# Externalities of Hair Industry within Nucleus-Plasma Partnership in Purbalingga

By:
Agus Arifin[1)], Rakhmat Priyono[2)]
[1,2)]Faculty of Economics and Business, Universitas Jenderal Soedirman
[1)]Email: arifin_ie@yahoo.co.id

**ABSTRACT**

This paper aims to analyze negative externalities of hair industry in Purbalingga Regency, focusing on the effects of hair production activities of nucleus-plasma partnership as part of hair production system. This industry has benefited many people and assisted local government in reducing unemployment and increasing social welfare. However negative externalities have already occured in social and economic aspects. This study selected sample of 2 factories, 5 plasmas, and 25 workers. Using *Dollar-based Ecosystem Valuation Method*, the results show that there has been degradation of social interaction among family members, reduced motivation of school children to achieve higher education level, and increased waste water that endangers the ecosystem.

**Keywords:** Externalities, Haircraft Industry, Nucleus-Plasma, Social Interaction, Waste Water.

***ABSTRAK***

*Tulisan ini bertujuan untuk menganalisis eksternalitas negatif dari industri rambut di Kabupaten Purbalingga, dengan fokus pada efek kegiatan produksi rambut kemitraan inti-plasma sebagai bagian dari sistem produksi rambut. Industri ini telah menguntungkan banyak orang dan membantu pemerintah daerah dalam mengurangi pengangguran dan meningkatkan kesejahteraan sosial. Namun eksternalitas negatif telah terjadi dalam aspek sosial dan ekonomi. Penelitian ini memilih sampel 2 pabrik, 5 plasma, dan 25 pekerja. Dengan menggunakan Metode Valuasi Ekosistem Berbasis Dolar, hasilnya menunjukkan bahwa telah terjadi penurunan interaksi sosial di antara anggota keluarga, berkurangnya motivasi anak-anak sekolah untuk mencapai tingkat pendidikan yang lebih tinggi, dan peningkatan air limbah yang membahayakan ekosistem.*

***Kata kunci:*** *Eksternalitas, Industri Kerajinan Rambut, Inti-Plasma, Interaksi Sosial, Air Limbah.*

## INTRODUCTION

One of the superior products of Purbalingga regency is hair craft industry. Based on the production scale, this industry is divided into large scale enterprises on the one hand,and micro, small and medium enterprises on the other. The large scale enterprises are mostly foreign direct investment (FDI) from Korea, export-oriented, and able to employ not less than fifty thousand local workforce.

Manpower and Transmigration Office of Purbalingga noted that there have been 33 factories in Purbalingga regency, 18 of which are FDI (Rejeki and Finesso, 2014). The products include synthetic hair and eyelashes. Sung Chang Indonesia is the largest synthetic hair factory and Royal Korindah Company is the largest eyelashes factory in Purbalingga and in Indoensia (www.indoplaces.com, March 28, 2014), and the overall haircraft products of Purbalingga regency are the largest in the world after Guangzhou, China (Sumarwoto, 2016). Meanwhile, micro, small, and medium enterprises of this industry are traditional business whose raw materials are human hair and are located in

Karangbanjar village of Bojongsari Subdistrict as home industries and the products are sold for domestic market.

In large-scale industries, the production system is operated into two types : direct employment system and nucleus-plasma system. In the direct employment system, the workers work in the factory during working hours (07:00 – 16:30). In the nucleus-plasma system the factories (as nucleus) have groups (as plasma). Each group is owned by a plasma owner who usually hires 10-100 workers. Semi-finished and finished products are collected by plasma owners who then deliver to the factories. These plasma are distributed in many areas, thus closer to workers' houses. Besides that, they can do the job at home. In this system, workers earn wages based on the quantity of work completed, while plasma owners gain profits from the difference between the price of basic items purchased from worker and the selling price to the factories. Thus, in the system of nucleus-plasma partnership, there is value chain which is a series of added value in every movement of products from first sub producer to subsequent sub producers. Priyono and Arifin (2015) conclude that the hair factories obtain the highest share of margin while plasma play role as the price drivers in the value chain model. The interesting aspect and hence as the main problem in this study is that the presence of hair factory and plasma can cause positive as well as negative impacts on the environment and society.

