

The Role Analysis of the Physical Environment, Socio-Economic, and the Urgency of Tat Tvam Asi in Collective Resource Management Multicultural Subak

I Gusti Ayu Purnamawati^{a*}
Gede Adi Yuniarta^b
Ni Komang Surya Wahyuni^c

^{a,b} Faculty of Economic, Universitas Pendidikan Ganesha, Bali, Indonesia; ^c Faculty of Law and Social Science, Universitas Pendidikan Ganesha, Bali, Indonesia

Abstract

This study aims to determine the effect of the role of the physical environment, socio-economics and the urgency of governance on the management of multicultural subak collective resources. The type of research is quantitative. The sampling technique used was a random sampling technique determined by the slovin formula—data collection techniques in distributing questionnaires and measured using a Likert scale. The study was conducted in Subak spread across the province of Bali by adhering to multiculturalism, and the sample used in the study was 170. Data or statistical analysis techniques in the study were considered using the Structural Equation Model (SEM) with WarpPLS 5.0 software modelling. The results show that the role of the physical environment does not have a significant effect on the management of the multicultural subak collective resources. In contrast, socio-economics and the urgency of governance significantly affect the management of the multicultural subak collective resources. This research focuses on multicultural subak, which contains the concept of *Tri Hita Karana*, which includes *Parhyangan*, *Pawongan* and *Palemahan* and *Tat Tvam Asi* is an embodiment of love for all beings. These two concepts link the subak organisation to continue to manage spiritually-based collective resources.

Keywords

Physical environment; socio-economic; governance; collective resources; multicultural Subak

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Introduction

Since 1071 AD, an organisational system that handles irrigation in Bali has been known as Subak, and in 2012 Subak was designated as an intangible cultural heritage by UNESCO (Norken et al., 2017). Irrigation has become one of Bali's local wisdom and cultural heritage, widely

known to foreign countries. Subak management is unique resource management, so collective resources can describe how subak plays a role in the welfare of humans and the environment. According to the agreement, all subak members will usually receive water from

planting to harvesting. (Kiper, 2013) the relationship between nature and local socio-cultural and economic conditions and is managed to maintain the ecosystem that has formed into its colour in the identity of the Balinese people. When the central government provides independent policies for local governments, the government and the Balinese people focus on developing their regions based on religious values (Hindersah, 2012). Subak is *Tri Hita Karana* philosophy application, which consists of a balance between humans and God (Parahyangan), fellow humans (Pawongan) and humans with the natural environment (Palemahan) (Sumawidari, 2021). Its embodiment in subak provides benefits such as in terms of culture by carrying out the Magpag Toya ceremony. It contained subak administrators and members or building a holy temple (Bedugul temple) in the subak environment so that a sense of togetherness is formed from a social perspective by making awig-awig or regulations that must be obeyed by all parties involved in the subak organisation as well as holding frequent meetings to create harmony and achieve the desired goals.

Subak is also a place to unite the community, not only Hindus but also Muslims who are also members (Giri & Ardiawan, 2018), so that subak is a form of embodiment of *menyama braya* that puts aside differences in ethnicity, race and religion. Research conducted by (Arjawa & Zulkifli, 2021) shows that in Kampung Islam Bugis Angantiga, the Muslim community participates in Subak activities with Hindus. Society in Bali with multiculturalism creates conditions that allow it to develop in a positive direction and become stronger among human beings. Still, sometimes it can also become a threat to integration (Zarbaliyev, 2017). The existence of multiculturalism creates a beautiful life amid diversity because they are involved in an active interaction and blend into one unit (Vangen & Winchester, 2014).

