

THE HEXA HELIX MODEL FOR TOURISM DEVELOPMENT IN THE TOURIST VILLAGES

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ABSTRACT

Yogyakarta is a city well-known for its arts and culture. Malioboro and Tugu are the icons of Yogyakarta, but unfortunately, other tourist attractions have not been able to attract as many visitors. One strategy to attract visitors is to develop Kampung Wisata or tourism villages. This study was conducted in tourism villages located in Yogyakarta City. The objective of this study is to describe and analyze the role of the government, industry, society, universities, the environment, and the mass media in the development of tourism villages in Yogyakarta. This study used a descriptive qualitative method. We obtained the data from the Yogyakarta City Government, industries, several universities, mass media, as well as the community and manager of the tourism villages of Yogyakarta. Data analysis included data condensation, data display, conclusions, and verification. The hexa helix concept combines the good elements of the penta helix, the media, the quintuple helix, the government, industry, universities, society, and the environment. Thus, all of the six elements mentioned above interact together to develop tourism in the tourism villages of Yogyakarta. The role and interaction of these six elements had a positive effect on the sustainable development of the tourism sector in the tourism villages in Yogyakarta, leading to an increase in the number of visitors. However, the hexa helix is also applicable to other topics. This manuscript is original and not being considered by any other journals.

Keywords: Hexa Helix, Tourism, Tourism Village

INTRODUCTION

The development of the tourism sector is not solely the government's responsibility but is a collaboration between the government and several stakeholders. The idea of the hexa helix plays a pivotal role in developing the tourism sector – the name refers to the interaction of six elements: government, industry, universities, society, environment, and the mass media. Some tourism problems need more than one or two stakeholders to solve—it indeed requires a collaboration of six stakeholders. Currently, collaboration between the government, industry, higher education institutions, society, and the media (penta helix) has been done to solve tourism issues. However, we also have to remember that the environment plays a vital role in tourism. The environmental aspects include the ecosystem, biodiversity, and environmental capacity. Amid the tight global competition, developing tourism without considering the environment will be challenging (Prasetyo, 2018). The environment must be considered along with the government, industry, higher education institutions, society, and the environment for tourism development. Thus, a collaboration of six stakeholders is crucial

since tourism has been developing rapidly along with the increasing demand from the community.

Awareness of the positive impact of the tourism sector is increasing, and thus, the sector is growing rapidly. Due to the increasing number of visitors, the Indonesian government has launched several programs to develop its tourism sector.

To increase the number of visitors, the government of Indonesia has held various programs, including infrastructure development (information and communication technology), increasing access, health service, and cleanliness, and having more online promotion (marketing) abroad (Indonesia Investment, 2016).

The number of tourists, especially foreign tourists, has increased. In 2018, Indonesia had 15.81 million foreign visitors, or a 12.58% increase compared to 2017 (14.04 million foreign visitors) (Badan Pusat Statistik, 2019).

The Special Region of Yogyakarta is one of the provinces in Indonesia striving to increase the number of domestic and foreign tourists. Table 1 shows the number of tourists visiting the province in 2017 and 2018.

Table 1		
NUMBER OF VISITORS IN EACH MUNICIPALITY/CITY IN THE SPECIAL REGION OF YOGYAKARTA IN 2017–2018		
Regional Government	2017	2018
Yogyakarta City	5,347,303	4,752,351
Sleman	6,814,558	7,787,088
Bantul	9,141,150	8,840,442
Kulon Progo	1,400,786	1,969,623
Gunung Kidul	3,246,996	3,055,284
Total	25,950,793	26,404,788
<i>Source: Special Region of Yogyakarta Yearbook of Tourism Statistics 2018</i>		

Yogyakarta City is an area in the Special Region of Yogyakarta, which is known for its universities, arts and culture, culinary attractions, and history. However, the number of visitors in Yogyakarta City in 2018 decreased compared with the numbers for 2017. In contrast, the number of visitors to Sleman and Kulon Progo, other areas in the Special Region of Yogyakarta, increased over this time. Many tourists visiting Yogyakarta City also visit Tugu, Malioboro, Keraton, and the nearby regions. Online media have highlighted the decreasing number of tourists in Yogyakarta City.

It has been known that Sleman Regency, Gunungkidul Regency, Bantul Regency, and Kulon Progo Regency are rich in natural beauty, including mountains, hills, beaches, and caves. Based on the Tourism Statistics of Yogyakarta (2019), tourists flock the natural tourism objects, including Kaliurang, Tebing Breksi, and volcano tours in Sleman Regency, the Pine Forests, Mangunan Orchard, Parangtritis Beach, and other beaches in Bantul, beaches, caves, the Ancient Volcano in Gunungkidul Regency, and beaches, tea plantation, hills, and mangrove forests in Kulon Progo Regency. Yogyakarta City itself provides more cultural attractions, yet the attractions have not become a priority for tourists while visiting the region, as reported by one online media.

Indonesia has great cultural potential to explore. However, people are not interested much in this kind of potential. They take days off and visit tourism objects simply for selfies. It is a challenge for tourism managers to present cultural attractions to be more appealing (Mutaya. 2016).

Tourist attractions in Yogyakarta City are not limited to Malioboro, Tugu, Keraton (the palace), Alun-alun Selatan, Titik Nol Kilometer, Taman Pintar, Kebun Binatang Gembira Loka (the zoo), Museum Sonobudoyo, and Museum Benteng Vredeburg. Malioboro has always been the most favorite destination for tourists. There are other interesting attractions, such as the tourism villages. Yogyakarta City has 17 tourism villages with various attractions, arts, and culture. Unfortunately, they have not yet been able to attract visitors in large numbers.

