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RESEARCH REPORT

Topic:
Evaluation of economic aspects and advantages of Project Child
Indonesia Drinking Water Program

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**Declaration**

We declare that we have developed and written the enclosed report completely by ourselves, and have not used sources or means without declaration them in the text.

Any thoughts from others or literal quotations are clearly marked. The report was not used in the same or in a similar version to achieve an academic grading and is not being published elsewhere.

Yogyakarta, 4th July 2019

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List of Abbreviations

PCI  Project Child Indonesia
DWP  Drinking Water Program
DWS  Drinking Water System
Abstract

Purpose
The research focuses on the measurement of economic figures and advantages of the Drinking Water Program provided by Project Child Indonesia.

Research Design
The research is based on a standardized questionnaire with a focus on quantitative and additional qualitative questions concerning economic and psychological aspects of school children, especially their consumption of drinks (sweetened drinks and drinking water) during school time as well as their related financial expenses.

Findings
The financial advantages for children from rather getting drinking water through the filter system is undoubted and bears a big economic incentive for schools to take part at the DWP. Further, in order to foster the children’s adoption to actually use the filter, simultaneously a decreased demand of sweet, unhealthy drinks is required to reach this particular goal as these two factors go hand in hand.

Value
The results can serve as a basis for Project Child Indonesia as a basis for evaluation of the impact of the Drinking Water Programm as well as for future discussions and fundraising activities.

Keywords
Project Child Indonesia, Non-Governmental Organizations, UN Sustainability Goals, Safe Drinking Water, Drinking Water Program, Schools in Indonesia
1 Introduction

The following report is a result of a five-month-long research cooperation of three students from the University of Applied Science Pforzheim and Project Child Indonesia (PCI). The research focuses on PCI’s Drinking Water Program (DWP).

1.1 Project Child Indonesia (PCI)

PCI is a locally-run, community-based Non-Governmental Organisation (NGO). Initially, the organization was founded in 2011 by Surayah Ryha from Indonesia and Marvin Kiefer from Germany with the idea of contributing to the wellbeing of local communities from low socio-economic areas in Indonesia (Project Child Indonesia 2019a). Since 2013 Project Child Indonesia is registered legally as an organization with the urge and responsibility to deliver services to people in need and to alleviate poverty (ibid.). PCI focuses its work on communities in coastal and riverside areas. These communities are most vulnerable concerning natural disasters and increasing pollution (Project Child Indonesia 2019b).

The vision of Project Child is for every child in Indonesia to have the opportunity to learn, to have a healthy start, and to feel supported and secure living in a clean and safe environment (Project Child Indonesia 2017b). Thus, PCI developed several programs. The Sekolah Pantai (Beach School) and Sekolah Sungai (River School) focus on teaching children about basic health and the environment. The Drinking Water Program focuses on solving the nutritional problem in primary schools in Indonesia and teaching children about healthy living and the environment. The Internet Literacy Program is an educational program focusing on digital awareness and information.

1.2 PCI Drinking Water Program (DWP)

As stated above, the following research report focuses on PCI’s Drinking Water Program. The program is working towards the implementation of water filters in elementary schools, providing them with safe water and supplementary education
about the importance of safe water, hygiene, health, and environmental issues. By
doing so, DWP introduces an effective way of increasing clear water usage and
hygiene standards (Project Child Indonesia 2019c).

Even though the water availability in Indonesia is naturally sufficient,
approximately 1 out of 8 households in the country has no access to safe water,
which affects more than 27 million people in the country. 51 million Indonesians
lack access to improved sanitation, increasing the chances of waterborne diseases
such as diarrhea. Especially children are concerned by dehydration due to the lack
of drinking water, which affects the student’s cognitive functions, limiting school
performance and physical activity (Project Child Indonesia 2019d). Water is a
fundamental human need and particularly essential for the healthy development and
growth of children. For a properly functioning body and good performance in
school, children must be given access to drinkable water, along with the awareness
of the vital importance of sufficient daily water consumption. Since 2016 DWP
addresses this critical issue by providing access to affordable and safe drinking
water for public schools by installing drinking water facility with the
complementary education about environment and health (Project Child Indonesia
2019c).

At the moment, DWP has 37 partners of elementary schools in Yogyakarta, Pacitan
(East Java) and Fak-Fak (West Papua), with total direct beneficiaries on about 7,091
people (Project Child Indonesia 2019c). The target group of the program is 4th-
grade elementary students.

