Awareness of Environmental Impacts of Batik Industry

A case study of Central Java, Indonesia

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Colophon

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Preface

This report is written in order to fulfil the graduation requirements of the Bachelor Geography, Planning and Environment at Radboud University in Nijmegen. It concerns the awareness levels of the environmental impacts of the batik industry in Central Java. Before this research, I had never heard about batik before. During the past few months, I have learned a lot about this industry. Batik is not only a production industry, but it is also a part of the cultural heritage of Java with its underlying meanings. Each batik is a real piece of art and is unique in its way.
Unfortunately, my plans for going to Indonesia and conducting my research at the island of Java were miscarried due to the COVID-19 pandemic. Luckily, I still managed to execute most of my research from home. I find it a real pity that I did not have the opportunity to experience the batik process and the people working in the industry in person. However, I am honoured to still be able to talk to many people involved in the batik industry from Indonesia.

Writing this thesis would have never been possible without the help of several individuals. First of all, I want to thank my supervisor Martin van der Velde, for the support and help during my research process. Also, my second supervisor Ainul Fajri has been a real help in setting up my research. Furthermore, I want to thank all my respondents for the informative, exciting and helpful interviews that were held online. Also, thanks to Mitziko for help at a distance in Indonesia as my student-buddy. Lastly, I am very grateful to all my dear friends and family who had helped me during the process. I had experienced some stress during this process, so their motivational words and support truly helped me to complete this thesis as it is today.

I hope you will enjoy reading this thesis.

Nijmegen, August
Jenna Sanders

Summary

The batik industry is one of Indonesia's many creative industries that contributes significantly to the local economy. This industry's contribution is feasible in Central Java, a province on the island Java, which one can see as the centre of the batik industry. However, the batik industry has also negative influences on the environment through water- and air pollution and soil degradation. These negative influences have severe impacts on the environment and the surroundings of Central Java. The government and batik entrepreneurs each have their role regarding the functioning of the batik industry and share thoughts about the environmental impacts of the industry. Those thoughts arise from their knowledge and awareness about the environmental impact the batik has.

The objective of this research is to gain an understanding of the difference in the role and the level of awareness of the government and batik entrepreneurs regarding the environmental impacts. The external goal is to deliver a contribution to the science surrounding these topics, which could contribute to a much bigger goal in improving how we as humans treat the earth. Accordingly, the internal goal is to broaden the knowledge of the two groups of actors for Central Java and increase their level of awareness regarding these environmental issues. Therefore, the main question of this research is ‘’***How can differences in the role and level of awareness of the environmental impacts of the batik industry in Central Java, Indonesia, be explained for government and batik entrepreneurs?’’***.

The batik industry has a bidirectional relationship between the groups of actors and the environment. Human behaviour, which leads to daily life practices around the batik industry, influences the well-being of the environment. Conversely, the environment also sets limits on human behaviour around the batik industry. However, this human-environment relationship is not only about behaviour, but it is also about the level of awareness of humans towards the environment. Awareness is one factor that contributes to one’s actions.

Awareness consists of three aspects. The first aspect is the knowledge of an individual. Knowledge is the textual information and experience one has about a concept or phenomenon. The concept of knowledge can be split up into two sorts: explicit knowledge and tacit knowledge. Explicit knowledge is objective and rational and can be transformed into words, sentences or a formula. Tacit knowledge, on the other hand, is subjective knowledge that is based on experience and cannot easily be put into words, sentences or a formula, it is more like expertise. The second aspect is affection, the emotion of the mind and is the permanent state of feeling. Affection is built upon one’s knowledge and how their feelings are towards a concept or phenomenon. The third aspect of awareness is willingness. Willingness goes further than the affection of someone. It is about the motivation one seeks about certain feelings one has towards a concept or phenomenon.

This research is qualitative because it reconstructs the meanings that different people assign to be their truth of a phenomenon. The approach of this qualitative study is phenomenology. Phenomenology is used to understand and explain the nature of a phenomenon. In this case, the role and the aspects of awareness of environmental impacts for the two actor groups, government and batik entrepreneurs, are investigated. The research strategy chosen for this research is a case study, with the batik industry in Central Java as a bounded case. Newly collected data is collected through semi-structured interviews with informants by using Skype and Zoom. Informants have much experience with the two different groups of actors in the batik industry.

In the batik industry, three types of batik exist. Batik tulis, cap batik and batik textile. Batik tulis is the hand-drawn batik, which is usually made on a small scale. Cap batik is batik made with a copper stamp, which is usually made in relatively more massive quantities. These two sorts of batik need wax in order to be produced. Batik tulis and cap batik are the fundamental ways of how batik is made. The third type is batik textile, here a pattern is made upon the fabric with paint, and no wax is used.

The production process of batik is mainly the same; however, there are a few exceptions. Each process starts with a new, empty fabric where a pattern or motif of batik is painted on with wax, according to the type of batik: for batik tulis with a canting and for the cap with a copper stamp. Afterwards, the fabric goes into the colouration process where the fabric is dyed. That can be done with a synthetic dye or natural dye. These two kinds of dyes have several differences: colour difference, production time difference, the difference in the actual result, the difference in costs and last but not least difference in their environmental impact.

Furthermore, two sizes of batik industries exist nowadays: micro to small-scaled batik industries and medium to large batik industries. The two sizes of batik have two differences: a difference in the market and a difference in their waste and thus a different environmental impact. The micro and small-scaled batik industries produce for the local market supply. Their production is relatively small-scaled, which accordingly have a low amount of waste and environmental impact. On the other hand, the medium- and large-scaled batik industries produce for big cities in Indonesia and the international market. Their production is relatively high scaled, compared to the micro- and small-scaled batik industries, which causes to them to have a higher amount of waste and a much more significant environmental impact. However, the waste and thus environmental impacts of the micro- and small-scaled batik industries is also significantly high if added up in the long term.

The government and batik entrepreneurs each have different roles n the functioning of the batik industry. The government supports the batik industry but also restricts the industry. The government supports batik by acknowledging and owning patents of motifs and with marketing and branding of some industries. However, their help is not always executed as best way as possible. The government lacks expertise regarding a few aspects: the provision of education towards the batik entrepreneurs, the provision of wastewater treatment or the handling of waste and the monitoring of programs around the batik industry, set up by the government itself.

Furthermore, batik entrepreneurs have the role of supervising their batik. The batik entrepreneurs have the choice in what kind of production process to operate, what kind of materials to use during this production and how to deal with waste that comes out from production. Batik entrepreneurs find it challenging to take into account the environment and keeping the business lucrative at the same time. Micro- and small-scaled batik industries do not have to comply with environmental law. The medium- and large-scaled batik industries do; however, they try to avoid the laws in several ways.

Additionally, the level of environmental awareness of the two groups of actors is reflected through three aspects: knowledge, affection, and willingness.

The level of awareness of the government regarding the environmental impacts is average. First of all, the level of knowledge is average; the government acknowledges the significance of the environmental impacts that result from medium- and large-scaled batik industries. However, the significance of environmental impacts that result from micro- and small-scaled batik industries is not acknowledged by the government, even though these impacts are significant. Secondly, the level of

affection of the government is average as well; the government has an evident affection for the batik industry itself; however, the affection for the environmental impacts lacks a bit. Lastly, the level of willingness for the government is average as well; they do develop motivation on top of their environmental sense, reflecting in environment-minded programs. However, the real motivation for these programs is missing. There is a lack of monitoring and continuous help in the long term. Overall, the government is highly aware of the environmental impacts for the medium- and large-scaled batiks; however, their awareness of the environmental impacts of the micro- and small-scaled batiks is low. Therefore, the level of awareness of the government is rated average.

The level of awareness of the batik entrepreneurs regarding the environmental impacts is low. First, the level of knowledge regarding their environmental impacts is low; batik entrepreneurs do not understand the relationship between their actions and the consequences these actions have on the environment. Entrepreneurs of small and medium batik industries have relatively less knowledge about the environmental impacts compared to entrepreneurs of medium- and large-scaled batik industries. Moreover, the level of affection of the batik entrepreneurs is also stated low; the entrepreneurs of micro- and small-scale industries have little environmental sense; thus, this a low level of affection. Oppositely, the medium- and large-scaled batik entrepreneurs have a respectively higher level of affection where more entrepreneurs are eager to make changes in their practices for the environment. Lastly, the level of willingness of the batik entrepreneurs is low. Most batik entrepreneurs do not develop motivation in order to improve their industry in making positive developments for the environment because these changes will hurt their profits. Overall, the entrepreneurs of micro- and small-scaled batik industries have a lower level of environmental knowledge, which also results in a lower level of affection and willingness compared to the medium- and large-scaled batik entrepreneurs.

Several concepts influence the differences in the role and the level of awareness for government and batik entrepreneurs. First of all, education is one of the reasons that result in different educational attainment for the two groups of actors. Educational attainment is prior in the ability for developing knowledge of environmental sense for one. This education is especially lacking for batik entrepreneurs. The government is one of the actors that play a role in providing this education; however, it is not correctly provided now. Second, the batik entrepreneurs themselves are dealing with a tragedy of the commons; this applies especially on the micro- and small-scaled batiks.

Furthermore, not every entrepreneur acknowledge their negative contribution to the environment even though they have a negative contribution to reality. No entrepreneur of micro or small batik industry acts in this cycle of non-acknowledgement, which results in it being a tragedy where the biggest concern is significant water pollution with batik waste. Third, there is not only a non-acknowledgement between the batik entrepreneurs themselves, but there is also a mismatch between the government and the micro- and small-scaled batik entrepreneurs. There is a mismatch in the acknowledgement towards each other where the government does not acknowledge the environmental impacts of the micro- and small-scaled batik industries. Oppositely, the micro- and small-scaled batik entrepreneurs are not aware of their significant negative consequences on the environment, and these consequences are also not acknowledged by the government. That results in them also not being encouraged to be aware of their environmental impacts. This non-acknowledgement results in both parties not developing their awareness regarding these environmental impacts which result from the batik industry.

In conclusion, a significant difference in the level of awareness regarding the environmental impacts of the batik industry exists for the two groups of actors, namely the government and the batik entrepreneurs. Their level of awareness is based upon the three aspects that awareness exists of knowledge, affection and willingness.

Batik entrepreneurs can be split up into two groups: micro- and small-scaled batik entrepreneurs and medium- and large-scaled batik entrepreneurs. The most relevant factor that results in a difference in the level of awareness for the batik entrepreneurs is their size. The two different groups of batik entrepreneurs have a primary difference in the level of knowledge, due to diversity in resources, mind-set and educational attainment. The micro- and small-scaled batik entrepreneurs score relatively lower on these three factors, which explains that their level of knowledge is also respectively low. The medium- and large-scaled batik entrepreneurs score higher in all three of these factors, which results in their level of knowledge also being respectively higher. Knowledge is the foundational aspect of awareness, on which the affection and willingness emerge from. Therefore, the level of awareness of these two groups of batik entrepreneurs differs. The level of awareness of the micro- and small-scaled batik entrepreneurs is low, including a confident neglecting attitude towards the environment. On the other hand, the medium and large-scaled batik entrepreneurs have a level of awareness that is placed between low and average.

The government has an average level of awareness. The government has a two-sided view of the batik industry. One: the government's view differs for the micro- and small-scaled batiks and the medium- and large-scaled batiks in the industry. The government's view on the micro- and small-scaled batiks can be considered as a low level of awareness. The level of knowledge lacks enormously for the government regarding the acknowledgement of the environmental impacts for micro- and small-scaled batik industries. Next up, the level of affection of the government about these environmental impacts for these industries is also low as the government does not have a permanent feeling of environmental concern. Last but not least, the level of willingness of the government is also low due to having barely any motivation for actions to be taken from the government to maintain their programs as useful as possible. The government's look on the medium- and large-scaled batik industries is oppositely considered as a high level of awareness. The government acknowledges their environmental impacts in significant ways, reflected through effective environmental regulation which clears the government's level of affection about these environmental impacts. Furthermore, the level willingness is also high, that reflects in the environmental regulation that the government obliges batik entrepreneurs with. In general, the government has an average level of awareness, due to a relatively low to an average level of awareness for the micro- and small-scaled batik industries and a relatively high level of awareness for the medium- and large-scaled batik industries.

Taking the previous information into account, the differences in the level of awareness mostly lies in the level of knowledge of the government and batik entrepreneurs. Knowledge is the foundation of awareness which affection and willingness of one actor are built upon. Having knowledge about environmental impacts is the first step. However, turning this knowledge into willingness with the feelings of affection towards the batik industry is a whole another thing, which the batik industry, for either batik entrepreneurs and government, is not fully developed in yet.