The head of the Department of Tourism of Yogyakarta City, Maryustion Tonang, acknowledged the need for more tourists to visit the tourism villages and stated that the city would promote 17 tourism villages in Yogyakarta City to attract foreign visitors. Each tourist village has its potential, but management should highlight its unique characteristics (Republika, 2019). Tourism villages in Yogyakarta need more efforts for their development to attract tourists.

We need to do more to develop the tourism villages to attract more tourists, including better facilities and infrastructure and quality human resources (Rusqiyati, 2019).

In addition, not all tourism villages have a routine (attractions or programs) for all tourists to follow when they visit the villages, as stated by the Ministry of Tourism and Creative Economy of the Republic of Indonesia.

We encourage all tourism villages in Yogyakarta to have attractions or programs held routinely for tourists to enjoy while visiting. This will help the tourism villages to become an excellent destination loved by all visitors. It surely takes so much dedication and energy to have such routine programs or attractions (Najib. 2022).

Management of these tourism villages should explore each of the potential tourism villages (*kampung wisata*) they are responsible for, identify its characteristics, and promote it so that visitors no longer focus on Malioboro and its nearby areas. Tourism villages also need to interact with the government, the media, higher education institutions, and the environment to motivate the tourism villages to have such a routine.

According to the 2018 Performance Report of the Department of Tourism of Yogyakarta City, people come to Yogyakarta City for various reasons, such as lifestyle, shopping, and culinary attractions. It is expected that tourists visiting Yogyakarta are interested in seeing one, some, or all of the tourism villages.

The government of Yogyakarta City manages 17 tourism villages (Dinas Pariwisata Kota Yogyakarta, 2020). Each tourism village has its unique characteristic as its attraction. Most tourism villages present cultural and art performances following their unique characteristics, such as classical dances, *bregodo*, *jatilan*, *karawitan*, and others. Each tourism village also produces its own products, services, and culinary. Batik *jumputan*, natural-dye batik products, and batik *Lukis* are made in several tourism villages, silver handicrafts are produced in Kota Gede, while various food and beverages including *kipo*, Javanese herb drinks, leave chips, chocolate, and others are the specialty of some tourism villages. The tourism villages also provide homestay services. According to the 2016 Decree of the Mayor of Yogyakarta, number 115, tourism villages must use community-based tourism to attract visitors.

Developing the tourist village is not the sole responsibility of the community where it is located or the government of Yogyakarta City. Stakeholders should participate actively in developing tourist attractions. In addition to the government and the community, other stakeholders in developing tourism villages in Yogyakarta City are the industry, universities, the surrounding environment, and the mass media. The six stakeholders realize their role

through various activities. The role of the government is realized through the implementation of training and education.

Tourism relies on promotion, mainly social media, and online platforms—they effectively attract people to tourist destinations, including tourism villages. The Office of Tourism of Yogyakarta City coordinated with Jogja Tourism Training Centre (JTTC) to hold training on digitization, entitled “*Branding dan Pemasaran*” on Tuesday, July 19, 2022, at Pandanaran Hotel, Yogyakarta. The managers of Kampung Wisata Yogyakarta also joined the training (Dinas Pariwisata Kota Yogyakarta, 2022).

The government, represented by the Office of Tourism of Yogyakarta City, helped to hold the training; the training has benefited tourism villages since it allows the villages to be known by more people. The industry played its role by fulfilling the needs of tourists visiting the area. One of the products offered by the tourism villages is batik.

Kampung Wisata Tahunan has batik workshop to produce batik, especially *jumputan*. Tourists can buy the product and can also learn how to make batik at the workshop (IamLathiva, 2022).

Jumputan is famous among tourists. Tahunan receives many visits, both individual visits, and group visits. In addition to the industry, universities also play a role in developing tourism villages in Yogyakarta City.

The Office of Tourism of Yogyakarta City held training and institutional cooperation in Kampung Wisata Pakualaman on Tuesday, October 26, 2021. As many as 20 tourism SME (Small Medium Enterprise) managers joined the program; they were part of Pakualaman’s tourist village management. The activity was held in collaboration with Sekolah Tinggi Pariwisata AMPTA Yogyakarta. Higher education institutions, through their programs, can help tourism managers develop complete and integrate tourism activities (Harumawan, 2021).

Higher education institutions can help develop tourism by developing the activities and human resources involved in tourism. Tourism SME (Small Medium Enterprise) managers must also be given training and education so they can manage their business professionally. The community also plays a vital role in tourism, especially the villages they live in. Many activities are held to attract tourists, including cultural and traditional activities.

Kampung Wisata Kauman has been the only tourist village developed based on religious tourism. During Ramadhan, Kauman is flooded with domestic tourists wanting to see religious tourist attractions. The tourists are also eager to attend Pasar Ramadhan, a market that sells many kinds of snacks (Dinas Pariwisata Kota Yogyakarta, 2018).

The community around the tourism villages design activities tourists may enjoy, including cultural and traditional ones. The community plays a crucial role in tourism development, as well as the environment does.

Kampung Wisata Dewa Bronto provides some outdoor activities. Tourists may go down the rivers, do flying fox, and other recreational activities (Wahana News Serambi, 2022).

The environment provides nature tourism experiences, so the environment is vital for tourism development. The media also has its role in tourism development.

Yogyakarta City offers many tourism villages with a unique atmosphere, a relaxing yet fun place to visit. Tourists may learn about Java culture, make crafts, and watch the cultural and traditional performances. Some of the tourism villages are Kampung Wisata Prenggan, Purbayan, Rejowinangun, Dewo Bronto, and Taman Sari (Susmayanti, 2021).

The media helps introduce tourism villages through their printed and electronic publications. The government, universities, industry, media-based and culture-based society, the environment, and the mass media (the hexa helix) have a significant influence in

developing the tourism sector in tourism villages by interacting with each other and creating synergy.

