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Influence of a bicycle on the perceived well-being of female students



A case study from rural Tanzania

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Front picture:

The 16-year-old Ahadi Mhina Amani is one of more than 1'300 female students who received a bicycle from the *Bike to School for Girls* program of *Velafrica* in Tanzania. Picture by: Chimwemwe Mkandawire, 2020.

Abstract

Title: Influence of a bicycle on the perceived well-being of female students. A case study from rural Tanzania.

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Education enables upward socioeconomic mobility and is a key to escaping poverty. While mayor progress has been made in the last decades, 263 million children and youth are still out of school - nearly a fifth of the global population in this age group (UNESCO, 2020). Girls are even less likely to receive an education, especially in low-income countries. The main reasons for them to drop out of school are the long distances to be travelled, the high poverty rate, and social norms (World Bank, 2018). Educating girls and promoting gender equality are key for the world to deliver on all the Sustainable Development Goals (SDGs). The aim of this thesis is to examine the impact of an intervention in the rural north of Tanzania, which aims to improve access to education by providing female students with a bicycle. Therefore, differences in quality of life between students with a bicycle and those without one are evaluated. Quality of life is assessed in terms of well-being, which is analyzed by operationalizing Amartya Sen's capability approach.

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Abbreviations

CCT = Conditional Cash Transfer

GDP = Gross Domestic Product

HDI = Human Development Index

IKT = In-Kind Transfer

IMT = Intermediate Means of Transport

NBS = National Bureau of Statistics

NGO = Non-Governmental Organization

SD = Sustainable Development

SDC = Swiss Agency for Development

SDG's = Sustainable Development Goals

TZS = Tanzanian Shilling

UN = United Nations

UNDP = United Nations Development Program

USD = US-Dollar

VBC = Vijana Bicycle Centre

1 Introduction

«I think it [the bicycle] has done more to emancipate women than any one thing in the world. I rejoice every time I see a woman ride by on a bike. It gives her a feeling of self-reliance and independence the moment she takes the seat; and away she goes, the picture of untrammelled womanhood».

Susan B. Anthony, 1896¹

Bicycles have been closely linked to the empowerment of women since their invention in the late 1800's. It enabled women to go to places without a driver, sparked the creation of less restrictive and more active clothing and changed the way women moved, felt and explored. It allowed European and American women to move independently, leave their homes and enjoy more liberty (Ostroff, 2018). Today, however, the struggle for the right to ride continues in other regions of the world. The bicycle can still be seen as a tool to bring freedom to women and girls, especially in lower income countries. In poor areas where distance is a challenge, the bicycle can be regarded as a reliable transportation mode and a tool to improve the lives of many and possibly even serving as a *freedom machine* (Leszek, 2015). The bicycle helps breaking down the transportation and safety barrier that keeps school children in general, but girls to an even greater extent, from accessing education. In rural villages in India, girls who were given bikes saw a 90 percent increase in school attendance (Muralidharan & Prakash, 2013). The bicycle also opens the door for better healthcare and more employment opportunities and therefore helps to move out of so called spatial poverty traps (Porter, 2007). Compared to walking, bicycles boost the carrying capacity fivefold and the distance covered fourfold, significantly reducing the time needed to get to and from schools, clinics and markets (Calvo, 1994; Porter, 2002). Bicycles are a simple, sustainable and appropriate tool to bridge the transportation gap between needs and resources empowering girls, families and communities. However, females are still substantially less likely than males to cycle for transport in countries with low bicycle transport mode share (Garrard et al., 2008). In certain countries, cycling is even forbidden for women, and the right to ride remains an everyday battle (Shearlaw, 2017).

1.1 Background

Today most people in the world still live in poverty: Two thirds of the world population live with less than ten dollars a day. Every tenth person even survives with less than two dollars a day, which is considered extreme poverty (Roser & Ortiz-Ospina, 2019). Reducing poverty is one of the main goals of the Agenda 2030 of the United Nations. In order to reach these ambitious goals education is required to empower people with the knowledge, skills and values to live in dignity, build their lives and contribute to their societies (United Nations, 2020). According to

¹ Susan B. Anthony was an American civil rights leader who played a pivotal role in the women's suffrage movement.

UN data 170 million people could be lifted out of poverty, if all students learned basic reading skills. However, many children have no or limited access to education, especially in rural areas of lower income countries. In these regions females still tend to be more restricted in accessing education than their male colleagues (UNESCO, 2018). Girls and women's lack of access to education not only creates barriers for their success, but also strongly affects society as a whole. Research on this topic revealed the linkage between fertility rates and the female educational level (Ainsworth et al., 1996) and there exists evidence that suggests an influence of girls educational attainment on their child-rearing practices and the health of the children (Kabeer, 2005). Further Porter (2007) claims that access to education is crucial to escape the poverty trap and has an impact on the whole family and even community. Women tend to spend more of the income they control in ways that benefit their children, improving nutrition, health and educational opportunities, as evidence from a range of countries shows (World Bank, 2012). Research also indicates that an increase in the female share of labour force participation results in faster economic growth, which can help countries move out of extreme poverty (Klasen & Lamanna, 2009).

Reducing the gender gap in school enrollment has been one of the main objectives of international education policy over the last decade and is part of the Sustainable Development Goals (SDG's) proposed by the United Nations (Muralidharan & Prakash, 2013). Considerable progress has been made in reducing the gender gap in primary education, but there are still significant differences in secondary education in lower income countries, with an increase in adolescents' years (UNESCO, 2012, 2018).

1.2 Objectives

After having introduced the problematic of a lack of access² to education and mobility³ for girls and women the objectives of this thesis will be presented. The main goal is to conduct an evaluation of the perceived change in well-being of female students which received a bicycle from the Swiss NGO *Velafrica* to reach secondary school. *Velafrica* is pursuing a holistic approach toward a long-term and durable access to bicycles and maintenance services in order to mobilize people in general and students in particular, in Sub Sahara Africa. They collect old bicycles in Switzerland, make them roadworthy again and ship them to their African partner organizations. The aim of *Velafrica* is to provide 6'000 more female students with a bicycle until the year 2023. Until the end of 2019 1'300 bicycles have been distributed. The success of the intervention will be evaluated by assessing the impact of bicycles on the quality of life and the aspirations of the female students. For this purpose, two specific research aims are

² Access or accessibility is defined as the perceived proximity of a desired location and is heavily influenced by the transport mode being used. Accessibility therefore depends on physical proximity and mobility (Bryceson et al., 2003).

³ Mobility is a measure of the agency with which people choose to move themselves or their goods around. Any analysis of mobility must take account of the factors influencing the choices of an individual agent (Bryceson et al., 2003).

presented: the first goal is to gain more detailed knowledge on the drivers and the barriers of the influence of a bicycle on the well-being of the female students in the remote region of Kagera, Tanzania. The second one, focusses on their aspirations and if they differ when they have a bicycle at hand. The aspirations are important to consider in the context of capabilities as they are seen as indicating what a person values in her or his life (Conradie & Robeyns, 2013). The third aim concerns only the theoretical part of this work and is intended to assess whether the inclusion of the aspect of aspirations can possibly contribute to the operationalization of the capability approach. The research aims and the according research questions will be presented more in detail in the next chapter. The knowledge to answer the research questions is gained through a survey with questionnaires, which is carried out with the female students who received a bicycle and those who did not receive a bicycle.

1.3 Relevance

Providing female students with bicycles to get to school is not only a cost-efficient intervention, but the bikes also constitutes a low carbon transportation mode suitable for rural region with little infrastructure (UN Environment Programme, 2019). Up to date there exist very few studies assessing the impact of bicycles on the lives of the rural population. Especially school children could possibly benefit from a bicycle as they have to cover large distances daily (Amoako-Sakyi & Owusu, 2012). Often the distance and the time cost to attend are very high, which leads to many children dropping out of school early. This trend affects girls to a greater extent than boys, as they are traditionally responsible for household chores and they face more challenges when having to walk for hours to school.

Yet, education is a fundamental prerequisite in order to tackle the intertwined issues of population growth, climate change and social disparities. The interlinking between human well-being and natural resources is deemed a fundamental comprehension in sustainability research. Sustainable Development (SD) is most prominently defined with respect to the needs of current and future generations. Meeting needs is intrinsically linked to well-being, which is the main driver for human action. According to Rauschmayer et al. (2011) capabilities are crucial to meeting needs, which in turn triggers well-being.

Sustainable Development can only be achieved through balancing economic, social and environmental considerations. The 2030 Agenda for Sustainable Development recognizes that «ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests» (United Nations, 2020). The intervention under consideration for this thesis has the potential to tackle various of these points.

As outlined in the previous section, reducing gender inequality is a major social justice concern and key to ending poverty. Ensuring equal access to education, rights, resources and opportunities is fundamental to human flourishing and just societies. In order to achieve the SDG's on a global level, it is inalienable to confront the challenges also at a local level. Therefore, the human development intervention *Bike to School for Girls* serves as the case study for the present thesis. However, a comprehensive analysis of the impact on the quality of life of the young women is still missing. The present study aims to close that gap.

1.4 Limitations

The present study does not seek to provide a comprehensive sustainability assessment of the *Bike to School for Girls* program. Nor is it the goal to conduct a complete evaluation of the quality of life of the young female students. The analysis of the quality of life is thus restricted to aspects that are influenced by the bicycle, aiming to reveal how the quality of life of women with and without a bicycle differ. Moreover, the scope of the present case study is limited to the rural area of Kagera in northern Tanzania. Therefore, the results cannot be generalized to other regions of SSA, as the local culture, norms and environmental conditions differ strongly.

1.5 Structure

After having introduced the topic of the thesis in this opening chapter, the following one will delineate the background of the study. For this purpose, on the basis of a literature review, the derivation of the research-guiding problem will be presented and then the research questions, the aims as well as the contributions of the study are specified.

In the third chapter, the context of the case study is outlined with special regard to the situation of female students in Tanzania. The background and conceptualization of the theoretical underpinning of the present work, the capability approach, is examined in the fourth chapter. This includes clarifying the relevance of the framework for measuring well-being in the context of human development interventions and the potential challenges associated with it. The capability approach is extended with the aspect of aspiration in order to get a broader view of the value of women in their lives.

Chapter five describes the methodological approach to data collection and analysis. Possible biases are identified that could affect this process and ultimately the results. The empirical and theoretical results are summarized in chapters 6 and 7, structured by answering the three main research questions and their sub-questions. Subsequently, the results are discussed and put into context in the eighth chapter. A conclusion and an outlook including possibilities for further research round off the work.

2 Derivation of the Problem

To end poverty in all its forms everywhere and for all people, is the first and one of the most challenging goals defined by the 2030 Agenda for Sustainable Development (United Nations, 2016). Remarkable progress has been made in the last 25 years, the amount of people living in extreme poverty has dropped from 1.9 billion in 1990 to 735 million in 2015 (United Nations, 2018). However, due to global crises such as COVID-19 or climate change and because it is becoming increasingly difficult to reach those remaining in extreme poverty⁴, reduction may not be fast enough to achieve the goal by 2030 (World Bank, 2020b). Understanding how poverty affects individuals in different ways is crucial to achieving welfare and well-being objectives (Boudet et al., 2018). According to the World Bank the majority of the global poor live in rural areas and are poorly educated, employed in the agricultural sector, and under 18 years of age. Being poor has an impact on various areas and limits the possibilities of a person to thrive in life (Chant, 2010). People who live in extreme poverty lack both income and assets and typically suffer from interrelated, chronic deprivations, including hunger and malnutrition, poor health, limited access to education, and marginalization or social exclusion (Bird et al., 2002).

2.1 Gender Inequality and Poverty

A key area of concern is the extent to which women and men face different levels of poverty and different barriers to poverty reduction (Chant, 2010). Yet existing data make it hard to have a clear picture of the true gender⁵ dimensions of poverty. In general poverty is measured at the household level, meaning that if a household lives in extreme poverty, it is assumed that everyone under the same roof lives with the same level of deprivation. However, both evidence and common sense suggest that this is rarely the case: women, children, people with disabilities and the elderly often receive smaller portions of food or have less invested in their education or health (Boudet et al., 2018). Furthermore, women face greater burdens of unpaid work (Antonopoulos & Hirway, 2010), own fewer assets and productive resources than men (Deere & Doss, 2006; Quisumbing, 1996), are often exposed to gender-based violence (Heise et al., 2002), and are more likely to be forced into early marriage (Efevbera et al., 2017) — all factors that reduce their ability to fully participate in the economy and to reap the benefits of growth. Additionally, discrepancies in cultural gender norms, the domestic distribution of wealth and power relations drive these disparities (Jayachandran, 2015).

⁴ The extreme poor often live in fragile countries and remote areas (World Bank, 2020b).

⁵ Gender in this thesis refers to the definition of gender by Ferber and Nelson (1993, pp. 9–10) which states: «gender is the social meaning that is given to biological differences between the sexes; it refers to social constructs rather than to biological givens».

According to Marta Nussbaum (2000) gender inequality not only poses an enormous justice problem, but the denial of opportunities to women hampers severely the productivity of many nations and, thus represent also a development problem. A nuanced understanding of the role gender plays in efforts to end extreme poverty can lead to better results and help to reveal barriers for poverty reduction (Boudet et al., 2018). When women are empowered and their productivity increases, the benefits are amplified across families and generations. Evidence from a range of countries shows that relative to men, women spend more of the income they control in ways that benefit their children, improving nutrition, health and educational opportunities (Anderson et al., 2020; Duflo, 2012). Research also indicates that an increase in the female share of labor force participation results in faster economic growth (Klasen & Lamanna, 2009), which can help countries move out of extreme poverty. While some level of gender inequality persists in all regions of the globe, these inequalities are particularly pronounced in low income countries (Jayachandran, 2015).

Poverty rates are the highest among children⁶, particularly among girls. For every 100 boys there are 105 girls living in extremely poor households. As they grow older, the gender gap widens further: women between 25 and 34 have a 20 percent higher chance to live in a poor household than men. The gender differences in poverty rates even out between the ages of 40 and 65 but reappear in the older years. This can only partially be explained by the fact that marriage, divorce, separation and widowhood affect poverty of men and women differently. The term *poverty penalty* is referring to the unexplained gender differences, which disproportionately affect young women and girls up to the age of 30 (Boudet et al., 2018).

According to a report published by UN Women in September 2020 the COVID-19 crisis will dramatically increase the poverty rate for women and widen the gap between men and women who live in poverty. Women of reproductive age will be particularly affected, as they earn lower wages and therefore can save less, have more uncertain jobs and take on most of the responsibility for caring for the family (UN Women, 2020), a point that shall be further elaborated in the next sections.

2.1.1 Special Consideration of Sub-Saharan Africa

Sub-Saharan Africa is home to most of the global extreme poor and has the largest gender poverty gap. Low incomes, illiteracy and innumeracy, geographical isolation, and limited mobility all restrict women's ability to escape poverty (McFerson, 2010). Agriculture accounts for roughly 15 percent of the GDP in African countries (World Bank, 2020a) and half of its employment, and it is here that the gender disparity is most evident (OECD & FAO, 2016). Rural women and girls are responsible for fetching water, fuel and fodder and for most of the work

⁶ Children account for 44 percent of the global extreme poor according to the World Bank (2020).

of carrying produce to markets. Environmental degradation has forced them to walk further and spend more time, and the occurrence of civil conflict aggravates the situation tremendously, by adding the fear and insecurity linked to the high incidence of rape by combatants from all sides (McFerson, 2010).

2.1.2 The Link between Gender and Time

When talking about poverty and females time plays a crucial role, as women spend disproportionately more time on unpaid care work than men. On account of gendered social norms that view unpaid care work as a female prerogative, women across different regions, socio-economic classes and cultures spend an important part of their day on meeting the expectations of their domestic and reproductive roles (McFerson, 2010). This is in addition to their paid activities, thus creating the *double burden* of work for women. The unequal distribution of unpaid care work between women and men represents an infringement of women's rights (UN, 2013) and also a brake on their economic empowerment (Ferrant et al., 2014).

Blackden and Wodon (2006, p. 17) identify the main links between time and poverty as follows:

«First, low-productivity in many non-market tasks renders them time- and labor-intensive, thus reducing the availability of time to participate in more economically productive activities. Second, due to the gendered division of labor that causes poor substitutability of labor allocation in non-market work, individuals, particularly women, are unable to take full advantage of economic opportunities and participate in income-generating activities. Third, time poverty also impedes individuals' ability to expand capabilities through education and skills development, thereby enhancing economic returns in the marketplace».

2.2 Breaking the Cycle of Poverty

As poverty is highly correlated with many negative aspects of living standards, reducing it can have a positive impact on the lives of millions of people around the world (Hipsher, 2013). As elucidated in the previous section the majority of the global poor live in rural regions of sub-Saharan Africa and are below the age of 18. In the following paragraph measures to break the cycle of poverty will be discussed. Special consideration will be placed on the situation of young females living in rural areas of SSA, as they are the subject of this case study and are particularly affected by the lack of access to education, health and markets (Porter, 2007).

2.2.1 Spatial Poverty Traps

Lack of basic infrastructure, like a road or a bridge, and limited access to transport services makes it difficult for the rural population to access markets and services and therefore to overcome poverty (Starkey & Hine, 2014). Porter (2007) refers to this phenomenon as a *spatial poverty trap*. According to her, access to education and health have important implications not

only in terms of immediate health and educational outcomes, but also for the subsequent livelihood opportunities and life chances. Furthermore, there is strong evidence that rural isolation is associated with low agricultural productivity, combined with poor market access. In addition, it is linked with poor health (e.g., unnecessarily high perinatal mortality) and low school enrollment rate. Moreover, rural isolation can imprison the elderly and people with disabilities (Starkey & Hine, 2014). Also, girl children and women in sub-Saharan Africa tend to be more restricted in their mobility than their male fellows; this tendency being particularly evident in regions with strong culturally imposed constraints on females (Porter, 2007). Females generally have less resources at hand to pay bus fares, even if transport were available, and given their lower purchasing power, sometimes coupled with cultural constraints, women are also far less likely to own a bicycle or other intermediate means of transport (IMT). Additionally, women are commonly expected to carry goods, like water, wood and harvested crops on their heads. They have the most burdensome and time-consuming tasks, but have less access to the means of travelling (Porter, 2002). These restraints and broader transport failures contribute to the maintenance of inter-generational cycles of poverty.

Following Hanson (2010) the empowering aspect of mobility is straightforward; it comes from seeing mobility as a means of access to opportunity, enabling people to get to the places, the destinations (schools, jobs, hospitals, stores, parks) where they want or need to go. Mandel's (2004) study of women traders in Benin provides clear evidence of the empowering benefits of mobility; she found a strong relationship between a women's physical mobility and her livelihood, with women able to travel having higher incomes, being more independent and enjoying greater autonomy.

Altogether, it can be said that women living in less accessible and remote areas are affected at various levels by their lack of adequate transport facilities, above all, in terms of educational level, health status and economic opportunities. The linkages between these factors can be mutually reinforcing, further deepening patterns of disadvantage and promoting the intergenerational transfer of poverty (Porter, 2007). Subsequently, the role of access to education will be further explored before moving on to identify interventions that can bring about positive changes for women and their daughters.

2.2.2 Access to Education

In sub-Saharan Africa access to education is hampered by many factors: Long distance to school and lack of adequate, safe and affordable modes of transport are two obstacles identified in various studies (Muralidharan & Prakash, 2013; World Bank, 2018). Many children have to wake up early in the dark and take a long walk to reach school. For girls the situation is even more difficult as they face different challenges on their way to school (Martínez, 2017).

Although transport failures play a significant role as a barrier to access education in some areas and for some women and girls, a more pervasive and fundamental issue is that of the gendered division of labour and associated time-poverty experienced by females. Girls living in less accessible areas often drop out of formal education not simply because school is too far away and transport is costly or inadequate, but because the work required for them before they leave for school is particularly onerous and time-consuming. This creates pressure, which is exacerbated by a long and sometimes hazardous journey to school and the fear of punishment for late arrival. Furthermore, some report that they are afraid of becoming victims of crime or harassment when walking to school (Martínez, 2017). Exhaustion as a combined result of heavy pre-school work duties and a long journey to school are also likely to reduce their ability to concentrate once they arrive in class (Porter, 2007).

The potential of these girls to contribute to the future of this region is at stake. The loss of talents, skills and ambitions through educational neglect for schoolchildren in general is a serious waste for the individual, the family and society. Identifying cost-effective and adaptable strategies to increase girls' enrollment and completion rates in lower income countries is therefore of high political interest (Muralidharan & Prakash, 2013), an issue that shall be delved into further in the next chapter.

2.2.3 Initiatives to Improve Access to Education

Interventions to strengthen the educational attainment of girls in lower income countries have focused both on increasing the immediate benefits of schooling for families and on reducing the costs of attending school. Probably the best-known type of intervention are conditional cash transfers (CCTs) to households to keep girls in school. The CCT's have shown good results raising levels of girls' school enrollment and attainment, but are not a cost-efficient solution (Fiszbein et al., 2009). Another common policy measure is to improve access to school by building more schools, thereby reducing the distance travelled and the transport costs (Muralidharan & Prakash, 2013). This form of intervention, however, is very costly and hardly feasible in rural regions with low population density. To overcome the barrier of long distance various studies propose the use of bicycles to ensure access to school for every child (Muralidharan & Prakash, 2013; Porter, 2007; Råber, 2014b; World Bank, 2018). This type of in-kind transfer (IKT) program has various benefits compared to the CCT's: As there is no money transferred, less misuse and less corruption are reported, further women and girls are less vulnerable in this context and the intervention is cost-efficient (Ghatak et al., 2013). The bicycles may have an important role to play in filling the transport gap where conventional motorised services are poor. The results of a study conducted in rural India which provided female secondary students with a bicycle for free seem very promising. The program increased school

enrollment by 32 percent and helped reducing the gender gap by 40 percent. The authors (Muralidharan & Prakash, 2013, p. 325) conclude that:

«The large positive effects of the Cycle program on increasing female secondary school enrollment and in reducing the gender gap, its relative ease of implementation, its cost effectiveness, and its high visibility and political popularity suggest that this may be a promising policy option to boost female secondary school enrollment in other developing country settings as well».

Porter (2007), however, points out that, despite their promises, these interventions cannot address the more fundamental problems of restricted mobility associated with gender inequality and time poverty still experienced by most women in SSA. Another point to consider is that ownership and use of IMT's is still widely male dominated as a result of economic and socio-cultural factors. A study from southern Ghana, in which women were offered cycles on credit, emphasized how girls' mobility can be restricted even in the absence of cultural prohibitions. Women who received bicycles as part of the research project did not ride them themselves, but instead lent them to their husbands and sons. Since these women had not learned to ride a bicycle in their youth, most of them were extremely reluctant to learn as adults. The daughters' access to cycling was limited mainly by household duties, which meant that they never had time to learn how to ride a bicycle. Therefore, usually only boys travelled to school by bicycle (Porter et al., 2008). However, in other parts of rural Africa women cycling are becoming increasingly common. In this context the concept of a critical mass of girls and women using the bicycle as their main mode of transport is crucial. Only then will repair facilities and spare parts be easier to find, and any existing cultural inhibitions may gradually disappear (Porter, 2002, 2007).