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1. Introduction

Batik is a proper national icon for Indonesia (Steelyana, n.d.). The batik industry contributes to the economy of Java. However, the industry has also a less attractive side, namely the environmental impacts it has. The batik industry still uses a traditional way of production, since the origin of batik. However, this traditional way of production is not environmentally friendly. The government and batik entrepreneurs are among the actors whom each has their role and thoughts about the environmental impacts of the industry. Those thoughts arise from their awareness of these environmental impacts. Batik entrepreneurs are relevant management-skilled people in the batik industry who decide how the batik industry is going to operate. By deciding how to operate in the industry, the batik entrepreneurs also decide on the impacts on the environment. This decision is based on their awareness. The government also has their level of awareness regarding the environmental impacts of the batik industry. The government and batik entrepreneurs will be discussed later in section 2.2. In chapter five, their role will be discussed.

1.1 Background

1.1.1 Java Island

Java is the third-largest island of Indonesia in size, yet it has provided for more than half (59%) of the GDP of Indonesia in 2005 (Kusharjanto & Kim, 2005). Java is the most populous and the most prosperous island in the country. Central Java Province has a growing economy over the past decades (Hadi & Buchori, 2018). When well developed, the creative industry is a critical factor for the economy. It provides jobs and contributes to increasing people's income (Sutapa et al., 2017).

1.1.2 Creative industry

The batik industry is one of the 14 creative industries in Indonesia (Gatut & Aryanto, n.d.) that is acknowledged by Indonesia's Ministry of Trade. The industry is acknowledged because the core of the batik process lies within the focus on creativity, inventions and innovations (Yoshanti & Dowaki, 2016). Batik is a significant product of national and cultural heritage, and in 2009 the tradition of batik has been acknowledged as ''Intangible World Heritage'' by the UNESCO. After this acknowledgement, the industry has increased with a volume of 200 percent in sales (Disperindag Solo, 2012). Central Java is the centre of batik for production in Java. In this area, the first batik arose and has spread out over the whole island (Meutia & Ismail, 2012). This is still happening in large quantities in Central Java. The making of batik is an excellent work of art which is many centuries old. This old and traditional way of producing batik is currently still used (Yoshanti & Dowaki, 2016). Batik artisans decorate cotton and other fabrics with wax by hand. Canting and stamps are the primary tools to create meaningful patterns and motifs on the fabrics; thereafter, the fabric goes into the dyeing process (Meutia & Ismail, 2012). Every spot where the wax is applied remains its colour when it is dyed. After this colouring process, the wax is boiled off, and the process for one colour of the piece of batik cloth has been finished. This process is repeated as many times as the desired colours the batik piece must have.

The many different styles and patterns of batik are all invented in Indonesia, especially on the island of Java, wherefrom one can look at it as a ''rich, various, creative and artistic tradition'' (Meutia & Ismail, 2012, p.47). Batik has grown from an ancient cultural heritage to a national culture-based industry by art and technology aspect. Through innovations, such as the inception of the cap batik, where a copper stamp was introduced to apply the wax, the industry has extended from micro- and

small-scaled batik industries to medium and large batik industries (Meutia & Ismail, 2012). Batik is thus also produced at a larger scale which results in 120,000 people being dependent on the batik industry nowadays (Kementrian KUKM, 2012).

This upscaling and growing number of batik industries has led to a change in the processes over the last few decades. A high demand, economic motives and the affordability of raw materials all contribute to a change of production which results in the local wisdom of environmentally friendly production of batik being replaced by a polluting one (Yoshanti & Dowaki, 2016).

1.1.3 Environmental record of the batik industry

Despite that the batik industry contributes significantly to the economy of Indonesia, it has a poor environmental record (Gatut & Aryanto, n.d.). The industry has various environmental impacts such as wastewater, soil degradation and the extreme use of energy and raw materials (Yoshanti & Dowaki, 2016). Nowadays, the process is often continued in the way it used to be and therefore contains an inefficient use of water to decorate the fabrics. However, the industry does not only use much water. The water that is used also gets polluted with dye chemicals. Most batiks use synthetic paint nowadays instead of the former natural paint as a result of the competitiveness between the batiks. Using synthetic dyes is mostly because of economic reason; hence, it is much cheaper than natural dyes. The use of synthetic dyes causes the process of producing batiks more polluting than when natural dyes are used. Therefore, the water gets highly polluted and is not filtered very often. This dirty water is being dumped into the nearest river and available sewers of Central Java (Yoshanti & Dowaki, 2016). This results in the batik industry, leaving multiple negative environmental impacts on the surroundings of Central Java. There is thus a relation between the humans that practice in and around the batik industry and the impact they have on the environment. On the other hand, the environment also has an impact on the batik industry.

1.2 Research objective

The main goal of this research report is to gain an understanding of the role and level of the awareness the two groups of actors have regarding the environmental impacts in the batik industry in Central Java. The groups of actors are the government and batik entrepreneurs. The goal can be split up into an external and an internal goal.

The external goal is to deliver a contribution to science about the awareness of the environment in the batik industry. With this research, further input is given for the understanding of the awareness of the actors in the batik industry. This can even help with the larger goal, namely improving the way we as humans treat the earth. This research will focus on the awareness of the environmental impacts which the batik industry causes. These impacts arise in all kinds of the waste but mainly in air-, water- and soil degradation. As a result, the level of awareness regarding these environmental issues will have a broader scientific knowledge, which can contribute to solutions or improvements in this area.

The internal goal of this research is to understand the role and the level of awareness from various points of actors regarding the environment for the batik industry. This goal also includes to figure out why these views differ from each other. The process that is put in place in the batik industry consists of different stages. Each actor has a different role in the various stages of the process. They all have their own set of norms, values, goals and interpretations on which their choices in daily life

are based upon. These personal influences also influence the awareness of the batik industry and the resulting impacts on the environment of Central Java.

1.3 Research questions

The main question of this research is **''How can differences in the role and level of awareness of the environmental impacts of the batik industry in Central Java, Indonesia, be explained for government and batik entrepreneurs?''**

The sub-questions that will help to formulate an answer on the main question will be:

1. *What is the role of government and batik entrepreneurs in the functioning of the batik industry in Central Java?*

This sub-question will discuss what influences the actors have in their daily-life practices which are performed around the batik industry. It is essential to understand in which way the actors are involved. To see how much control, impact or actions the actors have and take in the batik industry will be the base for explaining which actions they form their awareness regarding the environmental impacts.

2. *What is the level of awareness of the environmental impacts in the batik industry for the government and batik entrepreneurs?*

In this sub-question, the extent of the three aspects of awareness, knowledge, affection and willingness, that are present for the government and batik entrepreneurs and in which way they are present, will be elaborated. This will reflect their awareness of the environmental impacts. It is essential to understand how this level of awareness is built up from knowledge, affection and willingness for the two groups of actors.

3. *What concepts influence a difference in role and level of awareness of environmental impacts for government and batik entrepreneurs?*

In this sub-question, three different concepts are elaborated, which influence the difference between the role and the level of awareness regarding the environmental impacts for both the government and batik entrepreneurs. It is essential to understand why these concepts have such an influence and why these aspects differ in order to be able to answer the main question.

1.4 Societal relevance

The level of awareness of the environmental impacts of the batik industry is uncertain for government and batik entrepreneurs. Therefore, this research seeks to gain an understanding of the relation between the batik industry and the environmental impacts which result from this industry. This development may result in better environmental practices in the batik industry. These relatively lower impacts could be beneficial for the community of Central Java and their livelihood. Hence, the societal relevance of this research is that the awareness of the environmental impacts of the batik industry becomes more apparent and understandable for government and batik entrepreneurs.

First, a better understanding of the government's perspective on the level of awareness of the environmental impacts of the batik industry can result in better regulations. The government will have a better insight into their awareness, as well as that from the batik entrepreneurs, plus more insight concerning the environment. In this way, the government can develop a more suitable regulation

which the industry can benefit from in terms of environmental improvements for all those who are involved.

Secondly, batik entrepreneurs create a general understanding of their level of awareness of the industry. It will become clear how their relationship with the environment is and how they look at the practices of batik. It will also elaborate on how their level of awareness of their environmental impact, that results from their practices, is. The batik entrepreneurs might have an interest in knowing what their environmental flaws are in order to improve these. The batik entrepreneurs may improve their business practices in the batik industry towards a less polluting one.

Overall, gaining an understanding of the awareness of the environmental impacts of the batik industry in Central Java may result in better awareness for the involved actors. This increased awareness of batik production may result in an improved regarding their impact on the environment.

1.5 Scientific relevance

This research complements the current literature with a deeper understanding of the awareness of environmental impacts in the batik industry and especially for the government and batik entrepreneurs in Central Java. Previous scholars have already addressed the environmental impacts of textile production on the environment. Defra (2010) and McGill (2009)stated that the creation of textile is highly polluting. For the batik sector, the environmental burden that results from the creation of batik is also researched. Gunawan (2013) claimed that none of the batiks of his research, which are directed by batik entrepreneurs, included green initiatives in their output. This can be acknowledged by Rafi Yaacob (2015) who has written about the environmental awareness of batik entrepreneurs in Kelantan, Malaysia. His research also included the implementation of green industry practices, where most batik entrepreneurs did not know about these benefits, economically and environmentally wise. These researches have a joint research objective, namely the environmental burdens resulting from the batik industry, due to decisions of batik entrepreneurs. However, the level of awareness of these batik entrepreneurs about these environmental impacts is not researched yet. Therefore, this research may contribute with new knowledge about the level of awareness of the batik entrepreneurs, especially for the area of Central Java.

Moreover, other researches were done about the implementation of green improvements in the batik industry. Syahputra and Soesanti (2016) researched the application of green energy in batik production. Additionally, Handayani et al. (2018) explored the eco-friendliness of the usage of natural dyes in batik production. Also, the chain of production of batik is investigated, such as Immawan et al. (2015), who elaborated about the possibility of sustainable supply chain management in the batik industry. Furthermore, Yoshanti and Dowaki (2016) researched the possibility of an excellent working batik life cycle assessment. These researches try to look for opportunities for governmental bodies to step into the batik industry and help with a more environmentally friendly batik industry in general. The level of awareness of the government upon these environmental impacts is lacking in previous research. This research can, therefore, add to the scientific literature, focusing on the level of awareness of the government on the environmental impacts of the batik industry.

Overall, some research about the environmental impacts has been done, like the environmental impact analysis of Rinawati et al. (2017). Nevertheless, the awareness upon these environmental impacts for the batik industry has not been researched. Gadenne et al. (2009) explored the environmental awareness for SMEs in multiple general fields of operation. However, studies about the awareness about the environment have not been done accurately for the batik industry located in

the area of Central Java yet. The literature on the awareness of these environmental burdens in this area still lacks. Hence, that is the focus of this research: the awareness of the environmental impacts of the batik industry in Central Java.

1.6 Reading guide

This research will continue with chapter two. This contains the theoretical framework that elaborates the written theories about the concepts of interest for this research: human-environment relationship, environmental impacts and awareness. The third chapter will elaborate on the methodology that is used for this research, including the research strategy, ways of data collection and manners of analysing the data. The fourth chapter explains the batik in context. First, the batik is explained in general, so the different types of batiks, the production process and the difference between micro- and small-scaled and medium- and large-scaled batik industries. Chapter five will elaborate on the role of the two actors in the batik industry, the government and the batik entrepreneurs. Chapter six will explain how the level of awareness, knowledge, affection and willingness, of the environmental impacts, is different for the government and the batik entrepreneurs. Chapter seven will discuss three concepts which influence the difference in the role and the level of awareness of the environmental impacts for the government and batik entrepreneurs. The eighth chapter will discuss the conclusion of this research, whereafter chapter nine follows with a discussion, including a reflection and several recommendations.

2. Theory of human-environment relationship, environmental impacts and awareness

2.1 Theoretical framework

2.1.1 Human-environment relationship

The human-environment relationship is bidirectional, according to Davis (2011). Human behaviour is of influence on the well-being of the environment, and conversely does the well-being of the environment influences human behaviour (Davis, 2011).

Humans influence the environment in positive and negative ways. In batik industry, humans influence the environment mostly in a negative way, by creating environmental degradation (Handayani et al., 2018). Direct cause and effect relations exist between humans and the environment, such as weather and climate being of enormous importance for food production for human survival (Moseley & Perramond, 2013). However, there are also more challenging problems that include indirect causality or complex causal chains that have uncertain consequences (Fraser et al., 2003). This is the case in the batik industry.