The urgency of *tat twam asi* is significant in upholding the *pawongan* principle, which is one aspect of *Tri Hita Karana* to establish harmonious relationships with one another and respect the multiculturalism contained in a subak (Ruastitia et al., 2020). *Tat twam asi* reflects human values by forming idealistic morality (Mahendra, 2021) by understanding that all creation comes from His strength and power so that all people are one family. Humans have integrity that must be actualised to show an attitude of tolerance so that this makes beings virtuous and have a character in upholding human values (Widana et al., 2018). The implementation of *Tri Hita Karana and Tat Twam Asi* in the subak system makes us aware that things done in Balinese life must still be based on religious values.

The principles of justice and togetherness are always applied in the maintenance and management of subak, both facilities and infrastructure (Putra et al., 2019), such as water irrigation channels, equitable distribution of water, and equal distribution of planting schedules and plant maintenance. In addition, Subak also adheres to an impingement system, namely by providing irrigation water assistance for members located downstream of rice fields to overcome water scarcity (Sriartha & Kertih, 2019). Religious ceremonies always carried out in Subak operational activities have a basis for expressing gratitude to *Ida Sang Hyang Widhi Wasa* (God) for gift of providing natural resources in the form of land, water, plants, fertilisers that can be processed (Nerawati, 2020). In contrast, Hindus believed that if they acted badly in irrigation water management, they would lead to the law of *Karmaphala*. It is said that currently, indications of the increasingly threatened existence of the subak institution are evidenced by the decreasing land area owned by the Balinese *krama* (Sunarta et al., 2019).

The economy is a social system reality that is continuously and complex. It cannot be predicted from time to time in its development (Kronenberg & Fuchs, 2021).

Subak must continue to act as a traditional agricultural system that includes dimensions of cultural ecology, scientific exploration and the study of nature (Potschin & Haines-Young, 2012). The system of government in Sweden is linked to institutions that make decisions regarding land and water use which provide conditions for preventing land conversion, so communities must have the power to protect agricultural land (Slätmo, 2017). In Bali, agriculture became the dominant industry in the past, but in its development, tourism has taken over from the agricultural industry as the dominant economic driver (Seuneke et al., 2013). The existence of covid-19 that hit Indonesia had a significant impact on every line of life, including in Bali, which was affected by the tourism industry, so a review of the subak regulations was carried out by subak residents. The paralysis of tourism so that the economy slumped also impacted the agricultural sector, especially related to the supply chain of agricultural products, whose distribution was more to hotels and restaurants (Araújo-Vila et al., 2021). In addition to maintaining the existence of subak in tourism, subak members must have a special strategy for maintaining the supply chain of agricultural products to anticipate uncertain conditions in the tourism industry (Parwata et al., 2021).

This study aims to see whether the subak multicultural collective resources influence the physical, socio-economic environment, and governance urgency.

Literature Review

This study uses stakeholder theory to explain how affect the collective resources of multicultural subaks. Freeman in 1984 stated that stakeholder theory makes an institution or organisation's operational activities selfish and must also benefit stakeholders (Tullberg, 2013). Organisations maintain relationships with stakeholders that fulfil stakeholders' wants and needs by utilising all available resources (McNie, 2012). The

implementation of subak activities is based on cooperation or cooperation. It means that subak does not only develop in the economic aspect but also in the socio-cultural, natural and spiritual aspects of the environment. The resources available in the subak area are used optimally, natural resources in the form of water and land are used for subak operational activities (Dewi et al., 2014), human resources by using subak members to carry out operational activities and financial resources by managing the fees charged for each subak member. To maintain relationships with stakeholders, it is necessary to implement financial management and reports within the subak organisation.

Subak belongs to the socio-agricultural and economic field in Balinese society, which regulates the use of irrigation for rice so that most of its members are farmers; this irrigation channel becomes the line of water flow from upstream to downstream sources or farmers' fields (Kesiman & Agustini, 2012). The same as other organisations, of course, Subak also has subak administrators (prajuru), members of subak (krama subak) are then grouped into sekaa, and set written and unwritten rules called Awig-awig and Perarem. Although the majority on the island of Bali are Hindus, on this island, there is also a diversity of religions, races, and cultures, which are more commonly known as multicultural. Multiculturalism also occurs in subak organisations; subak members of different religions still participate in each other to organise and manage agricultural activities.