Of the positive impacts are reduced unemployment up to 5.6 percent in 2015 and significant contribution of FDI about 25 billion in 2014 (Arif, 2015). However, the negative impacts caused by this industry are large enough. Chairman of the All Indonesian Workers Union (SPSI), Adi Supono Warsito said that everyone could just set up a hair plasma, but the nuisance permit act (HO) and the impact to the environment still received less attention (http://kotaperwira.com, accessed 22 April 2014). Jafarudin, a resident of Kalikabong Village of Kalimanah sub district says that the environmental pollution caused by hair craft waste has been complained by local residents such as the water smells stink and cannot be used for bathing, washing, and even kills a lot of fish in their pond.

Not only the negative impact of industrial waste, but the socio-economic impacts are also complained by the public. Rochmat Mualim, Chairman of Student Association of Nahdlatul Ulama (IPNU), during an audience with the Vice Head of Purbalingga regency, reveals that nowadays many children in Purbalingga prefer to work in hair factory and plasma instead of pursuing higher education (Arif, 2015). This is confirmed by the Chairman of the Board of Education Purbalingga, Sudino, that Purbalingga still has high dropout rate because many students choose to work in synthetic hair and eyelashes plasma and factory (Andrianto, 2012). In addition, as disclosed by the Vice Head of Purbalingga regency that the industry has contributed to increasing divorce rate. This could be due to the fact that many women working at the factories often go home until and their role is held by their husband (Wismo, 2015).

Based on this background, the specific objective of this study is to measure and analyze the positive and negative externalities from the socioeconomic point of view. To achieve these objectives, because of the complexity in exploring information in order to obtain the socioeconomic values properly, accuracy is highly required.

## RESEARCH METHOD

### Location and Sample

This study was conducted in Purbalingga sub district of Purbalingga regency focusing on a number of nucleus-plasma partnership of haircrafts. The main data required is the primary data collected from factory, plasma, and workers, through questionnaires and interviews, as well as supporting secondary data obtained from various agencies and institutions such as the Central Bureau of Statistics (BPS), Investment and Licensing Services Office (KMPT), Industry, Trade, and Cooperative Office, etc.

This study is categorized as explorative and quantitative focusing on socioeconomic impacts. The minimum size of samples that can be received on the research method is at least 10 percent of the total population (Gay & Diehl, 1996: 140-141) and Soeratno & Arsyad, 2003: 106). In Purbalingga

sub district, there are about 50 plasma. Therefore, 5 plasmas were selected as sample. The number of workers in each plasma ranges between 40-60 persons. Five workers were selected from each plasma totalling 25 workers. In addition, 2 factories have been selected as sample.

**Analysis of Positive Externalities**

The analysis used to explore positive externality is Dollar-based Ecosystem Valuation Method (King and Marisa, 2015). There are three generally accepted approaches for estimating the value of the ecosystem. Each approach includes several methods, namely market prices, indirect evidence, and surveys. In this study, the method applied was the analysis of the market prices (revealed willingness to pay). Value of products (goods or services) of an ecosystem, such as wood, fish, rice, corn, vegetables, etc., can be measured using market prices. Thus, the values of these products can be obtained by estimating the consumer surplus and producer surplus. Other ecosystem products, such as clean water which is used as an input in production, can be measured by their contribution to profit after selling the final product. Some ecosystem products or environment may not be directly traded in the market. However, the price of those products that people are willing to pay in the market can be used to estimate values. For example, people often pay a higher price for the house with a sea view, or will take the time to travel to special places for fishing or bird watching. This method includes the market price method, productivity method, hedonic pricing method, and travel cost method.

**Analysis of Negative Externalities**

Negative externalities are exemplified in the production of paper where pollutants are discharged into rivers causing environmental damage. Pollutants have been lowering benefits of river and habitat. For example, industrial pollution from paper production can reduce the catch of fishermen, recreational value of the lake for swimming, boating, etc. The analysis used to measure and analyze the negative externalities is damage cost avoided, replacement cost, and substitute cost method (King and Marisa, 2015). This method seeks to estimate the economic value based on (1) the costs of damage which can be avoided due to the ecosystem product/service loss, (2) the costs of replacement to repair the ecosystem, or (3) the costs of provision to substitute services. It is based on the assumption that if the person charged to avoid damage due to ecosystem services loss or to replace ecosystem services, then those services must be worth at least equivalent to what people pay to replace it. Thus, that is the most appropriate method that can be applied in this case in which the avoidance of damage or expense reimbursement fee actually have, or actually be, precisely realized.