The batik industry has a particular relation between humans and the environment. For batik, several resources are used, such as fabrics, water, wax, and dyestuff (Suliyanto et al., 2015). The production of batik with these resources has several consequences for the environment, where the biggest one is waste. Most of the waste that is produced gets dumped into the environment without any treatment (Yaacob et al., 2016). The challenging complication of the batik industry is that human management decisions lead to these environmental degradations, that make specific changes in the environment. These changes will also have, in return, unpredictable consequences for the community (Fraser et al., 2003). For instance, the batik entrepreneurs dump their waste from batik practices directly into the soil or river, which results in the water being polluted (Yaacob et al., 2016). This polluted water in the nearest soil or river has an impact on the accessibility to clean water for the whole community that is near this river. The results of these impacts for the environment will return into new management decisions, that feed a further cycle of environmental impacts and human responses. That is a continuous cycle, in which both environment and society influence each other (Fraser et al., 2003). However, the influence of humans on the environment is yet more considerable than the influence of the environment on humans nowadays (Thomas & Middleton, 1997). Therefore, the environmental impacts that result from batik production are higher than the restoring capacity of this particular environment (Fraser et al., 2003).

Nonetheless, this human-environment relationship is not only about the behaviour of humans, but also about the mind of humans towards the environment (Kaiser et al., 1999). One's behaviour can be explained through lots of different grounds. Common grounds are money, capacity, but also one's awareness (Susanty et al., 2013). Awareness is the level of the mind that decides how aware one is about themselves, embedded in a certain ambience (Davis, 2011). The concept of awareness will be further elaborated in section 2.1.3.

2.1.2 Environmental Impacts

The environmental impact of businesses has become increasingly important since the 1980s (Robbins, 2001). That is not only a concern-matter for environmental groups and legislators in society but also customers, employees, institutions, local communities and public authorities (Deegan, 2007). This results in an expanding pressure on Small and Medium Enterprises (SME's) in their environmental activities and production processes (Gerrans and Hutchins, 2000). Environmental concern and

sustainability are concepts that increase in importance all over the world, and this is also increasing for Indonesia (Immawan, Arkeman & Maulana, 2015). The batik industry is also noticing an increasing demand for environmentally friendly production and social responsibility, where SMEs are the most common category of industries.

Small- and medium-sized enterprises, like enterprises in the batik industry, are compared at the total number of workers, the total amount of capital, or assets (Sarah, 2009). Besides, there are other criteria to determine if a company can be labelled as micro, small, medium, or large. In general, SMEs have limited assets and operations relative to more significant industries. This limitation results in having fewer assets available to deal with environmental issues. SMEs are also often preoccupied with matters that are necessary for their daily business operation. It is argued by Gadenne et al. (2009) that in Western countries, SMEs believe that they have little impact on the environment. However, their actual impact is rather high. That can also be said about the batik industry at Java and is even being worsened because of their lower set of standards regarding environmental responsibility compared to SME's in Western countries (Yaacob et al., 2016). The small home-based industries do have a smaller impact when seeing them separately compared with relatively large batik industries. However, when putting them all together, the environmental impact of these small and medium batiks is relatively significant in comparison with larger ones (Welford, 1994). Small and medium batiks are not just a miniature version of a large batik industry regarding their limitations to addressing resources, finance- and human technology (Yaacob et al., 2016). They have their way of business, production, or sales. Therefore, these batiks all handle their environmental impacts differently.

Humans are growing to be the most prominent creators of environmental degradation in all time of history (Fraser et al., 2003). The impacts that humans have on the environment concern all aspects of the ecosystem, but are most closely related to air, water, and soil degradation (Thomas & Middleton, 1997). These are also the three things that the environmental impacts of the batik industry include. The impact on the environment can be in small or big quantities, mostly relative to the size of the batik. In the batik industry, there are three main ways of environmental impacts.

First, the air is polluted due to the usage of kerosene stoves and firewood in production. That contributes to the more significant concern of global warming and climate change (Thomas & Middleton, 1997). Second, the water is polluted with wastewater (Handayani et al., 2018). The wastewater contains heavy metals, chemicals, and dyestuff, which are non-biodegradable. The water gets dumped into the nearest river most of the time, without any water treatment. That contributes to a decrease in the accessibility to clean water of Central Java and the biodiversity of plants and fish that live in that water. Third, the soil is also polluted with wastewater. The non-filtered water goes directly into the soil, negatively contributing to the fertility of the ground or polluting the groundwater in general.

The batik industry contributes to the economic development of Indonesia (Syahputra & Soesanti, 2016), but it should also contribute to the sustainable growth of the country. The batik industries form a backbone for the economy, but they also significantly contribute to environmental degradations (Yaacob et al., 2016). The fact that these degradations happen is undeniable, but in what way the actors are aware of these things is very important to understand.

2.1.3 Awareness

Awareness consists of three aspects that build upon each other. Awareness can be developed, beginning with the knowledge of one person (Hilgard, 1980). One has or does not have knowledge about a phenomenon, action, or consequence. Next, affection can be stated as the feelings that people build upon their knowledge (Hilgard, 1980). Lastly, willingness is about what one is willing to do with their feelings they have developed and how the knowledge can help bring this feeling into action. Willingness is about how knowledge and feelings are turned into motivation (Davis, 2011). The awareness has a tripartite classification of how one's awareness is accomplished. That is also reasoned by Alexander Bain (1859), who explains the tripartite classification of awareness according to three things. Feelings represent the emotions and passion that one has for a phenomenon. Volition is the will that embraces the whole of our activity that is directed by our feelings and thoughts, that exist from intellect, knowledge, and cognition (Bain, 1859).

2.1.2.1 Knowledge

''Knowledge is an experience, textual information and opinion of experts in the field'' (Susanty et al., 2011, p.1195). Knowledge is not something one is born with; it has to be developed, and an individual must be educated to get more knowledge (Brown & Duguid, 1998). The concept of knowledge can be split up into two kinds of knowledge: explicit knowledge and tacit knowledge.

Explicit knowledge is objective and rational knowledge that can be transformed into words, sentences, or a formula (Susanty et al., 2011). This knowledge includes theoretical approaches, the possibility of solving problems and manuals. Tacit knowledge, on the other hand, is more subjective knowledge that is based on experience and can not that easy to be put into words, sentences, or a formula (Susanty et al., 2011). It includes cognitive skills of beliefs, images, or technical skills like craft. Tacit knowledge is hard to formalise and communicate with others because it is mainly the expertise and experience that is gained over time. Most tacit knowledge needs to go from expert to expert to transfer the knowledge correctly.

In the batik industry, both kinds of knowledge exist. There is a knowledge transfer of the two kinds of knowledge between the actors. This transfer is not a simple two-way process but has to get repeated and adjusted multiple times to be effective (Susanty et al., 2011). The knowledge transfer is between transfer agents and transfer recipients. Transfer agents in the batik industry are the governmental bodies who are involved(Setyanti et al., 2013). The government mostly has programs for problem-solving and experts carry out theoretical approaches, based on research. Transfer recipients, on the other hand, are the batik entrepreneurs in the batik industry, which chiefly have resources, manufacturing experience, and absorptive capacity (Susanty et al., 2011). Absorptive capacity is the capacity of batik entrepreneurs to ''recognise the value of new information, assimilate it and apply it to commercial end'' (Cohen & Levinthal, 1990, p.129).

The knowledge transfer between the transfer agents and transfer recipients is found to be not that effective in the batik industry (Susanty et al., 2011). A big reason for this ineffectiveness is that transfer agents chiefly own explicit knowledge about how to make process production of batik more efficient or, for example, how to use natural dye. The transfer recipients, on the other hand, mostly own tacit knowledge about how to make batik, which is derived from experience from ancestral heritage about the development of designs and motifs. (Susanty et al., 2011) This tacit knowledge is thus based on the experience of batik artisans and developed over the years. Two complications result in this transfer.

The first complication is that batik industries cannot derive explicit knowledge from the transfer agents, which is mostly on how to improve the development of the tacit knowledge of the batik entrepreneurs (Setyanti et al., 2013). That is because of a few reasons. Firstly, there is a lack of infrastructure to support knowledge transfer, which means that the batik entrepreneurs cannot receive the information well (Setyanti et al., 2013). Secondly, there is a lack of willingness of the batik entrepreneurs in using the new technology and science in their production (Susanty et al., 2013). Thirdly, there is a lack of access for batik entrepreneurs and limited explicit knowledge that they can understand about using new sources and make use of specific knowledge.

The second implication is that transfer agents do not comprehend tacit knowledge from the transfer recipients (Setyanti et al., 2013). That is the main reason why they can not develop actual attuned knowledge on how to improve this tacit knowledge in a more environmentally friendly way. Batik entrepreneurs say that the transfer is not working well on the side of the transfer agents because the agents only provided a temporary program without a follow-up (Susany et al., 2011).

So the governmental bodies and experts do not understand the wholeness of the batik entrepreneurs and vice versa. That results in them having a hard time understanding each other and having the correct knowledge.

Furthermore, knowledge is not the same as behaviour. One can know something, but to put it into action requires much more than just intellect (Setyanti et al., 2013)
Training could be a significant advancement to link knowledge and behaviour. People who do not have knowledge cannot change their behaviour that is linked to the desired knowledge to do so. Nevertheless, training is an experience of learning that may play a role in the change of an individual's knowledge, skills, attitude, or social behaviour (Suliyanto et al., 2015). ''It reconciles the gap between what should happen and what is currently happening'' (Suliyanto et al., 2015, p.254).

2.1.2.2 Affection

Next to knowledge, affection is the second aspect of the awareness of environmental impacts. Affection is defined as ''an emotion of the mind'' (Floyd, 2006, p.102) that can be seen as more than just a feeling. It is a permanent state of feeling. Affection is about the feelings that one has about concepts that are based upon the knowledge one acquires about it. Affection is a ''positive emotional disposition'', as their position towards something that is ''externally directed'' (Floyd, 2006, p.103). It is not just a quick response to something people hear or get to know about; real affection is developed over time (Kaiser et al., 1999).

Affection is always a positive component of a relational interaction unless there is a lack of it. Most affection is directly linked to a good state of mind towards something (Kaiser et al., 1999). In this case, it should be the right mind of state towards the environmental impacts of the batik industry actors in the batik industry. However, when there is a lack of this state of mind, it can be stated that there is weak affection.

For affection to be developed, environmental education could be of help. Cognitive knowledge and affection are needed to stimulate moral behaviour towards the environment (Littledyke, 2008). However, environmental education is a real challenge. It is difficult to find how to effectively stimulate and encourage people to have a sense of the relation between them and the environment around them (Littledyke, 2008). This also concerns the ineffectiveness of knowledge transfer.

''Affection should also be distinguished from the behaviour through which it is presented'' (Floyd, 2006, p.103). Affection is chiefly about strong feelings one person has or maybe does not have.

That is not to be seen for the outside world unless one looks at behaviour. In the behaviour of people, most people's affection becomes clear (Kaiser et al., 1999). This is reflected through actions and discussions about environmentally-friendly practices in the batik industry, which can be seen as an individual having a strong affection for the environmental impact of the batik industry (Setyanti et al., 2013). However, suppose one does not talk about environmental impacts at all. In that case, it can be analysed that this person does not have strong feelings towards the eco-friendliness of the batik industry. Nonetheless, this is not always the case. People can have affection towards something but not communicate it to the outside world. The reality of affection is, therefore, reflected in the willingness.

2.1.2.3 Willingness

Willingness is built upon the affection of a person. Affection plays a role in the feelings that people have about something. Willingness goes further than this and seeks the motivation of people about something. It is the motivation that people develop around the knowledge and feelings they have acquired (Davis, 2011).

This motivation is built upon knowledge and affection. If one of these changes, the willingness of an individual also changes. That results in people having a transformation of motivation. Motivation in a positive way is when individuals have a shift from individual towards concerned societal interest. Additionally, how they see themselves and their actions towards revises in motivations and changes in behaviour (Davis, 2011). Willingness is related to the willingness to sacrifice for the environment. That is ''the extent to which individuals' decisions will take into account the well-being of the environment, even at the expense of immediate self-interest, effort or cost for the greater good of a community of people'' (Davis, 2011, p.263).