In overcoming or preventing conflict, an approach through communication by holding regular meetings at the bale subak can strengthen religious harmony (Murni et al., 2019). In the economic sector, although subak members have different religions, they still charge the same fees and fines so that there is no overlap in financial management.

Collective resources are a combination of various resources owned by an area. These

collective resources generally include natural resources, human resources and financial resources. These three resources play an important role in water irrigation, well-known in Bali, namely Subak. Subak manages all existing resources in the subak area to create harmony by the *Tri Hita Karana* concept. (Wijermans & Schlüter, 2014) said that the irrigation system in Bali is related to the socio-ecological field, which focuses on the involvement of humans and the environment, which are closely related and continuous interaction. Subak administrators and members often hold meetings (sangkepan or paruman) as a means of communication in discussing rice planting activities, all of which require collective resources (Garcia-Figuera et al., 2021) consisting of natural resources, namely water, canals/dams or irrigation canals, subak temples; human resources, namely all parties involved in the subak organisation; economic resources or financial resources come from "urunan" funds, punia or collectors.

The third aspect of *Tri Hita Karana*, namely palemahan, relates to the physical environment, which focuses on balance and environmental sustainability. Nature must be considered a fair resource, not exploited, so Subak is expected to regulate and maintain the system in harmony (Gelgel, 2017). According to (Miura & Sarjana, 2016), the subak is becoming an increasingly complex organisation with a network of interrelated rice fields connecting other subaks in the same watershed; this can integrate socio-cultural, spiritual, and economic aspects Balinese society.

All components of the water resources system are interconnected to form a large complex process which is difficult to monitor and predict. (Sriartha & Giyarsih, 2015) in his research found the results that the main factor in the weak ability of Subak in implementing *Tri Hita Karana* is the economic factor. These economic problems include operational and maintenance costs of subak facilities which increase but are not

accompanied by income earned from farming. The perception of farmers in subak institutions says that the role of the economy provides a positive direction. This economic role includes the activities of giving donations, namely good and holy giving, as a unity of the Dharma values of Hinduism. This activity develops the physical environment in subak (Suidarma et al., 2021).

In the *Tri Hita Karana* concept, the Pawongan aspect relates to socio-economic aspects, which creates the concept of harmony among members of Subak even though they are of different races, religions and cultures. The subak system will work according to its objectives if the members understand equality and justice. Rice cultivation is an important part of Balinese ecological and cultural identity. It is agreed by (Lorenzen & Roth, 2015) that the subak system and Balinese culture are interrelated, where both attract tourists to come to visit, which impacts the economy in Bali. The utilisation of tourism can benefit subak members in developing subak socially and economically. More emphasis on the economy in business activities in an area at the expense of social, cultural and ecological will cause the development of the goals to be achieved by the business (Benge & Neef, 2018).

Socio-economic manifestations are linked to collective resources with various activities carried out jointly by human resources, both prajuru and subak members, to establish communication and social interaction (Surata et al., 2020). Activities carried out with subak members realise rights and obligations; obligations are regulated based on water irrigation rights obtained and position in the organisation (Ilwan, 2016). This obligation includes Ngayah activities, paying regular monthly and annual fees according to the agreement and based on awig-awig and additional fees if operational costs are needed in managing Subak.

In the subak system, the principle of "Tat Twam Asi" is also needed between subak members. The principle of tat twam asi is defined as "he is you, I am you and all beings are the same" this teaches about unlimited decency. This guideline displays similarities to universal values by directing tolerant relationships with others; this act better reflects the ethics and morals that each individual must have in interacting with others (Perbowosari, 2019). This becomes the basis for behaviour to make good relations between humans and other humans and be able to respect people who are older and younger (Suryandari et al., 2021). Respect for other individuals is also not based on wealth, where all are considered the same. The harmony created by multiculturalism makes its character compared to other institutions and regions (Arifin & Hermino, 2017).

