an improvement. Part of the reason for this low number is that the work of executives is typically strategic in nature, rather than operational, so that they have much less opportunity to make small improvements. It could also be seen as an indicator that the leadership buy-in of the initiative has not yet fully developed. Everyone at Medair can see the documented improvements and who did them. If people, see that only one of their executive officers did improvements they might think that the lean initiative is not recognized as much by the ELT. This may discourage staff from spending effort on improvements, if they feel it is not appreciated by their bosses. The building of lean leaders comes at stage 2 of the initiative, but it already shows how important leaders are in the initial stage.

7.2 Stage 2: Developing Change Agents and Lean Leaders

The first five-day Green Belt Training took place between March and April 2017. It was held by Andrew Parris, the Process Excellence manager, as a five one-day training sessions spread over six weeks. 19 Medair employees started the training, two had to drop out during the training, because of various reasons. The 17 remaining work in

different departments of the Headquarter and hold different position. Table 7-2 gives a closer view of the participants.

Table 7-2: Green Belt Training Participants

Department	Number of participants	Manager / Team Member
Information Service	2	1/1
Programmes	1	1/0
Human Resources	5	1/4
Finance	4	0/4
Marketing & Relationships	2	0/2
Logistics	3	0/3

Before participating in the training every participant had to identify one process they want to improve in their work area, and get commitment from their manager and director that they will work on this project through to completion. The Green Belt Project has three main purposes: Apply the learning, build skills, and show colleagues the benefits of lean.

12 different improvement projects were identified, and only one has been finished. Staff are very busy with their everyday work, so that the Green Belt projects take longer than expected, which was three months. Out of the training two participants have finished their projects and got certified. One left Medair shortly after finishing and one was extern. So, no participants in Medair are certified Green Belts yet. Still, all participants went through the whole training and developed problem solving and improvement skills, and are now applying these in their Green Belt projects and in their everyday work. They are also acting as change agents.

The development of lean leaders, meaning managers and executive leaders, has yet not taken place, except for the three managers who participated in the Green Belt training.

7.3 Stage 3: Improvement Project

The first part of this stage has already been made with the WIMB projects, shown in Section 7.1. Next, the PEM is planning to do Kaizen workshops of two or three days in HQ in the departmental work groups to improve key processes in the respective department.

7.4 Stage 4: Lean Daily Meetings and Visual Boards

This part has not been rolled out yet, except for a team in the information services department. (The manager of this work group – one of the Green Belts – already held daily stand-up meetings before the lean initiative.) However, two Green Belts plan to start this practice in their areas.

7.5 Bringing Lean to the Field

Bringing Lean to the field would basically follow the same approach that is being taken in Medair headquarters in Ecublens, Switzerland, described above.

To realize field training, there is a proposal to cooperate with Kühne HELP Logistics, SpreadThinking, and ETH Zürich. HELP Logistics is part of the Kühne Foundation and offers consulting and training in humanitarian supply chain management (Kühne-Stiftung, 2017). SpreadThinking is a non-profit organization with the purpose of spreading continuous improvement philosophy and principles (SpreadThinking, 2017). This collaboration wants to offer a 4-day workshop to teach about continuous improvement and lean in the humanitarian NGO context. This workshop is not meant for only Medair, but also for other NGOs to participate. The idea of this workshop was born in June 2017 and the details are not clear yet, but it is a huge opportunity to spread lean into the humanitarian sector.

Medair is also considering the idea of partnering with a Swiss corporation that has benefitted from applying Lean and that would be eager to share its Lean expertise with Medair as part of its corporate social responsibility. Given the importance and visibility of the Middle Eastern refugee crisis in Europe, this would provide a corporation the opportunity to help displaced people in the Middle East, by helping Medair improve its processes, both in Switzerland and in the field.

8 Conclusions

This thesis now concludes by answering the three research questions, stating its limitations, and providing recommendations for Medair in their lean transformation journey.