2.2 Conceptual framework

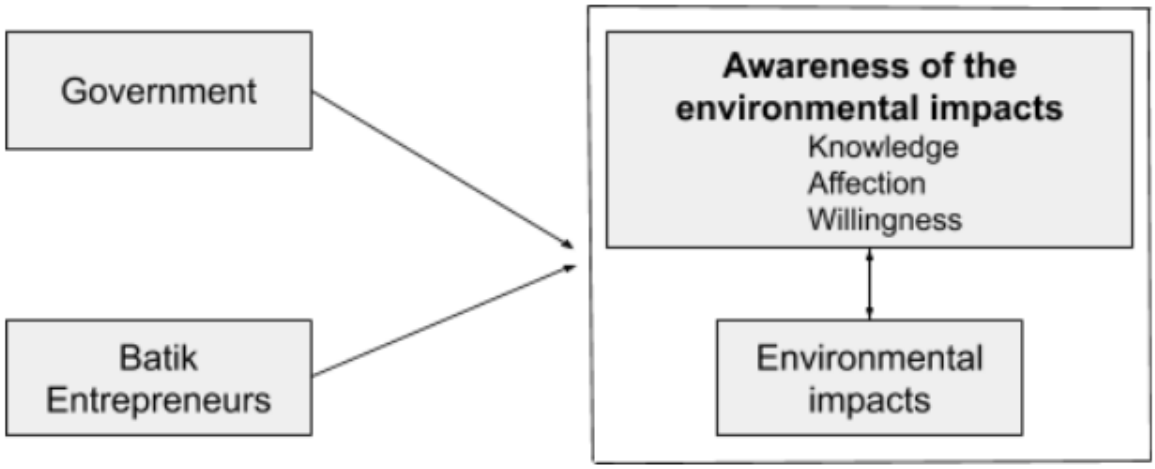

Figure 1 Conceptual Model

The conceptual model exists of two independent variables and two dependent variables, who have an interrelation. The model shows that the two actors that are involved in this research, the government and the batik entrepreneurs, influence their awareness of the environmental impacts of the batik industry and the actual environmental impacts.

Each actor has a different role in this concept. Therefore, they each have a different arrow that points out to the square with the interrelationship of awareness and the environmental impacts. The

government is the governmental body of Central Java, who is engaged with the functioning and regulation of the batik industry in Central Java. On the other hand, the batik entrepreneurs are the managers of the batik industries in Central Java. They decide the management of their batik, which can be for a micro or small batik industry or a medium or big batik industry.

The awareness consists of three aspects, as mentioned in section 2.1.3. These are knowledge, affection, and willingness. This awareness is on the concept of environmental impacts, but this is not a one-way relationship. Environmental impacts influence the awareness of environmental impacts, but the actual environmental impacts are also influenced by awareness.

As mentioned in section 2.1.1, humans influence the environment around them, but the environment around them also sets boundaries for humans. If the environmental impacts are high, the awareness will most probably be influenced positively because awareness becomes higher. On the other hand, if the environmental impacts are low, the awareness will most probably also be low. This is because it seems that the practices that are done in that certain way at that time do not influence the environment in such a way that many negative impacts are clearly.

3. Methodology

The methodological framework contains and explains the methods used for collecting and analysing data. This chapter will discuss the reason behind the choices that are made regarding the research strategy, the data collection and the various ways of use of analysing the data.

First, the research strategy will be explained, which also includes the chosen method for this research. Second, the way of data collection is elaborated, continued with the characteristics of the data. Last, the data analysis that is used in this research will be explained.

3.1 Research strategy

The goal of this research is to gain an in-depth understanding of differences in the role and the level of awareness of environmental impacts of the batik industry, for government and batik entrepreneurs that are located in Central Java, Indonesia. This research will explore the awareness of the environmental impacts, compared to the various assets that come up with the general concept of awareness, oriented on the environment. This research has a qualitative approach because the goal of the research is to ''reconstruct the meanings that different human beings assign to the ‘’truth’’ to understand their actions from that'' (Wester, 1991;1995, p.15). This goal is included in the research in the way that different views of various actors on the same concept are retrieved. The qualitative approach is preferred over the quantitative approach because a quantitative approach would make it challenging to capture the subjective perspective of the different meanings of awareness of the different actors and how these differences can be explained.

The approach to this qualitative study is phenomenology. Phenomenology focusses on the ''commonality of lived experience within a particular group'' (Chambers, 2013, p.33). The goal of phenomenology is to understand and explain the nature of a particular phenomenon. In this case, the role of the actors in the functioning of the batik industry and the aspects that influence their difference in awareness of the environmental impacts are investigated for the two groups of actors. Phenomenology examines patterns of subjective experience and awareness. It focusses on a systematic reflection and the investigation of the structure of awareness, where it gives the possibility for realist concepts to be examined scientifically. That is also the case in this research. The awareness is split up into three major aspects that structure it that are mentioned before in paragraph 2.1.3; knowledge, affection and willingness. These three are investigated to explain the groups of actors' awareness.

A case study is chosen as the research strategy for this research because this type of strategy enables it to analyse various influencing aspects of a specific phenomenon, which is the awareness of environmental impacts for the batik industry in this case. The aim of this research is not to develop a whole new theory, that is described in the grounded theory (Cresswell, 2007), but it is to gain more in-depth knowledge about what has been investigated in other research and complement on this. This research does have something in common with the grounded theory, namely the process of coding the data until it is put together later into groups. The various aspects of the awareness of different actors could have been tested with a survey. However, a case study is more suitable for getting an in-depth understanding of processes.

This research contains a contemporary phenomenon, has no clear boundaries between the context and the phenomenon, and multiple origins of research are used, which are the top three criteria in which a case study fits the best, according to Yin (1989). The single instrument case study is most suitable in this research, because in a single instrument case study ''the researcher focuses on an issue or concern, and then selects one bounded case to illustrate this'' (Stake, 1995, p.51). In this research, the concern is the awareness of the environmental impacts of the groups of actors in the batik industry, and the bounded case is Central Java. The focus of the case study is to find out the relationship between the actors and the environment, based on the concept of awareness. That relationship will be explained according to what concepts influence the awareness of the environmental impacts, their role to the batik industry, and how their difference in awareness can be explained.

Three phases can be defined in this research. The first phase is the gathering of data regarding the background and theories of awareness and the environmental impacts of the batik industry in Central Java. The second phase is the collection of new data from semi-structured interviews, that are held through Skype and Zoom with informants that have experience with the government and batik entrepreneurs. The choice for interviews with informants will be elaborated in paragraph 3.2. The last phase is the analysis and interpretation of all newly collected data, from which a conclusion is formulated.

3.2 Data collection

Two main ways of data collection are used. These are first literature review, where written literature about the subject is looked at, and next data collection through semi-structured interviews, which is newly collected data. The literature review is used for the theoretical section, and the semi-structured interviews are used for the empirical section. Using different kinds of data collection is useful in a way that contributes to the validity of the research. More kinds of lighting and aspects to one particular phenomenon helps to understand the phenomena in a whole better. That is seen as a holistic approach, which is common in qualitative research. A holistic approach implies the explanation and description of a concept, that exists of different apparitions that contribute to the phenomena as a whole (Diesing, 1972). The mutual unity that is found in the different components is grouped into clusters of meaning that will capture the overall meanings.

In the first phase, the literature research is performed for the theoretical section. Literature is searched about different topics, where pattern elucidation is the primary goal. Data is sought, read, summarised, and interpreted. An inductive way of thinking is used, that is a bottom-up approach. The wholeness of the batik industry in Central Java is studied. Next to this, the concept of awareness and the environmental impacts that result from the batik industry are also studied. Similarities and differentials in these concepts in Central Java are compared to each other, on which a pattern can be made. In finding all of this literature, the snowball-method is used. That is done through studying the lists of literature in the relevant found literature to be able to find more and new relevant literature on the subject and the theories involved. The snowball-method is not the only method that is used in this research. Also, the best match method is used, where relevant terms and states are put into Google Scholar and ERIC, the Education Resources Information Centre, to find relevant literature for the theoretical part.

The second phase concerns the fieldwork that is employed at a distance from the Netherlands to Central Java, Indonesia. The sources of information for this research are informants. Informants are people who have experience with and relevant knowledge about the two groups of actors in this

research; the batik entrepreneurs and the government. The information that is gathered in the semi-structured interviews with these informants is second-hand information because there has not been spoken to the direct groups of actors. The reason for this non-opportunity is the worldwide health crisis at the moment of research. The second-hand information leads to a certain bias in the collected data. The possibility to speak to informants instead of direct respondents results in a data collection with subjective tones. The informants talk about their experience with the groups of actors and give an outsiders' perspective of the situation in the batik industry and the environmental impacts that result from it. Furthermore, the awareness of the batik entrepreneurs and government is then based on the experience of these informants; not the direct story of the groups of actors themselves about their level of awareness. The perceptions of the informants are subjective, where social reality is never fully abided.

Six informants have been spoken to for this research, from which three of them are located in Central Java, one of them is located in the Netherlands, one in Yogyakarta and one in Malaysia. Four of the informants have written articles and done research about several environmental issues in the batik industry, where the location of two of the researches was in Central Java. The other locations of research are Yogyakarta and Kelantan. Furthermore, the informant located in the Netherlands has travelled multiple times to Central Java to visit all of the batik industry. Last but not least, another informant located in Central Java is a lecturer at a University in Central Java and also has experience with the batik industry in general at location.

The semi-structured interviews give an insight into how informants have experienced in what way the two actors experience their awareness of the environmental impacts of the batik industry. The informants all had a specific interview guide, with leading questions. In these questions, space was left for potential additions in the interview itself. The data differs from experience or stories to findings or conclusions of the research that they have done.

3.3 Data analysis

After the data is collected, the analysis of the data starts. That is the third phase of this research. That is for the newly collected empirical data through semi-structured interviews that are held with Skype and Zoom with informants in Central Java. The semi-structured interviews are transcribed word by word, so the text is analysed. A coloured coding scheme is used to differentiate the different types of information. Coding is meant to capture the essence of the gathered data through semi-structured interviews, which is an interpretive process. Different focus characteristics are the result of this categorisation into different groups. These groups represent what role the groups of actors have in the industry and the leading aspects that influence the awareness of environmental impacts of them.

These coloured words and sentences are after that, read again and analysed. That is done in another file where coordinated groups were formed for each interview. The groups are directed into a text for each informant. Groups are made for the role of the government and batik entrepreneurs, but also on the concept of waste, wastewater treatment, sustainability, and natural vs synthetic dyes. Furthermore, the awareness is split up into knowledge, affection, and willingness. Developing the answers and chapters of the sub-questions, the coordinated texts are laid next to each other and compared. This way, each perspective of the different interviews is compared to each other for one part of a sub-question, that came to the best-formulated piece of writing. That is an inductive way of analysing because, from the multiple specific points of view that are studied, a general outcome is determined.

The level of awareness is divided into three classes: low, average and high. This is determined upon the level of knowledge, affection and willingness for the two groups of actors. These levels are somewhat compared and summarized, where the level of awareness is based upon.

After the answering of the first two sub-questions, the third sub-question is developed based on the first two. It is the critical reflection on the first questions and how the answers for each actor differ and particularly why they differ. It is the chapter with a more analytical depth that gives a begin-cross for the conclusion.

4. Batik in context

In this chapter, the batik process will be explained further and put into context. First of all, Central Java is introduced, the study area of this research. Secondly, the different types of batik and their production process is explained. That involves the different materials that are elaborated and the people who exceed the process. Lastly, the main results of the batik industry are explained.

4.1 Central Java

Central Java, "*Jawa Tengah"* in Indonesian, is the third-largest province of the island of Java (Badan Pusat Statistik, 2019). It is located in the middle of the island with the administrative capital Semarang. Central Java has a total population of 34,5 million in 2019 (Badan Pusat Statistik, 2019). In cultural sight, Central Java also includes the city of Yogyakarta.

Central Java is seen as the historical place and centre of the origin of batik (Elliot, 2013). It is still the area where most batik is produced nowadays, as it is called the "heart" of Javanese culture (Elliot, 2013). The centre of batik is in Pekalongan. Other centres include Surakarta, Yogyakarta and Semarang.

4.2 Different types of batik

The process of batik is very traditional (Fitri Wonopati, p.c., 2020). Nevertheless, it varies between different batik owners. Batik is always produced in the same format. That is in a Sarong format (Sabine Bolk, p.c., 2020). The Sarong is mostly 1.10 meters by 2.00 or 2.50 meters. It is dependent on if it needs to be worn as a Sarong, which is like a hobble skirt, or as a Karapanjan, a longer skirt that one can wrap around themself (Sabine Bolk, p.c., 2020).

