A Sustainable Value of Vernacular Architecture and Coffee Culture for Coffee Value Chain with Case Study Toraja

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Abstract. Tongkonan, a Toraja vernacular architecture, reflects the tangible and intangible value of the social, economic, and political lives. Furthermore, the coffee culture, together with the Tongkonan, is part of the cultural landscape. For most Toraja people, coffee considers a primary income, but the current coffee value chain is operated in a long linear path. It has not been taken care of in a sustainable way, and the essential thing the coffee value chain has not adopted the local wisdom point of view on creating the roots and the link. Based on the coffee value chain's urgency to be sustainable growth, this research aims to formulate a framework of a community-based sustainable coffee value chain by analyzing the intangible value of vernacular architecture and coffee culture. This research is conducting using qualitative research methodology. It employs a case study approach as a method of collecting and analyzing data. The finding shows that Toraja vernacular architecture's intangible value is the root of the Toraja coffee culture. It will be the base of the societal structure and culture concept to fill the coffee value chain's circular economy gap.

Keywords: Toraja vernacular architecture, sustainable architecture, Toraja coffee culture, circular economy, coffee value chain

1. Introduction

Indonesia grew coffee as one of the essential commodities since circa 1669 [1] and is known as the big five world's largest coffee producers [2]. The research found that the current coffee value chain is operated on a long linear path and has not adopted the local wisdom point of view.

A new phenomenon of the circular economy that introduces as the most sustainable approach, an essential field of academic [3], stood out as a compelling alternative to the unsustainable linear economy [4] for the coffee value chain. It left the thought that the framework does not cover the social value: societal structure and culture underlying world-views, and the paradigmatic potential mainly unexplored [5], and our societies are on a dangerously unsustainable track [6]. There is a gap to fulfill the circular economy framework to be sustainably applied and implanted for the coffee value chain. The idea of the circular economy has recently gained significance on policymakers' agendas to resolve these and other sustainability issues. [7]
The research aims to formulate a community-based sustainable coffee value chain framework by analyzing the intangible value of vernacular architecture and coffee culture as the base for understanding the social value with case study Toraja to cover the gap of societal structure and culture of the circular economy.

The vernacular architecture and the coffee culture are viewed as one frame in the cultural landscape to be analyzed related to the indigenous people. Via human activity over decades, cultural landscapes have been made more biologically diverse. They are the roots of systems for food production and living gene banks for tomorrow's food crops. [8] The research will focus on vernacular architecture's intangible value for its deep thought of societal structures and cultures underlying the design and its relation to the coffee culture.

For decades, the intangible value of Toraja vernacular architecture has survived. It relates and associates with the Toraja coffee culture that is rooted as one cultural landscape. It affects the way smallholder coffee farmers in some areas in Toraja, maintaining the quality of the coffee.

"A value chain represents a chain of activities that an organization performs to deliver a valuable product for the market" [9]. Research and development in the value chain have often been concentrated too narrowly on the structural elements of production, resulting in a lack of adaptive ability. [10] Smallholder producers, large plantation plantations, village collectors, dealers, mill operators, exporters, and coffee roasting and processing companies are the numerous players involved in the coffee industry and are incorporated into a global coffee value chain. [11]

This study sets its cultural themes as the intangible value of Toraja vernacular architecture and coffee culture in the same frame of the Toraja cultural landscape. The issue to be covered: the relation and the association of the intangible value of Toraja vernacular architecture and coffee culture.

2. Method
This research is conducting using qualitative research methodology. It employs a case study approach. It started with the preliminary observation and study literature, continued with formulating the research aim, and setting the research theme and issue. The research continued by making the research design, doing the literature review, observing, and analyzing to have a substantial finding and conclusion. Finally, rechecked the synchronization of the conclusion to the research aim, theme, and issue.

![Figure 1. Research Design. [12]](image-url)
3. Result and Discussion

The cultural landscape of Tana Toraja also reflects the traditional socio-political organization. "One might call the region a federation, a community with its own traditions and, in certain respects, its own adat" [13].

The classification system of Toraja may not be systematized, at least not in any way that complies with Western expectations, but its accuracy is unsurpassed in essential respects: it places man in a world that is as much a synthesis of parallels and contradictions as he is himself. [13]

Figure 2 shows the schematic representation of Sa’ dan-Toraja cosmology. This schematic drawing reflects an attempt to visualize how the cosmos is understood. A cross-section, top, center, and lower, of the three realms, is shown. [13]

![Figure 2. Schematic representation of Sa’ dan- Toraja cosmology. [13]](image)

Tongkonan (Figure 3) is a vernacular architecture of Toraja people, one of the earliest group of people who first came to Indonesia archipelago, that have wastu widya, technically practices [16] (tangible) and wastu citra, deeply spiritual [16] (intangible) meaning of the social life, the economic, political life of Toraja People, and the cultural surroundings. It is seen as four paradigms: cosmology, socio-political organization, symbolic meaning, and typology of architecture.

