
Research Article

Balance environmental obligations and socio-economic compulsion; the case of Kadamaian's indigenous community proficiency needs

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Abstract

The community of Kadamaian is expected to have heightened sense of environmental and biodiversity awareness and an obligation towards protection and conservation since the community occupies an area adjacent to Sabah's premier World Heritage Site i.e. Kinabalu Park. Of course, with support from the Sabah government, Kadamaian's community is compelled to exploit their natural surroundings as primary resources to better their socio-economic position to be at par with other communities elsewhere in Sabah. Will Kadamaian's community be able to balance the obligation and the compulsion to exploit? An empirical study in a scientific expedition that was carried out in late 2019 at Kadamaian-Kota Belud answers this question. The unit of analysis in this study is the social relationship between Kadamaian's community and its social artifacts. The documentation technique, direct observation technique and the interview technique were used to collect data, while data analysis was carried out according to the structuration theory using the triangulation method. The findings of this study showed the existence of three (3) interdependent social relationships that influenced Kadamaian's community strive to balance environmental and socio-economic issues. While these relationships have somewhat contributed to the establishment of a non-governmental organization i.e. Kadamaian Biocultural Protocol Committee that focused on the environmental obligation of Kadamaian's community, other small enterprising network focused on socio-economic compulsion. The implication of these relationships is discussed in the article.

Keywords: Structuration, Behavioural sink

Background

Sabah is world renowned for its environmental contributions. From the many types of environmental issues, Sabah has been quite successful in addressing two (2) environmental issues namely deforestation and biological diversity conservation. With many key areas protected using the concept of fortress conservation, the government is now transitioning towards rights-based conservation in the hope of creating buffer zones for the existing protected

areas as well as increasing contributions of indigenous communities in conservation through the concept of Other Effective Area-based Conservation Measures. Indigenous community support is needed. But this transition is only possible if the respective community finds it worthwhile (Schulze & Suratman, 1999). The root factor for such a change is the community's collective assessment of the potential benefits to be gained by having a relationship with the government and complying with the government's plan versus the types of risks involved. If the cost of a relationship is higher than its reward, the relationship will face challenges (Emerson, 1976, p. 345), which would eventually lead to a situation where the government has no support for its plan. Hence, for a government that wants to transition from fortress conservation to rights-based conservation, it is important to determine whether a community in Sabah can transition and whether the cost that a community would need to bear during such transition is acceptable.

Introduction

Kadamaian is an area covering some 445 km² located to just the west of the renowned Kinabalu Park - Malaysia's first site listed under UNESCO's World Heritage Convention. It is in a rural region of Sabah. Development in and around Kadamaian has been ongoing from as early as the 1940s with the establishment of the Kadamaian routes, which were upgraded from footpaths of the indigenous peoples inhabiting the area. Socio-politically, Kadamaian falls within the district of Kota Belud - a district with a population of about 95,000 and a third of that population stays in the Kadamaian area. The largest town in Kadamaian is Taginambur, which is about 10 km from Kota Belud town and about 20 km from Tuaran town. There are 76 villages in Kadamaian, and its inhabitants comprise the Kadazandusun, Bajau and Irranun. While majority in Kota Belud are Muslim, the communities of Kadamaian are mainly Christians who still appreciate some of their ancestral pagan beliefs. Socio-economically, many of the inhabitants of Kadamaian are either farmers, civil servants or tourism entrepreneurs.