Three types of batik exist, namely the hand-drawn batik, the cap batik, and the batik textile (Rina Febri, p.c., 2020). The difference between these three is mainly in the first stage of the production process. In this stage, the motif is applied to the fabric.

The first type of batik is the hand-drawn batik, also called 'batik tulis'. This type of batik is generations old and has stayed the same since the 18th century. The canting is as old as batik exists and is one of the major things that still make the production process traditional (Fitri Wonopati, p.c., 2020). The canting is a small hand-pen that the batik craftsmen use to draw the batik motif on the fabric with wax (Sabine Bolk, p.c., 2020). Women often exceed the handwritten batik since the beginning of batik, as seen in figure 4.1. The expertise is brought over from mother to daughter, and this is still happening this way.

Fig. 4,1 Batik tulis; Women draw batik motifs on fabric with canting.
Sabine Bolk (2019)

Next to the batik tulis, there is the cap batik. This cap is a brass stamp and more the "quick" version of the hand-written batik (Sabine Bolk, p.c., 2020). A repeated motif is stamped on the fabric with wax. With the cap, the batik is often limited to one or two colours. Furthermore, men often exceed the cap batik because it is too heavy to do this work as a female.

The third type of batik is batik textile. This batik is often not seen as real batik because no

wax is used during the production process (Rina Febri, p.c., 2020). The batik motifs are printed on the fabrics with dye, and that is it. Most of these batiks are made in mass production. That is the main reason why batik textile is relatively cheap compared to the crafted batik that is made initially (Sabine Bolk, p.c., 2020).

4.3 Production process

The production process is primarily explained for the batik tulis and the cap batik because the batik textile is not seen as real batik and thus has not such an implicated production, as Rina Febri (p.c., 2020) mentioned.

Each process starts with a new, empty fabric. A motif is drawn on top of the plain fabric, different for each type of batik. The motif is made with wax. Everything on the fabric that is meant to remain the colour is put wax over. After a motif is placed on the fabric, the fabric goes into a bath with extracts of dye. The fabrics are pulled through these baths a couple of times, until the desired result (Rustina Untari, p.c, 2020). That is the colouration phase. The wax makes sure that the paint is not able to go underneath the selected places (Rustina Untari, p.c., 2020). After the fabric is coloured into the desired result, it is dried under the sun.

When the fabric is dried, the fabric is put into a tub with boiled water. Here the wax is boiled off, as seen in figure 4.2. Starch and Soda ash is put into the boiled water most of the times (Fitri Wonopati, p.c., 2020). What kind of chemical and how much of the chemical is used depends on the entrepreneur. This is different for every batik (Fitri Wonopati, p.c., 2020). Boiling is the last process for one colour. This process is repeated the number of times equal to the number of colours that the batik is desired to get (Sabine Bolk, p.c., 2020).

Fig. 4.2 Boiling process
Sabine Bolk (2019)

There is a difference between what kind of dye is used. There are two types of dyes, natural and synthetic. Most batiks nowadays use synthetic dyes instead of natural dyes, which used to be the main dye used for batik (Budi Modjo, p.c., 2020). This is confirmed by Rustina Untari (p.c., 2020), Fitri Wonopati (p.c., 2020) and Rina Febri (p.c., 2020). The batiks that are made with the two different kinds of dyes have several differences that will be elaborated.

First, the batiks made with different kind of dyes have a difference in colour. The usage of synthetic dyes makes it possible to put every imaginable colour on a batik. For example, a batik made with synthetic dye may have very bright, exceptional colours such as gold, purple, and orange. The natural dyes are only limited to several colours because organic stuff is used to create this dye. These colours are mostly limited to darker colours, mainly brown, black, and blue (Fitri Wonopati, p.c., 2020).

Second, there is a time difference in the making of batiks, differentiated to the type of dye. Synthetic dyes bind relatively faster to fabric compared to natural dyes, due to the fabric only has to go once or twice through a bath with dyestuff with synthetic dyes. Natural dyes need to be prepared

from organic things towards a sort of dye that can be put into the water and used. Furthermore, the natural dyes also bind slower to the fabric due to the lower quantity of chemicals (Fitri Wonopati, p.c., 2020).

Third, there is a difference in the results of the quality of the batiks. The batiks where synthetic dyes are used, are to remain better in quality of colour preservation. Relatively, the batiks where natural dyes are used tend to remain less long in quality of colour preservation (Rustina Untari, p.c., 2020).

Fourth, a difference in costs exists for the two kinds of dyes. The synthetic dyes are much cheaper to obtain, and less dye is needed in order to get the same result (Rustina Untari, p.c., 2020). The natural dyes are relatively expensive to use for just one piece of batik cloth.

Finally, there is an environmental difference as a result of batik practices. In general, synthetic dyes retain more chemicals than the natural dyes because of the water that is not very much filtered through the batik industries. This polluted water ends up directly into the environment. The chemicals in this water are non-biodegradable and are stated very pollutingly to the environment. However, the batiks that are produced with natural dyes are sometimes also included with chemicals. Chemicals are used to accelerate the time of production, but it is also used to bind the colours better to the fabric.

To put it differently, the batik productions that use natural dyes are not always as environmentally-friendly as it is thought (Fitri Wonopati, p.c., 2020). The synthetic dyes seem to be the most polluting to the environment. However, the synthetic dye is relatively better for the environment in a way that the amount of water that is used is lower for the synthetic dyes than the natural dyes. That is because the dyes bind faster, so less water is needed for the same desired result.

4.4 Micro- and small-scaled industries versus medium-and large-scaled industries

A significant difference in size for batik industries exists. This size difference distinguishes micro- to small-scaled batiks and medium- to large-scale industries. These different industries have their course of events.

The micro- and small-scale industries produce on a small scale (Fitri Wonopati, p.c., 2020). The micro- and small-scale industries mostly produce hand-drawn batik, the batik tulis. Micro- and small-scale industries can sometimes be considered as individual batik crafters, with only one or two extra artisans. An artisan is the excellent creator of a piece of batik, which designs the pattern and applies this to the fabric (Sabine Bolk, p.c., 2020). Most micro- and small-scaled batik industries are practised from home, in the area around their house, such as their garage. For example, Budi Modjo (p.c.,2020) spoke to a micro batik with only one to five artisans, who sometimes only made three or four batiks a day.

The medium- and large-scaled industries produce, more on a bigger scale and sometimes even mass production (Fitri Wonopati, p.c., 2020). The medium- and large-scaled industries mostly do not only produce hand-written batik but also cap batik (Rina Febri, p.c., 2020). For example, Fitri Wonopati experienced a large batik that contained around 50 artisans and produced at least 50 pieces of batik cloth a day (p.c.,2020). Sabine Bolk (p.c., 2020) went to a large fabric of batik industry in Ketalong where at least 150 female workers were doing hand-drawn batik and lines of men who were doing the cap batik. These are much larger numbers of workers and pieces of batik cloth that are produced a day in contrast to micro- and small-scale industries.

The two sizes of batiks also have a different market (Fitri Wonopati, p.c., 2020). Overall, the micro- and small-scaled home-based industries produce mostly for the local market. That is also acknowledged by Rina Febri (p.c., 2020) and Rustina Untari (p.c., 2020) who adds that the local market is for all the people of Java, especially for the higher class people.

The medium- and large-scaled industries produce primarily for the large cities of Java, like Jakarta, and the international market. The medium- and large-scaled batik industries have several strategies to maximise their sales (Rina Febri, p.c., 2020). They produce for a wider audience, so they mostly do the cap batik because that is a relatively quick way of production, but they also do handwritten batik on request (Rina Febri, p.c., 2020). This combination of different kinds of production, and thus different kinds of products, is their strategy to fasten the turnover rate. Japan is also a big market for the Javanese batik industry. For this market, specific batik is produced.

The medium- and large-scaled industries also sell products from small industries. That happens in two ways; first, they have contacts with several small based industries who only produce batik and do not sell them individually. The sales of their batik run only through the larger-scaled industries, with them as larger resellers. Second, the medium- and large-scaled industries also receive the leftovers of the smaller batiks, who do not get these batiks sold at the local market.

The two sizes mainly use a different kind of dyes. The micro- and small-scale industries produce batik mainly with synthetic dye. However, in some exceptions, batik is produced with natural dye. In contrast, the medium- and large-scaled industries produce batik with both natural and synthetic dyeing (Rina Febri, p.c., 2020). They mostly produce large quantities of batik cloth with synthetic dye, but they also make batik with natural dyeing on request.

The difference in the size of batik industries also relates to the size and sort of waste that results in environmental impacts. It can be argued that a larger scaled industry, that produces more batiks, also produces more waste. Smaller industries have, in theory, less impact on the environment than medium or large batik industries. However, according to Budi Modjo (p.c., 2020), they cumulatively contribute in a significant way to the environment. In the long run, their total negative impact is becoming too high. These impacts from small home-based industries are not measured absolutely, but pollution is only becoming more and more over time (Budi Modjo, p.c., 2020).

5. Role of actors in batik industry

In this chapter, the role of the government and batik entrepreneurs in the batik industry will be elaborated. The following sub-question will be answered: *''What is the role of the government and batik entrepreneurs in the functioning of the batik industry in Central Java?*''. Each actor has a different influence on the daily life practices of the batik industry, and therefore, the roles will be explained separately.

5.1 Government

The government that is involved in the batik industry is the department of Industry and Tourism and the Department of Environment. It also includes some municipal accommodators per region. The government has various roles in the batik industry. It is the general power of the state that can influence the batik industry in various ways. The government can use their power for the tender of education or wastewater treatment, the monitoring of batik entrepreneurs on their actions, and in the stimulation of research that is executed by experts. However, the government lacks in its role in giving practical help to the batik industry in specific ways, which has several consequences.

The first role of the government is to support the batik positively in a few ways. They encourage batik by acknowledging and owning the patents of the original motifs per region. Every region has its own motif, and the governmental officer often wears the batik uniform of their region (Rustina Untari, p.c., 2020). The acknowledgement of batik as World Intangible Heritage by UNESCO also supports this. The acknowledgement leads to the government making a program for each region to stimulate the production of batik (Rustina Untari, p.c., 2020). That acknowledgement resulted in the industry having a massive increase in importance and attention in Java, not only for the inhabitants but also for tourists that visit Java. Rustina Untari is an excellent example of a person who contributed to the batik industry. She helped batik entrepreneurs, on behalf of the chamber of commerce of Central Java, in organising exhibitions throughout the region for them. The exhibitions were held in supermarkets, ateliers, or malls and the batik entrepreneurs received more customers and a broader network from these activities.

Moreover, the government has a vital role in education. The provision of education for people, in general, is provided well, according to Fitri Wonopati (p.c., 2020). Although the education level of Java is pretty good, the education level of the batik entrepreneurs can be stated as relatively low (Fitri Wonopati, p.c., 2020). The batik industry is a creative industry where not much expertise is needed to start a small, profitable business. The batik entrepreneurs have barely studied after high school, let alone acquire a bachelor's diploma or finishing any high educational study. Educational attainment is essential for the ability to develop one's knowledge of certain concepts.

The lack of education is mostly concerned with the subject of the environment. Education is a significant factor that could positively increase the knowledge about the environment of batik entrepreneurs. Batik entrepreneurs cannot educate themselves due to economic reasons. Currently, the government does not educate batik entrepreneurs (Budi Modjo, p.c., 2020). Under the pressure of the general power, the government could gently force the batik entrepreneurs to educate themselves in various subjects of the environment. However, the government does not communicate this with batik entrepreneurs. An example of a good education would be training the batik entrepreneurs about the environmental impacts of their practices given by experts. In this way, batik entrepreneurs are able

to know more about their environmental impacts, which will affect their affection, and willingness to the environmental impacts positively. Nowadays, there are some trainings executed by the government, but this is still exceptional (Rustina Untari, p.c., 2020).

Additionally, the government likewise does not execute the role of influencing the handling of waste and the provision of wastewater treatment of batik entrepreneurs. The view of the government to the micro- and small-scale industries and their related waste is one of the main reasons that they do not take many actions against the waste. The government does not acknowledge a significant need for wastewater treatment for micro- and small-scaled batik industries. It does not provide much concerning wastewater treatment for micro- and small-scaled batik entrepreneurs, according to Fitri Wonopati (p.c., 2020). Most of the micro- and small-scaled batik entrepreneurs cannot afford the acquisition of treatment themselves, and the government also does not help in acquiring one. The micro- and small-scale businesses are also not contracted to comply with environmental laws (Budi Modjo, p.c., 2020), and the government does not give an incentive to reduce their amount of waste. This is supported by Benny Setianto (p.c., 2020) who mentions that the government does not want to see the micro- and small-scale businesses as over-using their resources and thus not as polluting as the larger ones. That might seem correct, but if the pollution of small businesses is added up over the years, it is significantly contributing (Budi Modjo, p.c., 2020).