2.3 Derivation of the Research Questions

So far in this chapter the problem guiding the present thesis was derived. The aim of the present research is to help understanding the impact of providing bicycles to adolescent girls. The program is specifically tailored to young women, as previous research has shown that they are severely affected by poverty and often lack access to education in SSA. For this thesis special emphasis will be put on access to education, as it can be seen as a prerequisite for improving life conditions in lower income countries.

2.3.1 Research Gap

Although cycling has proven to be a cost-effective means of transport in rural areas it is yet to be exploited to overcome the mobility constraints (Amoako-Sakyi & Owusu, 2012). Especially, female cycling is still a controversial topic in some parts of the world. In this regard, the inter-

vention *Bike to School for Girls* tries to improve access to education by providing female students with bicycles. While *Velafrica* has conducted previous research on the topic, the effects on the comprehensive well-being of the females are yet to be discovered. Additionally, possible barriers that may reduce the positive impacts of the intervention were not yet analysed in detail. Furthermore, this study is the first to compare data from female students with bicycles with data from those who do not have one.

2.3.2 Research Aims

The overall aim of the planned thesis is to conduct a quantitative and mainly theory driven research with the goal to deepen knowledge about the intervention *Bike to School for Girls*. The intervention aims to have a long-term, stabilizing and improving influence on the lives of female students by providing them with bicycles. The success of the intervention will be evaluated by assessing the impact of having a bike on the quality of life and the aspirations of the female students. For this purpose, three specific research aims are delineated:

The first aim is to get more detailed knowledge on the drivers and the barriers for the use of a bicycle in the remote regions of Tanzania. Furthermore, this study investigates on how quality of life in terms of well-being differ between the females with a bicycle and the ones without. This knowledge will be gained through a survey with questionnaire.

The second research aim focusses on the female's aspirations in life and if they are different with a bicycle at hand. The author of this thesis included this aspect in order to gain more insight into what the female students' value in their lives and to be able to properly analyze the data with regard to their well-being. As argued by Bernard & Taffesse (2012, p.1), «in the absence of information regarding why and how people make their choices, one is left to assume a particular type of preferences, expectations, or both when analyzing data».

A third aim only concerns the theoretical part of the present thesis. The theoretical framework was extended with aspirations and is intended to assess whether the inclusion of the aspect of aspirations can possibly contribute to the operationalization of the capability approach. As Hart (2016) argues, aspirations are important to consider in the context of the capability approach and the assessment of well-being, as they can be seen as forerunners to many capabilities. Aspirations widen the scope of understanding what an individual has reason to value (Hart, 2016).

2.3.3 Research Questions

For the empirical study, two overall research questions and two specific research questions were deduced according to the presented research aims. Furthermore, a third research question, which only refers to the theoretical part of this thesis, is presented.

The first main research questions guiding this research is divided into two sub-questions:

1.) In what respect does owning a bicycle affect the quality of life of female students in rural northern Tanzania in terms of well-being?

1A.) What are the drives for the improvement of the quality of life with a bicycle?

1B.) What are the barriers for the change in quality of life by using a bicycle for female students?

The second main research question is:

2.) How do aspirations from female students with a bicycle differ from those without one?

The third research question regarding the theoretical part of the thesis is:

3.) Can information on an individual's aspirations help in operationalizing the capability approach?

Before the results are presented and the research questions are answered in chapter 6, the context of the case study is first outlined in the next part. In a subsequent step, the theoretical framework and its implementation for the case study will be introduced, followed by a description of the applied methodology.

2.3.4 Contributions of the Present Study

The present study contributes to three main aspects. First and most important it aims at assessing the change in well-being of a development intervention addressed at improving the quality of life of young female students in rural regions of sub-Saharan Africa (SSA). To date there are only a few studies that examine the impact of bicycles on the lives of the rural population. This research will investigate possible drivers and barriers and, therefore, help to improve the project studied or further develop it in other regions in SSA.

In the second place the present thesis makes a contribution to the rural society in Tanzania, especially to its girls and women who bear a great responsibility for their families, communities and society. Too often their struggles and hardship are forgotten, and their work is not enough appreciated. The study shall be a homage to the young women and their ceaseless struggle for education.

Thirdly, this study adds to the efforts to operationalize the capability approach for the assessment of sustainability-related topics. Furthermore, the capability approach will be extended with the aspect of aspirations. The operationalization of the extended and adjusted framework gave rise to the questionnaire, which is expected to provide information about the well-being of the female students in rural Tanzania. The analysis and the interpretation of the collected data shall render a feedback on the general validity of the framework for further exploration in the field of well-being assessments.

3 Presenting the Case

For a better contextualization of the findings and results, the author considers it justified and essential to devote the following paragraphs to the context of the case study. Firstly, some general information about Tanzania is presented, secondly the obstacles that specifically affect women in the east African country shall be outlined, before, in a third step the current challenges in the education sector relevant for this study are discussed. Lastly, the development intervention under consideration, the *Bike to School for Girls* Program of the Swiss NGO *Velafrica* is introduced.

3.1 General Information about Tanzania

The United Republic of Tanzania dates formally from 1964, when it was formed out of the union of the mainland territory of Tanganyika and the coastal archipelago of Zanzibar. The name Tanzania is a blend of Tanganyika and Zanzibar. Tanganyika was part of German East Africa, before it was governed by Britain after the first World War. Today Tanzania is still part of the Commonwealth of Nations (CIA The World Factbook, 2020). Being located in eastern Africa within the Great Lakes region, the country shares its borders with Burundi, Democratic Republic of the Congo, Kenya, Malawi, Mozambique, Rwanda, Uganda and Zambia (Figure 1). Dodoma is the capital and Dar es Salaam is the major commercial city of the east African country. Official currency is the Tanzanian Shilling (TZS) and the national language is Kiswahili, but English is also widely used (Brock-Utne & Holmarsdottir, 2004). In the last 50 years the population has increased more than four times from 12.3 million in 1967 to 54.2 million in 2018 (National Bureau of Statistics, 2019).

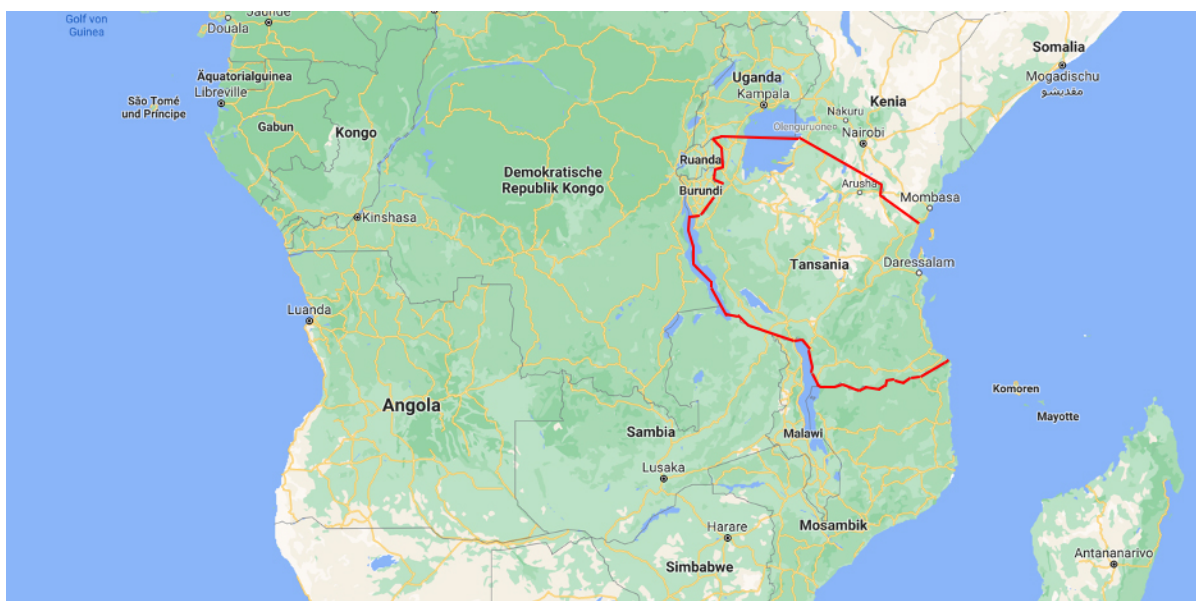


Figure 1: Map of Tanzania and neighboring countries. Source: Google Maps (2020)

Average life expectancy at birth is 65 years, the number of school years an average Tanzanian completes add up to six years and adult literacy reaches roughly 70 percent (UNDP, 2019b). Total fertility rate is according to the government 5.5 children per women, however, there exist big differences between the urban and the rural population. A woman living in an urban context has on average 3.8 children, while a woman in a rural region has six children. Furthermore, the fertility is negatively associated with the educational attainment of the mother (National Bureau of Statistics, 2015).

The African country benefits from political stability and has been experiencing solid economic growth for the last two decades. However, it has still low income and human development indicators and one third of Tanzanians continue to live in poverty. Tanzania ranks 159 out of 189 in the Human Development Index (HDI) that includes data on a long and healthy life, knowledge and a decent standard of living (UNDP, 2019c). While the poverty rate in the country has declined, the absolute number of poor has not because of the high population growth rate. Government efforts to expand access to social services such as education, health, and water have been undermined by their declining quality as the population is growing faster than the supply of the services (World Bank, 2019a). The problem is even more pronounced in rural areas, where two third of the Tanzanian population live. Agriculture is the largest employment sector in Tanzania, with the vast majority of rural women and men employed in it, predominantly as self-employed on their own farms. The agricultural sector generates 25 percent of the GDP, employs about 88 percent of the working population and accounts for roughly two thirds of exports (FAO, 2014). Women play an essential role in agricultural production. With 52 percent, women constitute the majority of the workforce in agriculture (Palacios-Lopez et al., 2017). Gender disparities in this sector are, however, still very pronounced.

3.2 Gender Inequality in Tanzania

An FAO report (2014) identified persisting gender inequalities in Tanzania, particularly in terms of access to productive resources, income generation and employment opportunities, time use patterns and educational possibilities. Especially in agriculture, Tanzania's main sector of employment, the gender discrimination is prevalent: Nearly three-quarters of all landholders are men and when women are owners, they tend to have smaller plots. They own less livestock than men and have more restricted access to new technologies, training, vocational education, credit and other financial services. In addition, self-employed women in agriculture are more likely to use their land for subsistence farming than for commercial farming. While more women than men are employed as casual workers, the average wage for women is almost three times lower than for men. Without this discrimination, their productivity would increase substantially. A study commissioned by UN Women (2015) found that by closing the gender gap in agricultural productivity more than 100 Million USD could be gained. An older study by Quisumbing

(1996) found that crop yields can increase by about 20 percent when rural women obtain the same education, experience, and farm inputs as the average male farmer. Thus, redressing gender discrimination would not only empower women and improving the development outcomes of the next generation, but also alleviate rural poverty and help to increase Africa's food supply, a key objective on the agenda of African and international policymakers (Palacios-Lopez et al., 2017).

World Bank (2019b) data reveals that compared to other East and Southern African countries, adolescent girls in Tanzania have relatively high rates of child marriage and early childbearing as well as low educational attainment. Limited education as well as early marriage and pregnancy affect girls' life trajectories in numerous ways. Girls who marry or drop out of school early are more likely to have poor health, larger families, and earn less as adults. All of these factors make it more likely that their households will suffer from poverty (Joshi & Gaddis, 2015). Other problems are a higher risk of intimate partner violence and a lack of decision-making power within the household. Fundamentally, girls who marry or have children at an early age or who drop out of school early are disempowered in ways that deprive them of their basic rights (World Bank, 2019b). In turn, this has a negative impact on their children, creating a cycle that spirals down through generations.

3.3 Education in Tanzania

With one of the world's largest young populations, 44 percent are under the age of 15, Tanzania faces enormous challenges in guaranteeing basic services for all (National Bureau of Statistics, 2019). Education, however, has been a national priority for successive governments since independence. The abolition of school fees is one of the most important actions taken by the government to implement its ambitious education goals. Tanzania is aiming to become a middle-income country by 2025 and its economic and social progress depends in part on empowering and educating its young people with skills necessary to take forward this nationwide goal. School in Tanzania consists of three main levels, which are primary, secondary and tertiary education. Secondary school consists of two levels: ordinary level⁷ (lower secondary) which takes four years to finish and advanced level, which takes two years. Enrolling at university or college level requires the completion of the advanced level of higher secondary school (Joshi & Gaddis, 2015). However, for many children education ends after primary school: only every second Tanzanian teenager is still enrolled in school⁸. And not all enrolled students graduate: the completion rate of lower secondary education for females is 27 percent, which is lower than for males with 31 percent. The numbers drop drastically for the upper

⁷ When mentioning secondary school in this thesis it is referred to lower secondary school.

⁸ The official age for children in secondary schools in Tanzania is 14–19 years. However, the actual age of most secondary school goers in Tanzania is 13–21 years (Joshi & Gaddis, 2015)

secondary school, in which completion rate for girls is only seven percent, whereas for boys it is ten percent (UNESCO Institute for Statistics, 2020). According to estimates of the Tanzanian government, a total of 5.1 million children between the ages of 7 and 17 do not attend school, including almost 1.5 million in lower secondary education (National Bureau of Statistics, 2019).

3.3.1 Barriers to Education in Tanzania

The main obstacles to quality education for the Tanzanian youth, identified in a report commissioned by *Human Rights Watch* are that many students still face significant financial barriers, that infrastructure is poor and transportation to schools is inadequate. Additionally, the quality of secondary education is poor, and the abolition of school fees has left significant gaps in school budgets (Martínez, 2017). Also instead of going to school, many children resort to child labour to supplement their family's income (International Labour Organization & Bureau of Statistics, 2016). The following sections outline the obstacles that stand in the way of successfully staying in school and graduating.

Distance and Inadequate Transportation

Many children have to cover long distances to reach school, leaving their homes early in the morning, thus impacting on their attendance and academic performance. Proximity of the school is an important factor in the decision to enroll, given the safety concerns of girls and their parents. Tanzania has primary schools in every ward with a mean distance of 2.9 kilometres. The average distance to secondary schools, however, is more than six kilometres (Joshi & Gaddis, 2015). Children who arrive late are often punished by their teachers for not complying with the school's regulations. As part of a government measure to improve transportation for schoolchildren, private drivers are required to charge students a reduced fare. However, bus owners do not receive any subsidies or compensation for students' discounted fares. As a result, bus drivers sometimes refuse to stop to pick up school children and even physically abuse and insult the students (Martínez, 2017).

Extreme Poverty

According to government estimates three quarter of all Tanzanian children live in multidimensional poverty⁹, one third even lives in households below the monetary poverty line (National Bureau of Statistics & UNICEF, 2016). Extreme poverty has a direct impact on education: For the poorest 20 percent of the population, the enrollment rate for primary school is thirty percent lower than for the rest. Children from the most deprived households are exposed to the consequences of poverty, which inevitably affect their education. Economic hardship and high

⁹ Multidimensional poverty is defined by a combination of indicators of monetary well-being, children's well-being, and living standards.

deprivation force many children into child labour, often under exploitative and dangerous conditions. In total 4.2 million, about one third of the children between the ages of 5 and 17 are involved in child labour (International Labour Organization & Bureau of Statistics, 2016). Among the most vulnerable children are an estimated 3 million orphans, many of which have lost one parent to HIV/AIDS (Makuu, 2019).

Accessing Higher Education

The abolition of school fees by the Tanzanian government has removed one of the biggest barriers to children's access to secondary education. But a number of other barriers still prevent many students from accessing higher education or limit their opportunities to do so. These include financial barriers that affect students from very poor families, the long distances that many have to travel to reach secondary school, and an entry exam that cannot be repeated and forces children to drop out of school (Martínez, 2017). Another difficulty concerns the language. While Kiswahili is the language of instruction in primary school (Du Plessis & Tibategeza, 2010), policy allows the dual use of Kiswahili and English in secondary schools. Secondary school exams, however, are still conducted in English. Moreover, many secondary schools only allow the use of English, which for most of the students is a new language. In the transition from Kiswahili to English, students are not sufficiently supported (Martínez, 2017). At the university, the primary language of instruction is English as well. Only very few students, however, continue their studies at the university, with the rural student population having less probability than the urban one. Overall, three percent of students are enrolled in tertiary education, while male students are almost twice as likely to attend university than their female colleagues (UNESCO, 2020b).

3.3.2 Additional Barriers for Female Students

In Tanzania, girls and young women face disproportionately worse outcomes in education. For example, while the share of girls enrolled in primary school is slightly higher than boys, in secondary school female students are much less likely to still be in school. In the lower secondary level females constitute 45 percent of the student population, declining further to 35 percent at the upper secondary level (Joshi & Gaddis, 2015). One reason for this is teenage marriage, which is still common in Tanzania. Roughly two out of five girls marry before they turn 18 and thousands of adolescent girls drop out of school because of pregnancy. Government policies specifically discriminate female students, enabling school officials to expel pregnant and married girls. Many schools force female students to undergo pregnancy testing in school and expel them when they find out they are pregnant (Maluli & Bali, 2014). Another policy allows school officials to subject students to corporal punishment that can take brutal and humiliating forms (Martínez, 2017). These policies deliberately facilitate discrimination and

abuse and stand in sharp contrast to the efforts to provide universal education. Yet this only partially explains why less than one-third of girls entering lower secondary education complete it. A report commissioned by the World Bank revealed other failures in the Tanzanian education system: Girls lack access to adequate sanitation facilities, a particular problem for menstrual hygiene and often miss school during their monthly period. They are often exposed to sexual harassment by teachers or on their way to school. Many times school officials do not report cases of sexual abuse to the police, and many institutions even lack a confidential mechanism to report it (Joshi & Gaddis, 2015). On their long way to school the girls face sexual exploitation and abuse by bus drivers and adults who ask them for sex in exchange for gifts, rides, or money (Martínez, 2017). Once out, girls struggle to get back into education because of discrimination and stigma against adolescent mothers, financial challenges, and the absence of a re-admission policy for young mothers (Maluli & Bali, 2014).

3.4 Bike to School for Girls

As a response to all those problems mentioned in the previous section, *Velafrica* launched the human development intervention¹⁰ *Bike to School for Girls* almost ten years ago in rural Tanzania together with the local partner organization *Vijana Bicycle Centre (VBC)*. Initially, only a few bicycles were distributed to female students who had to cover long distances to school. In the last years the program was growing and in 2019 a total of 1'300 bicycles were given to female students at special conditions, either for free or for a reduced price. The intervention is partially financed by the *Swiss Agency for Development and Cooperation (SDC)*.

According to *Velafrica* the primary objective of the program is to improve the access to bicycles for female students. A bicycle will support girls to reach school faster and safer. The program also includes a pilot for some form of maintenance or repair services, in order to guarantee the durability and long-term use of the bikes. Therefore, a mechanic from *VBC* regularly passes by at the schools and repairs the bicycles if necessary.

The bicycles were distributed in three regions in rural Tanzania: In the northern regions of Kagera, Shinyanga and Arusha/Kilimanjaro. However, the scope of the present study is limited to the case of the economically poor and rural region of Kagera. *VBC*, the local partner organization of *Velafrica* in Nshamba, distributes the bicycles to female secondary school students in the surrounding villages. The students are chosen according to the distance they have to travel to school and the grade they are enrolled in. They then get a reduction on the bicycle of TZS 90'000 and therefore the price they have to pay is TSZ 60'000 (about CHF 25). Among

¹⁰ Human development interventions are characterized by their aim of capability enhancement, while they also aim for strengthening other important human values, such as democracy and people's agency. In general they are result-oriented actions aimed at improving people's quality of life (Conradie & Robeyns, 2013).

the 1'300 students, a hundred girls from low-income households in rural Kagera received a free bicycle.

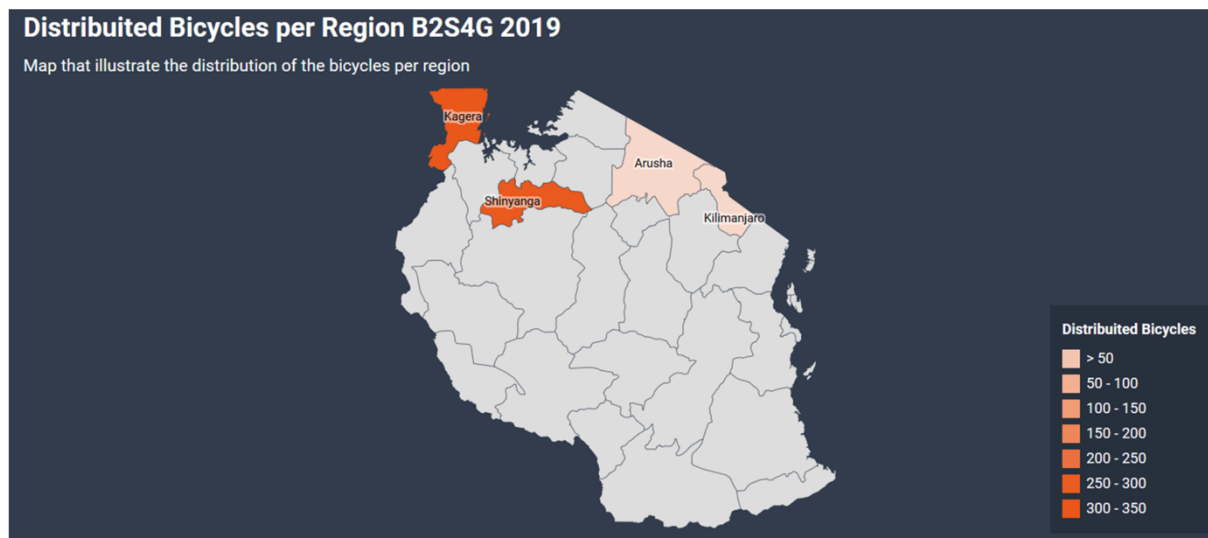


Figure 2: Map of distributed bicycles per Region. Source: Velafrica (2020)

For the present study 83 female students who received a bicycle in 2019 with a discount and 24 that got one for free, were included in the survey¹¹. The goal was to measure the outcomes of the intervention after one year. Two other shorter surveys were conducted by *Velafrica* three and six months after implementation.