Pakistan owns one of the best irrigation systems known globally but often suffers from water scarcity problems, so the country operates tube wells with diesel engines (Zhang et al., 2021). Research conducted by (Nunes et al., 2017) shows that the Mediterranean region may experience water scarcity in the future due to climate change, so it is necessary to increase water supply by using irrigation. Subak is an irrigation network managed from the same water source, with resources including facilities and infrastructure. The process carried out from planting seeds to the end of harvest is accompanied by religious ceremonies and subak members (Acabado & Martin, 2016). The allocation and utilisation of irrigation water resources have been optimally distributed (Jiang et al., 2016).

Subak has a physical building that should also be maintained by subak residents, with the involvement of all member components despite the diversity of members (Dewi & Pantiyasa, 2017). The cooperation and tolerance built by jointly maintaining the physical condition of the subak regardless of religion (Lestawi, 2017) are very clearly seen in the examination of the condition of

the dam, the smooth supply of water and the regulation of water distribution.

H₁ = Physical environment affects the collective resources of multicultural subak

Irrigation affects socio-economic factors, which meet the growing global food demand due to an increasing population and changing diet (Schaldach et al., 2012). It indicates that irrigation for agricultural systems includes multidisciplinary energy, irrigation systems and food relations. This multidisciplinary form of interrelated collective resources requires strategies to manage and use them efficiently (Haffaf et al., 2021). More reliable energy solutions are needed by rural communities, so (Shouman et al., 2016) said that photovoltaic power can be used in agriculture to save energy so that socio-economic growth occurs in a country. Photovoltaic power is used more efficiently and cost-effectively than traditional irrigation systems and can improve socio-economic conditions (Rana et al., 2021). (Raza et al., 2022) in his research in Pakistan also stated that photo voltaic-powered irrigation systems save energy, save labour costs, reduce water use, and increase harvest profits to improve farmers' socio-economic quality of life. Optimisation of subak wealth is regulated in awig-awig, which regulates the accountability of activities related to subak finances which become the practice of implementing accountability (Jansing, 2018). The practice of accountability demonstrates tolerance and mutual trust (Yunita & Christianingrum, 2018) between the officers and members of the Subak and the community around the Subak area. Financial information, both reports and physical, is submitted in a transparent and accountable manner every month by the treasurer officer.

H₂ = Socio-economic influence on the collective resources of multicultural subak

Mutual respect for fellow believers is a part of life between individuals and communities today (Samiyono & Suardana, 2018). Meeting activities (sangkep) and

ngayah strengthen the bonds of brotherhood in the subak environment; besides, awig-awig has an important role in building and maintaining social harmony (Indriani, 2020). Accountability that is carried out in the Subak organisation is based on sincerely showing love and affection to all members of Subak (Sujana et al., 2014), where prajuru sincerely carries out their obligations to manage funds and make financial reports as accountability without thinking about the number of wages earned so that this becomes one of the practices of Tat Twam Asi. This prajuru certainly optimises financial management to maintain the trust of subak members; if financial fraud is committed, then both prajuru and subak members believe in the law of karma phala (Apriliani, 2019) in Hindu teachings where this is a reinforcement to maintain the trust that has been given. Tat twam asi motivates the prajurus to manage their finances with humility and feelings of pleasure.

H₃ = The urgency of Tat Tvam Asi affects the collective resources of multicultural subak

Research Methods

Quantitative research is used in this type of research based on the philosophy of positivism, namely, research based on a certain population or sample. The data

collection technique was in the form of distributing questionnaires. The questionnaires in each subak were distributed to four people, namely two prajuru and two multicultural members of different races, religions and cultures. The questionnaire is related to four variables: the physical environment, socio-economics, urgency of governance, and collective resources of multicultural subak and uses a Likert scale of 1-5 points.