For the medium- and large-scaled batik industries, the government has strict environmental laws that these industries need to follow; for example, they need to create their wastewater treatment by force. Those environmental laws are implemented in the 1970s (Budi Modjo, p.c., 2020). However, the penalties of not complying are not severe enough. Lots of medium- and large-scaled batik entrepreneurs choose to continue with their current production process and amount of waste and pay the punishment for this because this is more beneficial to them (Budi Modjo, p.c., 2020). This kind of environmental law, including regulation, does not cover the micro- and small-scale industries.

The government does provide some treatment but on a small scale. In some areas, the government arranges the facility of water treatment to a group of batiks. However, this does not often happen (Rustina Untari, p.c., 2020). In Pekalongan, for example, the municipality did provide two reactors where water gets filtered. The government has arranged it to two home-based industries in Pekalongan, but this is far from providing it to all industries (Fitri Wonopati, p.c., 2020). Unfortunately, Fitri Wonopati (p.c., 2020) mentions that this is exceptional; lots of industries still get left behind without any help from the government. So, it is no real help to the problem of wastewater if it only gets provided to two industries in the area. Rustina Untari (p.c., 2020) also acknowledges that it is not fair how some batik entrepreneurs get water treatment, and some do not.

Lastly, the government has a problem with their role in the continuation of monitoring programs after they are exceeded. The government seems to provide some help to the batik industry by giving training, regulation, or the provision of ways to treat the wastewater. This happens in programs, where programs get executed according to a specific protocol. However, there is one big problem that the government of Central Java faces with these activities. They perform these programs successfully, but afterwards, there is a considerable lack of monitoring of the programs.

An excellent example of this is the provision of the two reactors that filter water in Pekalongan. The government did provide the reactors to two industries. However, Fitri Wonopati (p.c., 2020) mentions that the batik entrepreneurs notice that they never were asked for feedback. The usage of the batik entrepreneurs of water treatment does not get monitored in any way. The batik

entrepreneurs can choose not to use it if they believe it is too much work for them, which should not be the intention of the program. Furthermore, the government seems to simply not monitor the waste of batik entrepreneurs in general (Fitri Wonopati, p.c., 2020). That can be related to the government, not seeing the seriousness of the pollution that is created by batik entrepreneurs. The government does not see what impact this waste will have on the environment.

Overall, the government does support the batik industry in some ways. However, these supports are not always the most effective and efficient way of helping the batik industry. The provided education about the environment to batik entrepreneurs by the government is not enough. The government also does not have a positive influence on waste and waste treatment for the batik industry. Last, the government does not monitor the programs they perform, that is the reason that the program loses its effectiveness.

5.2 Batik entrepreneurs

The batik entrepreneurs are the supervisors of the batiks. In micro- and small-scaled batik industries, the batik entrepreneurs, are both craftsmen and supervisors. This is in contrast with medium- and large-scale industries, where the batik entrepreneurs do not make the batik themselves. Here artisans make batik, and the batik entrepreneurs have the role of supervising only.

Batik entrepreneurs have the role of controlling their business and making decisions about what production process to perform, which products to use, and how to treat their waste. This also includes environmental concerns like, for example, wastewater treatment. The micro- and small-scaled batik industries have less wastewater treatment than the medium- and large-scale industries (Rina Febriani, p.c., 2020). Both do not measure the quantity of water that they use for production. ''The batik entrepreneurs just use what they need and do not think further about that'' (Rustina Untari, p.c., 2020), which reflects the mind-set around the usage of water in the batik industry. This also counts for the whole water usage in Indonesia, according to Rina Febriani (p.c., 2020). The usage of water could be more efficient; however, this is not something that batik entrepreneurs are busy with currently (Rustina Untari, p.c., 2020).

The micro- and small-scaled batik industries do not have to comply with environmental law because they do not have a specific size of pollution according to the government (Benny Setianto, p.c., 2020). The relatively larger businesses, in contrast to the smaller ones, need to set up their wastewater treatment on their own (Benny Setianto, p.c., 2020).

Furthermore, medium- and large-scale industries need to comply with environmental laws. However, the medium- and large-scaled industries make use of flaws in environmental laws (Budi Modjo, p.c., 2020). When they are significantly large in size to a certain point, they need to comply with the environmental laws. So, they stay at a certain limit of size and import batik that is made in small industries to add to their sales. In this way, they get to sell many batiks with relatively too high pollution, without paying a tax for this. The batik entrepreneurs say that ''they did not directly pollute the environment with it'' according to the law (Budi Modjo, p.c., 2020) and that justifies it for them.
Moreover, the medium- and large-scaled industries also play so-called ‘cat and mouse’ with the government, according to Budi Modjo (p.c., 2020). The batik entrepreneurs give lots of excuses not to have to comply with the environmental law. They have an attitude to use any excuse available, such as the COVID-19 pandemic. These sort of excuses are examples of forms of justification for the batik entrepreneurs to have difficulties in their industry, which causes them to ask for a delay for compliance with the law (Budi Modjo, p.c., 2020). ''No operation keeps their premise'' (Budi Modjo, p.c., 2020).

Despite the profitable advantages for the batik entrepreneurs, all these tricks go on behalf of the environment.

Overall, the batik entrepreneurs do not take much responsibility in their practices towards the environment. There is little wastewater treatment, and this is only used when it is obliged by law. Furthermore, the quantity of water used in the batik industry is not measured at all. Batik entrepreneurs have a certain attitude in their practices towards the environment. This attitude is mostly reflected in a neglection towards the environmental impacts that result from them. The micro- and small-scaled batik industries differ in their compliance with the law compared to the medium- and large-scale industries. The batik entrepreneurs of micro and small are not obliged, while the batik entrepreneurs of medium and big are. However, the medium- and large-scaled batik entrepreneurs try to give excuses and find flaws in environmental law, not to have to comply with it.

6. Knowledge, affection, and willingness: aspects of awareness of environmental impacts in batik industry

The government and batik entrepreneurs have their own particular level of awareness. Their awareness of environmental impacts varies because each of the actors has a different set and combination of aspects of the three factors of awareness, that are explained in section 2.1.3. These factors are knowledge, affection and willingness. In this chapter, the following sub-question will be answered: ‘’*What is the level of awareness of the environmental impacts in batik industry for the government and batik entrepreneurs?’’.* The aspects that influence the factors of awareness will be elaborated further for the government and the batik entrepreneurs, at which result the level of awareness will be constructed.

6.1 Knowledge

Knowledge is the experience, and intellect one builds pon knowledge as previously explained in section 2.1.3 in the theoretical framework. In the following paragraphs, the knowledge of the government and batik entrepreneurs is elaborated.

6.1.1 Government

The government has some intellect and experience with the environmental consequences of the batik industry. The acknowledgement of the government about these impacts on the environment that result from the batik industry's practices differs for the micro- and small-scaled home-based industries and the medium- and large-scaled batik industries.

The government sees the micro- and small-scaled home-based industry not as polluting as the larger ones (Budi Modjo, p.c., 2020). This might seem logical for the government, because of the size of production of these industries and how much waste the micro- and small-scale industries produce. Nevertheless, the opposite is accurate, according to Budi Modjo (p.c., 2020). Cumulatively, the waste of the small batik industries does contribute significantly to the environment (Budi Modjo, p.c., 2020). The small industries significantly affect the environment in the long term. The government does not know about these long-term perspectives of the waste generated from micro- and small-scaled batik industries (Benny Setianto, p.c., 2020). The government does not have the right knowledge of the relationship between the production and the consequences these practices have for the environment of Central Java for the micro- and small-scale industries (Benny Setianto, p.c., 2020). The government thus obtains limited intellect that the small amounts of waste do not pollute the environment in a significant way. Overall, the government does not see the seriousness of the problem of the relatively small batiks (Budi Modjo, p.c., 2020).

Furthermore, the government has the knowledge that many people of Central Java in the batik industry rely on, particularly on the micro- and small-scaled batik industries. This knowledge is reflected in the government not having that much regulation for these micro- and small-scale industries because the government does not want to restrict and punish them in order for them to get into trouble and lose their jobs (Budi Modjo, p.c., 2020). This way, the environmental impacts are not punished much for the batik industry.

The government does acknowledge that the medium- and large-scale industries of batik produce a significant level of waste. Acknowledgement means having enough intellect and experience with a specific action to consider it to change the action. Here, the government has intellect and

experience with the size of pollution that results from the batik industry for medium- and large-scale industries in the surroundings of Central Java (Budi Modjo, p.c., 2020). This knowledge is reflected in a change in action, in this case, the force of the government for the medium- and large-scaled batik industries to comply with environmental laws (Rina Febriani, p.c., 2020).

In short, the level of knowledge for the government about the environmental impacts of the batik industry in Central Java is average. The government acknowledges the significance of the environmental impacts of medium- and large-scaled batik industries. However, the waste of the micro- and small-scale industries are not acknowledged as significantly having much environmental impact, which it indeed is, according to Budi Modjo (p.c., 2020). The government does obtain intellect about some environmental impacts of the batik industry. However, it seems to be missing the broader picture where every batik in Central Java, if they are micro, small, medium or large, have an actual and significant environmental impact.

6.1.2 Batik entrepreneurs

Batik entrepreneurs are very low educated in general (Fitri Wonopati, p.c., 2020), primarily the micro- and small-scaled batik entrepreneurs. Many entrepreneurs have not finished more than a high school degree and have little general knowledge about broad concepts in the world and their environmental surroundings. A low education level is a prior argument for batik entrepreneurs not being able to gain more knowledge about several environmental subjects.

First of all, batik waste is an enormous concept that batik entrepreneurs deal with. However, batik waste is not a concept of concern for most of the entrepreneurs. The batik entrepreneurs do not have knowledge about what their waste actually consists of. For almost every entrepreneur, it is mostly unknown how polluting the heavy metals and chemicals are, which they add to their process and later on directly dump into the surroundings (Budi Modjo, p.c., 2020). The batik entrepreneurs conduct their production and handling of this resulting waste in a not sustainable way. They conduct it this way, ''because many others also do it this way'' (Budi Modjo, p.c., 2020). The knowledge they obtain about these concepts is given from local to local, not through education.

Secondly, batik entrepreneurs do not have much knowledge about how to treat this batik waste. Wastewater treatment comes in different shapes and can be divided into two kinds: simple and advanced technology. The entrepreneurs of micro- and small-scaled home-based batik industries prefer simple technology, according to Fitri Wonopati (p.c., 2020), because they can handle these technologies knowledge-wise. An example of this simple treatment is a tube with layers of coconut fibre that filter the water as it runs through (Rina Febriani, p.c., 2020). The entrepreneurs of medium- and large-scaled batik industries are more able and capable of introducing advanced technology for wastewater treatment in their business (Rina Febriani, p.c., 2020). However, these techniques are mostly unknown. This results in a few batik entrepreneurs that actually make use of these treatments of waste.

Third, batik entrepreneurs do not obtain much knowledge of the environmental impacts that are the result of their practices. The batik entrepreneurs of small industries do not talk about environmental impacts, because it is out of their league: they simply do not discuss these things, according to Benny Setianto (p.c., 2020). The batik entrepreneurs do not witness the direct problem in chemicals or dye, so they cannot see how polluted the water gets with harmful chemicals. They do not know on what scale their business affects the environment, mostly because they cannot see the direct

consequences. Their non-thoughtful actions do not only influence themselves and the environment but also their surrounding community (Budi Modjo, p.c., 2020).

An example of this is that the batik entrepreneur does know that they add the chemicals to the process; they do it themselves. However, they do not have the knowledge about if it is a massively polluting chemical or not (Fitri Wonopati, p.c., 2020). Batik entrepreneurs simply do not understand the relation between the usage of chemicals and the pollution of the environment (Budi Modjo, p.c., 2020).

On the other hand, the batik entrepreneurs of medium- and large-scale industries have a little more knowledge about their environmental impacts. The size of their production results also in a larger size of pollution, which is seen as more practical and more accessible than a relatively smaller quantity of pollution. However, still, not all of the medium- and large-scaled batik entrepreneurs conduct waste treatment (Fitri Wonopati, p.c., 2020).