Geographically, Kadamaian is an undulating area with many rivers. It is an important water catchment area to the Northwest region of Sabah. The Kadamaian and Wariu rivers flow to this area. Although Kadamaian is an important water catchment area, more than 60% of Kadamaian's inhabitants do not enjoy treated water supply and have to rely on gravity water supply. Along with other matters, Kadamaian's communities are considered far behind urban communities in terms of its capitalistic strengths. Nevertheless, since it is just outside of the Kinabalu World Heritage Site and its inhabitants may possess

certain unique indigenous knowledge, Kadamaian has an important role to play and its community is obligated to support Kinabalu Park's environmental and biodiversity conservation efforts. There are a few conservation acts that are community driven. Among these are the implementation of the tagal system. Among natives, this is inbuilt, but now most require consolidation since there is a need for that consolidation to network with government and non-governmental organizations. The question is, does Kadamaian's community have the relevant knowledge to fulfill their obligations and still pursue socio-economic interests? A community's education approach to the act as an environmental custodian is unique. How do we study education needs of a community? While scientific research may be preferred, it is seldom carried out simply because it is technically just too laborious. The general approach in assessing a community's educational needs is the establishment of a technical committee that would eventually produce a technical report, but this approach is not free from political criticism. Understanding matters such as social network and material flows may prove useful because it ties together environmental practices (Flikke, 2014). Hence, to explore the question about a community's ability to balance demands and obligations, we need to know local culture and traditions, and if the concept of conservation is a component to these cultures and traditions.

Communication Media as a Factor of Social Relationship

One could form an understanding about how a community organizes and functions in a particular environment by studying the community's artifacts. This is possible when Marshall McLuhan's theoretical perspective about a medium is drawn upon. According to McLuhan (1964), mediums are instruments or tools that extend a man's interest; mediums are extensions of man. The message of this extension either is a message about enhancement, a message about obsolesces, a message about retrieval, and a message about reversal (McLuhan, 1964). The four (4) message possibilities are knowledge as the Laws of Media (McLuhan, 1964). Of course, a medium (pl. media) does not contain within itself any message; whatever is in a medium are merely forms of arts. The medium IS the message (McLuhan, 1964). Because of McLuhan's perspective, instruments and tools act as mediums to communicate a particular aspect of the said community. Thus, communication media studies are about the studies of media, its effect on society and its relationship with its surroundings. Moreover, while this field of study is commonly associated with commerce and the modern environment, it could also be associated to socialization and the traditional environment e.g. environmental education and nature-based tourism.

Studying the educational needs of a community in Sabah

Under the Malaysian education law, every child is required to finish primary education. Secondary level education or training is at discretion. Parents have a choice to send their children to public schools, private schools or training institutions and centres. Some of these education and training providers offer environmental education as extra-curriculum. It all depends on the providers since environmental education is not compulsory.

Education is important. There is huge literature on its importance. This literature shows that an absence of education and the low level of education can lower a family's household income since the absence of education and the low level of education are factors of job permanency (Zurina, Hukil & Norinsan, 2018). Hence, the question about the importance of education to a community is indeed a rhetorical question. It is an enabler, and people are willing to migrate in pursuit of education. It has been well documented that youth migrate to urban areas to pursue education (Haji Abbas & Binsin, 2008, p. 347). However, the implication of this migration is on the community. The question about why some people place more importance on education than others is not a rhetorical question. An answer to that question comes in many ways and one of them is through the Social Exchange Theory.

The Social Exchange Theory is also an example of an example of a human capital theory. This theory, which modeled the interpretation of a society based on a series of interactions between people, states that people's interactions e.g. teacher-student interaction and trainer-trainee interaction are based on estimates of rewards and punishments. According to this view, our interactions are determined by the rewards or punishments that we expect to receive from others excluding the educators and facilitators, which we evaluate using a cost-benefit analysis model (whether consciously or subconsciously). This theory was described by Richard M. Emerson in 1976, the same scholar that gave us the stakeholder theory. The importance of this theory is that it provides a justification for the need to migrate in pursue of education.

Forwarded by Anthony Giddens, the Structuration Theory is a way of explaining what constitutes a society. According to Giddens (1984), a society has three different properties or dimensions namely the authority dimension, the development dimension and the facilitation dimension. In the context of Malaysia, this theory was first used to explore the contribution of Imbak Canyon to educational opportunities. For education at Imbak Canyon, the Education Ministry forms the authority dimension, while Yayasan Sabah and PETRONAS

The places where data collection was carried out include Malangkap village, Podos village, Bayayat village, and Taginambur town within the dotted circle adjacent to a protected landmass under Sabah Parks. An empirical study was done during a scientific expedition that was carried out from 14th to 25th October, 2019 known as the Borneo Geographic Expedition. This expedition was organized by the Institute for Tropical Biology and Conservation, supported by Sabah Parks.