Some examples of cases where this method can be applied are assessing 1) the improvement of water quality by measuring the cost of controlling waste emissions, 2) the forest and wetland erosion protection services by measuring the cost of sediment erosion from downstream areas, 3) assess the water purification services in wetlands by measuring the cost of filtration and water treatment chemically, 4) assess the hurricane protection services in coastal wetlands by measuring the cost to build a retaining wall, and 5) assessing fish habitat and nursery services by measuring the cost of nurseries and fish supply program.

**RESULT AND DISCUSSION**

**Overview of Haircraft Nucleus-Plasma Partnership**

Based on data from The Agency of Social, Manpower, and Transmigration Office Purbalingga there have been 22 FDIs and 6 domestic investment (DI) which are all engaged in eyelashes and syntetic haircraft (wig) in Purbalingga regency providing employment for 47 thousand people. The figure excludes plasma and small enterprises, so including employment in plasma and small enterprises, total workforce in haircraft industry has been approximately 60 thousand people, 90 percent of which are women (www.purbalinggakab.go.id, February 3, 2016).

Within nucleus-plasma partnership, hair factories (nucleus) process raw material of synthetic hair by providing chemicals and pharmaceutical products in order to make that raw material durable,

smooth, and ready for further processing. The raw materials are then cut into about 1- meter long synthetic hair which is very similar to the original human hair. After that, this semi-finished materials will be processed by plasma into semi-finished eyelashes. About ten kilograms of raw materials submitted to the hair plasma can be transformed into 10,000 pieces of semi-finished eyelashes. This must be finished in 1 week—every Monday plasma must submit to nucleus. Nucleus pay Rp650,00 for one piece of eyelash. Let's say the average weekly sales is Rp6.500.000,00, so the monthly turnover per plasma is 26 million rupiahs.

In transforming raw materials into semi-finished eyelashes, plasma also has partnership with collectors. On Average, there are 4 active collectors. Plasma delivers 10 kg of raw materials from factories to collectors for processing into semi-finished eyelashes. The raw material, long synthetic hair, is cut into smaller pieces, about 5 centimeters long and then formed into semi-finished (not ready) eyelashes. Plasma pays Rp550,00 per piece of eyelashes from collectors.. Thus, plasma profit can be calculated for each piece, that is Rp650,00-Rp550,00=Rp100.00. With the average production of 10,000 pieces of eyelashes per week, then plasma earn profit of Rp1 million/week or Rp4 million per month. Typically, plasma builds partnership with 2-3 factories. For example, a plasma owned by Sutimah has 3 partners: PT Sung Shim International, PT Tiga Putra Perkasa Abadi, and PT Midas Indonesia. With 3 partners, the profit is three times higher, about Rp12 millions/month.

**Analysis of Positive Externalities**

At the time of the positive externalities arise, market prices are not entirely the same as the marginal social benefit of goods or services. Therefore, many things can be measured by the market price, but any others cannot be measured with market prices. Hence, the measurements are properly done at market prices approach for countable things and survey approach for uncountable ones.

Positive externalities using market-price approach reveal willingness to pay—Dollar-based Ecosystem Valuation Methods (King and Marisa, 2015). The market price approach is chosen because the value of benefits of hair production activites can be measured by market prices. In this case there are two points which can be described. Firstly, direct economic benefits from the activities of production, and secondly, indirect positive externalities benefiting the public. The economic benefits (direct benefits) can be measured at the selling value of the products, profit from products sales, collectors income/profit, and wages of workers. Further illustration is presented at the following table.