The program is an answer to the United Nations (UN) Sustainable Development
Goals (SDGs). The SDGs are a universal call to action to end poverty, protect the
planet and ensure that all people enjoy peace and prosperity across all countries -
developed and developing (United Nations Development Programme 2019). In
reference to the SDGs, DWP has a three-fold impact on the environment (ecological
impact), on student’s state of health and the economic status of families in the areas
(ecological impact).
1.2.1 Ecological Impact
The installation of water filtration systems allows children to refill bottles. By doing so, the program provides an opportunity to avoid the purchase of safe water, which usually comes along in plastic bottles. Therefore, DWP leads to a reduction in the use of single-use plastics and plastic waste (Project Child Indonesia 2019c).

Furthermore, supplementary education in environmental issues raises awareness of the current plastic crisis in Indonesia and provides young generations with valuable knowledge and alternative solutions in order to tackle the challenge.

1.2.2 State of Health
PCI provides a practical solution to the lack of access to safe drinking water in elementary schools. By installing water filters, PCI ensures proper hydration of students, which is essential for the children's state of health, growth, and functioning body system and school performance (Project Child Indonesia 2019c).

The additionally provided education raises the awareness of sufficient daily drinking water consumption. It helps the children to understand the importance of staying hydrated. Moreover, DWP explains the dangers of sugary drinks for the health of children, a common knowledge gap in Indonesia (Project Child Indonesia 2019c).

1.2.3 Economic Impact
Since DWP focuses on communities affected by poverty, it aims to better the situation of families often living on the daily-standard poverty budget of around 3 USD per day. They face a daily struggle with attempting to provide for their most essential needs. Providing free drinking water for their children at school reduces the money parents are forced to spend on purchasing water bottles and make healthy nutrition more affordable (Project Child Indonesia 2019c).
1.3 Research Topic and Objectives

As stated in the previous chapter, DWP is not only providing children with drinking water and important additional education but furthermore has a measurable advantage on the economic situation of the concerned families and communities.

In reference to former studies, the economic impact of DWP is yet an issue that needs further research. So far, there are no concrete numbers explicitly stating the savings and therefore the economic advantage of schoolchildren benefiting from the DWP.

These numbers appear to be a convincing factor for the communities to strengthen their use of the program and gain awareness of other schools and supporting governmental institutions. Therefore, the main objective of the following research is the measurement of the economic advantage of the DWP that can serve as a basis for discussions and fundraising of PCI.

2 Research

In this chapter, the team gives an overview of the intent and method used for the conducted research.

2.1 Research Question

As stated above, the objective of the following research is the measurement of economic aspects of the DWP. Thus, the research is based on the research question:

*What can be economic advantages (financial as well as concerning psychological aspects) of PCI Drinking Water Programm?*

2.2 Research Design

In order to reach the objected stated and be able to answer the research question, the team agreed on the following Research Design:
**Methodology**

In reference to the superior research question and objective, the team operationalized a standardized questionnaire with a focus on quantitative and additional qualitative questions concerning economic and psychological aspects of school children, especially their consumption of drinks (sweetened drinks and drinking water) during school time as well as their related financial expenses.

**Sample Unit**

As sample unit, the team agreed on school children from fourth and fifth grade, between the age of 9 and 14 years. The samples are taken from public schools partnering and benefiting from PCI Drinking Water Program in Yogyakarta, Java, and Fak-Fak, West Papua.

**Sample time**

The questionnaires are conducted between March and May 2019.

2.3  **Implementation and Evaluation**

2.3.1  **Description of the Sample Unit**

In total, the research team was able to conduct 272 questionnaires in ten partner schools, all of them valid for evaluation. The polled school children were in fourth and fifth class, located in schools in Yogyakarta, Java (three schools, 156 samples) and Fak-Fak, West-Papua (7 schools, 116 samples). Averaged, the school children have been in the age of 10,3 years.

Currently, DWP has 37 partners of elementary schools in Yogyakarta, Pacitan (East Java) and Fak-Fak, with total direct beneficiaries on about 7091 people. Most of the partner schools are placed in Yogyakarta. Concerning that, the representativeness of the sample unit can be seen as sufficient, but limited in reference to the local distribution, since it consists of almost as many samples from Fak-Fak as from Yogyakarta, and none from Pacitan.
2.3.2 Evaluation

The following chapter displays and explains the evaluation of the questionnaire. The final questionnaire (A.1; in Indonesian language), as well as the evaluation charts (A.2), can be found in the appendix of the report.