Velafrica has set up *Bike to School Programs* in other countries of SSA (Madagascar and South Africa) and other regions in Tanzania. The results of this case study, however, are limited to the regional context of the Kagera region. The findings are therefore not generalizable to another cultural and environmental context. Nevertheless, they can contribute to *Velafrica's* goal of equipping 6,000 more female students in rural Tanzania with bicycles.

¹¹ See appendix for more details.

4 Theoretical Background

Given now the context as well as the aims guiding the present study, this chapter will deal with the elaboration of the theoretical underpinning which frames the assessment of the perceived impact of bicycles on the well-being of female students in rural Tanzania. The capability approach elaborated by the Indian philosopher and economist Amartya Sen will be used as a general theoretical framework. After an introduction to the core concepts of the capability approach, its strengths and shortcomings shall be discussed in the following paragraph. However, some changes were necessary to adapt the framework to the present study. A stepwise approximation to the final theoretical framework shall allow a better and detailed understanding of why the adjustments were made.

4.1 The Capability Approach

The capability approach is a philosophical and economic theory put forward by Amartya Sen in the 1980s. It has more recently been significantly further developed by the philosopher Martha Nussbaum and a growing number of other scholars (Robeyns, 2005). The approach brings together a range of ideas that were previously excluded from or inadequately formulated in traditional approaches to the economics of welfare (Robeyns, 2000). At the core of the capability approach is what the individual can do, i.e., what she or he is capable of doing. Sen shifted the emphasis from the means (such as having income to buy food) to the ends (being well-nourished). Having noted that there is a wide range of conditions (including being fed, healthy, clothed, educated) that together make up well-being (Sumner, 2004). Further the capability approach is a normative framework for the evaluation and assessment of individual well-being, social arrangements and policies concerned with social change. It has been employed extensively in the context of human development, for example, in the Human Development Index (HDI) of the United Nations Development Programme, as a broader, deeper alternative to narrowly economic metrics such as growth in GDP per capita (Fukuda-Parr, 2003). Hence, poverty is understood as deprivation of the capabilities to live a good life, and development is seen as capability expansion (UNDP, 2019a). It is, however, important to recognize that the capability approach contributes to these areas by conceptualizing and evaluating poverty, rather than by explaining its existence (Robeyns, 2005).

4.1.1 The Core Concepts of the Capability Approach

The capability approach puts a strong focus on the quality of life an individual can possibly achieve. So called functionings, capabilities, freedom and agency are the key concepts of this theoretical framework. The concepts are closely related and shall be briefly explained subse-

quently. Functionings are what a person «manages to do or be» (Sen, 1985, p. 10) and includes achievements such as being well-fed, being healthy, not suffering from lack of self-esteem, participating in social life, and so on. The capabilities of an individual reflect the different functionings she or he may achieve (Robeyns, 2000). Put differently, capabilities include the idea of freedom and correspond to real opportunities to live the life one has reasons to choose and to value. Or as Sen puts it: «A functioning is an achievement, whereas a capability is the ability to achieve. Functionings are, in a sense, more directly related to living conditions, since they are different aspects of living conditions. Capabilities, in contrast, are notions of freedom, in the positive sense: what real opportunities you have regarding the life you may lead» (1987, p. 36).

The freedom is dependent on the social environment and the possibilities of change. Sen uses the term of *conversion factors* to refer to this variability in the conversion of goods or resources into functionings and skills. He mentions various types, which can be put into three categories: Personal conversion factors (such as physical conditions, age and gender), social conversion factors (e.g., institutions, cultural, and social norms), and environmental conversion factors (including climate, pollution, and public facilities) (Robeyns, 2005; Sen, 1992, 1999). The process of converting available resources into well-being is dependent on these individual, social, and environmental features (Figure 3) (Dang, 2014). In addition, Sen stresses the role of agency, the process of choice, and the freedom to reason with respect to the selection of relevant capabilities regardless whether they are connected to human well-being (Robeyns, 2005). For example, one may go on a hunger strike for political reasons even if it reduces her or his well-being. Dang (2014) therefore argues that the concept of agency is broader than that of well-being.

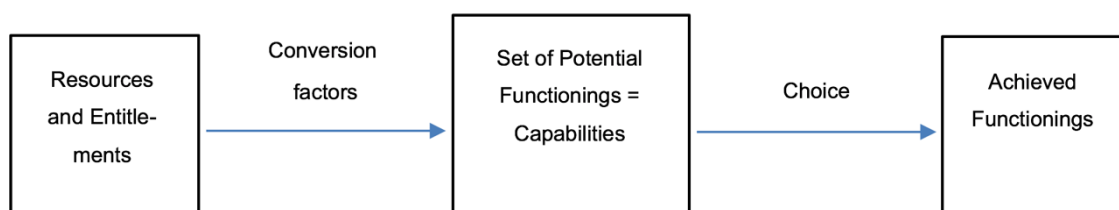


Figure 3: A representation of the capability approach. Own illustration based on: Robeyns (2000).

4.1.2 Strengths and Weaknesses of the Capability Approach

In the following paragraph the strengths and subsequently the weaknesses of the capability approach identified in literature are presented. According to Dang (2014) the strengths of the framework are threefold: First, it recognizes human diversity and the interpersonal differences

in the transformation of the characteristics of commodities into functions and capabilities. According to Robeyns (2005) the capability approach accounts for diversity in two ways: by its focus on functionings and capabilities as the evaluative space, and by the explicit role it assigns to the conversion factors of commodities into functionings. Sen's standard example, which fits perfectly to the topic of this thesis, is the bicycle (commodity), which displays the characteristic of transportation regardless of whether the owner, in our case the student, is able-bodied or handicapped. If a student is unable to ride a bicycle because she is disabled or feels pain when riding or has even never learned to cycle (personal conversion factor), because roads are in poor condition (environmental conversion factor), or because social norms in Tanzania do not allow women to ride bicycles (social conversion factor), then the possession of a bicycle would not lead to the functioning of mobility. This focus on the heterogeneity of human beings explains why Sen has rejected welfarist theories or resource-based theories as a framework for well-being and justice (Dang, 2014). In the second place, the capability approach proposes a multidimensional perspective on human well-being. It not only expands the assessment spaces and the information base of assessments, but also provides another means of defining well-being: Quality of life is more than the amount of resources available. In third place, Sen attaches great importance on freedom to assess human well-being. For him, freedom has an intrinsic value and provides us with more opportunities to obtain what we desire. As noted by Sen (1988), one reason why freedom may be important is that *choosing* itself could be an important functioning.

There are, however, various shortcomings and criticisms mentioned in literature. Robert Sugden (1993, p. 1953) has summarized the major critique as follows: «Given the rich array of functionings that Sen takes to be relevant, given the extent of disagreement among reasonable people about the nature of the good life, and given the unresolved problem of how to value sets, it is natural to ask how far Sen's framework is operational». Another often mentioned critique is that the capability approach is too individualistic in the sense that it ignores the social milieu which shapes individual lives. Critics further claim that the framework does not pay sufficient attention to social structures (Robeyns, 2005).

Another point mentioned by Lienert & Burger (2015) in the context of Sustainable Development (SD) is that the capability approach neglects risk stemming from environmental threats as a problem for current or future generations and does not adequately represent the reciprocal relationship of human-nature interactions. Therefore, neglecting the impacts of human actions on the ecosystem and their long-term consequences (Schultz et al., 2013).

4.2 Extension of the Capability Approach with Aspirations

After having presented the theoretical framework guiding this thesis, in a second step the adaptations made shall be highlighted. As argued by Robeyns (2000) the capability approach is an opportunity-based theory that clearly gives choice a central place. In order to put the aspect of choice into context, it is crucial to know what a person has reason to value and therefore, what the future aspirations of the person are. For this thesis the adapted framework presented by Ingrid Robeyns will be used. She (2000, p. 19) argues for «that a general theory of choice will have to be applied and refined for every specific choice of a vector of functionings from the capabilities set or alternatively, when assessing the refined functionings». Therefore, the aspect of the aspirations will be included in order to be able to identify what the girls have reason to value in their capability set. Furthermore, the voicing of aspirations could possibly reveal underlying constraints on choices. Guney et al. (2018) found that aspirations for desired but perhaps unavailable alternatives influence decisions. Further their results indicate that an aspiration unavailable for an agent steers her or him to choose similar available alternatives. For this thesis the article *Aspirations and Human Development Interventions* of Ina Conradie and Ingrid Robeyns (2013) is of crucial importance, as it puts special emphasis on the role aspirations play in small-scale human development interventions and directly link it to the capability approach. The next section will first define and contextualize the concept of aspirations, and then outline the role aspirations could play in the evaluation of small-scale human development interventions.

4.2.1 Aspirations Matter

According to the online Oxford Dictionary, «aspirations are the hope or ambition of achieving something». However, an aspiration is not just a plan that a person begins to work out with a certainty that she or he will succeed, rather, there may be a greater element of hope and uncertainty as to whether it will work out (Conradie & Robeyns, 2013). According to Appadurai (2004) aspirations are multidimensional, many-faceted and socially embedded. They might be complementary or even substitute each other and are usually formed through social interactions. Therefore, they can differ from one society to another (Appadurai, 2004; Copestake & Camfield, 2010).

Aspirations can also reflect the extent to which people feel that they have control over their future (Bernard et al., 2008). Regarding the previously discussed poverty traps, those internal constraints are thus of equal importance in understanding poverty traps as external ones. This is because an individual's cognitive window can limit the effect of role models and hence lead to failure of aspirations. In this context it makes sense to further deepen our understanding of

the concept of aspirations and have a look at different concepts like the aspiration window, the aspiration gap and the aspiration failure.

4.2.2 Aspiration Window

Aspirations can relate to many dimensions of life, but they are always built in social context and in interaction with significant others. Individuals might self-impose restrictions and weight the odds of achieving a certain goal, based on the observation of their peers. Ray describes this phenomenon as a multi-dimensional «aspiration window» and suggests that an «individual draws her aspirations from the lives, achievements, or ideals of those who exist in her aspirations window» (Ray, 2003, p. 2). Hodgkinson and Sparkes (1996) have described «horizons for action» as another metaphor for the way in which individuals identify the zone of possible action in relation to the ways they might live their lives and the goals they seek to attain.

4.2.3 Aspiration Gap

According to Ray (2003) the aspiration gap is the difference between the aspired and already achieved standard of living. He argues that it is this gap and not the aspirations per se, nor one's standard of living alone either, that affects future oriented behaviour. He claims that individuals whose aspirations are closely aligned to their current standards of living have little incentive to raise those standards. In contrast, people whose aspirations are very far from their current standard of living also have little incentive to raise the standard, as the gap will remain very wide and the investment to close it stays out of reach. Ray concludes that the concept of the aspiration window together with the description of aspirational behavior has important implications: If economic betterment or well-being improvement are aimed for, «the aspirations window must be opened, for otherwise there is no drive to self-betterment. Yet it should not be open too wide: there is the curse of frustrated aspirations» (Ray, 2003, p. 4). In other words there must be individuals in our peer group who do a little better than we do. Yet if they do a lot better, there will be no investments made and their experiences have little effect on our lives because they lie outside our aspirations window, or their living standards (which form our aspirations) are far away from ours.

4.2.4 Aspiration Failure

Ray (2003, p. 1) ascribes poverty a crucial role in aspiration failure: «Poverty stifles dreams, or at least the process of attaining dreams. Thus, poverty and the failure of aspirations may be reciprocally linked in a self-sustaining trap». However, not poverty alone is responsible for aspiration failure. It is poverty in conjunction with a lack of connectedness, the lack of a critical mass of persons who are both better off than the person in question, yet not so much better

off that their (economic) well-being is thought to be unattainable. In a polarized society, in which there is hardly any middle class and the contrast between poor and rich is very pronounced (Esteban & Ray, 1994), there exist two possibilities for poor people. First, the poor do not include the rich in their cognitive window. Second, the poor do aspire to be like the rich, but the gap is simply too large. The costs of the investment are too high, and the reward in terms of a relative narrowing of the aspirations gap simply too low. This is another kind of aspirations failure. The aspirations do exist, but the feeling is widespread that such aspirations are largely unreachable (Ray, 2003).

4.3 Aspirations and the Capability Approach

After having given a broad overview of the conceptualization of aspirations, in a next step the connection of capabilities and functionings will be considered. First – as pointed out earlier – aspirations and culture are closely related. Culture is extremely crucial for people's aspirations as it affects human values and perceptions of wellbeing and hence can determine the capabilities that one aspires to and the type of life that one values as well as his/her reasons for valuing it (Ibrahim, 2011). This makes the expressing of aspirations a very interesting approach to identify a persons options and what is valuable to her or him. Conradie and Robeyns (2013) state that expressed aspirations tell us which capabilities are the ones that are not yet realized, which makes the voicing of aspirations an excellent tool to decide which dimensions of well-being to target in a human development intervention. The process of voicing and reflecting upon their aspirations lets people indicate precisely which capabilities are valuable and most relevant for them. However, people are unlikely to mention all capabilities valuable for them, since those capabilities already secured, will not be part of their aspiration (Conradie & Robeyns, 2013).

In her paper *Poverty, aspirations and wellbeing: afraid to aspire and unable to reach a better life – voices from Egypt*, Solava Ibrahim (2014) concludes that identifying and addressing the causal relationship between poverty, aspirations and well-being could be the starting point for effective and more relevant development policies that help poor people to achieve their aspired but unfulfilled capabilities.

The freedom an individual has to aspire and the kinds of aspirations they develop depend on various factors: Firstly on the persons values, characteristics and dispositions, secondly on the social context and cultural influences, thirdly on the forms of capital and resources at hand and lastly on the physical setting with its structures, institutions and environmental features (Figure 4). Whether aspirations are then transformed into capabilities and functionings depends again on conversion factors. A distillation process occurs both from aspirations to capabilities and from capabilities to functionings. Whilst a large bundle of aspirations may be converted into

capabilities it is not necessarily the case that all of these capabilities can then be realized and certain functionings will preclude others. Ultimately, an aspiration set will include some, but not all, precursors of the capabilities an individual holds (Hart, 2016).

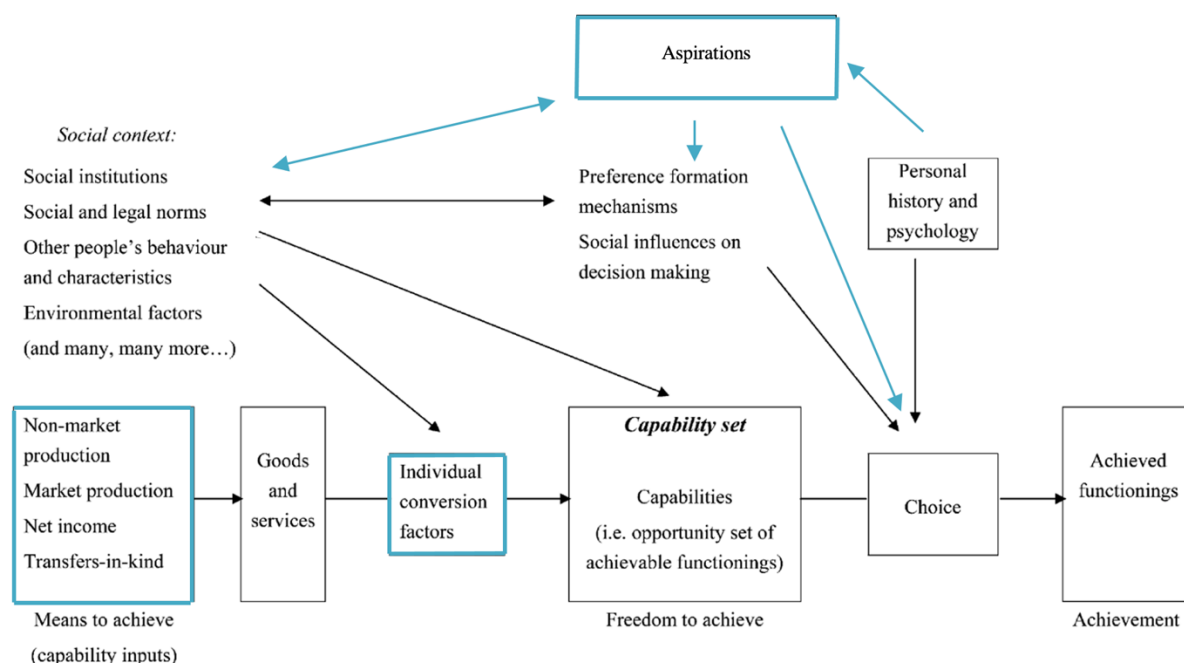


Figure 4: The capability approach extended with aspirations. Adapted illustration from Robeyns (2005). Boxes highlighted with blue have an influence on aspirations. The arrows indicate on what the aspirations have an impact.

4.3.1 The Capability to Aspire

By expressing one or more aspirations, most people will be able to demonstrate the functioning of aspiring. However, this tells us little about the full range of the individual's capability to aspire, as the constraints or oppressive roots of the aspirations may not be readily explicit. A study conducted with students aged 17 to 19 by Hart (2012) in the UK showed that people are sometimes afraid to share their aspirations with other people and that one in four adolescents have never shared their aspirations with anyone else. An individual's revealed aspirations therefore only give a partial view of an individual's aspirational set (Hart, 2012). Aspirations are often born out of unequal power relations that drive people to develop in such a way that they meet perceived expectations of normality and acceptance. Martha Nussbaum observes, «habit, fear, low expectations and unjust backgrounds deform people's choices and even their wishes for their own lives» (Nussbaum, 2005, p. 114). This phenomenon, which in literature is often described as the challenge of adaptation, will be further commented on in the next section.

4.3.2 The Challenge of Adaption

Some people's aspirations may have adapted to dire circumstances, such as deep poverty or unjust social structures. The same phenomenon applies when operationalizing the capability approach. It postulates that we should strive for the expansion of people's beings and doings that they have reason to value. The evaluation process, however, is vulnerable to people's adaptation to adverse circumstances: persons with limited opportunities, ambitions or wishes turn out to be very modest when they formulate which capabilities they find valuable. The same applies to aspirations: if people have adapted aspirations, they will only have modest goals, ambitions, and hopes, even if there are much more valuable options open to them (Conradie & Robeyns, 2013). Therefore, the process of aspiration-voicing needs to be complemented with additional actions or interventions that challenge people to ask whether their aspirations have been limited by adverse circumstances in which they live, or by the unjust or oppressive structures of their society (Hart, 2016).

4.4 Operationalizing the Capability Approach

Against the backdrop that many scholars claim that the capability approach is not a useful framework for interpersonal comparison of welfare, there has been a growing interest in operationalizing it over the past decades (Kuklys, 2005; Robeyns, 2006). However, an important aspect of Sen's version of the approach is its underspecified character. According to Robeyns (2003) it is a framework of thought, a normative tool, but it is not a fully specified theory that gives us complete answers to all our normative questions.

Despite this, there have been various attempts to operationalize the capability approach for the comparison of living standards. Among the most prominent ones is the Human Development Index (HDI) which since 1990 is published each year. The HDI uses quantitative country data sets and combines indicators of health, educational attainment and income in order to measure development and make it comparable between countries (UNDP, 2019a). However, despite this prominent example, the operationalization of the capability approach still presents a major challenge (Robeyns, 2006). Two major difficulties identified by Lessmann (2012a) are its conception of freedoms as contributing to human well-being and its multidimensionality. The idea behind the first point is, that an individual gains advantage from having options among which to choose. According to Robeyns (2000) the capability approach clearly gives choices a central place. This, however, poses one major difficulty: It concerns the question of how to measure opportunities instead of outcomes. Functionings are (at least indirectly) observable, whereas the person's capability would also include all the opportunities this person had but did choose not to have – unobservable facts. Sen himself admits that assessing functionings is

often the most feasible way to evaluate capabilities. His claim is that «functionings are constitutive of a person's well-being and that an evaluation of a person's well-being has to take the form of an assessment of these constituent elements» (1992, p. 39).

For the second challenge of the multidimensionality of the capability approach, Lessmann (2012, p. 99) identified the problem as follows:

«There is widespread agreement that a plurality of dimensions should be taken into account when measuring wellbeing, but no agreement about which dimensions are relevant or how to select and weight them. In practice it is necessary to collect a huge amount of micro-data, indicating the achievements of each person in each dimension, i.e., their health, their shelter, their educational achievements and so on apart from their income».

The first point brought up by Lessmann goes in line with the criticism that Sen does not prescribe a list of functionings (Nussbaum, 2003; Roemer, 1996; Sugden, 1993). As a consequence, every evaluative exercise will require a selection of the relevant dimensions. However, Sen responds to this critique though, that selecting functionings will always be an «act of reasoning». This, in turn, raises the question of whether the selection process may be prone to biases. In other words, the values and the social embedding of the researcher might influence which doings and beings will be included or not (Robeyns, 2000). In her version of the capability approach the philosopher Martha Nussbaum (2000, pp. 78–80) included a list of central human capabilities, which are: Life; Bodily Health; Bodily Integrity; Senses, Imagination, and Thought; Emotions; Practical Reason; Affiliation; Other Species; Play; and Control over One's Environment. Sen (1997), however, argues that capabilities should be selected in the light of the purpose of the study as well as the values of the populations studied and that the selection should be both explicit and open to public debate and scrutiny. However, a complete assessment of quality of life is not the aim of this thesis. Therefore, it is not necessary to consider all possible capability dimensions, but only the ones that matter in the specific context.

The second problem brought up by Lessmann (2012), is how to aggregate and weight the selected dimension. However, this question is considered as not relevant for the present thesis, as it is not the aim to generate an aggregated indicator of quality of life and thus will not be further discussed. In the next section the choice of dimensions proposed by Alkire (2007) shall be outlined first, followed by the description of the own application for this case study.

4.4.1 Choice of Dimensions by Alkire

The challenge of the multidimensionality of the capability approach presented by Lessmann (2012) can be divided into two aspects: the choice of dimensions and the interplay between them. To select the relevant dimensions for the present study, the list of methods presented

by Alkire (2007, p. 7) was consulted. She analyzed the process for selecting the dimensions in existing studies and differentiated five methods:

- i. Existing data or convention: selecting dimensions (or capabilities) based mostly on convenience or a convention that is taken to be authoritative, or because these are the only data available with the required characteristics;
- ii. Assumptions: choosing dimensions based on implicit or explicit assumptions with respect to what people do value or should value. These are commonly the informed guesses of the researcher; they may also draw on convention, social or psychological theory, philosophy, religion, and so on;
- iii. Public 'consensus': selecting a list of dimensions that has achieved a degree of legitimacy as a result of public consensus, exemplified at the international level by the universal human rights, the MDGs, and the Sphere project; these vary at the national and local levels;
- iv. Ongoing deliberative participatory processes: deciding dimensions on the basis of ongoing purposive participatory exercises that periodically elicit the values and perspectives of stakeholders; and
- v. Empirical evidence regarding people's values: choosing dimensions on the basis of expert analyses of people's values from empirical data, or data on consumer preferences and behaviours, or studies of the values that are most conducive to mental health or social benefit.