As described earlier, mediums are extensions of man (McLuhan, 1964); and in this study, data about Kadamaian's mediums were collected using the documentation technique, direct observation technique and the interview technique. Documentation technique was applied on existing electronic media platforms that contain information about the research location such as *JTYWMA Pro Geospatial Mapping Application*, *Google Image*, *Facebook*, *Youtube®* and *Tripadvisor®*. Direct observation technique was carried out *ad hoc* at tourist spots. Since the research location is stated as a rural region, the focus of the collection was on extra-ordinary mediums that exist at the research location. The interview technique was carried out on two groups of people namely the residents of Kadamaian and the community developers and leaders associated to Kadamaian. Open-ended questions on casual lifestyle was given to the former, and socio-economic development of Kadamaian was given to the latter.

Data analysis was carried out according to the Structuration Theory using the triangulation method. Explanation-building technique according to McLuhan's Laws of Media was used to analyse the collected data.

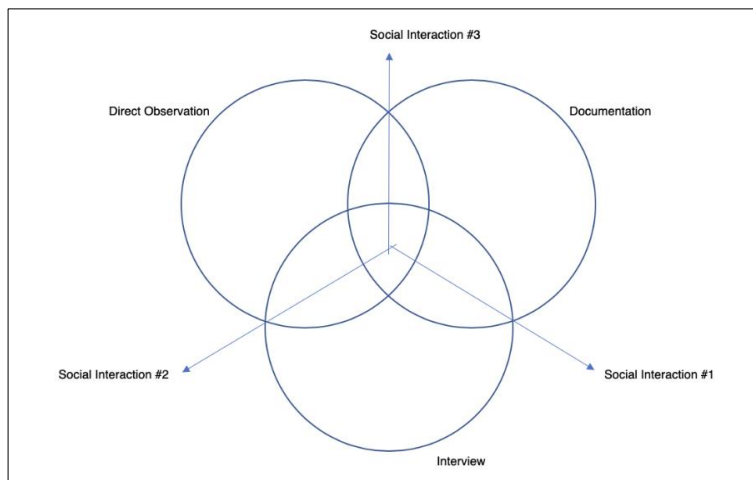


Figure 2: Conceptual framework

Figure 2 shows an analytical triangulation of three different data collection techniques. The explanation building technique used to analyze data will produce at least three (3) social interactions, which will be reported in the following section.

Results and Discussion

In a recent socio-economic development study by the Institute for Development Studies Sabah (IDS) on Kadamaian, much of the output was focused on structural matters that regional and local authorities could monitor. Human capital development (Mat et al., 2015) e.g. entrepreneurship and job creation, which require an understanding about humanities, was confirmed in an interview by a member of the research team. But the interview also uncovered certain aspects of humanities like the level of environmental awareness in Kadamaian’s community, sustainable traditional usage of Kadamaian’s resources, the adoption of environmentally friendly technology, while the community members’ readiness were prioritized the least. In addition, aspects relating to environmental pressures and conservation matters were also uncovered to be least prioritized. Existing strength in environment related enforcement may have led IDS away from environment related aspects. But without knowing the understanding about the environment among the Kadamaian community, there will always be a challenge to conservation.

Drawing from the Structuration Theory, the data was collected and analyzed. The result of the analysis is illustrated in the following matrix.