Subak spread across the province of Bali by adhering to multiculturalism amounted to 64 subaks. Hence, the population in the study was 320, and the sampling technique used a random sampling sample determined by the Slovin formula with a margin of error of 5%, so the sample obtained was $n=320/1+320(0,05)^2 = 176$. However, it used only 170 samples because six questionnaires were not returned. Data or statistical analysis techniques using the Structural Equation Model (WarpPLS 5.0 software modelling).

The dependent variable used in this study is the collective resources of multicultural subak. For the independent variable, three variables are used, namely the physical environment, socio-economic status and the urgency of governance.

Table 1. The Sample Criteria

The Sample Criteria	Total
Questionnaires distributed	176
Questionnaires that did not return	6
Questionnaires returned	170
Unprocessed questionnaire	0
Questionnaires that can be processed	170

Definition of variables and data sources: (1) Multicultural subak collective resources is The traditional rice field irrigation system in Bali uses the *Tri Hita Karana* concept, which utilises natural resources, human resources and financial resources, as well as the Tat Tvam Asi concept in respecting racial, religious and cultural diversity (Norken, 2019); (2) Physical environment is

all conditions that exist around human life, both the natural and artificial environment that affect directly or indirectly (Kaushal & Rhodes, 2014); (3) Socio-economic is a person's position in society is determined based on economic activity, education and income (Stukalo & Simakhova, 2018); (4) The Urgency of Tat Tvam Asi is Hindu religious, moral teachings with the

philosophy of "I am you, you are me", which is based on the values of equality, tolerance, social empathy and others that make people's lives harmonious (Putri, 2021). Research Model:

$$\eta = \eta\beta + \xi\Gamma + \beta_1\xi_1 + \beta_2\xi_2 + \beta_3\xi_3 + \varepsilon$$

Information:

- η = Multicultural subak collective resource
- $\eta\beta$ = Coefficient of endogenous variable matrix

- $\xi\Gamma$ = Exogenous variable matrix coefficient
- $\beta_1\xi_1$ = Physical environment
- $\beta_2\xi_2$ = Socioeconomic
- $\beta_3\xi_3$ = The Urgency of Tat Tvam Asi
- ε = error disturbance (confounding variable)

Evaluation of Outer Model Test

The outer model is used to test the validity and reliability of a research instrument (Wong, 2013). The validity criteria are met if the loading value = 0.6.

Table 2. Convergent Validity

Variable	Indicator	X1	X2	X3	Y	P-value
Physical environment (X1)	X1.1	0.812*	0.075	-0.056	-0.106	<0.001
	X1.2	0.854*	0.163	0.129	-0.077	<0.001
	X1.3	0.847*	-0.183	-0.048	0.068	<0.001
	X1.4	0.839*	-0.211	-0.096	0.240	<0.001
	X1.5	0.865*	0.001	0.114	0.067	<0.001
	X1.6	0.682*	0.191	-0.061	-0.241	<0.001
Socioeconomic (X2)	X2.1	-0.025	0.899*	-0.008	0.195	<0.001
	X2.2	-0.054	0.883*	-0.044	0.145	<0.001
	X2.3	-0.021	0.902*	-0.084	-0.092	<0.001
	X2.4	0.016	0.865*	0.103	0.044	<0.001
	X2.5	0.004	0.863*	0.017	0.160	<0.001
	X2.6	0.086	0.843*	0.021	-0.470	<0.001
The Urgency of Tat Tvam Asi (X3)	X3.1	0.011	-0.326	0.849*	0.322	<0.001
	X3.2	-0.070	0.017	0.788*	0.123	<0.001
	X3.3	0.070	0.179	0.851*	-0.171	<0.001
	X3.4	0.030	0.337	0.618*	-0.194	<0.001
	X3.5	-0.038	-0.112	0.869*	-0.121	<0.001
Multicultural subak collective resource (Y)	Y.1	-0.051	0.321	-0.138	0.857*	<0.001
	Y.2	-0.078	0.045	-0.002	0.807*	<0.001
	Y.3	0.076	-0.355	0.113	0.865*	<0.001
	Y.4	0.050	-0.005	0.027	0.835*	<0.001

Source: Processed Data

Based on table 2, it is known that the validity criteria is met. The table 2 shows that the AVE value of each variable from 170 respondents is greater than the

correlation between latent variables in the same column. It shows that it can accept discriminant validity.