For the present study, the dimensions were selected using the first two methods proposed by Alkire (2007). Existing data and assumptions, e.g., well informed guesses by the author, were relied upon in the selection of the relevant capability dimensions. since the author did not have the opportunity to conduct participatory exercises on site as originally planned, the method of ongoing deliberative participation processes was not feasible.

Based on the chosen dimension, the questionnaire for the data collection was created. Therefore, in a first step, a literature research was conducted and the studies that apply the capability approach in a gender context were consulted. A detailed insight into the operationalisation shall be given in the next section.

4.5 Operationalization for the Present Study

First and foremost, an adequate operationalisation is an important step in developing a basis for research in a specific field. It is essential to obtain valuable information to answer the research questions. Secondly, a coherent operationalization forms the basis of the methodological guideline for the following data collection and analysis. It ensures that relevant information for answering the research questions can be identified and filtered when analysing the collected data. Thus, this subchapter will elucidate the operationalization of the theoretical framework for the mainly quantitative data collection and analysis.

4.5.1 Focus on Gender

For the present study gender is considered the principal conversion factor for a range of capabilities and functionings available to the female students. On the one hand this element was operationalized by only including females in the sample. However, as there were no male beneficiaries of bicycles, a comparison with the impact on the quality of life of male students would not have been possible in this context. This, however, could be an interesting aspect for further studies. On the other hand, it is assumed that the female gender has an influence, firstly on the range of capabilities available to an individual and, secondly on the choices she makes in terms of achieving certain doings and beings based on the available opportunities.

Therefore, for the operationalization, literature on the capability approach with a special consideration on the situation of females was consulted. Martha Nussbaum has dedicated a lot of her work on gender inequality. Many other scholars wrote about capabilities and gender, among them: Dijkstra (2002), Robeyns (2003), Unterhalter (2007) and Raynor (2007). Especially enriching for this thesis are the studies from Ingrid Robeyns (2003) on selecting relevant capabilities in the context of gender, and the one of Janet Raynor (2007) about the struggles of adolescent girls in Bangladesh to receive an adequate education.

For the operationalization of the capability approach with special consideration of gender the list of capabilities put forward by Robeyns (2003, pp. 71–72)¹² was used as a guideline. As her list is explicitly directed at females in post-industrialized societies, some adaptations were necessary for the present study.

Adapted list of capabilities based on Robeyns (2003)

1. Health: being able to be physically healthy.
2. Mental well-being: being able to be mentally healthy.
3. Safety: being able to feel safe.¹³
4. Bodily integrity: being able to be protected from violence of any sort.
5. Social relations: being able to be part of social networks and to give and receive social support.
6. Education: being able to be educated and to use and produce knowledge.
7. Domestic work and care: being able to fulfill domestic duties and to take care of others.
8. Mobility: being able to be mobile and to have access.
9. Leisure: being able to engage in leisure activities.
10. Time(-autonomy): being able to exercise autonomy in allocating one's time.

¹² The capabilities *Political empowerment*, *Paid work and other projects*, *Respect* and *Religion* were deemed not primarily important for the present study. *Shelter and environment* is considered important but goes beyond the scope of this study.

¹³ In the original list *safety* and *bodily integrity* constitute one point, however, for the present study the author considers the feeling of safety as a capability dimension of itself.

Following the methods proposed by Alkire, in a second step the list was extended with other aspects deemed important by the author of this thesis. Therefore, based on relevant literature on the topic, the list of dimensions was extended with two more categories:

11. Aspirations: Being able to aspire.
12. Independence: Being able to feel independent and not to rely always on others.
13. Family: Being able to spend time with the family.

According to Robeyns (2003) selecting the capabilities relevant for the evaluation is the first step when applying the capability approach. Second, the researcher has to decide whether to evaluate functionings or capabilities, which is addressed in the next subchapter. Third, she proposes to weight the different functionings or capabilities. This step, however, will not be applied to the present thesis for reasons stated in the subchapter 4.4. In addition, the list is not considered a closed one and may be extended during data analysis as new categories emerge.

4.5.2 Measuring Capabilities

The second step proposed by Robeyns (2003) consists of deciding whether to measure realized doings and beings or the underlying opportunities. As pointed out earlier in this chapter measuring capabilities is a challenge, as they are not per se observable. According to the present conception of capabilities, having the freedom to choose among various opportunities improves the well-being of a person. But, how to measure opportunities? Effectively achieved doings and beings are considered the visible result of a choice made by the individual based on the opportunities open to her. Therefore, the main goal of the questionnaire is to reveal the realized functionings. Thus, the range of capabilities will be derived from personal decisions about realized functional capabilities without further examining the underlying institutional, socio-cultural and environmental conditions, which undoubtedly have a significant impact on the capabilities available for the female students. A closer look at the methodological implementation will be taken in the next section.

5 Methodology

In the previous sections the theoretical background for evaluating the impact of a bicycle on the well-being of young female students as well as the case study context have been presented. In this section, first an introduction into case study research is given, before the methods of data collection and analysis will be outlined, followed by the presentation of the strengths and weaknesses of the method used. To close this chapter, possible biases shall be discussed. The planned method of data collection had to be adapted in the course of the work, as the field research and the planned semi-structures interviews with young female students in Tanzania could not be conducted due to travel restrictions caused by the COVID-19 pandemic. In order to gather the data to answer the research questions, surveys with a questionnaire were carried out with the help of Elvira Charles, a Tanzanian research assistant.

5.1 The Case Study

Case study research should not be considered as a method¹⁴ in itself. Rather, it is a design framework that may include a range of methods (Simons, 2009). According to Yin (2009, p. 18) a case study is «an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident». In undertaking case studies, different methods can be used in collecting and analyzing data. These methods may be either quantitative, qualitative or a combination of both. The addition of numerical data to a qualitative approach might strengthen or enrich the understanding of the case. While the addition of an integrated qualitative approach to pure numerical data might be crucial to give context, to put flesh on the bones of the numerical analysis (Onghena et al., 2019).

Yin (2003) distinguishes between three types of case studies: descriptive, exploratory and explanatory. For the present study, a descriptive case study was chosen, since the aim of the work is to describe an intervention or a phenomenon in its real-life context and to broaden the knowledge about a specific topic. The case is supposed to contain a manifestation of the phenomenon and can refer to any unit: a person, a group of persons, an organization, a set of procedures, an event or an artifact (Yin, 2009). Defining the case and bounding the case can be difficult as many points of interest and variables intersect and overlap in case study research. Developing research questions and/or propositions to select the case, identify the focus, and refine the boundaries is recommended to effectively establish these elements in the research design (Harrison et al., 2017). In the case of the present thesis the object of the study is the *Bike to School for Girls* program of the Swiss NGO *Velafrica*. The focus will be laid on

¹⁴ Mills (2014) distinguishes methods as procedures and techniques employed in the study, while methodology is the lens through which the researcher views and makes decisions about the study.

the perceived differences in well-being between female students with a bicycle and those without one. In order to bound the case study, the location was limited to 15 schools in the region of Kagera, in the North of Tanzania.

5.2 Survey with a Questionnaire

As Yin (2009) states, the right choice of methods is crucial to be able to answer the research questions in the most adequate way. For the present research the method of a survey based on a self-completion questionnaire was chosen because it is a sound method of gathering data for profiling and descriptive research and because questionnaires can be completed without any direct interaction with the researcher. Sufficient information about the situation under study was available, so that it was possible to formulate meaningful questions. In addition, the females who received a bicycle constitute a sample group that provides meaningful data on the topic (Rowley, 2014).

Grooves et al. (2004, p. 4) define a survey as: «A systematic method for gathering information from (a sample of) entities for the purpose of constructing quantitative descriptors of the attributes of the larger population of which the entities are members». As the definition by Grooves et al. (2004) indicates, the word survey covers in general quantitative studies that primarily aim at describing numerical distributions of variables (e.g., prevalence rates) in the population. In the case of sample surveys, statistical representativeness of the sample, data quality and precision of estimates, are the main issues (Jansen, 2010). Since the design of a questionnaire calls for some prior knowledge, a deductive approach is more common when using this method (Rowley, 2014). The present research is based on prior studies from *Velafrika* and some questions were already used in prior surveys for impact evaluation. However, the present questionnaire goes further and asks more detailed questions and especially more open-ended questions. Furthermore, this study is the first one to compare data from female students with a bicycle with the data of the ones which do not have a bike. The following sections first discuss the design of the questionnaire, followed by a description of the way in which data collection and analysis were carried out.

5.2.1 Questionnaire Design

For the design of the questionnaire a mix between closed and open questions was chosen. Closed questions are quick for respondents and the responses are easier to code and analyze, which is particularly important if the number of questionnaires collected is quite large. Open questions are useful for collecting more in-depth insights and allow respondents to use their own language and express their views. However, since they are more time consuming to complete and to analyze, they should only be used if they are the best option (Rowley, 2014). The

design of the closed ended questions and according response categories were deducted from literature and then discussed with experts on the topic from *Velafrica* and the local partner organization *VBC* in Tanzania (Oppenheim, 1992). Different types of closed questions were chosen including Likert scale questions, where respondents are asked to indicate how strongly they agree or disagree with a series of statements. Also, nominal questions with multiple answer options and yes or no questions were used. After a short introductory paragraph, which introduced the purpose of the survey, questions regarding age and grade were posed. Subsequently, students were asked about their use of the bicycle and its advantages, followed by a section about their future expectations and role models. At the end, the students had the possibility to give feedback on the program *Bike to School for Girls* and had the opportunity to leave their contact details in order to be informed about the results of the study.

5.2.2 Data Collection

Prior to the start of the survey itself, the questionnaire was pre-tested with three young Tanzanian women to check its comprehensibility. Then it was adapted according to the feedback and comments of the young women during the pre-test. The feedback was collected by the local research assistant, and then the questions were discussed and adapted together with the author of this thesis in a second step (Bryman, 2008).

The actual data collection for the case study was carried out in Tanzania over a period of one month in August 2020. The questionnaires were distributed to 269 students in 15 different schools in the Kagera region, in the rural north of Tanzania. The local research assistant Elvira Charles traveled by motorcycle from one school to another to distribute the questionnaires. The students completed the questionnaires in Kiswahili, and the research assistant provided help and guidance to them. Therefore, a response rate of 100 percent was achieved, but it is important to be aware of the power and status of such intermediaries and their impact on responses (Rowley, 2014). The research assistant Elvira Charles is a young woman from the rural village of Nshamba, hence the author considers the intermediary's influence to be rather small. In a next step, the research assistant translated the questionnaires to English and uploaded the data to the platform *Kobotoolbox*. *VBC* supported the research assistant and provided her with the necessary information about the students and the schools



Figure 5: Pretest of the questionnaire with young Tanzanian women. Photo taken by Adelphinus Alexander.

5.2.3 Sample Group

A representative sample group for the data collection was aimed at.¹⁵ The principal criterion that determined the selection of the female students was that they received a bicycle by the program *Bike to School for Girls* by the Swiss NPO *Velafrica*. To date 1'300 female students have received a bicycle, which is the sampling frame for this study. In order to get a representative sample, 15 schools¹⁶ with students who received a bicycle were chosen. The selection criteria were the following: a.) in each school there was a minimum of four students who have received a bicycle, b.) the teachers gave us permission and c.) the schools were in reach by motorcycle from the rural town of Nshamba, where the partner organization of *Velafrica* is located. Therefore, not all the female students with a bicycle had the same probability of being included in the sample. However, due to the circumstances the author considered it justified to opt for convenience sample¹⁷. In each school a control group of female students who were not given a bicycle was selected randomly on the condition that they were in the same age group as the girls with a bicycle. A total of 269 questionnaires¹⁸ were distributed and completed, 107 by the treatment group and 162 by the control group.

¹⁵ The amount of data gathered is exceeding the requirements for statistical relevance for paired comparative studies according to DCED. The DCED Standard is a framework for enhancing the quality of monitoring and evaluation. Their sampling tool for a statistically significant foresees for the present study a sample of 30 comparable answers with a 95% confidence level.

¹⁶ The list of the schools visited can be found in the appendix.

¹⁷ The sample is built from cases which are accessible, such as schools in a certain region (Rowley, 2014).

¹⁸ Rowley (2014) recommends collecting a minimum of 100 questionnaires for the scope of a Master's Thesis. However, collecting more data is likely to make the research more robust and offer opportunities for generating a wider range of insights.

5.2.4 Data Analysis

As the local research assistant had uploaded the questionnaires on the online platform Kobotoolbox, the author of the thesis was able to download the data form there and subsequently analyze it with Excel. First the data was checked and cleaned before the answers were analyzed quantitatively or qualitatively depending on the nature of the questions. Generally close ended questions with multiple choice answers were examined using quantitative methods e.g., descriptive statistics. In contrast, the open-ended questions were analyzed using qualitative methods (Jansen, 2010). A manual coding was conducted, and the free-text responses were coded with one or more categories. Since the categories were already defined in a previous step¹⁹, the nature of the analysis was a deductive one (Mayring, 2002). The answers were coded and then grouped before being analyzed quantitatively by performing quantity distributions. However, as new categories evolved from the data (especially from the open questions) the analysis was in a second step an inductive one as well. The last step consisted of analysing the functionings in the respective context and deriving the underlying capabilities. The analysis of the content followed both the research aim and the questions.

5.3 Strengths and Weaknesses of Surveys with Questionnaires

The major advantage of questionnaires is that it is relatively simple to obtain answers from a large number of people (sample), and the data collected can therefore provide results that are more generalisable (Bryman, 2008; Rowley, 2014). The results can, however, be threatened by many factors, including: poor questionnaire design; sampling and non-response errors; biased questionnaire design and wording; respondent unreliability, ignorance, misunderstanding, reluctance or bias; errors in coding, processing, and statistical analysis as well as faulty interpretation of results (Oppenheim, 1992). Furthermore, issues related to self-reporting plague the method of survey. Individuals can simultaneously hold conflicting conceptions and beliefs, which may cause them to respond in seemingly contradictory or inconsistent ways (Marton & Pong, 2005). Additionally, poor or incomplete memory of events, external influences and lack of time may lead to inaccurate recall and responding (Brewer et al., 2004). It is further inevitable to have some unanswered questions on some questionnaires – these might arise from the respondent being bored, running out of time, not being willing to provide certain information, feeling that they do not know a fact or don't have an opinion, or simply not understanding the question (Rowley, 2014). Therefore, knowledge on the deficiencies and shortcomings of the applied methods is crucial to avoid those pitfalls and get the best results (Harris & Brown, 2010). Indeed, as Rowley (2014, p. 32) concludes «questionnaire-based surveys should not be viewed as offering the answer, but rather as a valuable tool in understanding a situation».

¹⁹ For the deduction of the categories please see Chapter 4.4.2.

5.4 Research during the COVID-19 Pandemic

The initial plan for the present thesis was to conduct qualitative semi-structured interviews with the female students. Due to the COVID-19 pandemic and the associated travel restrictions, the planned field research in Tanzania could not be carried out. With the help of *VBC*, a Tanzanian research assistant was recruited to conduct the field work on site. To ensure the quality of the surveys and the answers, a questionnaire was prepared by the author of this thesis and subsequently translated and pretested by the research assistant. According to the author, the chosen method proposes a good alternative for conducting research in times of travel restrictions. Another great advantage is that the research assistant understands the local language and is closer in age to the sample group. Therefore, the possible effects of the intermediary on the sample group could be minimized. Another aspect to consider is that this form of research can even be considered more environmentally friendly, since the CO₂ emissions for the flights to Tanzania and back could be saved. A major drawback, however, is that the author had no insight into the local context, which would have been beneficial for the correct interpretation of the results. Nevertheless, the research assistant gave the author a very valuable insight into the local culture and customs.

Since the data collection by using a questionnaire worked very well under the given conditions, the idea came up to conduct qualitative interviews in order to deepen the results of the survey. Yet the results of the pilot²⁰ showed that carrying out interviews is a very complex undertaking and a much more challenging task than conducting a survey by questionnaire. Therefore, it was decided not to include the interviews in the present thesis.

5.5 Possible Biases

Prior to the subsequent discussion and analysis of the results, it is important to consider possible biases that might affect them. Consequently, in this section, first, some biases in terms of data collection and, second, in terms of data analysis are outlined. The arguments in favour of the applied approaches have already been directly incorporated in the previous sections.

Biases regarding data collection

- Regarding the data collection one major weakness is that the author of the present thesis could not be present and therefore could have only limited influence on the data collection process. Even though the local research assistant was instructed by the author of the thesis, the author did not know the local context and had to rely in some areas on the knowledge and skills of the local partner organization and the research assistant. It is important to note that *VBC* recruited the research assistant, so she does

²⁰ The pilot interviews with students and teachers can be found in the appendix.

not represent a neutral person. Furthermore, the partner organization has its own interests, which may have influenced the data collection process. This point deserves special attention, as the head of the partner organization was present during the first days of the fieldwork to support the research assistant.

- Another point to mention is that the method of data collection had to be changed various times due to uncertainties about travel restriction due to COVID-19. The theoretical outline, however, was already set up before and was designed for qualitative interviews. Hence, various parts of the thesis had to be slightly adapted afterwards, so the methodology is not as elaborated as it could have been.
- The last point concerns the translation of the questionnaire into Kiswahili by the local research assistant. Since the author of this paper does not speak this language, she had to rely on the translations of the research assistant. To avoid misunderstandings, several skype calls helped to clarify possible questions about the questionnaire. In this context, it must also be considered that in the Kagera region the local language is Kihaya and not Kiswahili. Therefore, some girls might have had some problems to understand the whole questionnaire well. However, since most of the classes are held in Kiswahili, we decided to conduct the questionnaire in this language.

Biases regarding data analysis

- Concerning the data analysis, the definite allocation of certain functionings turned out to be difficult, especially when a functioning had to be assigned to either one of the main categories. The distinction between directly and indirectly influenced category was made by the author and is therefore prone to be biased and further lead to some redundancies. This point, however, shows very well the interrelations of the different functionings.
- Last but not least, the underlying capabilities were derived by the author. This might lead to slightly different capabilities than the ones the target group would have derived from their valued functionings. The derivation of the capabilities was kept close to the functionings without leaving too much room for interpretations that could have led to misleading results. Nevertheless, the findings have to be treated with caution as the values and the social embedding of the researcher can influence which functionings and capabilities are included and which not (Robeyns, 2000).

6 Empirical Findings

In this chapter the empirical findings from the survey will be presented. First, the characteristics and the collected information of the sample group are outlined. Subsequently the three research questions and the sub-questions are answered based on the findings of the data collection.

6.1 Characteristics of the survey sample group

Empirical findings always have to be understood in their context. Therefore, a description of the target groups circumstances seems appropriate at this point (Mayring, 1996). The average age of the girls in the treatment group is slightly higher with 16.2 years compared to the control group with 15.8 years. The variation is higher in the treatment group, as the ages range from 13 to 20 years. All of the students are enrolled in lower secondary school, which in Tanzania consists of four so called forms, with form one being the lowest and form four the highest. Most of the students from the treatment group are in form two, while the female students from the control group are primary enrolled in form one. Only very few students are enrolled in form four and none of the female students in the sample was in higher secondary school.

6.2 Change in subjective well-being

The aim of the present study is to reveal the change in well-being of female students which received a bicycle for free or for a reduced price. Therefore, capabilities and functionings are revealed, which were enabled by the in-kind transfer of a bicycle to the students in rural northern Tanzania. Following the logic of the first main research questions, in a first step the drives for the improvement of the well-being of the female students with a bicycle are identified. In a second step, the barriers to the change of well-being will be discussed. In the subsequent sections, the second and the third research questions regarding the aspirations of the females and the extension of the capability approach, shall be answered. Followed by a discussion of the results in the next chapter.

6.3 Drives for the improvement of well-being

1.) In what respect does owning a bicycle affect the quality of life of female students in rural northern Tanzania in terms of well-being?

1A.) What are the drives for the improvement of the quality of life with a bicycle?

In order to reveal the drives for the improvement of well-being of the female student the functionings and capabilities generated for them are highlighted in this section. As mentioned in the chapter about the operationalization of the capability approach²¹, the functionings and not capabilities were used for the analysis of well-being, since there can be various capabilities derived from one functioning.

A list of valuable functionings and underlying capabilities that are influenced by the possession of a bicycle will be presented on the next pages (Table 1). The list has been derived and described in subchapter 4.5.1. Of course, the possession of a bicycle does not lead automatically to an expansion of capabilities and functionings (if the bicycle is broken for example) and not all people can transform the capabilities in the same way²² (depending on their conversion factors, some of the girls might not be able to transform the capabilities into functionings, e.g., if they do not know how to ride the bicycle or if there are no adequate roads).

Some of the capabilities are directly influenced by the possession of a bicycle, like having more time for other things. This indirectly leads to the creation of further capabilities. The distinction is visualized by listing directly and indirectly achieved functionings in separate columns. The capabilities and functionings directly generated by the bicycle are divided in the six main categories, which are also called capability dimensions: Time, safety, health, mobility, education and mental well-being. The categories that were only indirectly influenced are: leisure activities, domestic work, helping others, family, bodily integrity, energy, independence and empowerment. Whereby, the categories of helping others, energy and empowerment were deduced from the data. Aspirations as a category in its own right will be discussed in the next chapter, however, it is also listed as an indirectly influenced category in table 1.

The following subchapters are organized according to the defined main categories and the results of the treatment group are compared to those of the control group in order to deduce which functionalities are directly and indirectly influenced by the possession of a bicycle.

²¹ See chapter 4.5.

²² The relationship between capabilities, conversion factors and functionings is explained in section 4.1.1.

Table 1: List of functionings and derived capabilities for female students with a bicycle in northern rural Tanzania.