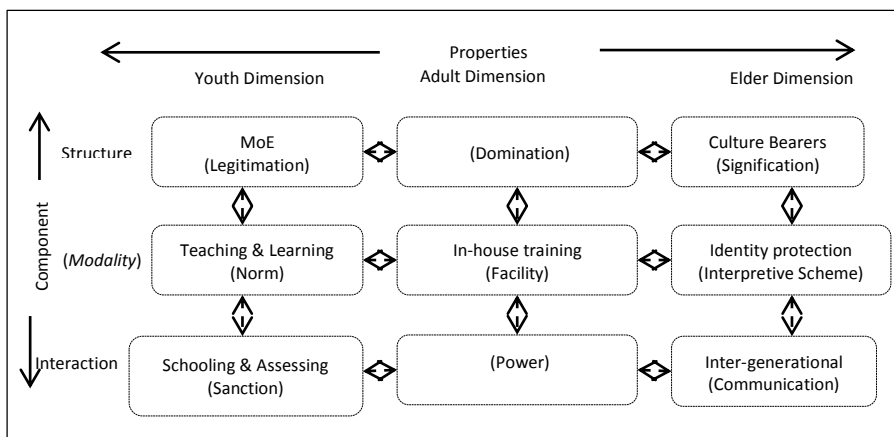


Figure 3. Structuration matrix of Kadamaian’s education network (adapted from Giddens (1984))

The above Figure 3 shows Kadamaian's education network. It has three (3) social relationship interdependent patterns i.e. dimensions. The first dimension is about a relationship between community elder members with their surroundings. The relationship focuses on the elders' need to maintain their traditions and culture through any means possible. The second dimension is between Kadamaian's youths and their surroundings. That relationship focuses on the youths wanting to migrate since they technically have no authority or power and their acquired knowledge from schooling does not motivate them to remain. The last dimension is about a relationship between adults and their surroundings, and the focus is on the limited conservation activities that adults participate in. In Figure 3, education is categorized under the component of modality, and under the Youth Dimension it is carried out through a specific interaction due to the existence of a governing entity. A similar but rather loose matter exists under the Adult Dimension as in-house training, while within the Elder Dimension, education has evolved into a practice i.e. the protection of an identity. The structuration matrix is essential because it highlights three (3) aspects in relation to a community's conservation obligation and its ability to fulfill that obligation that is worth discussing. First, the older community members of Kadamaian have hierarchical needs. Second, Kadamaian's youths have no need for environmental education, and last is the inability of the adult group to balance socio-economic demands and conservation obligations.

This matrix adds clarity to all social exchanges that take place when members of a community analyze the cost and benefit of a matter like education. This matrix enables us to determine the education needs in appreciating of the concept of conservation in daily lives. In this study, Kadamaian's land-use practises are quite rigid. The older generation still carry out their duties. This generation wants their land to be conserved, and the younger generation is to deal with conservation and the commercialisation of its results. The latter is where the problem lies. Not knowing how to commercialise and monetise those resources have forced the younger generation to seek opportunities elsewhere. The local government is assisting but their assistance is focused on commercial resource preparation only. It is believed that once the physical development of Kadamaian has taken off in accordance to Kadamaian's master plan, the scale between socio-economic demands and environmental obligations may be tipped. However, unless education is localized to the needs of the land and youths are recruited to be next in line in defending and implementing, it will be difficult to balance that scale.

Community's Hierarchy Needs

As introduced earlier, Kadamaian is west of Kinabalu Park, and has a very undulating landscape. A satellite image of the area (refer Appendix A) shows a distinct difference between privately owned lands outside of the park and Kinabalu Park. Forest cover outside the park is patchy whereas the forest cover within the park is full. This patchiness shows land-use of some sort, and more prominent where there is road access. Existing Sabah State laws denote a native having the right to be awarded at any one time a piece of state land up to 15 acres or about 6.1 hectares for agriculture-based use. From publicly accessible database i.e. JTUWMA Pro - land authority online database available to the public, most properties at Kadamaian are noted to be less than 15 acres. The land sizes range from one hectare to six hectares. The database also gives us the understating that land titles near road access have already been issued. From direct observation, land-use at Kadamaian is limited to agriculture and tourism activities. While there are other land-use e.g. rock quarrying, the use is negligible by comparison Kadamaian's overall land-use, and this was confirmed through interviews. A federal agency may only be brought into Kadamaian for assistance if the land available for development is more than 25 acres. To fulfill such requirement, it would make sense for native landowners to pool their resources and work together. Some of these lands have already been placed under a programme of *Lembaga Industri Getah Sabah* to support the development of the rubber industry. Of course, this does not imply that everyone in Kadamaian is a farmer. This suggests that Kadamaian's natural environment is relatively intact. As a result, environmental pressures and the need for conservation obligations are minimal at Kadamaian.