Table 3. Discriminant validity

<i>Correlations among l.vs. with sq. rts. of AVEs</i>				
	X1	X2	X3	Y
Physical environment (X1)	0.819*	0.073	-0.054	0.072
Socio-economic (X2)	0.073	0.876*	-0.818	0.807
The Urgency of Tat Tvam Asi (X3)	-0.054	-0.818	0.801*	-0.789
Multicultural subak collective resources (Y)	0.072	0.807	-0.789	0.841*

Source: processed data

Validity and reliability are also measured through two instruments: composite reliability and Cronbach's alpha. Composite reliability is a value that measures the stability and consistency of the combined reliability measurement, and the questionnaire has high composite reliability if the composite reliability value is 0.8.

Meanwhile, Cronbach's alpha on each variable must be above 0.6 to accept internal consistency reliability. In table 3, the composite reliability value of each variable is > 0.8 , and the Cronbach's alpha value of each variable is > 0.6 . It is concluded that all variables have met the reliability criteria.

Table 4. Latent Variable Coefficients

	X1	X2	X3	Y
R-squared coefficients				0,790
Adjusted R-squared coefficients				0,786
Composite reliability coefficients	0,924	0,952	0,898	0,906
Cronbach's alpha coefficients	0,900	0,939	0,856	0,862
Average variances extracted	0,671	0,767	0,641	0,708
Full collinearity VIFs	1,006	2,998	3,280	2,371
Q-squared coefficients				0,791

Source: Data Processed

Table 4 obtained information in the form of R-square in the study of 0.790, which means that 79% of the subak multicultural collective resource variables can be explained by the physical environment, socio-economic variables, and urgency of governance. In comparison, the remaining 21% is influenced by another variable. In the value of full collinearity VIFs as the result of the full collinearity test, which includes vertical and lateral multicollinearity, the criteria must be less than (< 3.3), the output results show a value

less than (< 3.3), and the value of full collinearity VIFs are accepted. In the measurement of Q-square coefficients used as an assessment of predictive validity, which can be negative and have a value greater than (> 0), the results of the study show a value greater than (> 0) so that it is declared valid.

Evaluation of the Inner Model Test

If the inner model test meets the required standards, the research is declared good (Kock, 2015). In table 5, there are test items and standard test values of the inner model used to measure the model's strength.

Tabel 5. Model Fit and Quality Indices

No.	Model Fit and Quality Indices	Fit Criteria	Indeks	Description
1	Average path coefficient (APC)	$p < 0.05$	0,311	Fulfilled
2	Average R-squared (ARS)	$p < 0.05$	0,790	Fulfilled
3	Average adjusted R-squared (AARS)	$p < 0.05$	0,786	Fulfilled
4	Average block VIF (AVIF)	acceptable if ≤ 5 , ideally ≤ 3.3	3,046	Fulfilled
5	Average full collinearity VIF (AFVIF)	acceptable if ≤ 5 , ideally ≤ 3.3	3,214	Fulfilled
6	Tenenhaus GoF (GoF)	small ≥ 0.1 , medium ≥ 0.25 , large ≥ 0.36	0,742	Fulfilled, category <i>large</i>
7	Sympson's paradox ratio (SPR)	acceptable if ≥ 0.7 , ideally = 1	1,0	Fulfilled
8	R-squared contribution ratio (RSCR)	acceptable if ≥ 0.9 , ideally = 1	1,0	Fulfilled
9	Statistical suppression ratio (SSR)	acceptable if ≥ 0.7	1,0	Fulfilled
10	Nonlinear bivariate causality direction ratio (NLBCDR)	acceptable if ≥ 0.7	1,000	Fulfilled

Sources: Data Processed

The output results presented in Table 5 show the model fit and quality indices for all criteria for the values of APC, ARS, AARS, AVIF, AFVIF, GoF, SPR, RSCR, SSR to NLBCDR have met the criteria so that the structural model can be accepted and used as analysis.