The unique Toraja architecture concept is also part of society. It can explain society through design and is the center of the social and religious activities that provide shelter and a (sub) ramage seat. [13]

The Toraja shows in a typical way what Claude Levi-Strauss had called a house-society in his first treatment of the phenomenon with its accessible, cognitive social organization. It is the connection to a
house that offers a point of orientation for the Toraja. It is the house that ensures stability in their ever-fluctuating family relationships, which often depend on personal choices. In the eyes of the people, its physical structure and the modern transformations are so significant. [17]

The Tongkonan of Tana Toraja is a living heritage. They go beyond the definition of 'home,' which is considered by local families to be living icons who focus on preserving their religious, cultural, and environmental traditions. In the Tana Toraja landscape, the Tongkonan does not exist in isolation. The view of the villages of Tana Toraja-sweeping roofs of parallel Tongkonan rows constructed at the foot of a hill where ancestors are buried and surrounded by communal rice fields-shows the local population's long relationship with their climate. The landscape reveals a deep relationship that has existed for centuries with nature. The preservation of the genius locus of the villages of Tana Toraja goes beyond the security of the dwellings' unique architecture. It means maintaining a complete lifestyle while trying to make the conventional lifestyle continue to be necessary, seriously threatened by pressures from the 21st century (Villalon, 2001:3). [18]
Aluk sana pitonna, the sustainable intangible value of Tana Toraja, is based on the 7777 article regulating the relationship between humans, plants, and animals in a rule called aluk talluLolona a wise and meaningful natural resources management. It focuses on three life shoots: humans, plants, and animals, that means sustainability in one complete ecosystem. The Tongkonan, the Toraja vernacular architecture, is a cosmic and visible symbol of the intangible values of aluk tallu lola. [24] Through the material symbols (Figure 4), Tongkonanan becomes the visualization of the intangible values. The house Tongkonan and the complete ecosystem are blended in the whole cultural landscape.

Besides its vernacular architecture, Toraja is known as one of Indonesia's biggest coffee producers and specialty coffee producers. Toraja coffee is respected among the Toraja people as part of their daily culture and is a precious commodity in Indonesia. Most coffee plantations in Toraja are a small community-based estate and processing as a family business (Figures 5 and 6). Based on Van Dijk's information, since the beginning of the 17th century, Toraja people knew and started to grow coffee [25] and since that, almost all of them depend on their economy's life through coffee.

Coffee culture in Toraja is an embedded culture that came along with the vision to broaden the area of the coffee plantation by the Dutch imperial through the Dutch trading company VOC (Vereenigde Oostindische Compagnie).

Circa1670 coffee was planted the second time by the VOC in Java, following the first in 1669 that failed to grow. In 1711, VOC exported coffee for the first time. It was a success story, and they decided to grow the coffee in other areas in Indonesia. In 1750 for the first time, coffee was planted in Celebes (Now Sulawesi). [1]

Besides the VOC's success story, the Cultuurstelsel (Cultivation System) was a dark history for Indonesian farmers. They were pushed to plant coffee to pay tax; the coffee price was set at the lowest price for the farmers. [26]

Smallholder farmers, large plantation plantations, village collectors, merchants, mill operators, exporters, and coffee roasting and processing companies are all active in Indonesia's coffee industry and are integrated within the global coffee value chain.[11]

Coffee is often grown by farm households for whom coffee is part of a larger subsistence strategy, and in some instances, coffee is a backyard crop where a family maintains only a few hundred trees. For the subsistence of the family, other sources of farm-based income can be equally crucial. Farmers who have access to alternative income opportunities also regard coffee cultivation unfavorably. [11]

Meanwhile, there are three approaches of environmental concepts in trans-disciplinary research that could be adopted for the coffee value chain: "concepts based on Natural environment, concepts based on inter-generational sustainability, concepts based on the models of economic production and consumption" [27]. Centered on take-and-dispose operations, the conventional linear economic paradigm has been widely accepted as unsustainable and unable to fulfill current environmental, social, and economic needs. [28]

Alongside these three approaches, the circular economy considers as a contemporary and the most recent sustainable approach based on the primary approach of environmental concept. The research found a gap in societal structure and culture to be fulfilled for the sustainable coffee value chain.

The concept of the circular economy is not new. It has deep-rooted origins that cannot be claimed as one date or the author [29]. The circular economy concept has been refined and developed by seven schools of thought: the cradle to cradle framework, the performance economy, biomimicry, industrial ecology, natural capitalism, blue economy, generative design (Figure 7) [29].

Culture has not been part of the fundamental thought of the seven schools of thought in which circular economy refined and developed, although "circular economy represents an economic and political challenge, as well as a culture one" [30]. "Many concepts, along with their different vocabularies, have been used to enable this intermeshing of disciplines addressing contemporary environmental challenges. Three of them are environmental sciences, sustainable development, and the more recently circular economy" [27].

Although the culture embeddedness has been considered in some micro-level such as in the coffee shop, fashion, new plastic, it still mainly unexplored, especially in the coffee value chain, which means
the framework of the circular economy has not been accomplished in closing the loop. The gaps in the matter of culture and societal structures are still mainly opened.

![Circular Economy Diagram](image)

**Figure 7.** Ellen MacArthur Foundation's circular economy model. [29]

Figure 8 represents the conceptual framework – the link between the Toraja cultural landscape consisting of Toraja vernacular architecture and Toraja coffee culture. An environmental concept in trans-disciplinary research consists of the circular economy.

The research's cultural theme is an intangible value of Toraja vernacular architecture and coffee culture in the same frame of Toraja cultural landscape, with an issue to be covered: the relation and the association of the intangible value of Toraja vernacular architecture and coffee culture.

The Toraja vernacular architecture, Tongkonan, is a visible symbol of the societal structure and culture with an intangible value.

![Conceptual Framework Diagram](image)

**Figure 8.** Conceptual framework. [31]

4. Conclusion
The Tongkonan, the Toraja vernacular architecture, is the visualization of the intangible value of the social structure and culture of Tana Toraja as a symbol of Toraja's life philosophy. The Tongkonan is the reflection of the concept of the intangible value establishment. Thus, the Tongkonan is the starting point and the root of coffee culture in Toraja. The concept of Tongkonan will be the base of the societal structure and culture concept to fill the gap of the circular economy framework for the coffee value chain in Tana Toraja. The finding will shape the Toraja's coffee value chain based on the indigenous approach.

For future research, the complete system of the indigenous approach's embedded values in the circular economy framework will strengthen the value chain in any sector.

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