Table 1. Economic Benefits of Haircrafts Plasma Production Activities

| No | Item | Market Price | Quantities /Week | Total Receive /Week | Total Receive /Month |
|---|---|---|---|---|---|
| 1 | Selling price of product from plasma to factory | Rp650 / pc | 10,000 pcs | Rp6,500,000 | Rp26,000.000 |
| 2 | Plasma profit | Rp200 / pc | 10,000 pcs | Rp2,000,000 | Rp8,000.000 |
| 3 | Selling price of product from collector to plasma : (1) – (2) | Rp450 / pc | | Rp4,500,000 | Rp18,000,000 |
| 4 | Collector profit | Rp200 / pc | 2000 pcs* | Rp400,000 | Rp1,600,000 |
| 5 | Selling price of product from worker to collector: (3) – (4) | Rp250 /pc | 2000 pcs** | Rp500,000 | Rp2,000,000 |

Notes:

* The plasma has 5 active collectors, so 10,000 pcs are completed by 5 collectors (@ 2000 pcs)

** The collectors have 5-10 workers to procuce 2000 pcs per week

Table 1 it shows that each plasma in one month could reach total sales up to Rp26,000,000,00 with total profit (net income) of Rp8,000,000.00. Collectors, whose semi-finished products are sold to factory at Rp450 per piece, earn profit of Rp200 per piece so that the total profit per month is Rp1,600,000.00. Workers are working for collector. Collector pays Rp250 per piece to worker. For example, there are 10 workers, meaning that each home worker should produce 200 pieces (2000 pieces divided by 10 workers) so that their wages are 200 pieces x Rp250,00 = Rp50,000.00/week or Rp200,000.00/month. Profit received by plasma is quite attractive. Profits received by collectors and workers can also provide additional income for their families.

The economic benefits are received directly by the economic agents which are directly involved in the activity and are measured in rupiah. However, the indirect benefits or so-called positive externalities should be shared to third parties—i.e. the parties who are not involved in the production process. For example, factories/plasma build bridges or repair roads around the factory or in many public places, provide scholarships for children which their parents are under economic pressure, assist in the rehabilitation of worker's infeasible houses, etc.

Based on information from the workers and Manpower Office Purbalingga, the factories and plasma still have minimum effort to provide positive externalities to communities. They give only small contribution to provide public facilities, just such a gift for feast days to workers. It is supposed that the factories and plasma should spend more in order to improve the social welfare as part of their Corporate Social Responsibility (CSR).

**Analysis of Negative Externalities**

The analysis approach used to measure and analyze the negative externalities is damage cost avoided, replacement cost, and substitute cost method (King and Marisa, 2015). This approach seeks to estimate the economic value based on (1) the costs of damage which can be avoided due to a result of the ecosystem product/service loss, (2) the costs of replacement to repair the ecosystem, or (3) the costs of provision to substitute services. It is based on the assumption that if the person charged to avoid damage due to ecosystem services loss or to replace ecosystem services, then those services must be worth at least equivalent to what people pay to replace it. Thus, that is the most appropriate method can be applied in this case in which the avoidance of damage or expense reimbursement fee actually have, or actually be, precisely realized.

The explanation below is analysis of the negative externalities of factory/plasma activity viewed from various aspects based on various sources and field data analysis. This includes chemistry, biology and ecosystems, socio-economic and culture, health and safety, and social and religious education, which is summarized as follows:

*Impacts of Dyeing and Washing of Raw Materialsr*

This process raises the vapor with a pungent odor and then causes declining air quality particularly in the dyeing and washing location. The environmental management effort is installing a suction machine that is discharged into the atmosphere through a high chimney. It can also avoid the unpleasant smell which disrupts the surroundings. As for the workers, the company provides personal protective equipment that must be used during the process of dyeing and washing, such as masks, elastic gloves, as well as safety shoes.

*Impacts of Hair Particulate and other Particles*

These particles would contaminate the air quality resulting in a decrease in air quality both inside and outside the factory. The environmental management effort is creating green belts inside and outside factory to absorb harmful particles.

*Impacts of Operational Generator Engine and Equipment and Materials Mobilization*

This activity causes noise thus reduce the comfort of factory environment and the communities around the factory. The environmental management actions is placing the engine generators and other machinery which cause noises in a special room that can at least reduce the level of noises. In

addition, the activities that cause noise are only carried out during normal working hours, i.e. at 07:00 to 16:00. If there are activities done at night, then it should be wise to announce to people around the factory.

*Impacts of Liquid Waste*

This waste can lead to decreased quality of surface water. The environmental management efforts are by building drainage systems, buliding of waste water treatment instalation (IPAL), and growing water infiltration plants. It is noted that only two hair factories which have had waste water treatment instalation and Liquid Waste Processing Permit (IPLC), namely PT Indokores and PT Royal Korindah.