Results and Discussion

Figure 1 shows a direct relationship for the variables studied. The results of the direct influence test in this study which are shown in Figure 1 and Table 5, are interpreted as follows:

1. The value of path coefficients from the physical environment to the collective resources of the multicultural subak is 0.020, and the p-values are $0.396 > \alpha$ a significance level of 0.05; it is stated that

the physical environment has no significant effect on the collective resources of the multicultural subak.

2. The path coefficient values from socio-economic to multicultural subak collective resources are 0.659, and p-values are $0.001 < 0.05$. It is stated that socio-economics significantly affects multicultural subak collective resources.
3. The value of the path coefficients from the urgency of tat tvam action towards the collective resources of multicultural subak is -0.252, and the p-values are $0.001 < 0.05$ significance level; it is stated that the urgency of tat tvam has a significant effect on the collective resources of multicultural subak.

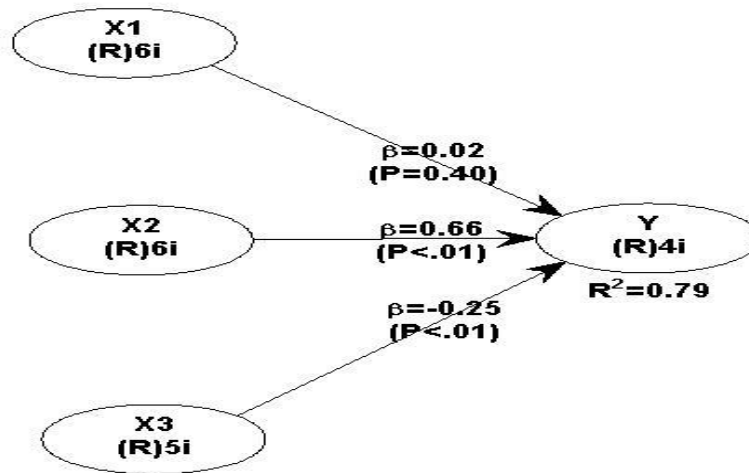


Figure 1. The direct effect results

Table 6. Path Coefficients and p-values

Variable	Criteria		Information
	Path coefficients	P Values	
Physical environment (X1)	0,020	0,396	No-significance
Socio-economic (X2)	0,659	< 0,001***	Significance
The Urgency of Tat Tvam Asi (X3)	-0,252	< 0,001***	Significance

Source: processed data

Subak is a local irrigation institution born from the agricultural culture in Bali and carried the philosophical concept of *Tri Hita Karana*, which means three causes of happiness. The existence of a system carried out in terraced rice fields becomes local wisdom that has social norms and values and economic value because it is a tourism area that impacts sustainable development and maintained ecosystems (Marhayani, 2016). Subak, which is multicultural, gives the role of social ties between communities.

Based on the results of the study shows that the first hypothesis is rejected, which means that the physical environment does not affect collective resources, such as research conducted by (Tariq et al., 2020) that sometimes an increase in water resources

available in the irrigation system causes inefficient use of water, resulting in a decrease in productivity plant water. The physical environment in subak irrigation in Bali continues to be under threat, where land or land as one of the physical environments has increasingly changed functions (Lorenzen, 2015). The transfer of functions carried out includes the construction of hotels, homestays and restaurants, which are considered more economically profitable. It means that when the physical environment experiences a scarcity of water or increasingly narrow land, it does not affect the collective resources of a subak area (Berto, 2014). Money is indeed managed by the subak, which is mostly used for religious ceremonies related to the operational activities of the subak (Anom et al., 2020).