8.1 Answer Research Question 1: Can Lean be applied to benefit a humanitarian NGO?

Yes.

As shown in the assessment in Section 3.3.3, there are serious impediments to establishing lean in humanitarian NGOs. The contextual differences to the business sector overall make it more difficult to implement lean in the humanitarian sector. The most critical factor is found to be the high staff turnover rate. The assessment also shows that lean cannot be applied to the same extent as for manufacturing companies and has to be adapted to benefit humanitarian NGOs best. Section 4.1 shows that lean is applicable to the context and beneficial for humanitarian NGOs.

As the above parts of this paper answer that lean can benefit a humanitarian NGO, Section 4.3 identifies that there is an actual and great need for lean in the humanitarian aid sector. Lean is needed to enable humanitarian NGOs to deliver better services and be able to respond faster and better to disasters. This will enable them to save more lives, relieve more suffering, and promote stronger recovery.

8.2 Answer Research Question 2: If so, what aspects of Lean are most useful?

The book *The Routledge Companion to Lean* Management shows that it is possible to take lean or lean tools out of manufacturing and apply them to other sectors successfully. The application areas of lean seem to be unrestricted, but to be successful, lean needs to be adapted to fit to the context. Creativity and wisdom in the application and adaption of lean tools is important to achieve good results.

The lean tool applicability assessment, Section 4.1, shows that many lean tools are applicable in humanitarian aid and the literature review proves this by giving some examples of successful lean implementations in the humanitarian aid and the non-profit sector. 8 of 13 important lean tools are identified to be applicable to humanitarian aid and the other five partly applicable. As people develop their improvement skills, they may find more creative ways to apply lean tools to benefit humanitarian operations. This review confirms findings of Rüttimann, et al. (2014, p.359) who say that adapted lean tools offer a huge improvement potential benefit for the service industry. Humanitarian NGOs provide services and can be therefore seen as a part of the service industry.

The applicability of lean thinking is found to be beneficial for any organization, regardless the sector. An organizational culture that promotes and lives continuous improvement automatically increases the performance of the organization by solving problems systematically, developing sustainable solutions, and continuously improving work processes.

8.3 Answer Research Question 3: How has it been deployed in Medair and other humanitarian NGOs?

The literature review and the tool assessment show that most lean tools are applicable and some are already successfully implemented in the humanitarian aid context. This means that lean tools are applicable to benefit humanitarian operations. Although not many humanitarian NGOs have thought to apply lean so far, and tool applications are limited, there is a high potential benefit for these organization.

The literature review in Section 4.1.1 shows that lean tools have been applied to humanitarian NGOs and showed success. WVI went one step further and implemented not only lean tools, but tried to build a lean culture in their East Africa section which achieved great results. Medair is the first humanitarian NGO that tries to implement lean organization-wide. As shown in Chapters 1 and 7, lean has been adapted to the humanitarian NGO context and is there called ‘Process Excellence’, which is an adaption of mostly lean and some parts of six sigma. The organization`s size makes it possible to implement lean throughout the whole organization with one expert. The first step of

Medair was to hire an expert in this field to teach employees about lean and process improvement. The expert created a four-stage model to implement lean in the organization.

The general idea is to develop problem solving skills in the employees and practice to improve the organization`s performance. This means teaching employees lean thinking and lean tools, and expecting them to apply them to improve processes, which begins to establish a lean culture (Parris, Thoughts on Lean in Humanitarian Aid, 2017), as discussed in Section 4.2.1. Although it uses the term different term ‘Process Excellence’, Medair still aims to develop a lean culture.

The author of this thesis had the opportunity to volunteer as assistant of the Process Excellence Manager, Andrew Parris, during the duration of this project. During the time at Medair, the author experienced Medair`s lean roll-out first hand and participated in the Green Belt training and Process Excellence Energizer Training. From personal experience the author can say that the initial stage of the lean implementation at Medair can be considered successful. The majority of employees was open to this initiative and welcomed the opportunity to learn about lean and process excellence. The WIMB challenge showed that people are already using the methods learned in the trainings. The initial stage was a success for Medair, but only the future will show if the organization will complete the full lean transformation.