Overall, batik entrepreneurs have a low level of knowledge about the environmental impacts of their practices. Batik entrepreneurs do not understand the relationship between their actions and the consequences these actions have to the environment (Budi Modjo, p.c., 2020). Batik entrepreneurs may know that their practices are not beneficial for the environment, but they sure do not know on what scale it is polluting the environment (Rustina Untari, p.c., 2020). Entrepreneurs of micro- and small-scaled batik industries are relatively less concerned and have less intellect about the environmental impacts compared to the entrepreneurs of medium- and large-scaled batik industries. The knowledge they obtain is based on what is told and explained to them by locals, not by education (Sabine Bolk, p.c., 2020). This results in them not knowing what their waste contains. Additionally, batik entrepreneurs also do not know that there is particular importance that this waste needs to be filtered.

6.2 Affection

Affection is, as explained in section 2.1.2.2, a permanent state of feeling: the feeling that one has about concepts, based upon the knowledge one acquires about those concepts. The next paragraphs are an elaboration on the affection for the government and batik entrepreneurs.

6.2.1 Government

The government has a particular way of feeling for the batik industry, in a way that it is cultural heritage, and most own patents of motifs for every region and support batik by wearing it (Rustina Untari, p.c., 2020). However, the feelings that the government develops about the impacts to the environment that are resulted from the batik industry is not that high (Rina Febriani, p.c., 2020). Affection can be seen through behaviour, as explained in section 2.1.2.2. The behaviour of the government shows that their feelings towards the environmental side of the batik industry are not put into action. Government sets the regulation for medium- and large-scaled batik industries. However, this is not monitored fully to be as efficient as possible (Budi Modjo, p.c., 2020). Furthermore, the government sets no regulation for the micro- and small-scaled batik industries. There seems to be no environmental concern, that can also be called affection of the environment, in this part of the batik industry by the government (Fitri Wonopati, p.c., 2020). The government does not have real affection, particularly about the waste generated from the batik industry, for small and medium industries (Budi Modjo, p.c., 2020).

The government will have an increasing affection for the environment over the years in the opinion of Rustina Untari (p.c., 2020). They will keep growing more in how much they genuinely see multiple sides of the batik industry. They can develop their affection on this. With the increasing pollution and waste conducted by the batik industry, over the years, it will become clearer what and in what quantity the environmental impacts will significantly be (Fitri Wonopati, p.c., 2020). When this happens, the government will possibly create more affection towards the feelings and urge to do something about pollution and how to reduce this.

Overall, the level of affection of the government about the batik industry is average. The government has an apparent affection for the batik industry itself. However, the affection for the environmental impacts that result from the batik industry is not that high. This affection is mostly little for insights on the micro- and small-scaled batik industries.

6.2.2 Batik entrepreneurs

Affection is built up upon the knowledge, where the knowledge of batik entrepreneurs is stated low in section 6.1.2. This affection will become clear in the behaviour of batik entrepreneurs. The affection of batik entrepreneurs towards the environmental impacts will differ per size of the industry. Micro- and small-scale industries do not have that much concern about waste management while in contrast, the relatively larger industries do have more concerns about waste management according to Rina Febriani (p.c., 2020).

The entrepreneurs of micro- and small-scaled batik industries do not have much knowledge or capacity to think about environmental impacts (Benny Setianto, p.c., 2020). That causes a lack of development of affection about environmental concepts by micro- and small-scaled batik entrepreneurs. According to Budi Modjo (p.c., 2020), batik entrepreneurs do not have a strong environmental frame of mind. It does not come to their mind to think about the environment during their daily life (Budi Modjo, p.c, 2020). This is reflected in the behaviour of the entrepreneurs of micro- and small-scale entrepreneurs: there is no real action taken to reduce their environmental impact; thus their level of affection towards these environmental impacts is low.

The medium- and large-scaled industries, on the other hand, have more affection for the environment. The medium- and large-scaled batik industries relatively take more action in their business towards a better environmental record (Benny Setianto, p.c., 2020) than micro- and small-scaled batik industries. For example, some medium and big industries are eager to do something with sustainability in their business (Rina Febriani, p.c., 2020). However, this does not cover all medium- and large-scaled batik industries, for example, others keep finding excuses to put money before the environment and try not to have to comply with environmental laws (Budi Modjo, p.c., 2020).

Overall, the level of affection of the batik entrepreneurs differs for micro- and small-scaled batik industries, compared to medium- and large-scale industries. The micro- and small-scale industries have little environmental sense, thus a low level of affection, due to a considerable lack of environmental knowledge. On the opposite, the medium- and large-scale industries have a relatively higher environmental sense, thus a relatively higher level of affection. However, this does not count all medium- and large-scaled batik industries: some are eager to really do something for the environment, but this is exceptional. Still, some other medium- and large-scale industries try to avoid to do something for the environment. Thus, the level of affection for all batik entrepreneurs, in general, is stated low.

6.3 Willingness

The willingness of one is built up upon one's affection, as elaborated in section 2.1.2.3. It seeks the motivation that people develop around their affection, and at the same time knowledge, they have acquired over time. In the following paragraphs, the willingness of the government and batik entrepreneurs are discussed.

6.3.1 Government

The government takes it step by step in the opinion of Rustina Untari (p.c., 2020) for the concept of willingness. The government is not entirely willing to look at the environmental difficulties that the batik industry is challenged with and how they can be helpful in these challenges (Benny Setianto, p.c., 2020). It is about the motivation that is generated upon their feelings. This motivation is mostly lacking at the governmental side (Budi Modjo, p.c., 2020) because their feelings towards environmental impacts are not that extraordinary. This is also noticeable through the execution of programs of the government. The government has developed several programs to stimulate the batik industry, for example, training on wastewater. However, after the program is executed, there is no monitoring or follow-up at all (Rina Febriani, p.c., 2020). The willingness to make environmental-minded programs work as efficient as possible lacks for the government.

The contribution of the government is willing to do something for the environmental side of the batik industry and help the batik entrepreneurs in this would be higher if the environmental impacts were higher, according to Fitri Wonopati (p.c., 2020). If the impacts are somewhat higher, the government could directly witness what the impacts are, and they would be stimulated to level up their motivation of doing something about it.

Overall, the level of willingness of the government is average. They do develop some motivation on top of their environmental sense, which is reflected in the creation of environmental-minded programs for the batik industry. However, the motivation of keeping these programs active and productive, after they are executed is not high. The government lacks monitoring and also in the provision of practical help in the long term.

6.3.2 Batik entrepreneurs

The batik entrepreneurs do not have the motivation to create something for the long term, because they do not see the long term of these kinds of investments. ''They are not willing to sacrifice for the sake of the environment'' (Budi Modjo, p.c., 2020). Batik entrepreneurs may have such feelings that they want to put this forward into motivation, but they do not support the costs that they would have to make to improve the environment (Budi Modjo, p.c., 2020).

Furthermore, batik entrepreneurs do not have a proper mindset towards the environment (Fitri Wonopati, p.c., 2020). They will use as much as they want to receive the desired result of batik. This might be a rightfully economic way of thinking, but not for the environmental right. They do not think in efficiency rates, where less quantity of something, such as fabric, dye or water, can be used to receive the same result. The batik entrepreneurs take what they need and do not have the motivation to threshold efficiency in their industries.

There are some excellent examples of batik entrepreneurs who have goodwill towards their practices against the environmental impacts indeed. Rustina Untari (p.c., 2020) spoke to a batik entrepreneur who was willing to voluntarily set up a wastewater treatment, additional to using natural

dyes. This is an excellent example of a batik entrepreneur who is willing to drive their feelings towards real motivation and make this accurate. These acknowledgements can be a connection between the batik entrepreneurs that already have affection for the environment and act upon it. They connect the feelings with the knowledge to generate motivation. These batik people have an ideology about environmental issues, according to Rustina Untari (p.c., 2020). Unfortunately, these batik entrepreneurs are exceptional (Fitri Wonopati, p.c., 2020). Not many batik entrepreneurs conduct these kinds of things voluntarily nowadays.

Overall, the level of willingness of the batik entrepreneurs is low. They mostly do not develop the motivation to make improvements in their industries towards positive developments for the environment, because of the negative influence on their profits in the short term. This goes on behalf of the environment in the long term. However, there are some exceptions of batik entrepreneurs who are willing to choose the environment above economic reasoning. Unfortunately, these batik entrepreneurs are exceptional.

6.4 Level of awareness

In the previous parts of this chapter, the different aspects of awareness, knowledge, affection and willingness, are elaborated on the topic of environmental impacts. These three aspects together form the level of awareness. The level of awareness of the government and the batik entrepreneurs is explained will be explained in the following paragraphs.

6.4.1 Government

The level of awareness of the environmental impacts of the government is average. The government is highly aware of the environmental impacts in several ways, for example, by having regulation for specific batik industries or executing environment-minded programs for the batik industry. However, this only counts mostly for the governments' view on medium- and large-scaled batik industries. The government acknowledges the waste that the medium- and large-scaled industries conduct, make them comply with regulation and are willing to take action in their production. Here the level of awareness of the environmental impacts is high.

On the other hand, the government does not have a proper view of the micro- and small-scaled batik industries, where their level of awareness is respectively low. They do not acknowledge the polluting results from the micro- and small-scale industries, which they oppositely do have. Furthermore, the affection of the government towards the environmental concerns of the waste that micro- and small-scale industries produce is also low. Lastly, the willingness in being more aware of these environmental impacts of these industries is also low: the government nearly does anything to help these batik industries.

Overall, the level of awareness of the environmental impacts of the government is average, due to a respectively high level of awareness for the medium- and large-scaled batik industries plus a respectively low level of awareness for the micro- and small-scaled batik industries.

6.4.2 Batik entrepreneurs

Batik entrepreneurs score a low level on all three of the aspects of awareness of the environmental impacts. This results in the batik entrepreneurs also have a low level of awareness on the environmental impacts. Batik entrepreneurs are generally not aware of the environmental impacts that result from their practices in the industry, whereas they cannot witness the pollution, which

results in them not being aware of the pollution. Batik entrepreneurs have a low level of knowledge about environmental impacts. The batik waste that results from their practices is not a matter of concern. How to treat this batik waste is also mostly unknown for batik entrepreneurs. Lastly, the batik entrepreneurs do not obtain much knowledge about what the environmental impacts actually are that result from their practices. With this, micro- and small-scaled batik entrepreneurs have a lower knowledge than medium- and large-scaled batik entrepreneurs. They are more capable of learning more about their business and related environmental information. The affection that is built upon this limited knowledge is also rather low. The environmental sense is stated low, where the medium- and large-scaled batik entrepreneurs have a relatively higher environmental sense compared to the micro- and small-scaled batik entrepreneurs, but this is still not impressively high. Lastly, the willingness of batik entrepreneurs is also low. They do not have the motivation to create something for the long-term perspective for the environment, because that goes on behalf of their short-term profits. Some entrepreneurs are willing to evolve and use environmental-minded practices, but these still remain exceptional.

7. Concepts of influence in difference in role and level

The government and batik entrepreneurs do not have the same role in the batik industry nor the same level of awareness of environmental impacts. Several concepts can explain the differences in the aspects, knowledge, affection and willingness, and roles for the government and batik entrepreneurs. In this chapter the following sub-question will be answered: ''*What concepts influence a difference in role and level of awareness of environmental impacts for government and batik entrepreneurs?''.*

The three aspects of awareness of the two groups of actors are intertwined with the role of the two actors in the batik industry. Three reasonable concepts came up that explain a difference in the role in the functioning of the batik industry and level of awareness of the environmental impacts for government and batik entrepreneurs.

7.1 Education

The lack of education about the environment is one reason for the difference in factors that influence the awareness of environmental impact for government and batik entrepreneurs. Educational attainment is prior in the ability for developing knowledge of environmental sense for an individual. Suppose one does not have educational attainment, which is fulfilled to a specific education about the environment or the seriousness of their contribution to the environment. In that case, one also cannot develop a sense of motivation on top of this.

This education is especially lacking for batik entrepreneurs (Fitri Wonopati, p.c., 2020). The most severed educated ones are the micro, and small, but also medium- and large-scaled industries have a lack of education. The fact that the batik entrepreneurs are low-educated is often well-known. On top of that, the batik entrepreneurs do not develop more knowledge about the relationship between their batik practices and the environment (Budi Modjo, p.c., 2020). Furthermore, the batik entrepreneurs, in general, have a kind of mindset with neglect towards the environment. An outsider like the government must play a role in helping the batik entrepreneurs to develop more knowledge, which can be done through education. It is the government's role to provide education. However, the government cannot reach micro- and small-scale businesses as useful as they would like to (Fitri Wonopati, p.c., 2020).