Waste disposal treatments by hair factories in Purbalingga have not been implemented optimally. Environment Agency (BLH) Purbalingga in monitoring periodical reports that there are still 30 to 40 percent of 28 hair factories in Purbalingga have not treated waste disposal properly. Awareness for building standard IPAL shows low responses. Many factories give reasons that building standard IPAL needs many expenses. Rationally, by billions of assets, a factory is highly capable to build IPAL which costs only hundreds of millions. Most hair factories have only waste tank whereas it can be over-filled at any time. PT Yuro Mustika has built its own IPAL but the results are not optimal. In fact, it cannot be operationalized to manage liquid waste.

The idea of building joint IPAL has also been done by CV Bioso, but only a year in operation. Actually, the processed waste could be used to supply clean water to the people for daily activities. When joint IPAL was operated, waste disposal from factory could be taken as many as four tanks every day.

Commission IV of Local Parliament (DPRD) Purbalingga also explains that many factories have not built the standard IPAL. In fact, only few factories have been building IPAL. One factory in Kalikabong says that it has once on the process of building IPAL, but during the early stages of excavation, soil structures was not feasible and eventually was postponed and have currently been waiting for the consultant. Seeing this phenomenon, Commission IV push BLH and related agencies such as the Investment and Integrated Permit Office (KPMPT) Purbalingga to create special requirements. This means that when a prospective investor or businessman will set up a factory then in processing business permition he must agree to build IPAL.

*Impacts of Landfill Waste*

These consist of the remaining activities of production, the rest of the packing, or other rubbish outside the process of production and packaging. The environmental management efforts are by making storage bins separating between dry, wet, and bottle/glass wastes, providing janitor operating inside and outside the factory with sufficient number, as well as cooperating with the Public Works Office in order to solve the waste problem.

*Impacts of Toxic and Hazardous Materials (B3)*

Forms of environmental management efforts are by the issuing a license of temporary storage for B3 waste, but to date almost all hair factories in Purbalingga have not acquired permission of temporary B3 waste.

*Impacts of Biology and Ecosystem*

Flora and fauna ecosystem of land and water are disrupted, and the quality of groundwater declined as a result of spills or puddles of liquid waste. In connection with a disruption of flora and fauna, a hair factory at Jl. Jend. Ahmad Yani was built beside the river Kramean. Factory dams river water then flows it into the factory. Then water is expelled back into the river stream through backside of factory and used as filler water ponds and irrigation. According to some farm workers who work the rice fields behind the factory, they do not feel the impact directly to the plant, but they are itching. Residents of Kandanggampang village, Purbalingga sub district, whose houses are right behind the factory, have ever protested the factory wasted into rivers with excessive capacity which causes

many fishes in their pond dead. Although the factory would replace the loss suffered by residents, but that does not mean the factory stop dumping waste into the river.

In Kalikabong groundwater is utilized for daily purposes. Users of water wells in the area Kalikabong reached 1,047 families, comprising 771 units wells. Ground water sources has been used as the main source of water in this area because this type of water is guaranteed in terms of quantity, quality, and continuity. However, the decline in the quality of ground water is quite alarming. Based on the study of Widiyanto and Kuswanto (2015) the water pollution occured in Kalikabong is 33.33 percent from industrial waste, 47.62 percent from household waste, and 19.04 percent from municipal waste.

Some factories do not operate the wastewater treatment procedure properly. As explained earlier that the IPAL and IPLC cannot be realized well and the majority of factories only have tanks of liquid waste. At one hair factory, a tank is not large enough, just 1 meter high, 2 meters wide and 4-5 meters long. The industry can generate industrial waste water up to 3,000 liters a week and a tank capacity is about 100,000 liters. Therefore, at a given moment, the fluid seems to overflow, and if it rains, that fluid overflows to pollute the rivers in the vicinity.

The environmental management efforts are by rebuilding waste water drainage from leaking out and holding afforestation by planting various kinds of trees inside and outside the factories. In addition, the government pressure to the factory for building IPAL and IPLC has to be guarded well.