However, suppose religious ceremonies only guide it without knowing the strong ecological, social, and cultural capital. In that case, collective resources cannot be used properly and cannot strengthen the contribution of conservation efforts at the local level (Zen et al., 2019).

While the results of the research based on the second hypothesis are accepted, which means that socio-economic influences on collective resources, where the money earned from subak members both from contributions, fines and the government must be managed properly and reported in transparency and accountability (Trawick et al., 2014). The sangkepan that was held as much as possible was resolved with "parasparos selunglung sebayantaka sarpanaya", which means share good, bad, heavy or light. In addition, water is one of the important natural resources in life; it also supports economic development and community welfare (Cosgrove & Loucks, 2015). As stated by (Rahman & Bulbul, 2015), producing more rice by utilising water irrigation can achieve food, social and economic security in Bangladesh. It means that there is a positive relationship between socioeconomic development and the use of irrigation water in most areas (Nechifor & Winning, 2017); (Lawal, 2017); (Ohlan, 2013).

The results of the third study stated that the third hypothesis was accepted, in which the urgency of governance affects collective resources. Tat twam asi in Hindu teachings related to atman and Brahman (God) is then applied to ethical teachings in behaviour (Divayana et al., 2020). The teachings of tat tvam asi create equality and morality (Purnamawati. & Adnyani, 2021) between individuals so that they have a love for one another. Tat Twam Asi teaches us to love nature or the environment. This implied meaning implements tat twam asi produce results with a harmonious life, complementing and protecting each other, and achieving a prosperous life (Segara, 2018). In a social sense related to finance, individuals who play an important role in

managing finances and making financial reports must prioritise all parties who use financial statements internally and externally (Yasa et al., 2020). Previously, finance was only a guide to social, cultural, political and economic aspects. Still, when implementing the Tat Tvam teachings, religion was involved in these aspects so that the presentation of financial statements was responsible for humans and God (Sudarma & Darmayasa, 2018). Likewise applied in subak organisations, the teachings of Tat tvam asi teach prajurus to be responsible for the financial management of subak members and Ida Sang Hyang Widhi Wasa (Ulum & Firdausi, 2021); (Bruns, 2013).

Conclusions, Implications and Limitations

The three independent variables in this research provide different results. The physical environment shows the study results that this variable has no significant effect on the collective resources of the multicultural subak. In contrast, the second variable provides the research results that socio-economics has a significant influence on the collective resources of the multicultural subak. The third variable provides the study results that the urgency of governance has a significant effect on multicultural subak collective resources. The existence of multicultural subak is the implementation of the *Tri Hita Karana* concept to form balance and harmony in optimising collective resources. The concept contained in *Tri Hita Karana* emphasises strong trust so that accountability also strengthens social and environmental sustainability relationships (Vehtasvili, 2017). The financial management practice applied to subak is more directed to morality based on honesty, empathy, compassion and love, which are taught in the Tat Tvam Asi concept, which arises from the individual himself. It is a motivation in the subak organisation not to focus on the economic field but must also be responsible to God (Kian, 2018), considering the law of Karmaphala. Accountability in this subak is inseparable

from cultural and religious values as instruments in accountability for yadnya activities. The limitation in this study lies in the variables that are used only three independent variables: the physical environment, socio-economics, and the urgency of governance. It does not show a role in utilising collective resources for multicultural subak.

Notes on Contributors

I Gusti Ayu Purnamawati are lecturer with the research interest in Accounting, Business, Financial, Management, and Economics.

Gede Adi Yuniarta are lecturer with the research interest in Accounting, Business, Financial, Management, and Economics.

Ni Komang Surya Wahyuni is a senior administration staff with the research interest in Social Science.

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