Directly influenced category	Indirectly influenced category	Valuable functioning	Derived capability
Time	Education	Having more time to do other things	To be able to invest time in other purposes
		Having more time to study	To be able to dedicate more time to studying
	Leisure	Reaching school on time	To be able to participate in all classes
		Arriving early at school	Being able to arrive early at school
		Having more leisure time	To be able to spend more time on leisure activities
	Domestic work	Having time to visit friends or other family members	To be able to visit friends or other family members and to strengthen social ties
		Having more time for household chores	To be able to do all the house chores on time
	Helping others	Having capacity to help the parents	To be able to support the parents
			To be able to take care of siblings
	Family	Spend more time with the family	To be able to spend more time with the family and strengthen family ties
Health		Not being corporally punished for being late	To be able to avoid corporal punishment in school
		Having more time to rest	To be able to sleep longer

Empirical Findings

<i>Directly influenced category</i>	<i>Indirectly influenced category</i>	<i>Valuable functioning</i>	<i>Derived capability</i>
Safety		To feel safe	To be able to feel safe
		Not having to walk in the dark	To be able to start walking after sunrise
		Having the possibility to escape faster when in danger	To be able to escape faster when in danger
	Bodily Integrity	Being safe from rape or harassment	To be able to feel safe from rape and harassment
		Being safe from dangerous animals	To be able to feel safe from dangerous animals
		Having a better health	To be able to be healthy
Health		Being fit	To be able to feel fit
		Not having to carry heavy loads	To be able to avoid carrying heavy loads
		Education	Going to school more regularly
	Energy	Being less tired in school	To be able to concentrate better
		Having more energy	To be able to cope with the workload
			To be able to feel strong
		Mental well-being	Not having to worry on the way to school
			To be able to feel relaxed
			To be able to feel calm

Empirical Findings

<i>Directly influenced category</i>	<i>Indirectly influenced category</i>	<i>Valuable functioning</i>	<i>Derived capability</i>
Mobility			
		Having a better mobility	Being able to enjoy better mobility
			Being able to go to the market
			Being able to visit relatives
			Being able to go to church
		Having a transportation tool	Being able to transport goods easier
	Independence	To feel independent and self-reliant	Being able to feel independent and be self-reliant
	Education	Reduced distance-cost for attending school	To be able to go to school more regularly due to reduced distance-cost
Education			
		To concentrate better in school	Being able to follow the lessons well
		To perform better in school	Being able to perform well in school
		To feel calmer in school	Being able to feel calm in school
		To be less absent in school	To be able to reduce absenteeism
		To visit other school activities	To be able to visit other school activities
	Aspirations	To aspire to go to university	To be able to aspire to go to university
		To aspire to have a good work	To be able to aspire a good work
Mental well-being			
		Not having to leave home before sunrise	To be able to travel with daylight
	Empowerment	To feel confident	To be able to feel confident
		To be proud	To be able to feel proud

6.3.1 Time

A very important aspect identified for the quality of life of the female students is the aspect of time, which in turn has an influence on many other factors. With a bicycle at hand, the girls no longer have to walk the sometimes very long distances to school. Cycling to school saves the girls one hour (58 minutes exactly) each way, which means an average of two hours per day. This time saving adds up to 10 hours per week, which in turn corresponds to about 40 hours per month. In a whole school year this is up to 400 hours, which is equivalent to about two weeks. The female students from the control group tend to have an even longer way to school with an average of 2 hours and 53 minutes. The time saving effect of the bicycle seems to be stronger the further away a student lives with the maximal time gain of two and a half hours. Interestingly, three girls state that with the bicycle they take more time to get to school. On closer examination, the data reveals that the three girls share their bikes with their siblings and/or their father. Considering that younger siblings may be sitting on the carrier, they might have to make some extra stops at another school to drop them off. Another reason could be that the bicycle causes problems on the way and that the students have to search for help fixing it or fix it themselves. A statement of one participant points in this direction: «It is always getting problems hence causing me to be late at school». However, further research is needed to clarify this matter.

Table 2: Average time needed to get to school – treatment group

	With a bicycle	When walking
Leave home at:	06:06 am	05:08 am
Arrive at school at:	07:54 am	07:54 am
Average time to school:	1 h 47 minutes ²³	2 h 45 minutes ²⁴

The female students with bicycles stated that they use the time gained to study (82%) and help out in the household (77%), with the majority choosing both options. Only one girl mentioned to use the time gained for resting after doing her housework. In addition, some reported that they use the extra time in the morning to study. None of the girls stated that she uses the extra time to meet friends, to sleep longer or the help in the fields.

Thanks to the bicycles, the girls arrive at school on time and no longer miss the early morning lessons. While the vast majority of the students without bicycles are late every day or almost

²³ This is the average time, there are however big differences. The maximal time to cycle to school mentioned by the students is 3 hours, the minimal one, 45 minutes.

²⁴ The maximal time to walk to school mentioned by the students is 4 hours, the minimal one, 45 minutes.

every day (Figure 7), the picture looks quite different for the students with a bike (Figure 6). Nearly two-thirds of them state that they are never late or only a few days a month. This finding is particularly important when considering that many girls, when running late, decide to stay absent from school in order to avoid corporal punishment. A practice that is still very common in Tanzania.

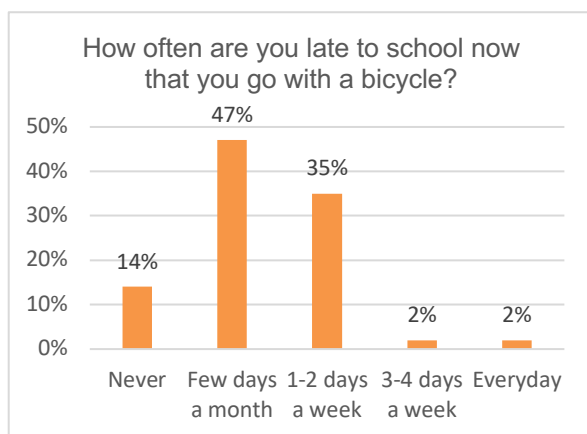


Figure 6: Lateness - treatment group

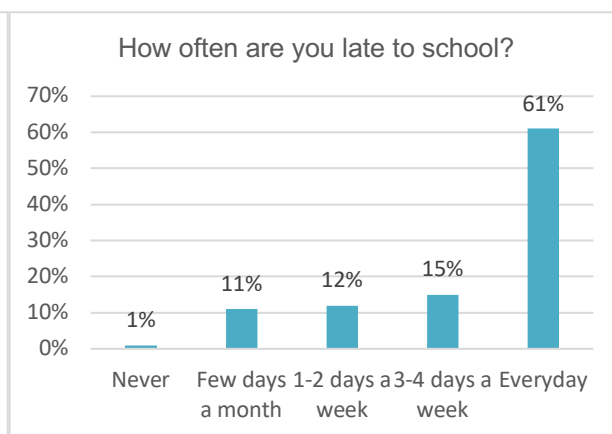


Figure 7: Lateness - control group

However, it has to be taken in account that the time saved walking is invested in other activities, which might even be more demanding and exhausting for the young females, like helping in the household or taking care of younger siblings. Yet this is only an assumption of the author and needs further empirical investigation.

6.3.2 Safety

Another very important aspect for the well-being of the female students is the aspect of safety. A striking difference between the two groups can be observed: while in the treatment group 94 percent of the girls feel safe on their way to school most of the time (Figure 8), only half of the girls without a bicycle feel safe on their way to school (Figure 9).

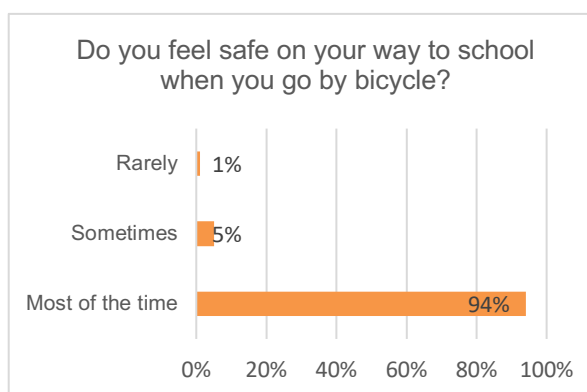


Figure 8: Safety - treatment group

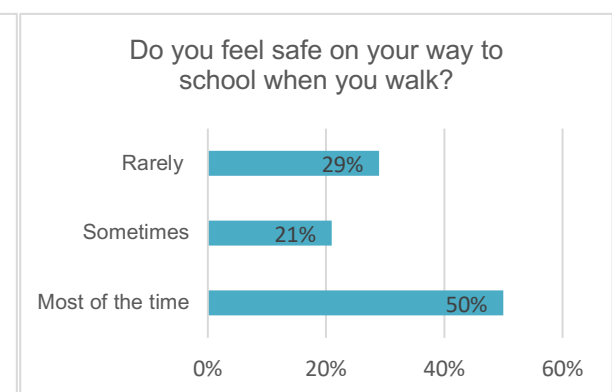


Figure 9: Safety - control group

The difference in the perceived feeling of security in the treatment group is even more pronounced (Figure 10): when the girls were asked how they felt before having a bicycle, nine out of ten stated that they rarely felt safe when walking to school. Margreth Jones, a 16-year-old form two student, writes in the questionnaire that she sees the major benefit in owning a bike as the following: «Boys and men are no longer raping us because we have bicycles which can help us to reach school very fast».



Figure 6: Safety before having the bicycle - treatment group

When asked what they are afraid of on their way, the results reveal interesting differences: Almost one third of the girls with the bicycles stated that they are not afraid of anything on their way to school (Figure 11). Fear of harassment and assault by men and darkness was further mentioned by one third of the female students. Other points mentioned were fear of wild animals, threats and abusive language and lastly to be late to school.

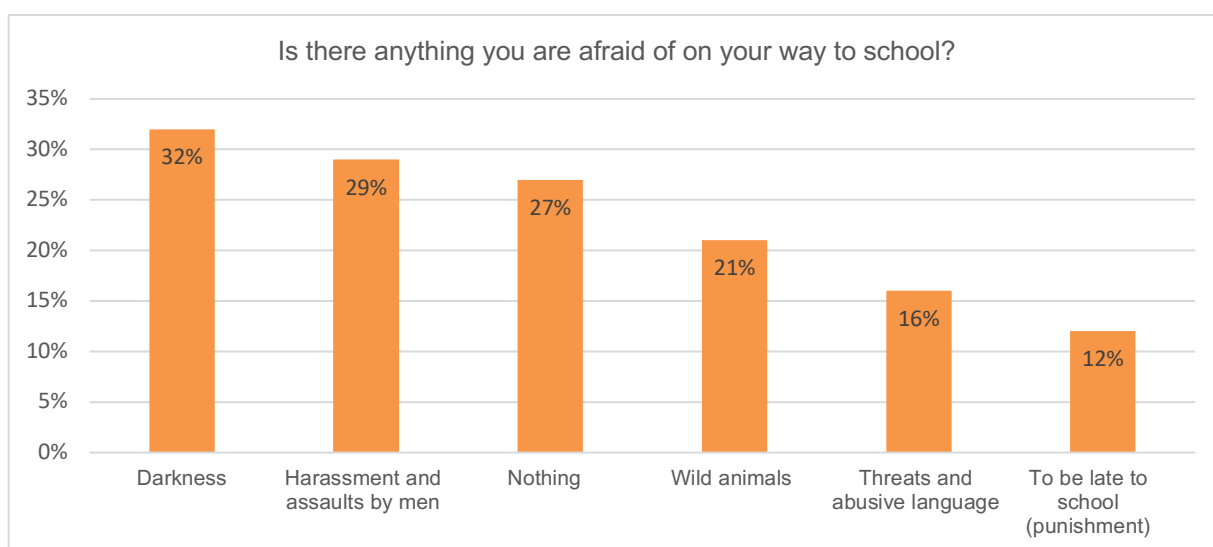


Figure 7: Fear on the way to school - treatment group²⁵

²⁵ The total is more than 100 percent because multiple answers could be chosen. If not otherwise stated, this is the case for all figures exceeding 100 percent.

Almost two thirds of the females in the control group reported that they are afraid of being late for school and that they fear the subsequent physical punishment (Figure 12). Moreover, darkness seems to cause a lot of fear among the female students, more than half of them mentioned this. Threats and abusive language and wild animals cause every third girl to be afraid on the way to school. Furthermore, many girls explicitly reported that they are afraid of being raped on the way to school. Interestingly, they also stated that they are afraid of ghosts and witches, a point not mentioned by the first group. Furthermore, they mentioned rainfall as a factor that frightens them.

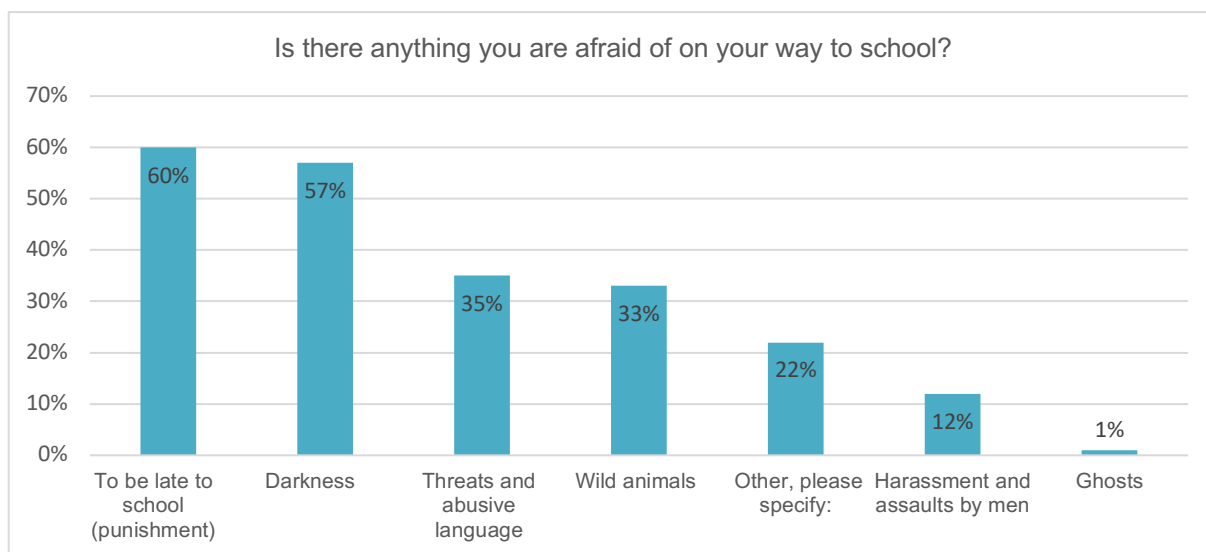


Figure 8: Fear on the way to school - control group

6.3.3 Health

Many female students without a bicycle state that they have to get up at 3 am in the morning in order to do the necessary housework and to reach school on time. On average they then walk two hours, some even three hours to school, which makes them even more tired. When arriving late, the girls sometimes have to endure violent forms of corporal punishment by their teachers. On their way to school the females are exposed to other potential health risks: Wild animals like snakes, that can bite them, but also men or other boys that could possibly take advantage of the situation and harass or even violate the girls. This creates a great stress and pressure on the girls when walking to school.

Not to forget in this context that cycling is considered a good exercise and helps to feel energized and fit. Another point to mention as well is, that with a bicycle the young females could also have better access to health facilities.

6.3.4 Mobility

The females use the bicycle in manifold ways and not only to go to school. Two thirds state that they use it as well to visit relatives and friends and one third claims to use it to go to the market (Figure 13). A surprisingly small number, namely only four percent of the girls uses the bicycle to fetch water, traditionally a task for young female family members in SSA. Among the other answers are going to school, going to church and to be sent somewhere by the parents. No female stated that she used the bicycle to transport harvest from the fields.

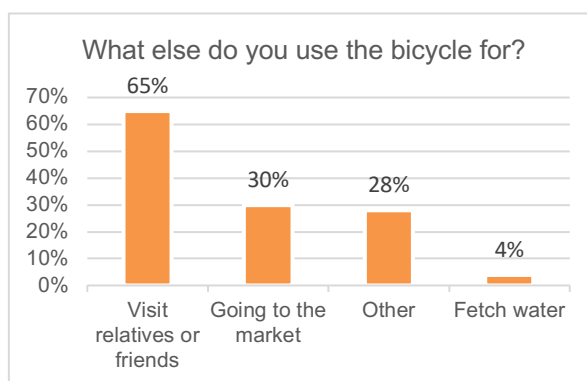


Figure 13: Bicycle usage - treatment group

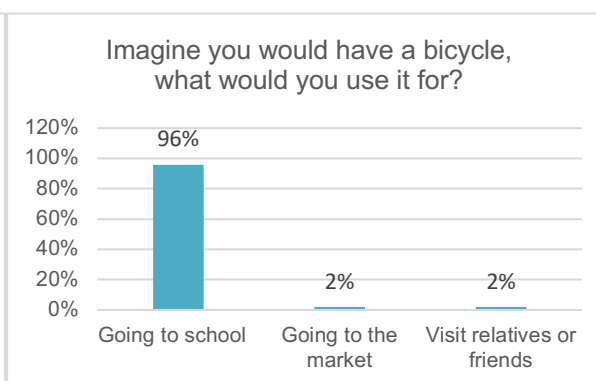


Figure 14: Bicycle usage - control group

When asked what they would use their bicycle for if they would have one, the vast majority of the control group would use it primarily for the way to and back from school (Figure 14). Only a minority of two percent imagine using it for other things, such as going to the market or visiting relatives or friends. When asked what other benefits a bicycle would bring them the girls from the control group stated that: «It will help us to shorten the distance from home to school». Another female student stated that the bike will help her being more independent on her way: «Hurrying to school and avoid Boda-Bodas²⁶ who give us lifts».

6.3.5 Education

All of the students now owning a bicycle state that they feel a change to before having one. Interestingly, all of them reported that they can concentrate more and that they perform better in school.²⁷ However, there is no clear tendency whether they feel less tired or more relaxed now with the bicycle. To the question whether they feel more relaxed 52 girls denied and 51 agreed. Four participants, however, did not answer this question. A reason for this could be that it has not been properly understood. Alternatively, this could be due to the fact that the girls have to do more homework or chores when they have more time available. Compared to these tasks, walking might be more relaxing. However, more empirical research is needed to clarify this question.

²⁶ Boda-Bodas are a form of bicycle or motorcycle cab in East Africa. Both the vehicle and the driver are called Boda-Boda.

²⁷ The results are to be treated with caution as they are self-reported, and the perception of the girls might differ from reality.

As already mentioned, there are big differences between the two groups in terms of their punctuality at school. Among the female students with bicycles, many said that they come to school early and use the time for revising their schoolbooks. This helps them to perform better in class, since they are better prepared than their female classmates without a bicycle.

One other aspect related to educational outcomes is that many of the girls in the sample strive to continue their studies and attend a university or other higher school. However, this point will be discussed in the next chapter.

6.3.6 Mental Well-Being

Bearing in mind that many girls feel uncomfortable or even fearful on the way to school, a bicycle may bring them great relief. Their perceived feeling of security improves greatly with a bicycle as has been shown in section 6.3.2. Also, as they arrive much more punctual, and therefore do not have to worry about corporal punishment. As the 16-year-old student Aneth Alex Michael states: «Before the bicycle I was going to school late but now I can go to school on time and attend all the lessons».

Other factors which are important for the girls is that they have more time to support their parents in doing housework or when they send them somewhere. Furthermore, they can invest more time in studying and therefore perform better in school. A point which is very important for the girls as they all stated that they want to continue studying afterwards at university.

Another positive aspect of owning a bicycle²⁸ could be that it makes the females proud and honoured, as mentioned by one of the students. Furthermore, it seems to be associated with positive feelings as two other students notice: «When I am riding a bicycle, I feel so good, I also reach school on time», says one of them, while the other claims: “It [the bicycle] helps to feel well when I am going to school».

²⁸ A detailed word cloud with the perceived benefits of a bicycle by the treatment and the control group can be found in the appendix.

6.4 Barriers for the change in well-being

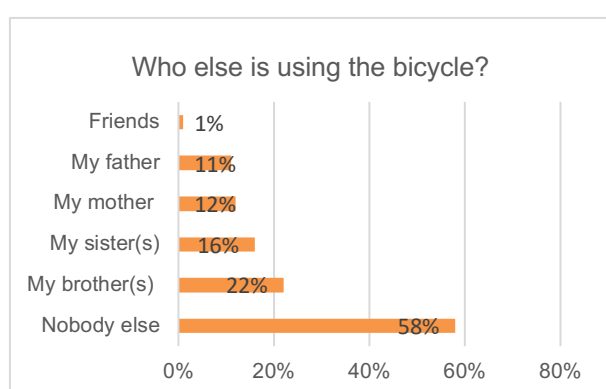
1.) In what respect does owning a bicycle affect the quality of life of female students in rural northern Tanzania in terms of well-being?

1B.) What are the barriers for the change in quality of life by using a bicycle for female students?

In this section the capability obstacles, e.g., aspects that need to be removed, eliminated or combated in order to help the corresponding capability to be realized, shall be outlined. For example, if there exists a social norm that women should not ride a bicycle, then this is an obstacle to women's capability to enjoy the freedoms associated with having a bicycle. The intervention *Bike to School for Girls* aims at expanding the capability set of female students by providing them with bicycles. Conradie and Robeyns (2013, p. 561) state that:

«If an intervention aims at expanding capability x , then we will need to know which capability inputs are important for x , and which obstacles are preventing x from fully emerging. Finding out which are the corresponding inputs and obstacles to a certain capability is crucial for human development interventions: without this knowledge, it would not be clear how to proceed».

The main barrier identified was that the girls had problems with the bicycle because parts were broken, or they had a flat tire. A detailed list of the problems the girls encountered can be found on the next page in table 3. Only six students stated that they never had any problems with their bicycle, which illustrates the importance of this barrier. When asked about reasons for not using the bicycle, the majority of the girls stated that when they are in pain/when they are menstruating, they are not cycling. It is, however, unclear if the girls just don't go to school when they are in pain²⁹ or if they prefer to walk. Only one student mentioned that she feels uncomfortable cycling with the obligatory school uniform, which still consists of a long skirt for female students. Surprisingly few students



(3%) state that they can't use the bicycle, because somebody else is using it³⁰ (Figure 15). The vast majority (58%) says that no one else uses the bicycle. An interesting point for further research would be to investigate whether it is common for more than one child to use the same bicycle to ride to school.

Figure 9: Usage of the bicycle by other people

²⁹ As stated in the fourth chapter the sanitary situation in Tanzanian schools is not very good and some girls prefer not to go to school when on their period.

³⁰ In a previous study conducted by *Velafrica* it was found that the main breadwinner is normally the main user of the bicycle (Räber, 2014).

Table 3: List of barriers to the usage of the bicycle

<i>Topic</i>	<i>Concrete Problem (Barrier)</i>	<i>Times mentioned</i>
Bicycle	Problems with the bicycle (general)	48
	Parts that are broken:	
	Flat tire/Puncture	24
	Brake	10
	Real drawler ³¹	6
	Tubes	2
	Chain	2
	Bicycle parts get old or get lost	2
	Lights	1
	The bicycle was destroyed	1
Personal factors	Pain (for example while menstruating)	77
	Not having money to fix it	51
	I do not know how to fix the bicycle	20
	Somebody else is using the bicycle	3
	Uncomfortable riding with my school uniform	1
External factors	Absence of mechanics	37
	During lock-down schools were closed and no mechanics were around	2
	Rainy season	1

Other important barriers mentioned by the female students are: Not having enough money to fix the bicycle, not having a mechanic nearby, and not knowing how to fix the bicycle. Only one girl mentioned that during the rainy season it is difficult to ride the bicycle. Other underlying cultural barriers were difficult to deduce from the answers from the questionnaire and would need for a further qualitative study to reveal them.