An integrated work between the government, universities, industry, the media-based and culture-based society, the environment, and the mass media (the hexa helix) will help to accelerate tourism development. The role of the six helixes will complement the previous, triple helix, quadruple helix, penta helix, and quintuple helix. Triple helix involves the government, universities, and the industry. Interaction between government, private sectors and university in triple helix has not been able to develop tourism sector in modern era. The triple helix refers to interactions between universities, industry, and the government (Etzkowitz, 2008; Etzkowitz et al., 2005; Etzkowitz et al., 2007; Leydesdorff, 2010; Kim et al., 2012; Ortiz et al., 2016; Sumarto et al., 2020). Interaction that occurs a symbiosis between government, university, and industry. Universities educate innovative and creative graduates and conduct scientific research relevant to the industrial sector and business incubators. Industry applies the innovations developed in the universities and creates quality products. The government is responsible for designing regulations that support innovation and providing financial support, for example, through entrepreneurship training.

In the tourism sector, the government is instrumental in the triple helix because it is responsible for the regulations that support innovation in the sector and allocates entrepreneurship funding to individuals working in the tourism sector. Universities should be able to improve both the hard and the soft skills of their graduates and conduct research that has a positive impact on the tourism sector. With support from the universities, industry can innovate and create products in the tourism sector, which have a competitive advantage.

The idea of the triple helix can be extended to a quadruple helix by adding the media-based and culture-based society to the elements of the triple helix (Carayannis & Campbell, 2009; Carayannis et al., 2012; Park, 2014; Sumarto et al., 2020). Society should participate actively in the interactions between the government, industry, and universities. The addition of the media-based and culture-based society allows the activities of the triple helix to become more responsive in overcoming the current social conditions. A culture-based society deals with issues such as tradition, values, and social capital. The media-based society is closely associated with electronic and printed media and social networks. The media-based and culture-based society have a significant influence on the development of tourism in an area as society and tourism are inseparable.

Interactions between the government, universities, industry, and society are vital for tourism development, but another key element for tourism development is the environment. Interactions between the government, universities, industry, the media-based and culture-based society with the environment result in welfare, sustainable development, and social ecology. This quintuple helix (Carayannis et al., 2012; Carayannis & Campbell, 2010; Ortiz et al., 2016; Sumarto et al., 2020) requires the participation of the natural and social sciences and the humanities. The environment in which a social group is located becomes the main focus of the quintuple helix, rather than the government, industry, universities, or the media-based and culture-based society. (Carayannis et al., 2012) and (Ortiz et al., 2016) assert that the environment focuses on innovations to ensure sustainability of natural capital. In the quintuple helix, the environment has become vital for sustainable environment altogether with the government, higher education institutions, society, and the provider of natural capital. The quintuple helix extends the quadruple helix and the triple helix to include the significant role that the environment plays in welfare and sustainable development.

The quintuple helix ecosystem involves the government as a regulator, industry as the setting for market potential and for carrying out innovation, universities that are closely

associated with output, research and business incubators, a society that addresses access to jobs and social welfare, and the environment deals with sustainable innovations as the provider of natural capital, which is related to social welfare. Hence, together with government, industry, university and society, environment is an important factor in academic study focusing on sustainable development and the provider of natural capital. The five helixes play a vital role in developing sustainability in an area.

In sustainable tourism development, the mass media is an integral element that supports and complements the other components of the helix (Soemaryani, 2016; Muhyi et al., 2017; Sumarto et al., 2020). The mass media spreads information and is an effective means of promotion, including promotions for tourist attractions.

In penta helix is an alternative five-element helix to the quintuple helix. In the penta helix, there are interactions between the government, industry, universities, society, and the mass media. In the quintuple helix, there are interactions between the government, industry, universities, society, and the environment. Combining the penta helix and the quintuple helix gives a six-element hexa helix with the government, universities, industry, society, the environment, and the mass media. The interactions between the elements of this hexa helix support sustainable development in the tourism sector and social welfare in a tourist destination.

Recently, the number of studies on the triple helix, quadruple helix, quintuple helix, and penta helix has been increasing. (Yoda and Kuwashima, 2019) analyzed changes in the collaborations and interactions between universities, industry, and the government before and after deregulation in Japan. They found that collaboration led to the development of relationships between university, industry, and the government. They also revealed a period in which the triple helix developed through the important role of government.

(Muhyi et al., 2017) analyzed the elements of the penta helix (academics, business, community, government, and the mass media) involved in the development of center of flagship industry in Bandung. The study found that a lack of coordination among the five elements was a hindrance to developing the local economy.

(Hardianto et al., 2019) used the penta helix in an analysis of the rapidly growing tourism sector in Batu, East Java, and the participation of various stakeholders. The penta helix in this study involved collaborations between government, academics, private institutions, the mass media, and the environment. The study identified a lack of synergy between academics and the environment. (Sumarto et al., 2020) wrote an article with the title of *Penta Helix and Quintuple Helix in The Management of Tourism Villages in Yogyakarta City* through a research literature. (Hartanto et al., 2020) studied quintuple helix model for tourism development in Banyuwangi Regency; the quintuple helix model confirms that the environment is effective in attracting tourists—it also acts as a driver for knowledge production and innovation. (Susanti et al., 2022) studied the Penta helix strategy for tourism village development in Karangasem Village, Bulu District, Sukoharjo Regency. The study aims to identify the tourism integrated development in Karangasem Village involving the Penta helixes: the academics, business, community, media, and the government. The findings show that each stakeholder has its role in tourist village development.

Previous studies examined the triple helix involving the collaboration and interaction of three elements: universities, industries, and the government. Another previous study examined the penta helix involving academics, the business community, the government, and the media in developing leading industrial centers, but it was not a tourism study. There was also a study examining the penta helix as a collaboration of five elements of the government, academics, the private sector, the media, and the environment in the tourism sector, but it did

not involve the society. Through a literature review, other studies on the penta helix and quintuple helix involved six elements of the government, academics, industry, society, media, and environment. There has not been much research on the six helices in the tourism sector, especially in tourism villages, through direct observations.