*Socio-Economic and Cultural Impacts*

These include increasing employment opportunities (positive impact), road traffic, uncomfortable condition, and social inequality. An example is increasing population density in Kalikabong. The settlement area is 57,853 hectares inhabited by 6,045 residents with a population density of 22 residents per squared kilometer. Kalikabong becomes more dense due to the presence of many plasma in this region. The increasingly dense population and water resources pollution cannot be neglected. This density would interfere the pleasure in interaction and quality of life of the society. In addition, the density also causes traffic jam especially during working hours in the morning around 6:30 to 8:00 and the evening about 16:00 to 18:00.

With regard to social inequality, the presence of the hair factory and hair plasma causes the emergence of a new social class, i.e. the class/group of workers which are considered as lower class in community system. This class is characterized by low wages, physical labor, and inferior position. Although there has been Indonesian Workers Union (SPSI) chaired by the representative workers who are considered to have the authority and ability of organization, communication, experience, and intelligence over the majority of the workers, but in practice, Korean hair crafts employers still have the dominant force in organizing everything related to the fate of workers.

The management efforts are by providing the opportunity for local people to become employees of this factory. To solve the traffic jam, the factory can help procurement of signs and road markings in the vicinity of the factory, and assist to alleviate traffic jam at rush hour. For all uncomfortable conditions, the factories should approach the surrounding community, village and district governments for mutual understanding relationship, and delivering Corporate Social Responsibility (CSR) to the local community in order to hold the development and preservation of the environment.

*Impact on Worker Health*

It is indicated a decrease in the quality of health and safety of workers and people around the hair plasma and factory. This job requires tenacity and thoroughness so vulnerable to damage the eyes. They have to trim the hair with a distance of less than ten centimeters between the hair object and eyes. Workers who work directly in the factory are luckier because they get health insurance. For workers who work on plasma or collectors, practically they do not obtain health insurance because of these informal businesses so their rights are different from the workers in the factory. Many factories do not give workers wages according to Minimum Standard Wages. They make their own rule that workers will be paid in standard wage when they add overtime hours. Efforts are being made are to

hold health facilities, such as health checks of employees and the surrounding community, health education and hygiene, etc. The government should enforce the rules of minimum standard wage and compliance to occupational health and safety for workers.

*Impact on the Social, Religion,and Education Aspects*

It is found that hair factories do not provide prayer facilities proportionally to the large number of workers. Likewise, times for worship are so limited hence religion rights are very limited too. Besides that, the presence of hair factories and plasma also cause other negative effects such as high divorce rate, the phenomenon of wife works and husband takes care of children at home, and declining motivation to reach higher school/education. A dramatic loss of maternal affection towards their children besides loss of wife loyalty to her husband might lead to higher rate of divorce.

## CONCLUSION

The study concludes the following points. The positive externalities of plasma and hair factory activities are still minimal. The reported externalities are limited economic benefits to plasma owners and workers in the form of profit obtained by the plasma owners and wages received by plasma workers and factory workers. Forms of positive externalities from plasma/factory are only in the form of feast gifts, and have not covered more beneficial actions such as scholarships, poor housing rehabilitation, afforestation, provision of public facilities, etc.

Meanwhile, the negative externalities of hair plasma and factory activities are very much felt by the public. These can be seen from various aspects, such as chemistry, biology and ecosystems, socio-economic and cultural, health, and religious and education. As a conclusion that, people's perceived negative externalities exceed the positive externalities where plasma and factory are solely oriented on the economic and materialistic motives without balanced with attention to the rights of society and environment in general.

## REFERENCE

Andrianto, Aris. (2012), “Buruh Anak di Purbalingga Bagaikan Bom Waktu”, http://nasional.tempo.co/read/news/2012/09/21/058430946/buruh-anak-di-purbalingga-bagaikan-bom-waktu, accessed on 6 January 2016.

Anonim. (2011), “Measuring and Valuing Environtmental Impacts, An Introductory Guide Network for Business Sustainability”, http://nbs.net/wp-content/uploads/NBS-Executive-Report-Impacts.pdf, accessed on 8 February 2016.

Anonim. (2014), “PT Sung Chang Indonesia, PabrikRambutPalsu, Purbalingga”. http://www.indoplaces.com/mod.php?mod=indonesia&op=view_region&regid=4049, accessed on 8 February 2016, 05.05.