8.3.1 Limitations

Due to the limited observation time of 5 months, only the early stages of the lean transformation at Medair could be observed and discussed in this paper. The future will show how Medair can overcome the sectorial obstacles of a successful lean transformation, identified in Section 3.3.3, such as funding issues and employee turnover. It will take years to be able to say if their lean transformation was successful. Further observation of this lean transformation is interesting for academic research, because it is the first organization-wide lean implementation with a permanently employed expert at a humanitarian NGO.

The author volunteered at Medair and had no experience in humanitarian aid before. Therefore, the objectivity of the assessment may be biased towards the experiences at Medair and the lack of reference of other NGOs. Still, the effort was to use many reliable sources to make the most possible objective assessment.

8.4 Recommendations for Medair

From the beginning of the Green Belt training the author experienced that people were welcoming to the idea of learning skills that will help them to improve their everyday work life. After the training, a group feeling among the Green Belt participants established that is very beneficial for the initiative and motivational for all members. The first steps of the initiative were successful, but to make the whole initiative a successful there is still a long way to go. The author gives the following suggestions to Medair which should help to transform successfully:

- Prioritize Lean or Process Excellence to be successful: Medair appears understaffed in all areas and people have to work very hard. So, it is hard for employees to see the benefit of stopping their usual work and improve processes to ease their work. From the author`s experience at Medair, lean has not been prioritized yet which slows down the transformation.

- Incentivize process improvement: Continuous work on process improvement has to be part of the work for every employee. It will be helpful to put process improvements in the annual employee performance assessment.

- Build lean leaders: There are existing leadership styles that Medair has agreed on before starting the lean initiative. The problem is now that lean comes along with a special leadership style. Now this lean leadership style has to be adopted to Medair. Leadership has been found to be the most important determinant of success in a lean transformation (Byrne, 2017 & Zarbo, 2012), as shown in Section 4.2.2. Medair already made a big step forward by committing to this initiative, but to make it successful the executive leaders and managers have to lead it. This has not yet been realized by all leaders. Table 4-2 shows how lean leaders differ from usual leaders. Developing lean leaders is of vital importance to

the lean initiative and leaders have to start internalizing lean thinking and be taught how to act as a lean leader.

- Organizational Structure: As shown in Figure 5-4, Medair has a clear functional structure in their Swiss HQ. A functional structure promotes employees to become specialists in their field (Gupta, 2009). Developing skills and knowledge requires time which is in conflict with the high staff turnover. Lean promotes generalists and team work and therefore works better in a cross-functional structure. One example of how this could cross-functional structure could look, is shown in Figure 8-1.

Because specialization is lower in cross-functional teams, it is easier to replace staff and responsibilities can be shared, so if a person leaves, it is easier for a new employee to step in. Silo thinking and bureaucracy is also reduced in this system (Gupta, 2009). This is in some way done at Medair, usually one person is specialized on one or two programmes, but employees` workplace is located in their functional department, for instance finance or logistics. This creates silo thinking and hinders communication throughout departments. This structure change means a major change for the organization, but has the chance to increase Medair`s performance and the success of the lean initiative.