**Beverage Preferences and Drinking Habits**

*Favorite Drink*

Half of the school children prefer sweetened drinks, almost 40% milk and only 20% state drinking water as their favorite drink. As the most common reason, the children state “healthy” as an influence on their choice. 20% stated “tasty” as the most important argument. This causes us to assume a lack in education and awareness since 73% of pupils state to prioritize the healthiness of drinks, however the majority still decides to get a sweetened drink or milk.

![Favorite Drink Chart](image1)

*Consumption of Drinking Water*

The recommended amount of fluids for children is around 2 l/day, which equals an ideal of eight cups/day. Exact half of the children are able to drink between five and eight cups, with only 28% drinking the recommended amount of eight cups.

![Consumption Chart](image2)
Consumption of Sweetened Drinks

Almost 60 % of the school children buy and consume around one to two cups (1 cup = 250 ml) of sweetened drinks each day during school time. Around 15 % buy and consume more than six cups, which equals more 1,5 l each day.

The most favored sweet drink is iced tea, followed almost equally by sweetened milk, juices, and soluble drinks.

Use of Water Filter Systeme

The school children were asked about the source of their drinking water during school time (Q9). Almost 60 % bring their drinking water from home. The remaining 40 % are equally divided into buying the water and using the water filter system provided by PCI.

Daily Expenses and Financial Status

Expenses Drinking Water

82 % of the school children spend up to RP 6 000 on drinking water during school time on a daily basis. Out of them, 65 % up to RP 4 000.
Expenses Sweetened Drinks

50% of the school children spend only up to RP 2,000 on sweetened drinks during school time on a daily basis. Another 30% up to RP 4,000. 20% spend more than RP 4,000.

Financial Income Parents

Considering the financial income of the parents, the research team asked about the wage earner and their job. In 60% of the cases, both parents work, in 37% only the father. In many cases, the mother consequently was described as being at home, keeping the households and caring for the family. Almost half of the children couldn’t assign the job of the father and almost 40% the job of the mother to one of the proposed.

Thus, the differentiation of the remaining cases can be stated as followed:

Available Pocket Money for School

Most of the school children (80%) have up to RP 10,000 pocket money with them every day. Most of them (35%) even have only up to RP 5,000.

Thoughts about Saving Money

Surprisingly, only a little more than half of the school children (56%) would prefer saving the money spend on buying drinking water (Q16), but almost 75% would prefer saving the money spend on sweetened drinks (Q17).

Additionally, the research team asked the school children about things, that they would rather spend that money for (Q18). Most commonly, the school children answered, that they would prefer saving their money to, e.g.
“...help for my mom and dad”
“...for bad times” or
“...for the future”.

If spending, the children prefer e.g. spending the money on materialistic things like
“...school supply”
“...data volume for my mobile phone”
“...a computer” or
“...a PS4”.

Financial Aspects of DWP

As a basis of the calculation we used the following data:

Pupils, that selected to usually buy water from the store have an average 5500 Rp of pocket money, whereas they spend equally 3000 Rp on buying sweetened drinks and water.

As 62 % of children, who buy sweet drinks anyways, have the desire to save that money instead and only a little more than half of the children want to save money which is spend on drinking water, we want to calculate the cumulative amount, which can be saved through using the means of a drinking water system to provide an attractive incentive for boosting the usage of the DWS.

$3,000\text{RP} \times 190 \text{ (school days/ year)} + 3,000\text{RP} \times 190 - 500\text{ RP} \times 38 \text{ (school weeks/ year)} = 1,121,000 \text{ RP}$

Pupils using the DWS could save up to 1,121 mil Rp in only one year considering the little amount they have to pay for the utilization of the filter, which equals the amount of pocket money they receive within around 7 months.

This number could be suggested to highlight the spending power which could alternatively be used for pursuing their preferred nomination.
3. Conclusion

More than half (1,121 mil Rp) of the children’s received pocket money within the time span of a year is spent on drinks they could either substitute through filtered water or by changing and mitigating their consumption habits of unhealthy drinks.

The calculation’s result serves as an meaningful argument for schools to establish a DWS.

The interest of almost 75% of pupils in saving the money rather than spending it on sweet drinks could be fostered and materialized by emphasizing the benefits from mainly drinking (filtered) water not only from a cost reducing perspective which leaves off a higher amount of spare pocket money but also from the health perspective.

The finding that 73% of children state healthiness as a main reason for their favorite drink, however still more than 47% prefer sweet drinks/milk (usually sweetened) gives an insight in the absence of education and awareness of nutrition. Children who get drinking water from home seem to have spare amounts to spend on sweet drinks which is on average 3 cups/ day.