On top of that, the government is likewise not able to map how many micro, and small batiks exist. The government is not able to witness how polluting their businesses are. They get the right overview of the batik entrepreneurs, which results in the government neglecting it. The government should give incentives to stimulate batik entrepreneurs in polluting less. However, it is the responsibility of the entrepreneur if they do something with their environmental impacts or not (Budi Modjo, p.c., 2020).

7.2 Tragedy of the commons

The difference in factors that influence awareness between batik entrepreneurs themselves can be explained according to the tragedy of the commons. It mostly occurs for the micro- and small-scale industries, wherefore no environmental law or regulation is forced by the government. The situation of the micro- and small-scale industries is that their impact on the environment is relatively low, compared to medium and large industries (Budi Modjo, p.c., 2020). Each batik industry believes that they are not that contributing to pollution to the environment and that their ''little industry does no

harm'' (Rustina Untari, p.c., 2020). However, if the impact of all micro- and small-scale industries are added up, their total negative impact on the environment is significantly high. Every batik entrepreneur has economic benefits for making another batik. Thus, every batik entrepreneur has the incentive to keep producing and polluting, while nothing is done to control or limit this. This results in it being a tragedy. The excessive pollution of the water, but also the air, is the main problem that results from this tragedy.

The fact that the tragedy of the commons occurs in the batik industry reflects itself in a way that the awareness of the environmental impacts is also influenced by it. The micro- and small-scaled batik entrepreneurs do not have the knowledge that their business is polluting. On top of this knowledge, they will not build many feeling that their actions are harmful towards the environment. The batik entrepreneurs also will not develop a motivation, that reflects the willingness, on being motivated to do it differently.

7.3 Mismatch government and micro and small scaled batik entrepreneurs

The relation between the micro- and small-scaled batik entrepreneurs and the government are not efficient. The government does not acknowledge that micro- and small-scaled businesses pollute in a significant way, as much as the medium- and large-scaled batik industries do. This way, the government does not acknowledge that micro- and small-scale industries have a significant impact on the environment. This is opposite in the acknowledgement for the medium- and large-scaled industries by the government, wherefore the government does acknowledge it. This acknowledgement is reflected in environmental laws that the medium- and large-scale industries have to comply with. For micro- and small-scale industries, there is no acknowledgement, which also means that there is no environmental law that needs to have complied. In reality, the impact of the micro- and small-scaled batik industries is likewise relatively high when added up; especially in the long term if that impact is continued in a current way.

Thus, because of this lack of acknowledgement, the micro- and small-scaled batik entrepreneurs are not aware of their negative consequences to the environment that result from their practices. They do not have the knowledge themselves to see the bad in their practices, which is partially due to a lack of educational attainment. Additionally, the batik entrepreneurs also do not get any criticism from the government about their practices, while the government does criticise relatively larger batiks. This way, the government does not stimulate the batik entrepreneurs of micro- and small-scale industries in developing their knowledge about these environmental issues and also not to develop their awareness.

The batik entrepreneurs of micro- and small-scale industries and the government simply do not concede each other. The government does not acknowledge the micro- and small-scale industries in their negative contribution to the environment. That results in the micro- and small-scaled batik industries also not acknowledging it. This double non-acknowledgement results in no awareness being developed upon these concepts of the environmental impacts that result from the batik practices.

8. Conclusion

A compelling difference exists in the level of awareness of the environmental impacts of the batik industry for the two groups of actors: the government and the batik entrepreneurs. Their level of awareness, regarding the environmental impacts, is based upon the three aspects, namely their level of knowledge, affection and willingness.

One of the actors, batik entrepreneurs need to be split up into two groups: micro- and small-scaled batik entrepreneurs and medium- and large-scaled batik entrepreneurs. The size of the batik industries is the most relevant factor that causes a difference in the level of awareness for batik entrepreneurs. The two different groups of batik entrepreneurs have a primary difference in the level of knowledge. This is due to the diversity in resources, mind-set and educational attainment. The micro- and small-scale industries score relatively lower on all three of these factors. This explains that their level of knowledge about the environmental impacts of the batik industry is also respectively low. The medium- and large-scaled industries score relatively higher on these three factors which results in their level of knowledge being placed between a low and average level of knowledge.

The level of awareness of the two groups of batik entrepreneurs differs due to the difference in knowledge, which is the foundational aspect of awareness, where affection and willingness of one actor are built upon,. The entrepreneurs of micro- and small-scaled batik industries have a low level of awareness of the environmental impacts, including a certain neglecting attitude towards the environmental impacts that their industry causes. Oppositely, the entrepreneurs of medium- and large-scaled batik industries have a level of awareness of the environmental impacts between low and average.

The government has an average level of awareness. This is mostly due to the average level of knowledge of the government.. The government likewise has a two-sided look at the batik industry: one considering the micro- and small-scaled batiks and another considering the medium- and large-scaled batiks. The governments' knowledge about the environmental impacts of the micro- and small-scale industries are stated exceptionally low; the government does not acknowledge any environmental burden resulting from their industries, which the industries, in contrast, do have. Furthermore, the affection of the government is also respectively low for the micro- and small-scaled batik industries, as the government does not have a permanent feeling of environmental concern. The willingness that is built upon this affection is also respectively low because there is barely any motivation for action to be taken by the government in case of the micro- and small-scaled batik industries. Some programs are executed to stimulate the batik industry in general, also including the micro- and small-scaled batiks. However, these programs lack monitoring and maintenance, thus are not as efficient as meant. Therefore, the level of awareness of the government on the micro- and small-scale industries is stated low to average.

Oppositely, the knowledge the government has about the environmental impacts of the medium- and large-scaled industries is respectively high; the government acknowledges their environmental impacts in a significant way, which is reflected through relatively high affection for these environmental impacts. This results in willingness of the government to implement environmental regulation that batik entrepreneurs are obliged with. The level of awareness of the government about the medium- and large-scaled batik industries is therefore stated as high.

In general, the government has an average level of awareness, due to a respectively low to average level of awareness for the micro- and small-scaled batik industries and a respectively high level of awareness for the medium- and large-scaled batik industries.

Micro- and small-scaled batik entrepreneurs deal with a tragedy of the commons. Each entrepreneur of a micro or small batik does not acknowledge their negative contribution to the environment, whereas they in reality do. No entrepreneur of micro or small batik industry takes action in this cycle of non-acknowledgement, which results in it being a tragedy where the biggest concern is significant water pollution with batik waste.

Not only micro- and small-scaled batik entrepreneurs mutually witness a mismatch, also the government and the micro- and small-scaled batik industries have a mismatch. The level of awareness of the entrepreneurs of micro- and small-scaled batik industries is coherent with the level of awareness of the government and their view at the micro- and small-scaled batik industries. This is due to a mismatch in the acknowledgement of both parties. The government does not acknowledge that the micro- and small-scaled batik industries as significant polluters, as well as not having a substantial negative environmental impact. On the other hand, the batik entrepreneurs of micro- and small-scaled batik industries are not aware of their environmental impacts, partially due to a lack of educational attainment. The fact that the government does not positively influence the batik entrepreneurs in their development of awareness about these concepts, multiplies the fact that the level of awareness of both remains low. The government does not acknowledge the environmental impact of micro- and small-scaled batik entrepreneurs, and the batik entrepreneurs are not challenged to find out about their environmental impact, which they simply cannot do by themselves. There is a lack of acknowledgement of both parties, which results in no awareness being developed for environmental impacts for both actors in this case.

Oppositely, the level of awareness of the entrepreneurs of medium- and large-scaled batik industries is in certain ways likewise coherent with the level of awareness of the government and their look at the medium- and large-scaled batik industries. The level of awareness of the entrepreneurs is stated between low and average, which is higher than the level of awareness of entrepreneurs of micro- and small-scaled batik industries. The level of awareness of the government on these medium- and large-scaled batik industries is also higher, compared with their level of awareness on micro- and small-scaled batik industries. In the case of medium- and large-scaled batik industries, the government plays an active role in helping the medium- and large-scaled batik industries in being aware of their environmental impacts, in a way that the entrepreneurs need to comply with environmental regulation.

The difference in the level of awareness mostly lies in the level of knowledge for the government and batik entrepreneurs. Knowledge is the foundational aspect of awareness, upon which the affection and willingness of one actor are built up. Having knowledge about environmental impacts is the first step. However, turning this knowledge into willingness with the feelings of affection towards the batik industry is a whole other thing, which is in the batik industry, for both batik entrepreneurs and the government, is not fully developed in yet.

9. Discussion

9.1 Reflection

First of all, because of the limited time of the research, the number of interviews and information that is gathered through these interviews is limited. Furthermore, there was a language barrier between the informants and myself. Some of the informants' English language was not at an academic level. However, I still got to manage enough information through these relatively more difficult interviews.

Due to the COVID-19 pandemic, I could not conduct the fieldwork in Central Java directly. This change of plans resulted in me having some changes to my research proposal. Not being able to visit Central Java also resulted in not being able to speak directly to the groups of actors. The result was to talk to informants that could speak for the groups of actors, based on their experience. In this group of informants, I was only able to communicate with informants who were capable of internet and Skype or Zoom, because the interviews were held online. That resulted in bias in the range of informants I was able to speak. Furthermore, because the interviews were conducted online, the real spark of having a face-to-face-talk and experiencing each other's enthusiasm was, unfortunately, a bit missing sometimes.

Additionally, the possibility to speak to informants instead of the direct groups of actors also influenced the project outcomes. The informants speak about their experience with the batik entrepreneurs and government, but will always bring their story with a personal touch; a subjective tone. This subjective tone is unnoticeable for me as a researcher because I cannot compare the social reality of the story by speaking to the batik entrepreneurs and government myself. This way, for this second-hand research data, is used instead of primary data, which results in the conclusions being made upon the experience of informants with the groups of actors instead of the own experience of the groups of actors.

Furthermore, the batik industry is a practical industry where I could have gained lots of useful information through observations. That could be through, for example, observing the production process, the usage of water and the handling of the waste. Also, I could have seen the environment of Central Java, through the surroundings of the batik industry, to see with my own eyes if the batik industry had visible environmental impacts. That could be, for example, if the river next to a batik industry would be coloured with wastewater containing dyestuff or not.

To sum up, time constraints, language barrier, the inability to visit Indonesia and not being able to do observations and speak directly to my groups of actors made my thesis a bit more challenging. Furthermore, the data that is collected is second-hand data instead of primary data, which include subjective tones. However, I am content on what my thesis has become and how I have handled the changing situations.

9.2 Recommendations

The outcome of this thesis is that there are significant differences in the role of and the level of the awareness of environmental impacts for government and batik entrepreneurs. These differences can be explained according to the fact that a tragedy of the commons is present at batik industry, the lack of education, the mismatch between the government and the batik entrepreneurs and last the absence of a good working information infrastructure in Central Java. The following recommendations have been made for further research on the awareness of the environmental impacts of the batik industry.

First, a look at the level of the involvement of possible NGO's interest in batik would be interesting for the batik industry in Central Java. There are small NGO's who are currently providing some programs for the batik industry, but it is mostly still unknown for a wider audience. It would be interesting to look at these NGO's and what kind of influence they have on certain concepts for batik industry, such as production, waste or wastewater treatment. Furthermore, they might also be able to provide training and education for the batik industry, which could improve the awareness of the groups of actors.

Second, the environmental impacts of the batik industry are not measured in quantitative terms. These environmental impacts are now still unknown. The research of what the actual environmental impacts nowadays are could be of interest for the level of awareness of the environmental impacts for the government and batik entrepreneurs.

Third, the view of consumers and tourists could also be of interest in the awareness of the actor groups of this research. The way these people look to the environmental impacts of the batik industry could be of impact on their consumer behaviour. This consumer behaviour is one of the forces of the market of supply and demand. It could change to what supply is demanded nowadays in the batik industry, in the world where sustainability gets higher up the agenda. It could be a stimulating force to stimulate sustainability in the batik industry, which could lead to less environmental impacts resulting from it.

Fourth, the accomplishment of observations in the field at the batik industry in Central Java could be a new site of information towards the awareness of the environmental impacts of the batik industry. This research is now based on the experience of informants of this area. However, with a good structuralised observation scheme and a quantity of a significant number of batiks in Central that are observed, things could be observed and concluded otherwise and based on their perception.

The last recommendation is for further research not to only look at the differences in awareness of the environmental impacts of the batik industry. It is also to investigate how this difference in awareness could be improved for the groups of actors. Furthermore, the research on the improvement of awareness could also study the positive development of the environmental impacts that would be the result of it.

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