³¹ The girls referred to the term rear drawler, a term which was unknown to the author. The research assistant proposed the term of rack or gear system as alternative words.

6.5 Differences in Aspirations

This chapter attempts to answer the second research question. In the second research question, the aspirations of the girls are examined, and the question is raised whether the expectations of the two groups differ:

2.) How do aspirations from female students with a bicycle differ from those without one?

When looking at the female students' aspirations one point stands out in particular: No girl stated that after finishing school she wants to get married and have a family. For both groups the most popular answer is that they want to go to university or another school to continue studying (Figure 16 and 18). A smaller percentage chose the option to work and earn money independently. Interestingly, only very few girls want to work with their family. Just over three percent of the young females with a bicycle see this option for their future. None of the girls without a bicycle opts to work with the family after graduating from school.

When asked how confident they are that they will achieve their goal, the answers of the two groups are very similar (Figure 17 and 19). The vast majority of both groups are very confident that they will accomplish it. Only one percent of the respondents from the control group stated that they are not confident to reach their goal. An option which was not chosen in the treatment group.

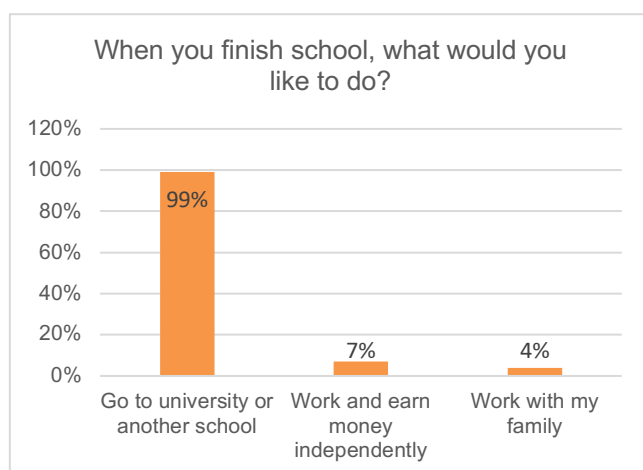


Figure 16: Future expectations - treatment group



Figure 17: Confidence – treatment

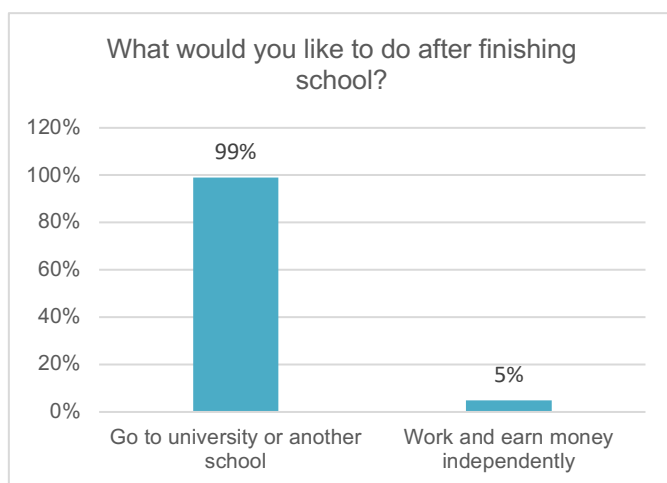


Figure 18: Future expectations - control group



Figure 19: Confidence – control group

When asked about their role models³² the females without a bicycle reported to a higher extent, namely 95 percent, that they have one, compared to only 70 percent of the ones with a bicycle. This result cannot be explained with the available data. Possible interpretations will be discussed subsequently.

Looking at what the role model does, no major difference could be found between the girls with a bicycle and the girls without one (Figures 20 and 21). The divergences that were found are minimal and do not allow to draw any significant conclusions. One tendency that needs further investigation, however, is that students without a bicycle tend to appear more ambitious in their choice of role models. Among their idols are high positions such as the President of Tanzania or the Minister of Peace and Security, as well as judges and pilots. Interestingly many students also named other students as their role models. From the girls without a bicycle, 20 of them said that the students with a bicycle are their role models. Also, students that performed well in their studies, have good behaviour and work hard are listed as being an inspiration for the young females. Role models are important to consider in the context of aspirations as an individual can become inspired to pursue similar achievements (Lockwood, 2006). Social psychologists have long noted that aspirations and self-efficacy are based on observing others (Bandura, 1977) and there is evidence from psychology that exposure to role models can improve aspirations and educational attainment, particularly among young adults (Stout et al., 2011).

Looking at the future expectations and aspirations of the young women, it seems that the females without bicycles have somewhat more ambitious plans for their future. They have more role models and more ambitious ones. In addition, a larger proportion of them want to graduate

³² Role models are defined by Lockwood (2006, p. 36) as individuals who provide an example of the kind of success that one may achieve, and often also provide a template of the behaviors that are needed to achieve such success.

from university or another school and work independently. Among them no girl indicated that she would like to work with her family. A possible interpretation of this finding could be that the girls with a bicycle have a slightly more realistic view of their future options.

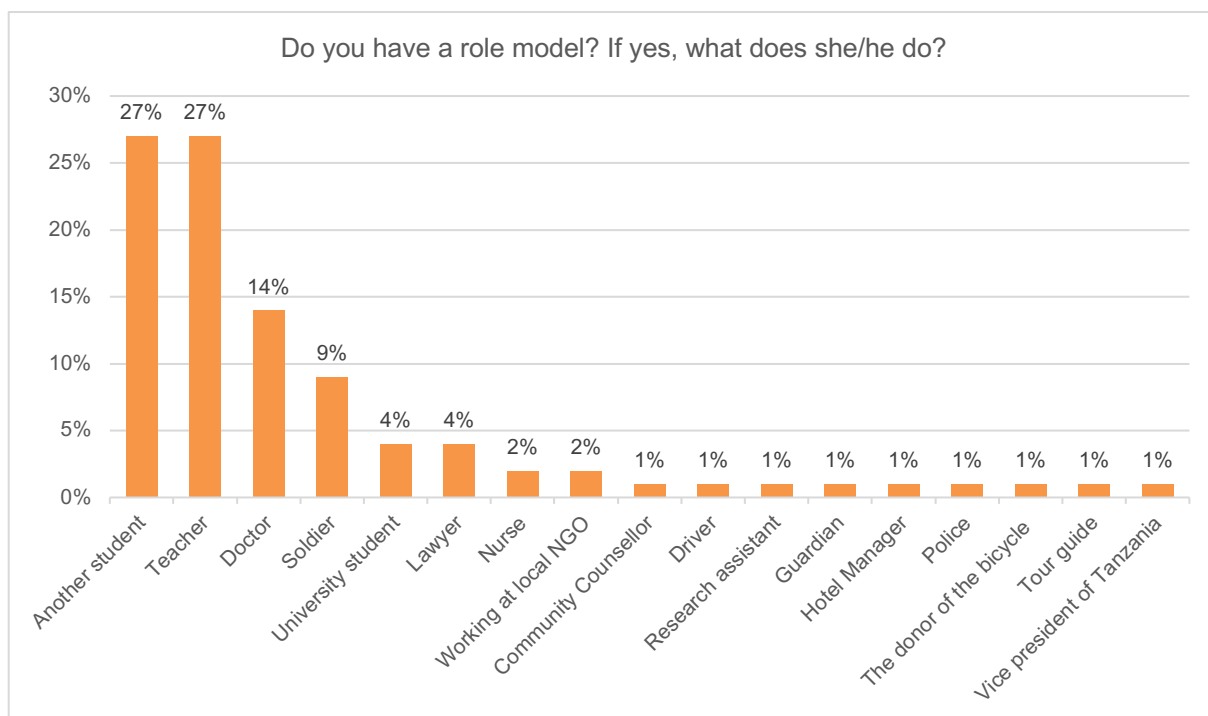


Figure 20: Role models - treatment group

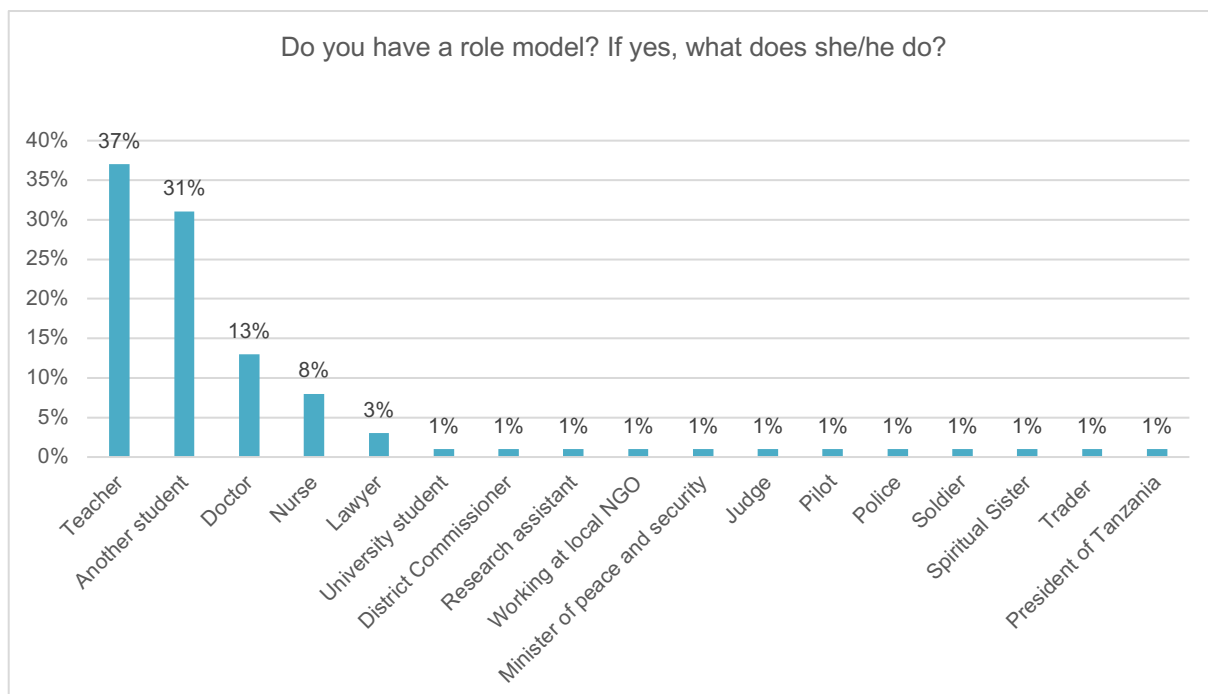


Figure 21: Role models - control group

However, as discussed in Chapter 4.3.1, expressing aspirations is a delicate process, and many young people are even afraid to express them. A study from England (National Careers Council, 2013, p. 8) found that young people have difficulties to formulate realistic ambitions for their future: «The ambitions of two in five young people were unrealistic, with young people from disadvantaged backgrounds being nearly twice as likely to suffer from such confusion as their more prosperous counterparts».

Appadurai (2004, p. 69) comes to a similar conclusion:

«The capacity to aspire is thus a navigational capacity. The more privileged in any society simply have used the map of its norms to explore the future more frequently, more realistically and share this knowledge with one another more routinely than their poorer and weaker neighbours. The poorer members, precisely because of their lack of opportunity to practice the use of this navigational capacity (in turn because their situations permit fewer experiments and less easy archiving of alternative futures), have a more brittle horizon of aspirations».

Another study from the UK finds that despite a general tendency to aspire the professions held by their parents, young people are overall very ambitious in their career aspirations. A further finding of the study is that young people who aspire to high-level careers generally also have appropriate ambitions for post-compulsory education, regardless of their background (Croll, 2008). However, Unterhalter, Ladwig and Jeffrey (2014) warn to be too naïve about the rhetoric around aspirations and to fall prey to the delusions of individual choice and rationality. They argue that, «the rhetoric of aspiration ultimately serves as a diversion from the reality of increasing social exclusion and inequality» (2014, p. 140). Structural factors such as socio-economic background and gender are strongly associated with educational and occupational outcomes and therefore the agency of an individual is often limited. However, it should be noted that structural relationships are probabilistic, but there exist many exceptions to this pattern, particularly with regard to upward social mobility, and therefore plenty of spaces in which choice and agency can operate (Croll, 2008).

To close this chapter on aspirations and to answer the second research question, it can be summarized that girls without bicycles have a slightly higher tendency to be more ambitious and more aspirational about their future compared to girls with bicycles. This difference, however, is not significant and should be investigated in further studies. A more in-depth investigation should be of a qualitative nature and opt for a multi-dimensional view of aspiration and seek for a deeper understanding of the combination of influences that precede and shape aspirations and their relationship to capabilities and functionings.

7 Theoretical findings

Within this section, the third research question shall be answered in order to provide a theoretical background for the embedding of empirical findings. The third research question relates to the extension of the capability approach with the aspect of aspirations:

3.) Can information on an individual's aspirations help in operationalizing the capability approach?

Various scholars have made the link between capabilities and functionings including Ibrahim (2011), Hart (2012) as well as Conradie and Robeyns (2013). The latter state that aspirations can have two possible roles in the evaluation of human development interventions: Namely a capability-selecting role and an agency-unlocking one. According to them (2013, p. 565) «the process of voicing and reflecting upon their aspirations is a process in which agents indicate precisely which capabilities are valuable and most relevant for them». Hart (2012) concludes similarly when stating: «Aspirations matter as signifiers of what has come to have meaning and value for us, as individuals, or as social groups. They offer guidelines and navigational reference points, lode stars for action».

One constraint to this approach is, however, that the agents are unlikely to mention all capabilities that are valuable for them, since those capabilities that are already fully secured will not be part of their aspirations. Therefore, the use of expressed aspirations is limited, as they only tell us which capabilities are the ones that are not yet realized. This makes the voicing of aspirations an excellent tool to decide which dimensions of well-being to target in a human development intervention. In evaluating an already existent human development intervention, its usage has, however, to be treated with caution. Appadurai (2004) warns that aspirations can also be complementary or may even substitute each other. Furthermore, an individual's revealed aspirations only give a partial view of an individual's *aspiration set* and that these are shaped and constrained by many factors which are not necessarily readily apparent (Hart, 2016).

Another interesting aspect of aspirations is, that they can also reflect the extent to which people feel that they have control over their future (Bernard et al., 2008, p. 10). Internal constraints are of equal importance in understanding poverty traps as external ones, and voicing aspirations possibly helps revealing them. Ibrahim (2011) explains that an individual's cognitive window can limit the effect of role models and hence lead to failure of aspirations.

According to Hart (2012) aspiration operate as a *metacapability*, an important capability in its own right, and a functioning. Where an individual is able to identify one or more aspirations

that they hold, this offers evidence of the capability to aspire. Most individuals will be able to demonstrate the functioning of aspiring through the expression of one or more aspirations. Whilst a large bundle of aspirations may be converted into capabilities for a given individual it will not necessarily be the case that all of these aspirations can be realized and certain functionings will preclude others. Ultimately, an aspiration set will include some but not all of the precursors to the capabilities an individual enjoys. Some capabilities will be enjoyed from birth or pre-aspiration – such as the freedom to live, to be treated with dignity, the freedom to play and so on.

It is not enough to look solely at the functioning of aspiring in order to understand an individual's agency and freedom. It is also crucial to understand the degrees of freedom to aspire enjoyed by individuals, alongside the chances of transforming the aspiration into a capability. The functioning of aspiring arguably sits between the freedom to aspire and the capability to achieve the particular aspiration. Thus, aspirations are powerfully situated as the forerunners to many capabilities.

Multiple conversion factors affect the freedom an individual has to aspire and the kinds of aspirations they develop. The conversion factors may include the interaction of an individual's characteristics, values and dispositions, their forms of capital and resources, their social context and cultural influences as well as the physical setting with its structures and institutions, environmental features and location relative to other places and spaces of social action. Further conversion factors act to influence whether aspirations are transformed into capabilities and functionings. A distillation process occurs both from aspiration to capability and capability to functioning.

To conclude and answer the third research question, the author sees a potential for a successful extension of the capability approach when assessing human development interventions with the aspect of aspirations in order to reveal what people value. However, its usefulness depends largely on the aim of the study. In case of overall assessments of well-being and even more in case of interpersonal comparison, the issue gets more complex. Furthermore, the concept of aspirations is a very complex one and, in this thesis, only a short introduction into the topic could be given. Aspirations always have to be understood in their cultural context and they in themselves tell us little about the histories, power dynamics and discourses, norms, values and cultures that have shaped, enhanced, diminished and adapted them.

8 Discussion

After having presented the findings of the empirical research by answering the two sub-questions in chapter 6, this section shall answer the overall first research question. Therefore, the findings from the present study will be compared to previous studies from *Velafrika* and further investigations on the topic.

1.) In what respect does owning a bicycle affect the quality of life of female students in rural northern Tanzania in terms of well-being?

In order to identify the differences in well-being the following steps are applied: First, the different preconditions are acknowledged. After all, which freedoms can be created by an intervention and how they influence well-being depends largely on the preconditions of those affected. Second, the effective potential of the intervention to bring about change is analyzed by comparing the drives and barriers to well-being and relating the data to the results of other interventions and relevant studies. Third, the appreciation of the change by the people affected is important. Therefore, the last question of the survey, in which the participants were able to give feedback on the program *Bike to School for Girls*, is evaluated and summarized. Their response on identified barriers is supplemented by suggestions of the author on how to address them. At the end of the chapter the limitations of the present study are outlined.

Different preconditions:

Owning a bicycle does not necessarily lead to the same effects on the well-being for different individuals. The results of this study show that, for example, the time benefit is greater the further away the students live from school. These findings are consistent with a study conducted in rural India, which found that the impact of a bicycle is the greatest when students live more than 3 km away from school (Muralidharan & Prakash, 2013). In addition, depending on the available funds, some girls had the opportunity to take a minibus or a Boda-boda taxi to school. However, very few of the participants in the survey used these means of transport. Therefore, the differences in well-being vary depending on the transport facilities that were previously available to the students.

8.1 Drives

The results of the survey show that a bicycle has a positive effect on the quality of life of its users in many ways. The majority of girls say that they use their bicycle every day or at least three to four days a week. This indicates the acceptance and benefits of the intervention. Furthermore, this finding is important because it shows that the bicycles are still owned by the girls

and that they have not been sold in times of financial hardship. Various positive effects on the quality of life were found and are outlined and put into context in the following section.

Time or time-autonomy:

This capability is a very important one when evaluating the quality of life of females according to Robeyns (2003). Females spend much more energy on time-consuming tasks like collecting water or firewood and are expected to take care of others. In this context, it is more relevant to note that the present study found that girls who own a bicycle gain about 10 hours a week by not having to walk to school. The students use the time saved to study or to help in the household. An earlier study from *Velafrica* (2020) came to similar results, although the time saved per week in this study was even 4 hours higher. Interestingly, in earlier studies they stated that they also use their extra time also to meet friends or to help on the fields. These points were not mentioned in this survey. Another study commissioned by the NGO *World Bicycle Relief* and *Innovations for Poverty Action* (IPA) in rural Zambia found that access to the bicycles reduced the time taken to commute to school by about 35 mins one way, which is a one-third decrease of the commuting time before receiving the bicycles (Fiala et al., 2020).

Another benefit of the bicycle is that it helps the student to arrive on time to class. Two-thirds of the participants report that they are never or only a few days late in a month. The figures are very similar to those of Fiala et al (2020): They observed that girls who got a bicycle in Zambia increased their punctuality by 66 percent. However, it is not clear to what extent the girls gain more autonomy over their time. As Robeyns (2003) points out, «allocation of time within the household is usually a collective and not an individual decision and is influenced by many individual, household, and community characteristics» (p.82). As a result, the girls may even have to help more in the household or in the fields, now that they have more time available. This issue, however, should be investigated in further research.

Safety:

The perceived feeling of safety changes drastically with a bicycle at hand. The results of this study are very similar to those of previous ones from *Velafrica*, in which 75 percent of girls feel safe on their way to school with a bicycle. Most of the participants in this survey indicated that they were afraid of the dark, of being harassed by men and of wild animals. Many other studies identified the issue of safety on the way to school as a crucial concern for female students, and many parents decide not to send their daughters to school because of safety considerations (Joshi & Gaddis, 2015; Martínez, 2017). Therefore, when females feel safer on their way to school, they are much more likely to attend school regularly. Female students who received a bicycle from the NGO *World Bicycle Relief* were less likely to miss school due to safety concerns and were 22 percent less likely to be whistled at or teased on their way to school (Fiala et al., 2020). In a study in Malawi, girls claimed to be afraid of ghosts, witches, bandits

and wild animals they had encountered on their way to school. Older girls reported being afraid of rape and harassment (Porter, 2007).

Health:

In the rural areas of Tanzania, girls still play an important role as pedestrian transporters of goods, which is a factor that on the one hand restricts their access to education, but on the other hand also needs consideration as a potential health risk. Even very young girls carry heavy buckets of water and are also often expected to transport firewood and agricultural produce (Porter, 2007). In the present study, however, only few girls stated that they use the bicycle to transport goods. When asked about health-related issues, they mainly referred to being less tired and stressed when cycling to school. Furthermore, they do not have to fear physical punishment, as they arrive much more punctually. Other potential health risks, such as being bitten by snakes or other wildlife, are also reduced, as mentioned in an earlier study (Porter, 2007).

Another advantage is that access to health services is guaranteed by a bicycle (Kwarteng et al., 2018; Porter, 2008). A point that can save lives, especially of women. In Gambia women in rural areas without access to hospitals were more than ten times more likely to die from maternal mortality than women with good health care access (Fawcus et al., 1996).

Mobility:

Mobility constraints still persist in rural Tanzania, with children and women being more affected since they are often limited in their transport options while at the same time being responsible for many transport-related tasks. In this context a bicycle can bring a big relief in many aspects. Going to school, fetching water, helping parents, visiting relatives and friends, going to the market and to church were mentioned by the survey participants. Other studies did not report on the use of the bicycle for other purposes.

Porter (2007) found that girls in Malawi are absent from school two days a week when markets are held since they are required to headload firewood and agricultural produce for sale. In this context, a bicycle could possibly serve the whole family, and if it is not used for schooling, it could be used to transport products to the local market, thus relieving the burden on young women and indirectly contributing to their educational opportunities.