Arif, Abdul. (2015), “IPNU Purbalingga Tuding Industri Rambut Picu Anak-anak Putus Sekolah”, http://jateng.tribunnews.com/2015/04/17/ipnu-purbalingga-tuding-industri-rambut-picu-anak-anak-putus-sekolah, accessed on 12 January 2016.

Arifin, Agus. (2008), “Analisis Keunggulan Produk Kerajinan Rambut di Desa Karangbanjar Kecamatan Bojongsari, Purbalingga, 2007 (Pendekatan Revealed Comparative Advantage (RCA) dan Sustainable Competitive Advantage (SCA))”, Jurnal Pembangunan Ekonomi Wilayah, 3(1), pp. 35-41.

_____. (2011), “Eksistensi Industri Kreatif Kerajinan Rambut dalam Upaya Penyerapan Tenaga Kerja dan Pemenuhan Kebutuhan Hidup Layak di Desa Karangbanjar, Kecamatan Bojongsari, Kabupaten Purbalingga, 2011”, Proceedings, National Seminar: Sustainable Competitive Advantage-1 (SCA-1). Departement of Management, Economics Faculty, Jenderal Soedirman University.

Arifin, Agus and Rakhmat Priyono. (2013), "Analisis Faktor Kelembagaan Berbasis Keunggulan Kompetitif pada Industri Kreatif Kerajinan Rambut Purbalingga", *Jurnal Ekonomi dan Bisnis (JEB), 7*(3), November, STIE YKPN Yogyakarta.

_____. (2015),"Model Rantai Nilai *(Value Chain)* dan Eksternalitas Industri Unggulan Kerajinan Rambut Inti-Plasma di Kecamatan Purbalingga Kabupaten Purbalingga", Proceedings, National Seminar: Pengembangan Sumber Daya Pedesaan dan Kearifan Lokal Berkelanjutan V Tahun 2015, LPPM UNSOED.

Arikunto, Suharsimi. (2002),"Statistik 1", Bumi Aksara, Jakarta.

Hyman, David N. (2005), "Public Finance: A Contemporary Application of Theory to Policy", 8e, International Student Edition, Thomson Learning, South-Western.

King, Dennis M. dan Mazotta Marisa. (2015), "Ecosystem Valuation", http://www.ecosystemvaluation.org, accessed on 6 Maret 2016.

Kuncoro, Mudrajad. (2003), "Metode Riset untuk Bisnis & Ekonomi: Bagaimana Meneliti dan Menulis Tesis?" Erlangga, Jakarta.

Puji, Purwanto. (2011), "Limbah Rambut Palsu di Purbalingga Belum Teratasi", http://suaramerdeka.com/v1/index.php/read/news/2011/11/23/102493/Limbah-Rambut-Palsu-di-Purbalingga-Belum-Teratasi, accessed on10 Januari 2016.

Rejeki, Sri dan Gregorius Magnus Finesso. (2014), "Bulu Mata Purbalingga Menyihir Dunia", http://bisniskeuangan.kompas.com/read/2014/06/02/1518008/Bulu.Mata.Purbalingga.Menyihir.Dunia, accessed on 14 Januari 2016.

Soeratno dan Lincoln Arsyad. (2003),"Metodologi Penelitian Untuk Ekonomi dan Bisnis". Edisi Revisi, UPP AMP YKPN, Yogyakarta.

Suhardiyo, Sapto. (2015), "PAD Purbalingga meningkat 119,17 %", http://www.purbalingganews.net/index.php/purbalingga-news/1544-pad-purbalingga-meningkat-119,17, accessed on 6 Januari 2016.

Sumarwoto. (2016), "Berdaya Saing, Pelaku Wisata Didorong Ikuti Sertifikasi". http://www.promojateng-pemprovjateng.com/ambildaerah.php?kota= purbalingga, diunggah 11 Januari 2016, accessed on 15 Januari 2016.

Warsito, SuponoAdi. (2012), "RawanEksploitasiPekerja, IzinPlasaRambutDipertanyakan", http://kotaperwira.com/rawan-eksploitasi-pekerja-izin-plasa-rambut-dipertanyakan, accessed on 22 April 2014.

Wismo, Bangkit. (2015), "Pemkab Harus Perhatikan Dampak Negatif Industri Rambut", http://braling.com/2015/04/pemkab-harus-perhatikan-dampak-negatif-industri-rambut/, accessed on 10 Januari 2016.