Kadamaian is one of three constituencies in the district of Kota Belud. As a constituency and based on the data about eligible voters of the Malaysian general election of 2013, there are 15,903 voters comprising 85.8% of all the eligible voters in Kadamaian. Based on statistical information available in the public domain, the population of Kota Belud is Kadazans 45% and Bajau 45%. With the population pyramid of Sabah resembling a triangle, we can assume that Kadamaian's population pyramid is also assumed to be somewhat resembling a triangle. Thus, Kadamaian's population can be divided into three functional groups and colloquially referred as a) the elderly generation, b) the adults and c) the younger generation. While this is a simplistic way of categorizing collected responses, this generational categorization is an important analytical step to the understanding of the concept of conservation at Kadamaian. With the conservation of biological diversity being linked to the ownership of the land, the educational relationship is best explored through generational

categorization. Data collection to determine the demography of Kadamaian was not carried out and not within the scope of this study. Nevertheless, Sabah’s population pyramid being regarded triangle-shaped, it should be noted that in terms of generational size, it follows the equation below,

$$Y_t > Ad > El \text{ -----} \tag{Eq 1}$$

The following table lists the difference of these three (3) functional groups.

Table 1: Demography of Kadamaian’s population based on functionality

Particular	Generation		
	Youth (Yt)	Adult (Ad)	Elder (El)
Age Range (Year Old)	≤ 34 YO	> 35 YO and ≤ 54 YO	> 55 YO
General Occupation	Students, Casual & contract based	White & Blue Collar	Farmer

The data collected during the study showed that the older generation namely those 60 years old or older are generally involved in land-use management. Since the older generations were assumed to be largely brought up as farmers, adults of Kadamaian may either be white or blue collar workers. Few would be farmers. As for the younger generation namely those below the age of 18 years old, public policies dictate their attention on formal education. With primary education being compulsory and secondary or higher education being optional and based on capabilities, only a handful of Kadamaian’s youths are assumed to have contractual or casual employment. The rest are students.

Schulze & Suratman (1999) stated that people make a choice based on what they perceive as being worthwhile. Certain old people are described as living libraries. But this type of library is becoming obsolete in modern time. They are slowly fading away, and to ensure their relevancy, they become authoritative. Adults mainly think about getting by socio-economically. With regards to the elders, their interaction is intergenerational. It was important to note that while the Sabah Government had a ministry that focused on education between May 2018 to October 2020 known as the Ministry of Education and Innovation and another ministry focusing on the youths namely the Ministry of Culture, Youth and Sports, the fact that education and training is under the purview of the federal government, the development of human capital be it for environment education or otherwise is less focused in Sabah.

As stated earlier, generational categorization is an important analytical step. Besides land ownership, generational categorization gives an understanding

about a person's prior knowledge. In general, elders are farmers and obviously possess prior knowledge acquired through years of experience working on their land; their prior knowledge gives them an understanding about the concept of conservation. The current situation suggests occupations at Kadamaian do not have a high or urgent need for conservation-based knowledge. Kadamaian's media presence revolves around a few themes. One of the themes is about the need to maintain its existing status quo. In an interview with K1, it was apparent that the status quo that needs maintaining is traditions and culture. Hence, the elders are viewed as culture bearers, and they focus on the preservation of their community's identity. To do this preservation, they are willing to carry out an intergenerational relationship.

The concept of a sustainable culture as advocated by Japan is important. To be sustainable, a community establishes structures which in turn continue actions. Here, there is formation of a tradition. Whether this tradition really supports conservation, only time will tell since different generations have different needs and there is no harmony between them. But this has now been taken over by the Biocultural Protocol Committee.