Education:

All participants reported that they can concentrate more in class and perform better. A study conducted in rural India found that a cycling program increases enrollment, as well as the number of girls who stayed in secondary school and took their final exams. However, no effects on the number of girls who passed the final exams were detected. According to the authors of the study, this observation is in line with evidence from different CCT programs around the

world that show significant effects on school enrollment but not on achievement (Muralidharan & Prakash, 2013). Results from Zambia indicate the same pattern: no significant impact on grade transition or dropout rate was found. The author of this thesis would recommend *Velafrica* to continue the evaluation and to conduct a qualitative survey within a reasonable time horizon to find out whether the bicycle has an impact on dropout rates and on educational outcomes. In this regard, interviews with teachers and parents of the students could also lead to further interesting insights.

Mental well-being:

The results indicate that the girls can leave their homes later and thus after sunrise. Since many of them stated that they are afraid of the dark, this brings with it a special relief. Thanks to the bicycle, one third of the girls can leave their homes by daylight now, whereas they all had to start walking in the dark before. From the control group only two percent of the girls can start walking by daylight. This finding is consistent with previous research from *Velafrica* (2020). Additionally, owning a bicycle can make the girls feel proud or they even feel honoured, as noted by one participant. Furthermore, it increases their independence. Girls without a bicycle are dependent on others to get to school when they don't want to walk or when they are late. Some Boda-Boda drivers or people who own a motorcycle take advantage of the situation. In other studies, girls who own a bicycle also reported feeling more in control of the decisions affecting their lives and they were more willing to reach out to a friend in need. Also, they had a more positive self-image than girls in the comparison group and a greater bargaining power within their households (Fiala et al., 2020).

In sum, the results suggest that in-kind transfer, in the form of a bicycle for travel to and from school, can be a useful tool to improve girls' well-being in lower income countries where distance is a barrier. It not only helps them to overcome this barrier but also in other aspects of their lives. Although cycling has proven to be a cost-effective means of transport in rural areas it is yet to be exploited to overcome the mobility constraints (Amoako-Sakyi & Owusu, 2012). This might be due to obstacles, like underlying cultural barriers or a neglect of this mode of transport by policy makers (Kwarteng et al., 2018). Further barriers and suggestions on how to address them, shall be discussed in the next section.

8.2 Barriers and Recommendations

The results of the study show that a bicycle can have a strong impact on the quality of life of female students in rural northern Tanzania. In the final question of the survey, the female students were asked to give feedback on the intervention. Overall, the feedback was very positive. Nevertheless, some critical comments were made. The main obstacle to improving well-being

identified in this study is simply that the bike gets broken. In fact, only six percent of the females say they have never had any problems with the bicycle. A number of comments are in line with this finding, with one young woman suggesting: «I request that, if possible, mechanics should be at school so as to repair our bicycles». One girl even expresses the wish to learn more about the bicycle and asks: «I request you to teach us how to [re-]construct the bicycle ourselves».

In order to unleash the full potential of the intervention *Bike to School for Girls*, the barriers identified in this study should be addressed. To avoid creating a dependency on mechanics, which would even reinforce traditional gender roles and would be a financial burden for young women, the author of this thesis proposes to teach the girls some basic skills for repairing bicycles. A study commissioned by UNESCO shows that the presence of female teachers, who may serve as role models, motivates girls to follow the same path (Kirk, 2006). Therefore, the mechanics who teach the girls to repair the bike should preferably be women. In addition, each bicycle could be supplemented with the most frequently needed tools and spare parts. If this is not feasible, at least the schools should be provided with a basic tool set, like for example a pump or sticker to patch bicycle tires.

Concerning other barriers revealed, one student stated that she does not feel comfortable riding a bicycle in her school uniform. However, it is difficult to conclude from the data in the questionnaire why this is the case. Further qualitative research would be needed on this point. One possible explanation could be that it is difficult to ride in the traditional school uniform, which for girls still consists of a long skirt. Therefore, *Velafrica* should ensure that they mainly deliver ladies bicycles with a low crossbar. Furthermore, in the context of rural Africa and bearing in mind that the girls often use their bikes to transport goods, they should all have a luggage rack. In addition, depending on the characteristics, the bikes should be used for different regions and different topography

One point that has not yet been mentioned in this study, but which the author considers important, is that many female students may simply never have learned to cycle. A study carried out in Ghana discovered that many children in rural areas cannot ride a bicycle. The reasons given for this include that the parents disapproved of cycling or that the children were afraid to ride due to the risk of injuries. The study also found that the children who learned to ride a bicycle were taught under a variety of conditions, including threats, coercion and often under the guidance of abusive instructors (Amoako-Sakyi & Owusu, 2012). Therefore, cycling lessons could be offered at school or by the girls who already have a bicycle to those who do not know how to ride or are afraid of it. But again, more qualitative data is needed, as the author does not know whether this is a real obstacle to the full development of the potential of the *Bike to School for Girls* program.

After all, it is the parents who buy the bike for their children, so it is important to consider advocacy and awareness raising about the benefits of the bike to parents. Especially the advantages for girls should be highlighted. In addition, however, the male students should also be considered for bicycles. They too are exposed to risks on the way to school and have to cover long distances to get to school. Even though their situation was not examined in this study.

Last but not least, a bicycle is an investment and for poor families even the reduced price may be a big burden. Therefore, *Velafrika* should consider different types of loan models to expand access to bicycles among those who need them most.

The main obstacle identified in other studies are cultural barriers towards female cyclists. A study from Ghana found that, although parents generally approved of their children's use of bicycles, most were skeptical of the effects of bicycle use on their female wards. The perceived physical vulnerability of girls, particularly in relation to reproductive health, often underpinned disapproval of girls riding bicycles. Furthermore, the study found that if a family owned a bicycle, children could only use it periodically. This because parents used it themselves to transport goods (Amoako-Sakyi & Owusu, 2012). However, evidence from the survey does not indicate that there exist any cultural barriers in northern Tanzania regarding females cycling nor that the parents use it very often.

Another investigation also from rural Ghana identified low-quality equipment, poor paths or roads, lack of consumer appeal, the high cost of acquisition, and low access to finance as the main challenges for the adoption of bicycles and other ITM's (Kwarteng et al., 2018).

8.3 Research Limits

The research design and the methodology of the present thesis had to be modified due to the circumstances and the restriction on travelling due to the COVID-19 pandemic. The assessment of individual well-being was therefore only partially possible, as the planned interviews with female students were not feasible under this situation. For the understanding of the local context, it would have been crucial for the author of the thesis to be present. This is one major limitation of this thesis. Nevertheless, a good solution was found, and a local research assistant was recruited to carry out the on-site field work.

Another limitation is the fact that the range of the case study is limited to a rural region of northern Tanzania. The results cannot be generalized to other rural regions, as the local culture and norms differ strongly.

A further limiting factor concerns the sample of the present study. The majority of the girls had to buy the bicycle. Even with the student reduction, it is still an investment for the family of the

student. Therefore, most of the females who were able to buy a bicycle were those from families that are already better off. The exception are a hundred girls from very poor families, that got the bicycle completely for free. However, due to distance and time restrictions not all of those girls could be included in the sample. The author suggests that the positive effects on the quality of life may be bigger and more impacting on those very poor and remotely living students.

In order to analyze the impact of a bicycle on the quality of life of its beneficiaries, the capability approach in the tradition of Amartya Sen has been applied. Two major challenges were encountered in this respect: Firstly, as it has already been discussed, the operationalization of the capability approach is a major challenge for the practical application of the approach. As only little guidance is offered by Sen himself, in the present thesis the methods presented by Alkire (2007) were applied. In this way the important dimensions of quality of life were identified to be included in the questionnaires. The inclusion of open questions allowed for the identification of further dimension. However, as the identification of dimensions was conducted by the author and not by the people affected there might be an important dimension missing. Furthermore, the results may fall prey to be influenced by her worldviews.

Additionally, this method of operationalization of the capability approach works well for a partial assessment of quality of life, related to a special issue (such as the bicycles). In case of overall assessments of well-being and even more in case of interpersonal comparison, the issue gets more complex as capabilities or functionings need to be weighted and aggregated. These issues are still subject to much discussion and were not addressed in the present study.

Moreover, the capability approach was expanded with the aspect of aspirations. However, the results of the present study on this topic were limited. This is due to the fact that this aspect was not given priority in the questionnaire. Also, measuring aspirations is not to be underestimated, as Bernard and Taffesse (2012, p. 1) state «defining an empirical instrument for aspirations is not without its challenges». Consequently, because data were limited and no clear tendency could be identified, the second research question was difficult to answer. Nevertheless, the author considers both aspirations and future expectations to be very important and sees a lot of potential for combining them with the capability approach. Furthermore, it could be very interesting for NGO's and other organizations to assess the long-term effects of their interventions by evaluation change in aspirations and future expectations, rather than the mere outputs and outcomes.

9 Conclusion and Outlook

Education is a human right and plays a key role in personal, social and economic development. Yet despite great progress in recent years, millions of children are still deprived of the right to education. Lack of access to education is one of the most certain ways of passing on poverty from one generation to the next. By providing skills that increase employment opportunities and income, education promotes economic growth. Additionally, education reduces social inequalities, empowers women and helps each individual to reach their full potential (Psacharopoulos & Patrinos, 2018).

However, the progress made in the last decades is at risk. Most countries have closed their schools in response to the COVID-19 pandemic at some point this year. While this disruption has far-reaching implications for everyone, the impact is particularly detrimental to the most disadvantaged students and their families, especially in countries of lower income. Consequences of the pandemic in the education sector will continue beyond the period of school closures, disproportionately affecting marginalized girls. According to estimates of UNESCO (2020a), eleven million girls might never return to school. Not only is this alarming number threatening decades of progress towards gender equality, but it also puts young females around the world at risk of teenage pregnancies, early and forced marriage and violence. The potential of these girls to contribute to the future of the region is at stake. Further, educated women have a greater chance of escaping poverty, leading healthier and more productive lives and raising the standard of living for their children, family and communities (Psacharopoulos & Patrinos, 2018). To meet the goals for sustainable development agreed upon by all nations and to empower children and women, ensuring access to education for all is a crucial step.

Against this backdrop, once the students return to school, the intervention of the Swiss NPO *Velafrica* is even more important than ever. Their aim is to improve access to education for female students by providing them with bicycles with which they can manage their long journeys to school. Previous research revealed the correlation between the distance to school and the drop-out rates of young females (Filmer, 2000; Lehman, 2003; Muralidharan & Prakash, 2013; World Bank, 2018). To overcome the barrier of long-distance, various studies propose the use of bicycles to ensure access to school for every child (Amoako-Sakyi & Owusu, 2012; Muralidharan & Prakash, 2013; World Bank, 2018).

History of the emancipation of women in the western world is closely linked to the bicycle. It is a cost-efficient and low-carbon transportation tool that provides access to education, health facilities and other services. Yet a bicycle could help girls in many other ways. Traditionally, carrying heavy loads like water or firewood is still considered a task for women and children. Therefore, with a bicycle at hand, young females not only have better access to education, but it could also help them in other important aspects of their lives. To date, though, no study has

been conducted to measure the differences in the well-being of women with and without bicycles in the rural areas of SSA. Hence, the aim of the present study is to fill this gap and to evaluate the impact of the bicycle on the quality of life of female secondary school students. The theoretical framework for the evaluation was based on the capability approach developed by the Indian economist and philosopher Amartya Sen. The theoretical underpinning was then extended with the aspect of aspirations. The impact of the bicycle was analyzed in terms of the differences in perceived well-being between female students with a bicycle and those without one. By identifying valuable functionings and capabilities that have emerged with the possession of a bicycle, the implications for individual well-being were examined. It could be shown that the bicycle leads to various positive changes in the lives of the students in rural Tanzania. Major direct positive impacts on the well-being, so called drives, have been revealed in terms of time, safety, health, education and mental well-being. Besides the drives, several barriers have been identified that potentially reduce the positive effects of bicycles on well-being. Most of them were related to problems with the bicycle, such as a flat tire or a broken chain. Other obstacles included the absence of mechanics and the lack of financial resources to repair the bicycle. To determine the influence of the bicycle on the students' aspirations, they were asked about their expectations for the future and their role models. In order to determine the influence of the bicycle on the students' aspirations, they were asked about their future expectations and their role models. However, no major differences between the two groups were found. The findings from the survey were translated into recommendations for further improvements that could increase the positive impact of the bicycle on the quality of life of young women.

During the work on the present study, several issues have emerged that would merit consideration in further research. On a theoretical level, the aspect of aspiration as a dimension of quality of life, but also as a tool for operationalizing the capability approach requires further research. On a practical level, the main barrier identified in this study is that the bicycle frequently breaks down. To address this problem, the author suggests a number of measures. Nevertheless, in this particular setting, a qualitative, participatory study should be carried out to determine the acceptance of the proposed strategies by the beneficiaries or to develop new strategies in collaboration with them. Another interesting aspect for a more comprehensive study would be to analyze the differences in perceived well-being between the females who bought the bike and those who got it for free. No significant differences were found in this study. Yet this is probably due to the small sample size of only 24 girls with a free bike. Further research should include all hundred beneficiaries and compare them with a similar control group of female students who bought the bicycle. In addition, a qualitatively more in-depth study with the same research focus could uncover other drives and barriers that were not revealed in the survey, especially the underlying cultural ones.

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Appendix

A1. List of schools visited

1. Mubuka secondary school	Students with a bicycle: 13
2. Gwanseli secondary school	Students with a bicycle: 4
3. Anna Tibaijuka secondary school	Students with a bicycle: 21
4. Prof. Joyce Ndalichako secondary school	Students with a bicycle: 6
5. Bureza secondary school	Students with a bicycle: 20
6. Kamachumu secondary school	Students with a bicycle: 20
7. Ngenge secondary school	Students with a bicycle: 16
8. Nyakatanga secondary school	Students with a bicycle: 40
9. Burungula secondary school	Students with a bicycle: 30
10. Rukindo secondary school	Students with a bicycle: 8
11. Kishanda secondary school	Students with a bicycle: 13
12. Ikondo secondary school	Students with a bicycle: 52
13. Itongo secondary school	Students with a bicycle: 70
14. Rulongo secondary school	Students with a bicycle: 18
15. Ijumbi secondary school	Students with a bicycle: 27

A2. List of the respondents of the questionnaire

Treatment group:

1. ASIA SHUKURU SAID
2. ADERA ZEPHRINE
3. FIANA COSTANTINE
4. LENATHA WISTON
5. JOYLINE DEONIZ
6. ANITHA REVOCATUS
7. ALISIA DEOGRATIAS
8. ANESIA MODEST
9. ROVINA A GODWIN
10. AISTIA DEOGRATIAS
11. AVETH EPAFRODITO
12. ALISIA RESPIKIUS
13. ROYCE GEORGE
14. RINETH DERICK
15. RENIDA SALMON
16. NOSIATHA STEPHANO
17. AINES STEVEN
18. ANISIA ENERIKO
19. MERIJUSTA ISSAYA (Free Bike)
20. LYDIA JAMES
21. JULIA ASIMWE JASON

Control group:

1. JUSITHA METHOD
2. VENIA TUMSIME STEVENE
3. ESELI ERADIUS
4. LIBERATHA BARNABA
5. AILETH GODLIKE
6. JOINES SEVELIN
7. EROJIA JALUES
8. APHURA PASTORY
9. MILIKA FAUSTINE
10. JAILES SEVELIN
11. PELINA DEOGRATIAS
12. AISHA SULEIMAN
13. AIVON RESTUS
14. JENESTA VEDASTO
15. LEAH T JOHANES
16. ANUSIATHA ZEPHRINE
17. REYSATH ASIMWE WISTON
18. JOVNESS JOSEPHAT
19. CRAUDIA RESPIKIUS
20. BETINA AJUNA VEDASTO
21. ADELA K STEVEN

- | | |
|--|---------------------------------|
| 22. ELIETH A ANGELO (Free Bike) | 22. IMAKULATHA RICHARD |
| 23. ATOSHA BENJAMINI | 23. BEATRICE K REVOCATUS |
| 24. ANJERIKA FRANCE (Free Bike) | 24. RIZIKI RENATUS |
| 25. AULEA AUDAX | 25. AIVOTH HURUMA VENANT |
| 26. AVILA ANTONY SILILO (Free Bike) | 26. REANA KANSINGILE SIMEO |
| 27. AISTA JOHANE (Free Bike) | 27. BENITHA K SEVERIN |
| 28. DOMITINA K EXAVELLY | 28. AVETH FELIX |
| 29. FAIMA SAID | 29. JIVINA JENSI |
| 30. MAGRETH JONES (Free Bike) | 30. ELIDA WILBARD KITATWILE |
| 31. ANTIA ASIMWE DOMINICK | 31. SHANI ARAJABU |
| 32. EPIFANIA SEVELINE | 32. JULIETHA AJUNA CLEMENCE |
| 33. ASHIRATH NURU (Free Bike) | 33. AZIA NINSIMA AMADA |
| 34. JUDITH AUDAX | 34. EJIDIA ALCHARD |
| 35. JOSOLIN TUMUHELWE SAMSON | 35. ASHIDATH ZAID |
| 36. ANISIA EDWIN | 36. YUVISTA ATUGONZA BRUKADI |
| 37. NASWIRA K MBARAKA | 37. WIVINES CLEMENCE |
| 38. RAINER RICHARD (Free Bike) | 38. RIDATH DENICE |
| 39. JUSTER R AUGUSTIN | 39. GREIDES ANDREW |
| 40. NISELA SHEMELA FESTO (Free Bike) | 40. ANCHIDIA CYPILIAN |
| 41. BENITHA A SALVETORY | 41. ANITHA FAUSTIN |
| 42. ANAMERY NYAKATO MUSHOBOZI | 42. HUZURATH OMARY |
| 43. REGINA YAKILILA MUGISHA (Free Bike) | 43. VESTINA AUGUSTINE |
| 44. MARIAM JOHN (Free Bike) | 44. ERISTHA EZDORY |
| 45. RUSIA HELMAN (Free Bike) | 45. AIRETH ISAYA |
| 46. BELITHA KURWA TELESFHORY (Free Bike) | 46. ANICETHA CHARLES |
| 47. GUDURA JOANES | 47. MAYNESIA GRASIAN |
| 48. ENELIETHA PHILIMON | 48. ELIVIRA ALISTEDES |
| 49. EDINA SOSTHENES | 49. TUMSIME MEDELICK |
| 50. MARIA JEREMIAH (Free Bike) | 50. ANTIA ARCHARD |
| 51. DIGINA JORAM (Free Bike) | 51. AILETH CYPRIAN |
| 52. EVODIA KOKUSIMA EDWARD | 52. ANITA DEOGRATIAS |
| 53. BELINA BARTHAZARY | 53. BENITHA THEONEST |
| 54. BELINA BARTHAZARY | 54. ASELA ADOLPH |
| 55. EUSEBIA EDWARD | 55. REDEMPTA ZAWADI RENATUS |
| 56. DATIVA TUSHABE EUSTACHIUS | 56. GENITHA DAUD |
| 57. DONATHA AJUNA PHILIBERT | 57. VANESA WINCHISLAUS |
| 58. JOVITHA FAUSTIN (Free Bike) | 58. EDINA WILLIBRORD |
| 59. JOANITHA ANACRET (Free Bike) | 59. LEAH KOKUTEKELEZA REVOCATUS |
| 60. LEONATHA LIBENTIUS | 60. NAMALA IRENE FROLIAN |
| 61. ASELLA ONORGSCO | 61. VICTOR GERVASE |
| 62. DIONISIA DENICE | 62. EPIFANIA ADRONIKUS |
| 63. EDINA SAMSON | 63. SANTUMA STEPHANO |
| 64. WIVINATHA DOTO BURCHARD | 64. ANTIA GOZIBERT |
| 65. ZULFA HAMZA | 65. RENATHA JOSAM JOHN |
| 66. WINIFRIDA SWITBERT | 66. ANITHA DESDERY |
| 67. AGUSTA SYLIVESTA | 67. EUDOZIA ERADIUS |
| 68. JOSPINA AJUNA NESTORY (Free Bike) | 68. DIANA ALEX |

- | | |
|--|--------------------------------|
| 69. BEATH K NOVATH (Free Bike) | 69. DELIPHINA SYLIVESTER |
| 70. ROSEMARY T LEOPORD (Free Bike) | 70. CROTILDA ELIPIDIUS |
| 71. DALIA K RICHARD (Free Bike) | 71. PETRIDA RUCKIUS |
| 72. YUSTINA BERNARD | 72. BETINA BERICK |
| 73. SARAH CHARLES | 73. IVONA T NOVATH |
| 74. ARAPHATI KOKWIJUKA MUHAJIRI | 74. NEOVITHA SARAPION |
| 75. FAUSTINA FASTON | 75. DOSILIDA DEOGRATIAS |
| 76. HAWA ALLY | 76. JUDITH VEDASTO |
| 77. DEVOTHA DANIEL | 77. GRACE JOHN |
| 78. NESTA JULIUS | 78. LENIA MUSHI |
| 79. DELPHINA DANIEL | 79. DOMINATHA MARCO |
| 80. DATIVA REMIDIUS | 80. MARTHA JOSEPH |
| 81. GAUDENSIA SAMOLA | 81. AVIRETH KARUNGI MATHIAS |
| 82. JENESTER D SWEETBERT | 82. JASINTA KOKUJUNA DAGOBERT |
| 83. IMELDA ADLONICKO | 83. JUSTA JOACHIM |
| 84. RINA SOSTENES | 84. AGUSTA TUSHABE GERADY |
| 85. EGIDIA ELIGIUS | 85. ANITHA K FIDEL |
| 86. ELIGIA ELIGIUS | 86. ANETH AMOS JOSEPHATH |
| 87. REVINA KOKUSIMA ERNEST | 87. ROSATHA ALINDA CHRIZESTOM |
| 88. JUSTER PHILIDOLIN | 88. RENATHA AJUNA GOZIBERT |
| 89. MOREEN ELIUD | 89. DEONISIA MKALINDA SCARION |
| 90. DOSILIDA DEOGRATIAS | 90. DATIVA DOMICK |
| 91. RAINA SYLIACUS KOKUSIMA | 91. NAJIMA IBRAHIMU |
| 92. ASELA BAHATI PHOTIDAS | 92. SHAMILATH KAILIZA MAJID |
| 93. SKUZANI KIRISPIAN | 93. REJIKA LEONARD |
| 94. RATIFA ASHIMU | 94. ELIVIRA PHILIMON |
| 95. SCONTIA EVODIUS KENGONZI (Free Bike) | 95. BENITHA ADOLPH |
| 96. JOVIETH VEDASTO | 96. JOSEPHINA FAUSTINE AMBROZI |
| 97. AVITHA EVELIGIST | 97. WILIMINA WILIFRIDI |
| 98. ASELA ALISTIDES | 98. LILIAN LEOPORD |
| 99. ANETH ALEX MICHAEL | 99. ANASTAZIA A MUSHOBOZI |
| 100. LEAH ANTIDIUS CLEOPHACE | 100. ANISIA ANTALEX |
| 101. NISERA RICHARD (Free Bike) | 101. MEDIA M BRUCHARD |
| 102. ZAITUNI ATUGONZA BASHIRU | 102. DORICE B PHILIBERT |
| 103. PIENSIA ALFRED (Free Bike) | 103. VELENA ATULINDA VEDASTO |
| 104. RENIA JULIUS | 104. RODESIA GORODIAN |
| 105. ASUMPTA NYAKATO JOSTON | 105. JOANA JOVINE |
| 106. AVETH A LORENCE | 106. ANISIA WILIBRORD |
| 107. JONES ALFRED | 108. FELISTA JOHN |
| | 109. RENATHA WINCHISLAUS |
| | 110. DIANA SAMSON |
| | 111. ANITHA SAMSON |
| | 112. ASELLA TIBAKANYA KASTURI |
| | 113. DISELA K JOHANES |
| | 114. ELIVIRA EGIDIUS |
| | 115. GODBEKA GODFREY |
| | 116. ROSEMERY THOMAS |