Previous studies involving the triple helix, quadruple helix, penta helix, and quintuple helix is not enough for tourism; thus, we propose the hexa helix (the six helices). The government plays a role in supporting tourism development in a region through many programs. The industry helps in providing goods and services for tourism. The higher education institutions are responsible for supporting products and services needed by tourists. The people are responsible for tourism in there is by active participation in tourism activities. The media promotes tourism activities. The environment supports innovations for tourism development and as the provider of natural capital.

Tourism development needs an interaction and roles of several helices—the government, the industry, higher education institutions, society, the media, and the environment. Interactions take place when the government conducts a program. The government interacts with the people, industry (SME) managers, higher education institutions, the media, and the environment. The people prepare all needed for tourism activities by interacting with the government, industry (SME) managers, higher education institutions, the media, and the environment. The higher education institutions provide training for the people and the industry (SME) managers in cooperation with the government covered by the media and supported by the environment. Industry (SME) managers provide the needs of tourists by providing goods and services, supported by the government, higher education institutions, promotion by the media, the people, and the environment. The media reports all programs and activities in the tourism villages. The environment interacts with the other helices through innovations of goods and services and as the provider of natural capital. The interaction between the government, the people, industry (SME) managers, higher education institutions, the media, and the environment support tourism development in a region. Thus, the six helices play a vital role in tourism development and improvement. This article presents the results of research in tourism villages in Yogyakarta City involving the six helices: the government, industry, universities, society, environment, and media.

The objective of this study was to describe and analyze the roles of the six elements of the hexa helix, the government, industry, society, universities, the environment and the mass media in developing the tourism sector of the tourism villages in Yogyakarta City. The findings of this study could be used as a reference by the government, stakeholders, and other institutions to understand how the interactions among the elements of the hexa helix can develop the tourism sector an area.

METHODS

This study was descriptive qualitative. We conducted the study in *kampung wisata* in Yogyakarta City to examine tourism in the study site through the role and interaction of the six helices (Hexa Helix): the government of Yogyakarta City, the provincial government of Yogyakarta Special Region, industries in the *kampung wisata* of Yogyakarta City, society of the *kampung wisata* Yogyakarta City, universities in Yogyakarta, the environment, and the media.

Data were collected through observations, interviews, and documentation. We directly observed 17 *kampung wisata* in Yogyakarta City, the government offices in charge of tourism management in tourism villages, industries running their business in tourism villages, and the

environment. Observations were done openly in which our presence as researchers were known by the research subjects. We observed the activities of tourism managers and the local people in tourism villages. We observed how the local people maintain the cleanliness of their environment. We observed the local people exercised to perform local art and cultural performances. We observed the enthusiasm of the local people in the festival held in the tourism villages. We also observed the making of industrial products in the tourism villages, such as batik *jumputan*, natural-dye batik, and silver handicrafts. We observed the officials from government offices attending programs in the villages and lecturers from the higher education institutions giving training. We observed the media staff becoming judges at some events and covering news at the tourism villages. We also watched and observed the cultural attractions and other activities on the rivers of the tourism villages.

We interviewed the government officials responsible for managing tourism villages in Yogyakarta City, society members and administrators, university officials, business owners, and media officials in Yogyakarta. We also collected data from government documents in government offices, universities, industries, the society of the tourism villages Yogyakarta City, and the media. Data were also collected from several websites, including websites owned by the government offices, universities, business owners, society of the tourism villages of Yogyakarta City, and media, and other websites to collect additional data related to tourism in tourism villages of Yogyakarta City.

Data analysis was done adopting the technique from (Miles et al., 2014), including (1) data condensation, (2) data display, and (3) conclusion drawing or verification. Data analysis started from data collection at study sites, namely Regional Official Organizations of Yogyakarta City and Yogyakarta Special Region. Data collection was also carried out in several universities and industrial places such as batik factories, silver workshops, culinary centers, and homestay services and the tourism villages. For the media, data collection was carried out at media offices in Yogyakarta, including Harian Jogja, Tribun Jogja, Kedaulatan Rakyat, and Radar Jogja.

Data condensation was carried out after data from the research sites were collected. Data collected came from observations, interviews with informants, and completed with data from documents related to tourism villages. Then data from the government, universities, and industries, society of the tourism villages in Yogyakarta City, the environment, and the media were selected and simplified before data display. Data selected came from interviews, observations, and documentations. Data display is a collection of information that has been organized from the results of data collection at the research site. After data were selected, the data were transferred to sentences for easier comprehension. Our data display showed the roles and synergistic interactions of the six helixes of Yogyakarta City and the Yogyakarta Special Region government, universities in Yogyakarta, industries in tourism villages of Yogyakarta City, society in tourism villages of Yogyakarta City, the environment of tourism villages, and the media. Based on the analyzed and presented data, the model was created showing the role and synergistic interaction of the tourism six helixes in *kampung wisata* of Yogyakarta City. Based on the analyzed and presented data, the model was created showing the role and synergistic interaction of the tourism six helixes in *kampung wisata* of Yogyakarta City.

RESULTS

Modern society tends to consider traveling as one of the main priorities for people. This phenomenon has motivated the development of tourism in each country and city. Yogyakarta City is a popular tourist destination among both domestic and foreign tourists.

Even though the city has a lot of tourist attractions, most visitors are only familiar with Malioboro and Tugu. Seventeen tourism villages spread throughout the city are suitable alternatives. To promote these tourism sites, their management needs to work together with the government, universities, industry, society, the environment, and the mass media (the six elements of the hexa helix).