Difficulty in Balancing socio-economy and environment

As stated earlier, Kadamaian's media presence revolves around a few themes. The first theme was described previously, and two major conservation activities associated to the theme were uncovered. The formation of a biocultural administration body is one of them, while the other is the implementation of a popular traditional conservation activity i.e. the *Tagal*. While *Tagal* is taken as a symbol of conservation, the role and power of adults at Kadamaian is unclear other than as supporters of the elders.

As for the second theme, it is about Kadamaian's tourism appeal. The tourism appeal is driven by authentic spaces such as structure camping sites and photo opportunity spots. These spaces are different from normal spaces communities generally establish. Authentic spaces cost money, time, and effort to develop. This is higher for Kadamaian's adults without the appropriate knowledge or experience.



Figure 3. Kadamaian's extra-ordinary as found on the Internet

With all of this, it remains to be seen if Kadamaian's community has the capacity to sustain that balance between socio-economic demands and environmental obligations. Hence, what appears is more need for knowledge to commercialise and monetise the resources of Kadamaian.

Kadamaian's youths have no need for a wholistic socio-economic and environmental understanding.

In literature, Kadamaian's environmental issues are derived from its abundant water resource and its proximity to Sabah's World Heritage Site i.e. the Kinabalu Park. Its challenges however are not related to the mentioned attributes but instead related to its socio-economic structures particularly for the youths of Kadamaian. Environment related challenges have been overshadowed since Kadamaian's indigenous community is not dependent on the mentioned attributes; many members of the community have access to treated water and have land outside of Kinabalu Park. The socio-economic challenge that has overshadowed environmental challenges has also forced youths to migrate out of Kadamaian, and youths are motivated to leave for jobs in other parts of Malaysia. This is evident through posters and other advertisements for vacancies in Peninsular Malaysia.

McLuhans' Law of Medias state that a medium is capable of giving out one of four messages i.e. enhancement, obsolesce, retrieval or reversal, and this is not about the artform within the medium. In relation to employment bunting banners for factory vacancies in Peninsular Malaysia that was found in one of Kadamaian's town, the most concerning message is that people are expected to have a change of lifestyle, as this change will influence the way conservation is carried out.

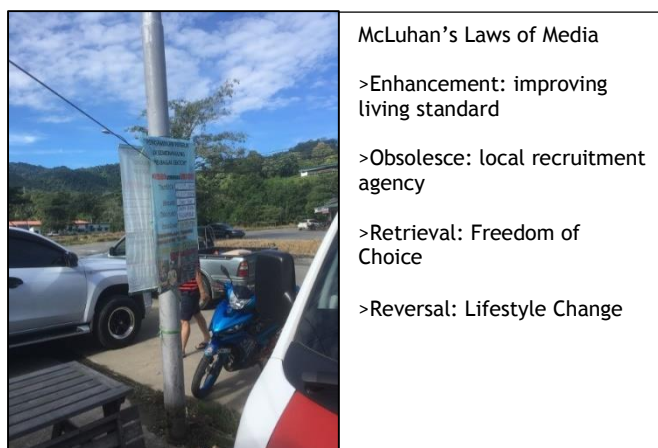


Figure 4. Tetrad of Employment Bunting Banner Medium found in Taginambur town (adopted from McLuhan (1964))