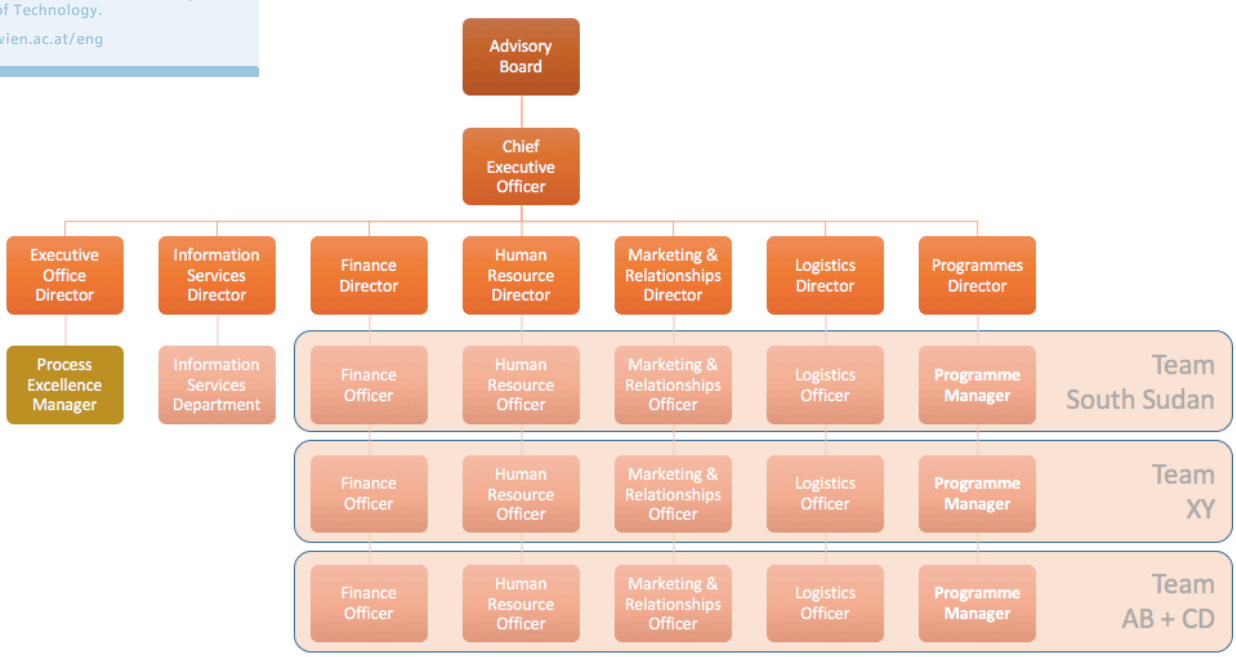

Figure 8-1: Possible Cross-functional Structure at Medair

Appendix

Process Excellence

Effective: Our processes are reliable and provide relief

- **Reliable**: *They consistently and safely deliver quality, valued outputs and impact*
- **Relief**: *They relieve or facilitate relieving human suffering for the most vulnerable communities*

Efficient: Our processes are simple, standard, timely and integrated

- **Simple**: *They are intuitive, clear, concise, visually organised, and easy to perform correctly*
- **Standard**: *They use defined, common workflows, tools, roles & responsibilities, policies, and expectations*
- **Timely**: *They flow smoothly (minimum hand-offs, delays, rework) to provide output when needed*
- **Integrated**: *They seamlessly integrate with other processes and into a larger, optimised system*

Appropriate: We respect all stakeholders, are flexible, and use appropriate technology

- **Respect**: *We honour all who are involved in or affected by our work, and their rights, values and beliefs*
- **Flexibility**: *We adapt to different contexts and respond easily to changing situations*
- **Technology**: *We use reliable technology that is appropriate to the purpose, user, and use environment*

Empowering: We make decisions locally, partner with stakeholders, and have needed capacity

- **Local Decisions**: *We make decisions transparently and as close to the action as possible*
- **Partnering**: *We work with stakeholders to increase capacity, teamwork, outputs, and impact*
- **Capacity**: *We have the people, tools, skills, knowledge, and work culture we need to achieve outputs and impact*

Continuously Improving: We are accountable, correct problems quickly, and apply learning

- **Accountability**: *We own, measure, report, review, and act on process performance, outputs, impact and feedback*
- **Correcting Problems Quickly**: *We make problems visible, promptly investigate them, and address root causes*
- **Learning**: *We reflect, and proactively develop, apply, and share learning, best practices, improvements and innovation*

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Appendix A: Process Excellence 1

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