As one of the helix elements, Tourism Office of Yogyakarta City could establish various programs to develop the tourism villages in the city. The head of Development of Tourism Objects and Attractions, stated that conducting training sessions and workshops is a strategy that the Department of Tourism has implemented in developing the tourism villages. Examples are Javanese classes, batik painting workshops, puppet making workshops, tour guide workshops, a workshop on Javanese culture, homestay service management, tourist village management, and the industry and its management (interview July 12, 2019).

In 2019, the Department of Tourism of Yogyakarta conducted a training session called Tourist Destination Management 2019. The participants were representatives from museums, galleries, restaurants, and tourist destinations in Yogyakarta City. The training aimed to provide some insights for the participants so that they could run their organizations more effectively and provide facilities that improved customer satisfaction and attracted more visitors each month (pariwisata.jogjakota.go.id 2019). Management staff for the 17 tourism villages in the city also participated in the training sessions, and the Department of Tourism also invited the teaching staff of the universities in Yogyakarta to act as facilitators or instructors in the training sessions.

Besides training, the Department of Tourism and the tourism villages in the city also held Festival Kampung Wisata (tourist village festivals) between September 7 and 8, 2019, in XT Square. Its objective was to promote the arts and culture, culinary experiences, and natural attractions located in Yogyakarta City. News about this festival appeared on the Department of Tourism of Yogyakarta City website. The festival promoted products and services, for instance, silver handicrafts, batik and various delicacies from each tourist village. The festival attracted some interest from local people (pariwisata.jogjakota.go.id 2019).



Figure 1
FESTIVAL KAMPUNG WISATA KOTA YOGYAKARTA (TOURISM VILLAGE FESTIVAL OF YOGYAKARTA CITY)

This festival allowed each tourist village to show their art and culture, handicrafts and culinary attractions to both local people and visitors. (Figure 1)

Participation by industry in developing tourism in the tourism villages was shown in Kampung Wisata Dewo Bronto (Dewa Bronto Tourism Village). It established an organization that consisted of natural-dye batik makers called Paguyuban Canthing Makaryo. Paguyuban Canthing Makaryo conducted a natural-dye batik painting class for women living in Kampung Wisata Dewo Bronto. (Figure 2) This training was initiated by the Government of Yogyakarta City and later developed by Kampung Wisata Dewo Bronto (interview with Mr. Khusnan, head of Paguyuban Canthing Makaryo August 28, 2019)



Figure 2
BATIK PAINTING CLASS IN KAMPUNG WISATA DEWO BRONTO

Another industry located in the tourism villages in Yogyakarta City was a chocolate factory called Coklat Monggo in Kampung Wisata Purbayan. The factory produced various flavors of chocolate, with Coklat Monggo being the most popular among visitors to Kampung Wisata Purbayan.



Figure 3
COKLAT MONGGO IN KAMPUNG WISATA PURBAYAN

Coklat Monggo supported the tourism sector of Kampung Wisata Purbayan (Figure 3) as visitors always stopped to visit the chocolate factory. Most industries located in the tourism villages in Yogyakarta City produced batik as the city is famous for its batik. Besides batik, the culinary industry, including chocolate, is growing rapidly in the city.

Research and community service allowed universities in Yogyakarta to support the development of tourism in the tourism villages. Universitas Janabadra Yogyakarta helped Kampung Wisata Tahunan to build waste management facilities for their batik industry. In this way, the university helped to prevent environmental damage in the tourism villages. Community members also participated in the waste management program. The university decided to carry out a waste management program in Kampung Wisata Tahunan because of its well-known batik (interview with Mrs.Yavida August 1, 2019).



Figure 4
BATIK JUMPUTAN WORKSHOP IN KAMPUNG WISATA TAHUNAN

Another university contributing to the development of tourism in the tourism villages in Yogyakarta City was Universitas Pembangunan Nasional Yogyakarta. This university conducted a community service program that focused on preserving the children's dance in Kampung Wisata Kadipaten. (Figure 4) The dance was performed in one of the cultural events in Kampung Wisata Kadipaten in Yogyakarta.



Figure 5
CHILDREN'S DANCE IN KAMPUNG WISATA PURBAYAN

The university made positive contributions towards the development of the tourism villages as they provided some insights into the arts and culture, and the handicraft and culinary industries to help with the management of the tourist attractions.

The media-based and culture-based society have also made positive contributions to developing the tourist village. They have made the place more interesting and marketable.

Kampung Wisata Warungboto is one of the tourism villages empowering the local community to manage the tourist attraction. (Figure 5)

Warungboto Tourism village is an education, art, and culture-based tourism village. One of the attractions of Warungboto Tourism Village is the Warungboto Site. Currently, Warungboto Site is often used as a pre-wedding venue where the village provides the photographer. Tourists who come to Warungboto Tourism Village are greeted with *Bregodo* or folk soldiers and treated to Warungboto's typical culinary. Tourists are then invited to the Warungboto Site (Interview with Mr. Purnomo, on August 26, 2019).

Another tourist village that has empowered their community successfully was Kampung Wisata Taman Sari. Kampung Wisata Taman Sari was known as a cyber village. It developed digital services to promote the various activities in the tourist village, including some local products, and online media in Yogyakarta published news about Kampung Cyber Taman Sari. As a cyber village, a lot of community members in Kampung Wisata Taman Sari work as artists and craftspeople and sell their products online (KR Jogja, 2018).

Kampung Wisata Taman Sari used online media to promote *batik lukis* and other handicrafts produced by its artists and craftspeople. Visitors could also access activities in the area through digital services. The community in which the tourist village is located generally understands their surroundings well, including having a suitable strategy for the tourist village. Hence, the local community was instrumental in developing the tourism sector in the area.

The mass media is another element of the hexa helix that has had a positive impact on the development of the tourism villages. It is a means for publicizing the tourism villages in Yogyakarta City. Mr. Sigit, a Senior Journalist of Tribun Jogja, stated that Tribun is committed to supporting Yogyakarta City and spreading information about the tourism villages in Yogyakarta City to the public. Tribun has published some cultural events and other activities conducted in the tourism villages (interview on July 15, 2019).

Other media spread information on support toward the tourism villages. Harian Jogja (Harjo) is another mass media publishing outlet that supports the tourism villages in Yogyakarta City. At the same time, it is expected that society members are aware of the pivotal role of mass media, as a means of promoting the tourism objects (interview with Mr. Anton, Editor in Chief of Harian Jogja on June 25, 2019).

Tribun published news about the accreditation of the tourism villages: Tribunjogja.com, Yogya – The Department of Tourism of Yogyakarta City is conducting re-accreditation for eight tourism villages next year. Head of Tourist Development and Marketing Bureau Department of Tourism of Yogyakarta City, Yeti Martanti stated that there are 17 tourism villages in the city. Previously, nine of those had been accredited. She added that the tourism villages had been able to provide a quality service for visitors as they welcomed visitors every year (Tribun Jogja, 2018).

The mass media was a means for promoting the tourism villages of Yogyakarta City. Community groups living in the vicinity of tourism objects should regularly publish activities and cultural events taking place in the tourism villages in mass media.

The environment is another element of the hexa helix supporting the tourism sector. Customer satisfaction increased sharply when the tourism villages were clean and well-maintained. Mr. Sigit from Kampung Wisata Dipowinatan mentioned how popular Kampung Wisata Dipowinatan was among foreign visitors. Thus, the local community should clean the tourism villages regularly but particularly during artistic and cultural performances. Another aspect of the environment supporting the development of the tourism villages was the socio-

cultural environment or the well-preserved traditions and customs (Focus Group Discussion, October 26, 2019).

A homestay owner from Kampung Wisata Sayidan stated that, “Visitors like a clean and peaceful environment. Therefore, I have always asked our community members to keep Kampung Wisata Sayidan clean. I always clean my home for homestay regularly, and as a result, my occupancy rate has always been stable. I welcome both domestic and foreign tourists” (interview with Mrs. Susanti August 25, 2019).



Figure 6
HOMESTAY SERVICE AT OMAH NDELIK KAMPUNG WISATA SAYIDAN

Kampung Wisata Dewo Bronto is another tourist village paying attention to its sanitation to improve visitors' satisfaction. The head of Kampung Wisata Dewo Bronto stated that:

Kampung Wisata Dewo Bronto is located close to Kali Code. Hence, the management staff of this tourist village has always encouraged community members to keep Kali Code clean. People living in Kampung Wisata Dewa Bronto have various social statuses. In order to minimize the social status gap, the head of Kampung Wisata Dewa Bronto (Figure 6) has always had discussions with all members of the community, particularly families with low economic status (interview with Mr. Marsudi August 26, 2019).



Figure 7
KAMPUNG WISATA DEWO BRONTO

When the six elements of the hexa helix work together harmoniously, (Figure 7) the tourism sector in the tourism villages can be developed more optimally. During Focus Group Discussions, representatives of the Department of Tourism of Yogyakarta City, universities in Yogyakarta, the industry in *kampung wisata* of Yogyakarta City, the mass media, the local

community living in the tourism villages, and the visitors agreed to collaborate to develop and promote all of the tourism villages in Yogyakarta City (October 26, 2019).

The role of each helix is realized in 17 tourism villages in Yogyakarta City and is elaborated in Table 2.

Table 2 THE ROLE OF THE HEXA HELIX IN TOURISM VILLAGES OF YOGYAKARTA CITY							
No.	Tourism villages	Role					
		Government	Industry	Higher Education Institutions (Universities)	Community	Media	Environment
1.	Kampung Wisata Dipowinatan	a. Regulation: Regulation of the City Mayor Number 115 of 2016 on Tourism villages b. Training c. Infrastructure development d. Festivals e. Accreditation	a. Jamu (traditional herbs) b. Batik c. Food and beverages (culinary) d. Homestay	a. Developing art and cultural attractions, batik b. English language training	a. Tour package offer for tourists b. Performing art and cultural attractions	a. Publishing news about festivals b. Publishing activities done in tourism villages	Innovations: art and cultural attractions, herbs, clean environment
2.	Kampung Wisata Rejowinangun		a. Jamu b. Chips (made from leaves) c. Handmade bags	Developing art and cultural attractions, batik			Innovations: art and cultural attractions, herbs, chips from leaves clean environment
3.	Kampung Wisata Warungboto		a. Lampshade b. Batik c. Food and beverages (culinary)	a. Developing art and cultural attractions, batik b. Field practice c. Research d. Foreign language training			Innovations: art and cultural attractions, clean environment
4.	Kampung Wisata Tahunan		a. <i>Jumputan</i> batik b. Food and beverages (culinary)	a. Developing art and cultural attractions, batik b. Field practice			Innovations: art and cultural attractions, <i>jumputan</i> batik, clean environment

)	c. Waste management training			
5.	Kampung Wisata Tamansari		a. Batik <i>lukis</i> b. <i>Wayang kulit</i> (puppet-shadow play)	Developing art and cultural attractions, batik			Innovations: art and cultural attractions, batik <i>lukis</i> , cyber village clean environment
6.	Kampung Wisata Tjokrodiningrat		a. Food and beverages (culinary) b. Various handicrafts	a. Research on water level b. Developing art and cultural attractions			Innovations: art and cultural attractions, clean environment, natural attractions
7.	Kampung Wisata Dewo Bronto		a. Natural-dye batik b. Food and beverages (culinary)	Developing art and cultural attractions, batik			Innovations: art and cultural attractions, batik, natural attractions, clean environment
8.	Kampung Wisata Sosromenduran		a. T-shirts b. Food and beverages (culinary) c. Leather handicraft	a. Developing art and cultural attractions b. English language training			Innovations: art and cultural attractions, clean environment
9.	Kampung Wisata Becak Maju		a. Traditional herbs b. Moci cake	a. Field practice b. Developing art and cultural attractions			Innovations: art and cultural attractions, herbs, clean environment, natural attractions
10.	Kampung Wisata Sayidan		a. Dried flowers b. Popcorn c. Homestay	a. Developing art and cultural attractions,			Innovations: art and cultural attractions, homestay,

				batik b. Field practice			clean environment
11.	Kampung Wisata Pakualaman		a. Traditional herbs b. Miniature d. Food and beverages (culinary)	a. Developing art and cultural attractions b. Field practice c. Web-design training			Innovations: art and cultural attractions, miniature, clean environment
12.	Kampung Wisata Pandeyan		a. Homestay b. Food and beverages (culinary) c. Handicrafts	a. Developing art and cultural attractions b. Field practice			Innovations: art and cultural attractions, homestay, green village clean environment
13.	Kampung Wisata Purbayan		a. Food and beverages (culinary) b. Silver	a. Developing art and cultural attractions, silver b. Research			Innovations: silver, art and cultural attractions, herbs, clean environment
14.	Kampung Wisata Prenggan		a. Silver b. Food and beverages (culinary)	Developing art and cultural attractions, silver			Innovations: silver, art and cultural attractions, herbs, clean environment
15.	Kampung Wisata Kadipaten		a. Batik b. Food and beverages (culinary) c. Plastic recycles	a. Developing art and cultural attractions b. English language training			Innovations: art and cultural attractions, herbs, clean environment
16.	Kampung Wisata Niti Gedongkiwo		a. Food and beverages (culinary) b. Various handicrafts	Developing art and cultural attractions			Innovations: art and cultural attractions, herbs, clean environment
17.	Kampung Wisata Kauman		a. Food and beverages (culinary)	a. Developing art and cultural			Innovations: art and cultural attractions,

			b. Handicraft s	attractions b. Research on historical buildings c. Field practice			hydroponics, clean environment
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Table 2 presents the role of each helix in Yogyakarta City's tourism. The role of the government can be found in all villages, such as the installation of washbasin, training on making products and services and human resources, and art and cultural attractions. This role is crucial for optimal development of tourism villages.

The industry helps with the handicrafts, the food and beverages (culinary), and the homestay service. Some tourism villages have similar products, such as batik, herbs, and silver. Almost all tourism villages have a homestay service for visitors. The industry's role is realized to provide the needs of tourists.

The universities play their role through research, community service, and field practice. The activities include training for production of goods and provision of services as well as art and cultural attractions. Business owners and those involved in art and cultural attractions gain many advantages to help them improve the quality of their products and services.

The community plays its role through tour packages and art and cultural performance. Some tourism villages offer similar tour packages and traditional performance, such as *bregodo* that can be found in all tourism villages. *Bregodo* as a traditional attraction is often made a competition during the festivals.

The media plays its role through publication—they write news about cultural events, attractions, and activities, such as festivals. This help people to know more about the tourism villages.

The environment plays its role in terms of innovation, including art and cultural performance and production of goods and services. The environment provides places for people going down the rivers, doing flying fox, performing traditional rituals, and other recreational activities. The beauty and cleanliness of the environment is important because it attracts the visitors. Thus, the six helices all have their important part in the development of tourism villages in Yogyakarta City.

The management of the tourism villages in Yogyakarta involves the interaction and role of several helices, including the government, the industry, higher education institutions, the people (society), the environment, and the media. The interaction takes place during programs or activities related to the tourism villages. When the government of Yogyakarta holds *Festival Kampung Wisata* (tourism village festival) and training, the government interacts with the local people, the industry (SME) managers, the higher education institutions, the media and the environment. The local people and the managers of the tourism villages prepare everything needed for the festival. The higher education institutions support the festival and become the training instructors. The industry (SME) managers exhibit their products during the festival and they become the training participants. The media reports the events, the festival, and other activities. The environment supports the innovations on the products and services and also provides the natural attractions in some village tourisms. The six helices interact and coordinate to support the success of activities in the tourism villages.

A synergy and harmonious interaction of the six helices will become such a great support for tourism activities in the tourism villages of Yogyakarta City. The tourism villages

will improve fast under the good coordination of the government, the industry, higher education institutions, the people (society), the environment, and the media.

DISCUSSION

The six elements had an important role toward and worked together in promoting the tourism villages. Hexa helix referred to interaction or synergy among government of Yogyakarta City, university, industry located in the tourism villages, society in the tourism villages of Yogyakarta City, environment and mass-media. Compared to triple helix, interaction referred to interaction among government, university and industry to gain new insights and create new service (Etzkowitz, 2008; Etzkowitz et al., 2005; Etzkowitz et al., 2007; Leydesdorff, 2010; Kim et al., 2012; Ortiz et al., 2016; Sumarto et al., 2020). Interaction among government of Yogyakarta City, university and industry in the tourism villages could not overcome issues related to development of tourism sector in the tourism villages in Yogyakarta City. Members of society who live in the tourism villages should be involved in the attempt as they are instrumental in developing the areas where they live. Participation of society in the interaction among government, university and industry referred to interaction in quadruple helix. Quadruple helix added culture-based society and mass-media in the interaction between government, university and industry (Carayannis & Campbell, 2009; Carayannis et al., 2012; Park, 2014; Sumarto et al., 2020). The tourism villages sell their arts and cultural heritage to visitors. Therefore, culture-based society and media are significant in developing tourism sector in the tourism villages where the society lives and interact with government, university and industry located in the tourism villages.

Environment is another essential element in development of tourism sector besides government, university, industry and society. The tourism villages could not take aside the role of environment (nature, socio-economic and culture) to develop sustainability. Environment was added in the interaction among government, university, industry, culture-based society and media in quintuple helix (Carayannis et al., 2012; Carayannis & Campbell 2010; Ortiz et al., 2016; Sumarto et al., 2020). Therefore, it is important to add environment in developing the tourism villages in Yogyakarta City into the interaction among government, university and industry.

However, the interaction among government, university, industry, society, and environment was not enough in promoting the tourism villages. Media is a means of branding and promotion and thus, it is another helix added to the interaction among government, industry, university and society (penta helix) (Soemaryani, 2016; Muhyi et al., 2017; Sumarto et al., 2020).

Tourism sector in the tourism villages in Yogyakarta City can be developed by interaction among hexa helix, government, university, industry, society, environment, and media. Hexa helix is a combination between quintuple helix and penta helix. Hexa helix develops the tourism villages based on interaction or synergy among government, university, industry, society, environment and media. Representing government of Yogyakarta City, Department of Tourism of Yogyakarta conducted various trainings on arts and culture, innovative goods and service, and human resource and management in order to improve quality of the tourism villages. The government also held Festival Kampung Wisata to introduce arts, culture and innovative goods and services from the tourism villages. Establishment of the tourism villages is stated on the 2016 Decree of the Mayor of Yogyakarta number 115. In accordance to role of government in quintuple helix and penta helix, government of Yogyakarta City acts as regulator that supports innovation by conducting entrepreneurship training and identifies potentials in the tourism villages.

Handicraft such as batik and culinary industry supported the tourism villages. In quintuple helix, industry is a medium to apply innovation and create quality products. This was applied to the tourist village in order to create innovative products with competitive advantage.

University conducted research and community service in the tourism villages. University conducted academic research that helped industry improving quality of their products. Society members living in the tourism villages were also able to provide a better service for visitors. The role of universities is manifested through training, field practice, and research. Universities support production improvement and the quality of art and cultural attractions.

Society played a role in their participation in art and cultural events, handicraft-making and culinary. In quintuple helix, roles of society members are creating innovation related to arts and culture, handicraft and culinary and using digital service to promote the tourism villages. Both government and university supported these roles. Many activities in the tourism villages are integrated in a tour package, including the art and cultural attractions. The community plays such an important role in the development of tourism villages.

Environment has a significant influence toward tourism sector. It supported arts and cultural activity as well as production taking place in the tourism villages. In quintuple helix, environment has significant impact toward development of sustainability in the tourism villages. The environment is closely related to the innovations of business people due to similarities in products and services offered; innovations must be done so tourists are interested in buying the products, enjoying the service, and watching the art and cultural performance. The environment also presents the places for tourist activities, such as going down the river, outdoor activities, and traditional rituals. The beauty and cleanliness of the environment is important for the comfort of tourists visiting the tourism villages.

Another important element was media. Media was vital in publication. It is in accordance with role of media in penta helix that is a means of promotion and publication. The media publishes news about activities in the tourism villages during the festival or other events. The media plays its role in the branding of the tourism villages.

Interaction between government as institution conducting the training and university as facilitator in the training resulted in goods and service production by the society in the tourism villages in Yogyakarta City. The society also held various activities related to tourism such as arts and culture. This received supports from both the government and university. Media published all activities held in the tourism villages while environment supported development of sustainability in the tourist village.

Table 2 on the roles of the six helixes confirms that the six helixes have a crucial role in the development of tourism villages in Yogyakarta City. The roles and interaction among the six helixes, namely government, industry, university, society, environment and media enhanced development of tourism sector in the tourism villages. Their interaction created a synergy.

Hexa helix referred to interaction/ synergy among six helixes, namely government, industry, university, society, environment and media in order to develop tourism sector in the tourism villages in Yogyakarta City. Hexa helix improves quality of the tourism villages, attracts visitors to the tourist attraction and develops sustainability in the tourism villages in the city.

CONCLUSION

The role and synergistic interaction between the government Yogyakarta City and Yogyakarta Special Region, universities in Yogyakarta, industries in *tourism villages* of Yogyakarta City, communities in *tourism villages* of Yogyakarta City, the environment of *tourism villages*, and the media in Yogyakarta is significant for the development of *tourism villages* in the region. Interactions within the Triple Helix, Quadruple Helix, Penta Helix, and Quintuple Helix were not enough to maximize the development of tourism and *tourism villages* in Yogyakarta. The Hexa Helix Model is the ideal model for tourism development in Yogyakarta and ensures sustainable tourism development in *tourism villages*. Hexa helix involves the six helices of the government, the industry, higher education institutions, the people (society), the environment, and the media to support the development and sustainability of tourism villages in Yogyakarta City.

The government plays a role in making regulations for strengthening tourism villages and supporting innovation through training. Through its innovation, the industry plays a role in creating products that have a competitive advantage. Universities play a role in producing knowledge applicable to the industry in tourism villages. Through empowerment in arts, culture, crafts, culinary, and digital services, the society plays its role in developing tourism. The environment holds a vital role in supporting tourism sustainability in tourism villages. The media can help the promotion and publication of tourism villages. The six helices interact synergistically to develop tourism in the tourist village of Yogyakarta City to improve the quality of the tourism villages. With the role and interaction of the hexa helix, tourism in the tourism villages of Yogyakarta will be growing and increasingly known to tourists. Thus, it can guarantee the sustainability of tourism in the tourism villages of Yogyakarta.

The limitation of the present study is that it used only a qualitative research approach. Further studies on the hexa helix can be carried out using quantitative research. The quantitative study helps us the effect of relationship between the 6 helices in the development of tourism villages in Yogyakarta City. The hexa helix studies in the tourism villages of Yogyakarta City can also be done using social network analysis. Further studies are recommended to analyze other fields that require synergistic roles and interactions from the government, industry, universities, society, the environment, and the media.

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