In order to modify that behaviour, PCI could approach this through providing adequate and sound education programs together with operating the DWP, where teachers playfully make clear the urge of this topic (also from an environmental perspective) which requires that the school sets an distinct direction by incorporating principles that go along with the suggested changes in the children’s lifestyle. To succeed with the DWP it requires a unambiguous introduction for the children. If the school further on provides all kinds of sweet foods and drinks wrapped up in plastic, there proposed mindset lack of consistency which therefore will fail an implementation on the part of the children.

The usage of the filter system significantly increases the amount of water consumed, which in general is too low for most children. Additionally, it can be concluded that children using the filter are having a higher consciousness about their own health as they state to prefer water over sweet drinks. However the amount of money spend on sweet drinks equals the amount which is spend by children bringing the water from their homes or buying it in the store.

Further research (Saldiva et al.; BioMed Central Ltd. 2014) give evidence concerning the association between parental education and the consumption of unhealthy foods. The IDEFICS cohort study in Europe analyzed data from children aged 2 to 9 years old and showed that low parental education level was associated with higher intake of sugar-rich and fatty foods among children, while high parental
education levels were associated with higher intake of low-sugar and low-fat foods. This findings illustrate the importance of not only addressing the children’s education but also to increase the knowledge of parents as they set the children’s foundation for nutrition and act as some kind of role model which is impersonated.
References


Appendix

A.1: Final Questionnaire

1. Siapa nama kamu?

2. Berapa umurmu saat ini?
   a. 10  b. 11  c. 12  d. 13

3. Apa minuman favoritmu?
   a. Air mineral  b. Susu  c. Minuman manis

4. Kenapa suka minuman itu?
   a. Sehat  b. Rasanya enak

5. Berapa jumlah uang yang kamu habiskan di sekolah dalam satu hari untuk membeli air minum?
   a. Kurang dari Rp 2000,-
   b. Rp 2000 - Rp 4000,-
   c. Rp 4000 - Rp 6000,-
   d. Rp 6000 - Rp 8000,-
   e. Rp 8000 - Rp 10.000,-
   f. Lebih dari Rp 10.000,-

6. Berapa jumlah uang yang kamu habiskan di sekolah dalam satu hari untuk membeli minuman manis?
   a. Kurang dari Rp 2000,-
   b. Rp 2000 - Rp 4000,-
   c. Rp 4000 - Rp 6000,-
   d. Rp 6000 - Rp 8000,-
   e. Rp 8000 - Rp 10.000,-
   f. Lebih dari Rp 10.000,-

7. Selama jam sekolah: Berapa banyak kamu minum air dalam satu hari?

   ![Number of glasses of water]

8. Berapa banyak air yang kamu beli dalam sehari?

   ![Number of glasses of water]
9. Selama jam sekolah: Darimana kamu mendapatkan air minum?
   a. Sebagian besar aku membawa air dari rumah.
   b. Sebagian besar aku mengisi ulang air di water filter.
   c. Sebagian besar aku membeli air di kantin.

10. Selama jam sekolah: Berapa banyak minuman manis yang kamu minum dan beli dalam sehari?
    ![Options Image]

11. Selama jam sekolah: Minuman manis apa yang kamu beli?

12. Berapa banyak uang jajan yang kamu bawa dari rumah dalam sehari?
    a. Kurang dari Rp 5,000,-
    b. Rp 5,000 - Rp 7,500,-
    c. Rp 7,500 - Rp 10,000,-
    d. Rp 10,000 - Rp 12,500,-
    e. Rp 12,500 - Rp 15,000,-
    f. Lebih dari Rp 15,000,-

13. Siapa saja yang bekerja di keluargamu?
    a. Kedua orang tua
    b. Hanya Ayahku
    c. Hanya Ibuku

14. Apa pekerjaan Ayahmu?
    a.Wiraswasta / Punya usaha sendiri
    b. Pegawai Negeri Sipil
    c. Pegawai Kantoran
    d. Lainnya, sebutkan ____________

15. Apa pekerjaan Ibu kamu?
    a. Wiraswasta / Punya usaha sendiri
    b. Pegawai Negeri Sipil
    c. Pegawai Kantoran
    d. Lainnya, sebutkan ____________

16. Apa kamu mau simpan uang kamu dengan tidak membeli air minum lagi?
    a. Ya b. Tidak

17. Apa kamu mau simpan uang kamu dengan tidak membeli minuman manis lagi?
    a. Ya b. Tidak

18. Untuk apa kamu lebih memilih menyimpan uangmu?
A.2: Evaluation Charts of Questionnaire

Q3 Favorite Drink

Q4 Reason

Q5 Expenses for Drinking Water