In fact, from interviews, some youths had already migrated to other countries such as South Korea, to earn a living. Some of these youths did send money home. Because of this, it would not be a surprise to see others following suit. The trend of youths migrating to urban areas is an alarming trend worldwide. Youths migrate to these areas as there are job and education opportunities and an enticing wage handout (Haji Abbas and Binsin, 2008, p. 347). The lure of lucrative income is a great driver to migration. In socio-economic context, there are push and pull factors to the migration of youths to urban areas. According to Haji Abbas and Binsin (2008, p. 347), while there are many pull factors some of which have already been introduced, there are three (3) major push factors for youth to migrate out of their community. These factors are the prevalence of poverty, the lack of job opportunities and the limitation of basic structural necessities (Abbas and Binsin, 2008, p. 347). In urban areas, there are a lot of jobs as well as education opportunities for youths to fit into those jobs. Despite this, there is no guarantee of job opportunities; the chance of landing into a job is 50/50. Among the Kadamaian community, many aspects of Kadamaian's socio-economic structures have already been explored; and this trend is worrying so much so that the Sabah State government has taken steps to slow this trend down by focusing on developing facilities to aid Kadamaian's human capital development. To address this socio-economic challenge, the Kadamaian Development Master Plan (2020-2035) was unveiled in January 2020. In an interview with the planners, information showed the plan was to support the perceived entrepreneurial spirit of youths in Kadamaian. It is believed that developing the needed facilities would eventually spur human capital

investment and/or development. Regardless, human capital development is not the focus at Kadamaian. Hence, while the push-pull factors provide an explanation to youth movement including the highlighting of the importance of education, the push-pull factors cannot be used to explain educational needs particularly environmental education needs. The youths simply need to find money to have power or a voice in their community.

An example of a human capital theory is the Social Exchange Theory, and according to this theory, the action taken is based on a calculation of benefits outweighing costs. This theory not only explains why Kadamaian's youths migrate, it also implies environmental education needs of the community at Kadamaian. To be precise, the youths have no need for environmental education since they do not wish to remain in Kadamaian. Only those willing to remain are those who may need socio-economic knowhow while leveraging on environment understanding.

Conclusion

Kadamaian is an indigenous populated area adjacent to a protected area, the Kinabalu Park World Heritage Site. Because of such proximity, Kadamaian's population is expected to be knowledgeable on matters concerning the conservation of biological diversity. Kadamaian's conservation of the environment and its biological diversity is expected to relate greatly with land-use management and product development. In fact, being an indigenous community living adjacent to a protected area, the community is expected to practice socio-economic development that is compatible with the concept of conservation, regardless of interest of community members. Since Kadamaian is regarded by other regional authorities as a buffer to Malaysia's first world heritage site, its community must have the ability to balance socio-economic demands and environmental obligations. However, they have not improved their socio-economic standing beyond regular approaches because they have no knowledge about the commercialisation of conservation and the monetisation of those natural resources. Hence, to support the government's move from fortress conservation to rights-based conservation, sustainability-based knowledge is needed in Kadamaian. The question about a community's obligation and ability to carry out conservation amid their socio-economy eventually led the community to establish a non-governmental organization (NGO). In the case of Kadamaian's indigenous community, the NGO is called the Melangkap Biocultural Protocol Committee (MBPC). But for MBPC to fulfill its obligation, Kadamaian's youths should be activity involved in conservation. This is where Kadamaian's

problem lies - the migration of youths out of the community. This study suggests that the migration is a behavioural sink in Kadamaian, and its adults need to play a role to resolve this behavioural sink from bring destructive to the community. Since this study was not able to detail the adults' social dimension of dominance and interactions prompting the need for more studies, one possible approach to resolve it is the introduction of a more encompassing concept of conservation apart from the currently popular *Tagal*. A criterion of such an approach is its support towards the sustainability of a community's traditions and culture.

Acknowledgements

The completion of this study could not have been possible without the participation of Kadamaian's indigenous Dusun community, the assistance of the Institute for Tropical Biology and Conservation through the Borneo Geographic Expedition: Kadamaian (Research Grant No. SDK0082-2019), and the support from the Sabah Biodiversity Council (Access License Ref: JKM/MBS.1000-2/1 JLD.3 (248)). These contributions are sincerely appreciated. In particular, gratitude and indebtedness go to Mr. Somiar bin Sula from Kadamaian, En. Izham bin Abu Bakan from UMS and Mdm. Anita Limjoon from IDS. Acknowledgement is also given to the Ministry of Higher Education for funding the research through the FRG0491-2018 research grant.

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