- 117.FATINA BALINJUNA JAMIRY
- 118.ASINETH CRALENSI
- 119.RAINES KANGANYIRA JOHANES
- 120.RAIKI AZIZI
- 121.NADHIFA SALUM SEIF
- 122.LILIAN KAUMBYA MAXIMILIAN
- 123.MARIASTELA CHARLES
- 124.GRACE MALEGESI
- 125.ELIETHA SIMON
- 126.JULITHA DEOGRATIAS
- 127.CONCHESA ALEXANDER
- 128.ANCHILA KENEEMA ANTALEX
- 129.JULIETH RESPIKIUS
- 130.JESCA JOSHUA
- 131.HUSNA K HAMDUNI
- 132.AISHATH KAUMBYA ABDULKA DIRI
- 133.METHODIA K AUGUSTIN
- 134.LEIYATH HASHIMU
- 135.JONIA DEZIDERY
- 136.IMELIDA MUGOLOZI
- 137.JAWILLA ABDALLA
- 138.ANCHESTA ADROPH
- 139.DORICE JORAM
- 140.MEDERANA MEDARD
- 141.VESTINA BALINGILAKI
- 142.ZAMDA ABDUL
- 143.IVONA JONAS
- 144.ADERA ADOROPH
- 145.EJIRIN EGIDIUS
- 146.BENITHA BENJAMIN
- 147.JUDITH NOVATH
- 148.ANTIA OSWARD
- 149.RAILATH HIJA
- 150.ASELA ANTIDIUS
- 151.SHAMRATH S JUMA
- 152.PIENSIA PROJESTUS
- 153.ANETH DISMAS
- 154.LEONTINA LAULIAN
- 155.WIVINA WISTONE
- 156.MAHYA HAMIMU
- 157.ASSANATH SADICK
- 158.JUSTHA JOSEPHATH
- 159.COSTANSIA ONORASCO
- 160.SAPHINA KASSIMU
- 161.CHRISTER PRUDENCE
- 162.IRENE JULIUS
- 163.ZENA HASSAN SULEIMAN

A3. Raw Data and Questionnaires

Raw data

The raw data for the present thesis can be found online on kobotoolbox.com

Username: deborah_velafrica Passwort: Masterthesis2020

Questionnaire for Beneficiaries

The questionnaire was made with kobotoolbox.com and then exported and printed. The printed version was distributed to the female students and the data was in a last step filled in again to kobotoolbox.com by the research assistant. The questionnaires were made in English and in Kiswahili. In this thesis only the ones in English are attached. The ones in Kiswahili can be found online.

Questionnaire Bike to School 1 in English

Welcome to the questionnaire about the Bike to School Program for Girls. To fill out this form you will need approximately 10 minutes. If you have any questions, feel free to ask the instructor Elvira.
With your answers you will help us to improve the program. Thank you very much for your help!

What is your name?

What is your age?

What grade are you in?

How often do you go to school with the bicycle?

- Each day 3-4 days per week 1-2 days per week Less than one day per month
 Never, please explain why:.....

What else do you use the bicycle for?

You can select more than one option

- Fetch water Visit relatives or friends Play with friends
 Going to the market Transport harvest from the field Others, please specify:
.....

Who else is using the bicycle?

You can select more than one option

- My father My mother My brother(s) My sister(s) Friends Neighbours
 Nobody else
 Others, please specify:

At what time do the lessons at your school start?

hh:mm

When do you leave home if you go to school with your bicycle?

When do you leave home if you walk to school?

If you arrive faster to school with your bicycle, what do you do with the extra time?
You can select more than one option

Study Help in the household Meet friends
 Help in the fields Sleep longer I do not arrive faster to school with the bicycle
 Others, please specify:

Do you feel safe on your way to school... Most of the time Sometimes Rarely I do not use this mode of transport

when you go by bicycle?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
when you walk?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
when you go by boda-boda-taxi?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
when you go by mini-bus?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Is there anything you are afraid of on your way to school?
You can select more than one option

Wild animals Darkness Threats and abusive language
 Harassment and assaults by men To be late to school (punishment) Nothing
 Others, please specify:

Did the bicycle change the way you feel in school? True Not true I dont know
Please state if the following statements are true,

I feel less tired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can concentrate better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I perform better in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel more relaxed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel no change to before	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How often are you late to school now that you go with a bicycle?

.....
 Everyday 3-4 days a week 1-2 days a week Few days a month Never

<p>When you finish school, what would you like to do? <i>You can select more than one option</i></p> <p><input type="checkbox"/> Become a mother and have a family immediately after</p> <p><input type="checkbox"/> Go to university or another school</p> <p><input type="checkbox"/> Work with my family</p> <p><input type="checkbox"/> Work and earn money independently</p> <p><input type="checkbox"/> Other, please specify:</p>
<p>How confident are you that you will be able to achieve this?</p> <p><input type="radio"/> ————— <input type="radio"/> ————— <input type="radio"/> ————— <input type="radio"/></p> <p>Very confident Confident Somewhat confident Not confident</p>
<p>Do you have a role model?</p> <p><input type="radio"/> Yes <input type="radio"/> No</p>
<p>If yes, what does she/he do?</p> <p>.....</p>
<p>Are there days on which you choose not to ride the bicycle? If yes, please explain why. <i>You can select more than one option</i></p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes, because somebody else needs the bicycle</p> <p><input type="checkbox"/> Yes, because family and friends don't want me to ride</p> <p><input type="checkbox"/> Yes, because I feel uncomfortable riding with my school uniform</p> <p><input type="checkbox"/> Yes, because I feel pain (for example while menstruating)</p> <p><input type="checkbox"/> Other reason, please specify:</p>
<p>What is the major problem when your bicycle breaks down?</p> <p><input type="radio"/> No problem</p> <p><input type="radio"/> Don't know how to repair it</p> <p><input type="radio"/> Don't have money to repair it</p> <p><input type="radio"/> There are no mechanics around</p> <p><input type="radio"/> There are no mechanics from VBC around</p> <p><input type="radio"/> Other reason, please specify:</p>
<p>Have you had a problem with your bicycle? Please specify:</p> <p>.....</p>
<p>Do you see any other benefits of owning a bike?</p> <p>.....</p>

Do you have any comments about the program?

You have reached the end of the questionnaire. Thank you very much for your participation.
If you wish to be informed about the results of the study, please provide us with your contact details.



Female secondary school students participating in the survey. The research assistant Elvira Charles is helping when the girls have questions. Picture taken by Adelfinus Alexander.

Questionnaire Bike to School 2 in English

Welcome to the questionnaire about the Bike to School program for Girls. To fill out this form you will need approximately 10 minutes. If you have any questions, feel free to ask the instructor Elviria.
With your answers you will help us to improve the program. Thank you very much for your help!

What is your name?

What is your age?

What grade are you in?

How do you normally go to school?
You can select more than one option

By foot By bus By moto-taxi
 By bicycle Other, please specify:

At what time do the lessons at your school start?

When do you leave home if you walk to school?

Imagine you would have a bicycle, what would you use it for?
You can select more than one option

Going to school Fetch water Transport harvest from the field
 Visit relatives or friends Going to the market Other, please specify:

Do you see any other benefits of owning a bicycle?

Do you feel safe on your way to school...	Most of the time	Sometimes	Never	I do not use this mode of transport
when you go by foot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
when you go by boda-boda taxi?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

when you go by minibus?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
when you go by bicycle?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Is there anything you are afraid of on your way to school?
You can select more than one option

<input type="checkbox"/> Wild animals	<input type="checkbox"/> Darkness	<input type="checkbox"/> Threats and abusive language
<input type="checkbox"/> Harassment and assaults by men	<input type="checkbox"/> To be late to school (punishment)	<input type="checkbox"/> Nothing
<input type="checkbox"/> Other, please specify:		

How often are you late to school?

————— ————— ————— —————

Everyday 3-4 days a week 1-2 days a week Few days a month Never

When you finish school, what would you like to do?
You can select more than one option

<input type="checkbox"/> Become a mother and have a family immediately
<input type="checkbox"/> Go to university or another school
<input type="checkbox"/> Work with my family
<input type="checkbox"/> Work and earn money independently
<input type="checkbox"/> Other, please specify:

How confident are you that you will be able to achieve this?

————— ————— —————

Very confident Confident Somewhat confident Not confident

Do you have a rolemodel?

Yes No

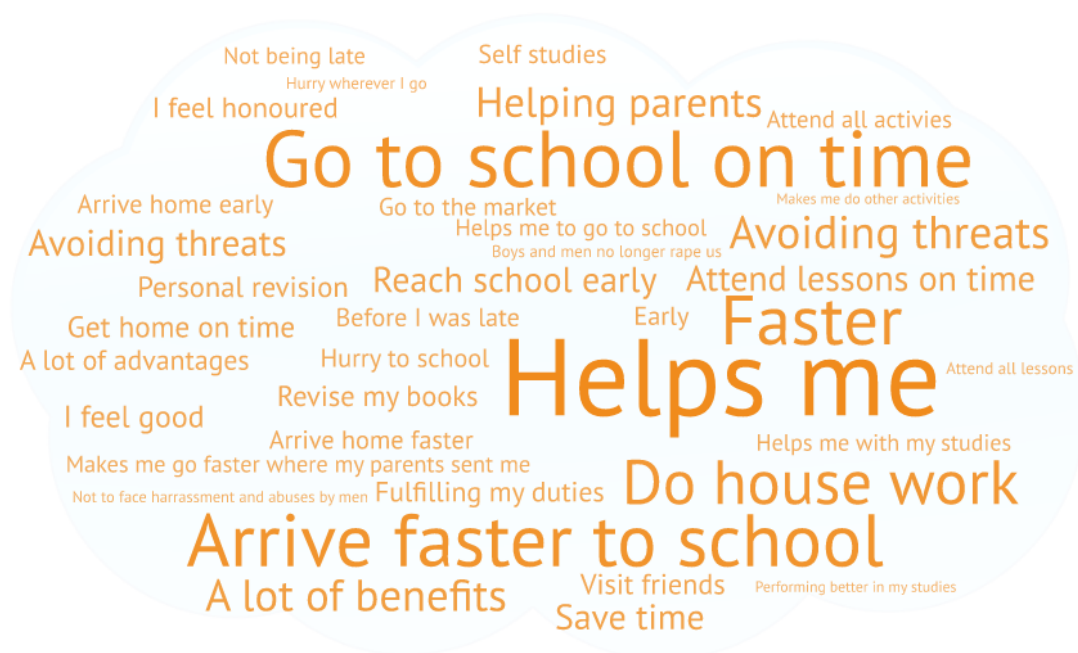
If yes, what does she/he do?

.....

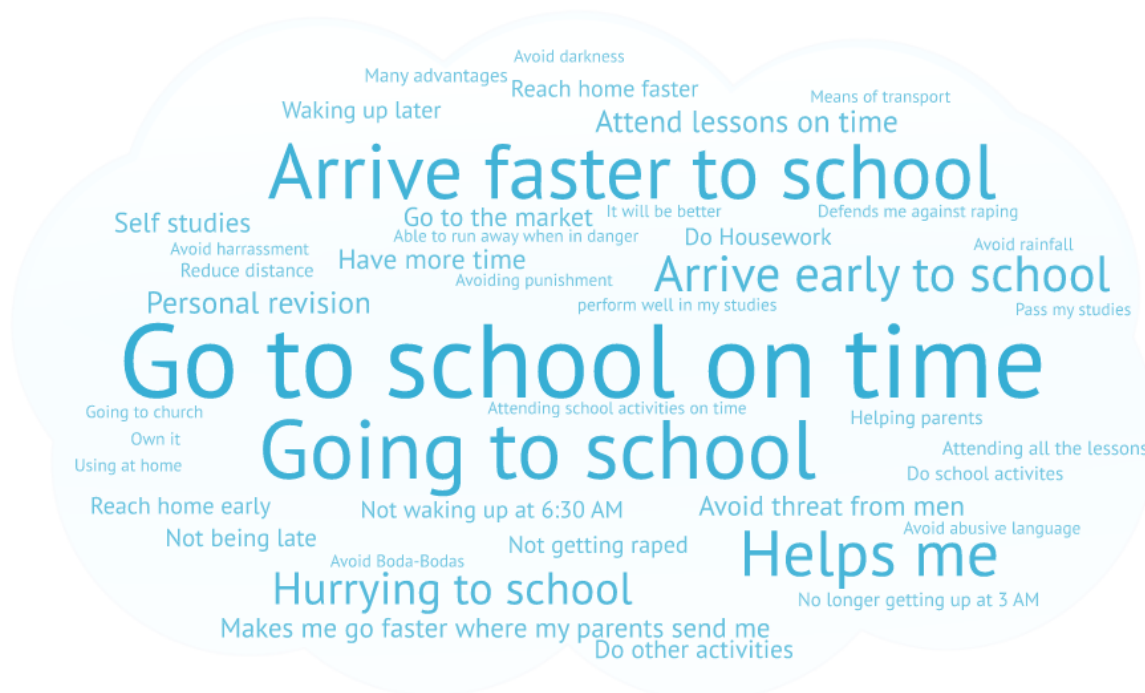
You have reached the end of the questionnaire. Thank you very much for your participation.
If you wish to be informed about the results of the study, please provide us with your contact details.

.....

A4. Word cloud on perceived benefits



Wordcloud1: Perceived benefits of a bicycle by the treatment group



Wordcloud 2: Imagined benefits of a bicycle by the control group

A5. Interview with students

Interview with Lydia James

Elvira: Hello sister, could you shortly present yourself?

Lydia: My name is Lydia James, I am 16 years old, a form three student at Burungura secondary school.

Elvira: Thank you so much, how many children are you in your family?

Lydia: we are seven children

Elvira: Ooooh! Seven children, which village are you coming from?

Lydia: Kakoma

Elvira: After arriving to school, what time do you take going to school when you walk on foot?

Lydia: From home at 5:00am and reach at school at 7:00am

Elvira: Yes, at what time do you start studying?

Lydia: We start at 8:00am

Elvira: Who else is using the bicycle?

Lydia: I use it alone

Elvira: What scares you on the way to school if you walk?

Lydia: Temptations, there are herdsmen where I pass

Elvira: Oh! There are herdsmen, ok now why are afraid of that tempting thing.

Lydia: For these herdsmen can cause me problem like raping me and then they can probably chase me away, maybe they will keep bothering you as soon as they blow the whistle.

Elvira: Thank you so much, do you see any changes going to school with a bike?

Lydia: Yes, because the bike helps me reach at home and do my work on time.

Elvira: Excellent, can you be careful at school?

Lydia: Yes because I am calm and I am not tired and I feel good.

Elvira: How many times did you miss going to school before you got a bike?

Lydia: Many times, because I'm tired and I don't feel well so it causes me to miss school.

Elvira: How often, can you tell us maybe for a month how many times can you miss?

Lydia: Like five times or sometimes week can end without coming because I am so tired and don't feel well.

Elvira: What makes you proud to have a bike?

Lydia: Firstly, the bike helps me when I go home I can't get tempted but when I don't have a bike I meet the herdsmen on the way they bother me, sometimes they hit the mules, it happens to bother me.

Elvira: what work you have to do for the day, from morning to evening?

Lydia: Firstly, I study for myself, I do my chores such as washing and helping my parents with housework.

1.2 Interview with Julia Jason

Elvira: What is your name and age and where are you from?

Julia: Am Julia Jason, am 19 years old, am in grade four and a student at Burungula Secondary School and I live in Burungula.

Elvira: Do you feel any change in school since you arrive by bicycle?

Julia: Yes I see a lot of improvements because am punctual and finish doing home activities earlier therefore I enter in the class earlier to have self-studies.

Elvira: Are there days in which you choose not to ride the bicycle? Why?

Julia: Some days I did not ride the bicycle because of being sick or when am in menstrual period.

Elvira: What are your plans for the future?

Julia: My future plans are to study hard and become a nurse and thereafter to have a family of six children.

1.3 Interview with Anisia Enerko

Elvira: What is your name and age and where are you from?

Anisia: My name is Anisia Enerko a student at at Burungura Secondary School, am 17 years old and I am from Kakoma village. We are seven members in our family, five children and two parents

Elvira: What are the major benefits the bicycle has brought to your life?

Anisia: It has helped me to be attentive in class and to improve my performance and reduce tiredness. Also when I leave with a bike, it helps me to reach home on time, help my parents with home activities. Before I spend an hour and a half walking from home to school, when walking to school I get afraid of temptations and rapes sometimes I meet guys on the way trying to stop me and start talking meaningless issues.

Elvira: Are there days in which you choose not to ride the bicycle? Why?

Anisia: I decided not to ride the bicycle because of the menstrual period because it causes pain.

Elvira: What are your plans for the future?

Anisia: My future plans are to study hard and become a doctor and thereafter to have a family of three children.

1.4 Interview with Shamila Dauda

Adeli: What is your name?

Shamila: Shamila Dauda

Adeli: In which form are you?

Shamila: I am in form 3A

Adeli: And in which school?

Shamila: Nshamba Secondary School

Adeli: Whom are you living with?

Shamila: I am living with my aunt

Adeli: How long does it take you from your home to school?

Shamila: Almost 2 hours

Adeli: Now with the bicycle how long does it take you?

Shamila: Half an hour

Adeli: Can you tell us how the bicycle is helping you?

Shamila: The bicycle has helped me to come from home to school and back at the right time. The bicycle has helped me to be clean. Because it is different for students who have got a bicycle and those who got no bicycle. When they come from home to school they might get dirty. But for me who has got a bicycle, it helps me to be clean. The bicycle has helped me to improve my academical performance because it provides me with enough time to do my own thing at school concerning academic activities. The bicycle has also kept me away from temptation of men in the road. That is all.

Adeli: Can you tell us about your challenges before having the bicycle?

Shamila: first of all I used to drag. I used to get punishment, so when I entered the class I could not study comfortably. Another challenge is that men wanted to abuse me. They wanted to give me a lift and I refused so that is a second challenge. The third challenge is raping. When you have got a bicycle you should use the alert. But for those who have got no bicycle they are firstly to pass narrow roads whereby there are the men who was taking the opium. Those people may trip.

When you have no transport, then you meet with boys then they give you something to eat such as chips. When a teacher is teaching in the classroom they don't concentrate on what the teacher is teaching, even if the parent is advising, they don't consider much what the parent is advising. Considering their boyfriend in the street who use to give them the lift.

Another thing is poor attendance at school: Due to the long distance if a girl is late she may decide to not attend school, then therefore she waits somewhere else until she returns home. She is late so she thinks that she is going to get punishment so she does hide herself until they it is going back time. So she did not attain the lesson. That's all.

A6. Interviews with teachers

Interview with Mr. Muganyizi

Elvira: Could you shortly present yourself and talk about the role of the bicycle for the female students?

Mr. Augustine Muganyizi: I am Mr. Augustine Muganyizi, Headmaster of Burungura secondary school, I recognize this Kwa Wazee project especially the unit of VBC which provides bicycle support for students, some students contribute half cost of the bicycle but also other students are given for free, these bikes have greatly helped a lot especially the students' attitude and education in particular, there are students from faraway places like Kakoma village about ten kilometers away going and coming back. That has made many students despair even of dropping out of school and this project has had many benefits for our students and the school in general, students have been able to ever be in school. They were very late but when we look at those who have and who don't have, those who have a bike are likely than those who do not have a bike and reduced absenteeism for students because of the distance, they were fleeing but now the percentage of absenteeism has decreased especially for female students who come from far away from where the school is. But also this project has helped increase concentration in the classroom, students walking long distance was causing them to get very tired so when they get to class they are really tired hence leading to not following the topic that the teacher is pursuing, but also cycling has helped to reduce fatigue, students are able to follow the lessons well in the classroom in such a situation that their performance when we give exams and exercises has improved. There is also the issue of safety for girls, when a student walks long distance here in the middle there is no safety, there a lot of temptations like lift but the student who own bike then it becomes directly from school to home. It greatly reduced the temptations by a large percentage the students who were given the bike are completely safe. I thank this Kwa Wazee organization through this VBC project, if it is possible to ask this project to continue helping us, continue to liberate our girls and protect them so that they can get what they are looking for here, also there are still students who walk long distances still need help.

Interview with Madam Aneth

Elvira: Could you shortly present yourself and talk about the role of the bicycle for the female students?

Madam Aneth: My name is Aneth Elias, I am teacher at this school. What I believe is that cycling is part of the exercise so when the body become active also the brain activates for that reason can make her concentrate, listen and understand well.

Interview with Mr. Alphonce

Elvira: Could you shortly present yourself and talk about the role of the bicycle for the female students?

Teacher Jonas: My name is Teacher Jonas Alphonce a teacher at Burungura Secondary school, I teach geography and Kiswahili subjects. Students who have already acquired a bicycle from you, for sure has helped a lot because when we compare to the past before getting bikes the students suffered a lot, so far they seem to be coming to school at the required time so they get morning lessons as those students who come from nearby.

Interview with Mr. Konga

Elvira: Could you shortly present yourself and talk about the role of the bicycle for the female students?

Teacher Ezron: My name is teacher Ezron Jacob Konga, I teach geography and history subjects, in fact there is a big difference to those female students with bicycles are safe, as my fellow teachers said, but a student without a bike meets a lot of obstacles in their way they face different problems for instance there are herdsmen, sometimes snakes so they can be bitten by snakes so it is not safe but with a bike she is real safe.

Declaration on plagiarism

I hereby declare that this submission is my own work and that I have fully acknowledged the assistance received in completing this work and that it contains no material that has not been formally acknowledged. I have mentioned all source materials used and have cited these in accordance with recognized scientific rules.

Full name: Deborah Bieri

Student number: 10-217-404

Date of issue: 19.11.2020

Signature: