

Integration of Local Wisdom and Leadership in Community Empowerment Toward Sustainable Circular Economy in Sumowono

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Abstract: This study examines the integration of local wisdom in community empowerment as a pathway toward a sustainable circular economy in Sumowono District, Semarang Regency. Using a qualitative narrative approach, it analyzes how transformational leadership, community empowerment, local wisdom, and collective consciousness interact in creating systemic change. Data were collected through in-depth interviews with community leaders, farmer group heads, and local wisdom practitioners, as well as participant observation to understand the socio-cultural context. The findings reveal that the Sumowono community practices circular economy principles through intercropping systems, reuse of organic materials, and community-based resource management. Transformational leadership is collective and rooted in communal values, functioning as a cultural bridge that aligns modern concepts with local traditions. Genuine community empowerment emerges from recognizing and revitalizing local capacities rather than importing external solutions. The transformation of collective consciousness enables a paradigm shift from linear to circular thinking through shared learning and spiritual reflection. The integration of these four elements forms a synergistic and resilient model that reinforces sustainability through continuous feedback loops, aligning ecological balance with social and cultural harmony (Ostrom, 2015; Berkes, 2018).

INTRODUCTION

The contemporary sustainable development paradigm faces a fundamental dilemma that questions the effectiveness of the linear economic model in addressing the global socio-ecological crisis. The transformation towards a sustainable circular economy requires not only technological and policy changes, but also a profound transformation in the way communities understand, experience, and practise their relationship with the environment (Ellen MacArthur Foundation, 2019; Kirchherr et al., 2017). In this context, community empowerment based on local wisdom emerges as a paradigmatic alternative that offers a way out of the stagnation of conventional development through the revitalisation of communal values and time-tested traditional ecological knowledge (Anand & Sen, 2020).

In response to this paradigmatic crisis, transformational leadership becomes a critical catalyst in this transformation process, not merely as a managerial instrument, but as a spiritual force capable of inspiring communities to rediscover their ecological identity that has been obscured by modernity (Bass & Riggio, 2016). This situation has arisen because the dominant development narrative has neglected the cultural and spiritual dimensions of the relationship between humans and nature, creating alienation that has led to environmental degradation and structural poverty in rural areas (Berkes, 2018; Ostrom, 2015). Interestingly, the experiences of traditional communities show that the circular economy is not a new concept, but rather a way of life that is deeply rooted in holistic and regenerative local knowledge systems.

This complex reality is clearly evident in Central Java, particularly in rural areas such as Sumowono District, which represents the complexity of development issues that cannot be understood through a quantitative approach alone. The life of the Sumowono community is a long narrative of the struggle to maintain cultural identity amid the pressures of homogenising modernisation (Putnam, 2020). The abundant natural resource potential in this region is not merely a statistical figure, but an integral part of a complex system of life where each element is interconnected in a network of profound meaning. However, the official narrative of development often reduces this complexity to economic indicators that are separated from their socio-cultural context (Coleman, 2018).

The paradox of development in Sumowono becomes even more apparent when data from the Central Statistics Agency showing that 25% of Sumowono's population lives below the poverty line must be read not only as a number but as a reflection of the systematic marginalisation of traditional sustainable ways of life (BPS Kabupaten Semarang, 2023). This poverty is paradoxical because it occurs amid abundant natural resources and ecological knowledge. Furthermore, in-depth observations show that the root of the problem lies in the disconnect between the local knowledge system and modern economic practices imposed from outside without considering the local cultural context (Giddens, 2019).

This disconnect manifests itself in agricultural practices that are increasingly dependent on external inputs such as chemical pesticides and synthetic fertilisers, which is not merely a technical issue, but a reflection of the erosion of people's trust in their own traditional wisdom (Purnomo et al., 2023). The transformation from complex intercropping and agroforestry systems to simple monocultures illustrates a process of simplification that eliminates the ecological and economic resilience of communities. This change did not occur because traditional systems were ineffective, but rather because of structural pressures that deprived communities of access to markets that valued the sustainable and diversified products they produced (Folke et al., 2016).

Consequently, leadership at the community level experiences a crisis of legitimacy as it is caught between the demands of modernisation and the responsibility to preserve traditions. Local leaders face the dilemma of articulating a vision for the future that integrates progress with the preservation of cultural identity (Wijayanti & Pratama, 2020). In this context, transformational leadership is not about applying a universal leadership model, but rather about the ability to revive collective consciousness about the regenerative potential contained in local wisdom (Northouse, 2021). This leadership challenge has implications for understanding community empowerment in the context of Sumowono, which cannot be understood as a transfer of capacity from outside, but rather as a process of recognition and revitalisation of existing capacities that have been marginalised by the dominance of mainstream development narratives (Zimmerman, 2020). The Sumowono community has a tradition of mutual cooperation, a community-based resource management system, and sophisticated ecological knowledge, but none of this is recognised in the formal development framework, which is biased towards Western modernity (Rappaport & Swift, 2017).

Ironically, sustainable circular economy in Sumowono's local narrative has actually been practised in the form of exchange systems, reuse of organic materials, and production cycles that follow the rhythms of nature. However, these practices are not labelled as "modern" and are therefore considered outdated and in need of replacement (Geissdoerfer et al., 2017). Ironically, when the

concept of the circular economy was introduced as a global innovation, local communities had to relearn what they already knew under a different name and in a different way (Korhonen et al., 2018). Faced with the complexity of this issue, a research approach is needed that is capable of capturing the dimensions of meaning, value, and life experiences of communities that cannot be quantified. The qualitative narrative approach is the methodological choice because of its ability to understand social reality as a complex and contextual construction of meaning (Creswell, 2018). Through narrative, the fragmentary experiences of communities can be woven into coherent stories that reveal patterns of meaning hidden behind development statistics (Riessman, 2018).

Therefore, this study departs from the belief that the transformation towards a sustainable circular economy requires more than just behavioural change or the adoption of new technologies. True transformation requires a change in consciousness that enables communities to see themselves not as objects of development, but as subjects who have knowledge, capacity, and a vision for a sustainable future (Freire, 2018). Local wisdom in this context is not merely technical knowledge about agriculture or resource management, but a holistic worldview that understands humans as an integral part of the ecosystem (Berkes, 2018).

Within this framework, transformational leadership relevant to the Sumowono context is leadership that is able to articulate a regenerative vision that integrates material progress with the preservation of spiritual and cultural values. Transformational leaders in this context are not individuals who bring change from outside, but catalysts who help communities rediscover the transformative potential contained in their traditions and collective experiences (Burns, 2018). In line with this, authentic community empowerment in this context is a process that enables communities to reclaim their agency in determining the direction of development through recognition of local knowledge systems, strengthening of traditional institutions that are still relevant, and creation of spaces for dialogue where the voices of the community can be heard in the development planning process (Murray et al., 2019).

Based on this deep understanding, this study aims to explore how the integration of local wisdom in community empowerment can become a pathway towards authentic and contextual sustainable circular economy transformation. Through a narrative approach, this study seeks to uncover the hidden stories of transformation in the lives of the Sumowono community, with the hope of providing valuable insights for the development of a more inclusive and sustainable empowerment model.

Literature Review

The transformation towards a sustainable circular economy requires a holistic approach that integrates social, economic, and environmental dimensions through community empowerment based on local wisdom. This study examines the transformative mechanisms in which transformational leadership acts as a catalyst in mobilising the community's potential to adopt circular economy practices (Bass & Riggio, 2016; Ellen MacArthur Foundation, 2019).

Local wisdom, as an accumulated knowledge system that has developed over generations, provides a solid foundation for the development of contextually relevant and culturally appropriate sustainable solutions (Berkes, 2018). Community empowerment in this context focuses not only on capacity building but also on strengthening social capital and collective efficacy to drive systemic transformation (Zimmerman, 2020). The integration of these four concepts creates a synergistic effect that enables rural communities such as Sumowono to overcome the development paradox where resources are abundant but community welfare is low. The literature review shows that the success of circular economy transformation is highly contingent on the quality of local leadership, the strength of community networks, and the ability to integrate traditional wisdom with modern sustainable practices (Kirchherr et al., 2017; Ostrom, 2015).

This study is built on a theoretical foundation that integrates Ostrom's (2015) social-ecological systems theory, Giddens' (2019) social transformation theory, and Bass & Riggio's (2016) transformational leadership theory. Social-ecological systems theory emphasises the importance of dynamic interactions between humans and the environment in creating sustainability through adaptive

governance and collective learning processes. Social transformation theory explains how social structures can change through empowered human agency, creating a duality of structure where individuals are both shaped by and shaping social structures. Transformational leadership theory provides a framework for understanding how leaders can inspire and mobilise followers to achieve higher-order goals through idealised influence, inspirational motivation, intellectual stimulation, and individualised consideration. These three theories synergistically form a comprehensive theoretical framework for understanding the mechanics of transforming the circular economy through community empowerment based on local wisdom. The integration of these theories explains how local wisdom as embedded knowledge can be revitalised through transformational leadership to encourage community empowerment, which ultimately leads to the adoption of a sustainable circular economy (Folke et al., 2016; Coleman, 2018).

Community Empowerment

Community empowerment is a multidimensional process that involves increasing the capacity of individuals and communities to control the factors that affect their lives through the development of critical consciousness, participatory skills, and collective action capabilities (Rappaport & Swift, 2017). Zimmerman (2020) conceptualises empowerment as a multilevel construct operating at the individual level (psychological empowerment), organisational level (empowered organisations), and community level (community empowerment).

In the context of the circular economy, community empowerment functions as an enabling mechanism that facilitates the adoption of sustainable practices through the enhancement of local capacity, strengthening of social networks, and mobilisation of collective resources for environmental stewardship (Murray et al., 2019). Freire (2018) emphasises that true empowerment requires critical pedagogy that enables communities to understand the root causes of their problems and develop locally relevant solutions. Empirical research shows that effective community empowerment in a sustainability context requires a combination of bottom-up initiatives from the grassroots level with top-down support from institutional actors, creating synergistic partnerships that facilitate

systemic change towards circular economy adoption (Craig & Mayo, 2016; Hickey & Mohan, 2018).

Indigenous Knowledge

Local wisdom or indigenous knowledge is a holistic knowledge system that develops through direct contact with the environment, accumulated over generations through cultural transmission and adaptive learning processes (Berkes, 2018). UNESCO (2017) defines indigenous knowledge as "a dynamic body of knowledge, practices and beliefs evolving by adaptive processes and handed down through generations by cultural transmission" that reflects the intimate relationship between communities and their local ecosystems.

Indigenous knowledge has unique characteristics, namely contextual specificity, a holistic worldview, and adaptive capacity, which make it highly relevant to sustainable development initiatives (Gadgil et al., 2019). In the context of the circular economy, indigenous knowledge provides foundational principles for resource conservation, waste minimisation, and ecosystem preservation that align with circular economy principles (Reid et al., 2021). Traditional ecological knowledge encompasses an understanding of ecological processes, sustainable resource management practices, and cultural values that support environmental stewardship. However, the integration of indigenous knowledge with modern sustainability approaches requires careful attention to power dynamics, cultural sensitivity, and mechanisms for knowledge validation that ensure authenticity and practical relevance in contemporary development contexts (Smith & Reid, 2018; Huntington, 2020).

Sustainable Circular Economy

The sustainable circular economy is a regenerative economic model that aims to eliminate waste and maximise resource efficiency through the implementation of reduce, reuse, recycle principles in closed-loop systems (Ellen MacArthur Foundation, 2019). Geissdoerfer et al. (2017) define the circular economy as "a regenerative system in which resource input and waste, emissions, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops through long-lasting design, maintenance, repair, reuse,

remanufacturing, refurbishing, and recycling". This concept represents a paradigm shift from the linear take-make-dispose model towards a sustainable economic system that mimics natural ecosystems (Kirchherr et al., 2017).

Circular economy sustainability integration encompasses environmental dimensions (resource conservation, pollution prevention), social dimensions (community engagement, social equity), and economic dimensions (value creation, economic resilience) that collectively contribute to sustainable development goals (Korhonen et al., 2018). In a community context, circular economy implementation requires the transformation of production systems, consumption patterns, and waste management practices, supported by strong community participation, appropriate technology adoption, and supportive policy frameworks (Morseletto, 2020; Winans et al., 2017).

Transformational Leadership

Transformational leadership is a leadership approach that focuses on inspiring and motivating followers to achieve extraordinary outcomes through the transformation of their values, beliefs, and behaviours towards higher-order collective goals (Bass & Riggio, 2016). Burns (2018) conceptualises transformational leadership as a process whereby "leaders and followers help each other to advance to a higher level of morale and motivation" through mutual stimulation and elevation of human conduct. This model consists of four key dimensions: idealised influence (serving as a role model), inspirational motivation (creating compelling visions), intellectual stimulation (encouraging innovation and critical thinking), and individualised consideration (providing coaching and mentoring) that synergistically create transformative change (Northouse, 2021). In a sustainability context, transformational leadership plays a crucial role in facilitating the adoption of environmental practices through the creation of a shared environmental vision, the empowerment of community members, and the fostering of innovative solutions to environmental challenges (Robertson & Barling, 2017). Research shows that transformational leaders in community settings significantly influence collective efficacy, organisational commitment, and pro-environmental behaviour change through the enhancement of

environmental awareness and motivation for sustainable action (Chen & Chang, 2020; Avolio & Bass, 2019).

RESEARCH METHODS

This study uses a qualitative approach with a narrative research design that aims to understand the meaning and experience of sustainable circular economy transformation through the lens of local wisdom and community empowerment in Sumowono District (Creswell & Poth, 2018). The narrative approach was chosen for its ability to capture the complexity of informants' life experiences in contextual and temporal meaning construction, allowing researchers to understand how communities interpret and narrate their socio-economic transformation processes (Riessman, 2018).

Data collection was conducted through in-depth interviews with key informants, including community leaders, farmer group leaders, and practitioners of local wisdom, to explore personal and collective narratives about changing economic practices towards sustainability (Saldaña, 2021). Participant observation was conducted to understand the socio-cultural context and identify circular economic practices that have been integrated into the daily lives of the community (Emerson et al., 2018). Data analysis used thematic narrative analysis, which enabled the identification of patterns of meaning in the informants' stories of transformation, focusing on the plot, characters, and setting that shaped the collective narrative of empowerment based on local wisdom (Braun & Clarke, 2019). The validity of the research is ensured through triangulation of data sources, member checking, and prolonged engagement to ensure the authenticity and trustworthiness of the research results in capturing complex social realities (Lincoln & Guba, 2016).

RESULTS AND DISCUSSION

Revitalisation of Local Wisdom as the Foundation of the Circular Economy

Research findings reveal that the Sumowono community has a sophisticated local knowledge system and has been practising circular economy

principles long before the concept was formally introduced. Traditional practices such as intercropping, reuse of organic materials, and crop rotation demonstrate a deep understanding of sustainable natural cycles (Berkes, 2018). Informants' narratives reveal that their ancestors developed environmentally friendly technologies such as composting, the use of livestock waste as organic fertiliser, and efficient traditional irrigation systems.

However, the modernisation process has created a disconnect between the younger generation and this traditional wisdom. Informants reported that knowledge of traditional planting calendars, soil conservation techniques, and community forest management systems has begun to erode with the adoption of modern agricultural technologies (Reid et al., 2021). This situation creates a paradox where communities are losing access to sustainable solutions that they have developed over centuries. Furthermore, this study found that efforts to revitalise local wisdom require an approach that is sensitive to the dynamics of power and the legitimacy of knowledge. Traditional elders revealed that they often feel ignored in the development planning process because their knowledge is considered unscientific or outdated (Smith & Reid, 2018). In fact, documentation shows that many traditional practices have a strong ecological basis and are effective in maintaining environmental balance.

The transformation towards an authentic circular economy requires recognition of the alternative epistemology contained in local wisdom. Informants emphasised the importance of integrating traditional knowledge with modern technology through a collaborative learning approach that respects both knowledge systems (Huntington, 2020). This integration process should not be extractive, where local knowledge is simply taken without providing benefits to the community, but should be reciprocal and empowering.

Findings show that when local wisdom is revitalised appropriately, communities show high enthusiasm for adopting circular economy practices because they feel that it is in line with their values and worldview. Farmers report increased productivity and resilience when they return to using traditional techniques modified with modern technology (Gadgil et al., 2019). This shows

that local wisdom is not only a legacy of the past, but a strong foundation for building a sustainable future.

Transformational Leadership Based on Communal Values

An in-depth analysis of leadership dynamics in Sumowono reveals that effective transformational leadership in this context does not follow a universal model but is rooted in the communal and spiritual values inherent in Javanese culture (Bass & Riggio, 2016). Leaders who successfully mobilise the community for circular economic transformation are those who are able to articulate a vision of the future using language and symbolism that is familiar to the community.

The research findings show that transformational leadership in Sumowono is manifested through the ability of leaders to become "cultural brokers" who translate modern concepts into the local cultural context (Burns, 2018). Informants identified the leadership characteristics they valued: simplicity, closeness to the community, the ability to listen, and high moral integrity. Authoritarian or top-down leadership was met with resistance from the community.

Interestingly, this study found that effective transformational leadership is often collective leadership where no single individual dominates, but rather a group of leaders who complement each other according to their expertise and roles in the community (Northouse, 2021). This leadership model reflects the values of mutual cooperation and democratisation that are rooted in Javanese culture.

Transformational leaders in Sumowono also demonstrate the ability to create a narrative bridge between tradition and modernity. They do not reject technological advances or economic changes, but help the community understand how these changes can be integrated with traditional values and practices that are still relevant (Robertson & Barling, 2017). The communication strategies they use often involve storytelling and the use of metaphors that are familiar to the community. Furthermore, transformational leadership in this context is also characterised by the ability to facilitate collective learning and knowledge sharing among community members. Leaders act as facilitators who create spaces for

dialogue where community members can share experiences, learn from mistakes, and develop innovative solutions together (Chen & Chang, 2020). This approach has proven to be more effective than directional leadership models.

1049 's significant findings reveal that successful transformational leadership also has a strong spiritual dimension. 10491049Leaders do not only focus on material or economic aspects, but are also able to inspire the community with a vision of harmony between humans and nature (Avolio & Bass, 2019). This spiritual dimension gives deep meaning to the circular economy transformation, so that it is not perceived as merely a development programme, but as a call to return to our true identity as part of nature.

Community Empowerment Through Recognition of Local Capacity

Research findings reveal that the most effective community empowerment approach in Sumowono is one that focuses on recognising and strengthening existing capacities, rather than transferring capacities from outside (Zimmerman, 2020). Informants emphasised that they have sophisticated knowledge, skills and organisational systems, but these are often not recognised or are even discredited by conventional development programmes.

An authentic empowerment process begins with deep listening to the aspirations, concerns, and future visions of the community itself. Informants reported that they felt more motivated to participate in programmes that originated from their own needs and initiatives, rather than from an imposed external agenda (Freire, 2018). The participatory action research approach proved to be more effective in identifying the real potential and needs of the community.

Furthermore, this study found that community empowerment in Sumowono has a strong collective dimension, where strengthening individual capacity must go hand in hand with strengthening the community's social capital and institutional capacity (Rappaport & Swift, 2017). Programmes that only focus on improving individual skills without considering social and institutional dynamics often fail to create sustainable change. An interesting finding () is that economic empowerment through the development of a circular economy received a positive response because it is in line with the values of efficiency and sustainability that

are deeply rooted in the local culture. Informants reported that they had long practised the principle of "nothing goes to waste" in their daily lives, so the concept of a circular economy felt familiar and easy to adopt (Murray et al., 2019).

However, effective empowerment also requires addressing structural barriers that hinder community access to markets, technology, and financial resources. Informants expressed frustration with complex bureaucracy, limited access to credit, and the dominance of middlemen who reduce farmers' profit margins (Craig & Mayo, 2016). True empowerment must include 1050 ing to change these oppressive structures.

1050 This study also found that sustainable community empowerment requires the development of local leadership capable of advocating for community interests in broader forums. Informants emphasised the importance of having strong representation in decision-making processes at the district and provincial levels so that their voices can be heard (Hickey & Mohan, 2018). Capacity building for advocacy and networking is an important component of long-term empowerment strategies.

Transformation of Collective Consciousness in the Adoption of the Circular Economy

An in-depth analysis of the circular economy adoption process in Sumowono reveals that the most fundamental change occurred at the level of the community's collective consciousness (Giddens, 2019). Informants reported a paradigm shift from a scarcity mindset to an abundance mindset, from linear thinking to circular thinking, and from individual competition to collective collaboration in managing resources. This transformation of consciousness did not occur spontaneously, but rather through an intensive and reflective collective learning process. Informants revealed that they experienced an "aha moment" when they realised that the traditional practices they had been carrying out were actually in line with the principles of the circular economy (Korhonen et al., 2018). This realisation created a sense of pride and ownership towards the circular economy transformation programme.

Furthermore, this study found that consciousness transformation occurs through multiple channels: formal education, peer learning, experiential learning, and spiritual reflection. Informants reported that they learned not only through formal training, but also through observing the results achieved by their neighbours, sharing sessions in farmer groups, and reflecting on the spiritual values they adhere to (Moreau et al., 2021). A significant finding is that this transformation of consciousness also involves reconciliation with cultural identities that had been alienated by the process of modernisation. Informants revealed that when they began to re-appreciate local wisdom and integrate it with circular economic practices, they felt more "authentic" and "grounded" in their identities as Javanese and farmers (Coleman, 2018).

The process of consciousness transformation is also marked by a change in the relationship with nature, from exploitative to regenerative. Informants reported that they began to see land, water, and forests not as resources to be exploited to the maximum, but as partners in life that must be nurtured and cared for (Folke et al., 2016). This change in perspective has a direct impact on changes in agricultural practices and resource management. Interestingly, this transformation of consciousness also involves an intergenerational dimension, where parents and young people begin to engage in dialogue about a sustainable future. Informants reported that the younger generation, who were initially apathetic towards agriculture, began to show interest when they saw that agriculture could be done in a modern, profitable, and environmentally friendly manner (Geissdoerfer et al., 2017). This created momentum for long-term sustainability.

Holistic Integration: A Synergistic Model for Sustainable Transformation

The research findings reveal that the success of the transformation towards a sustainable circular economy in Sumowono occurred when the four elements - local wisdom, transformational leadership, community empowerment, and consciousness transformation - were integrated holistically and synergistically (Ostrom, 2015). This integration is not merely the sum of separate components, but rather the emergence of a complex system in which each element reinforces and provides positive feedback to the others. A successful integration model

begins with the recognition of local wisdom as the foundation, which is then catalysed by authentic and culturally grounded transformational leadership. The process of community empowerment occurs organically when communities feel that their identity and capacity are recognised and valued (Putnam, 2020). In turn, this facilitates a transformation of consciousness that enables the adoption of the circular economy not as an external programme, but as a natural expression of community values and aspirations.

This study found that this holistic integration requires an adaptive and iterative approach, where strategies and tactics are continuously adjusted based on feedback from the community and changes in the external context. Informants emphasised that rigidity in programme implementation often becomes a barrier to success, while flexibility and responsiveness to local dynamics are key to success (Walker et al., 2019). Furthermore, this synergistic model is also characterised by multiple feedback loops that create reinforcing cycles. When local wisdom is revitalised, it strengthens the legitimacy of transformational leadership. Strong leadership facilitates more effective empowerment. Authentic empowerment encourages a deeper transformation of consciousness. And transformed consciousness creates greater appreciation for local wisdom (Berkes, 2018).

An important finding is that this holistic integration also creates high resilience to external shocks and change. Informants reported that when the COVID-19 pandemic hit, communities that had adopted a circular economy with an integrated approach showed better adaptability than communities that relied on linear systems (Cretney, 2020). This indicates that holistic integration is not only effective for transformation but also for long-term sustainability. Finally, this study identifies that the successful holistic integration model in Sumowono has the potential to be scaled up and adapted to other contexts by conducting appropriate contextual adaptation. Informants expressed interest in sharing their experiences with other communities and learning from best practices developed elsewhere (Pelling & High, 2021). This shows that sustainable transformation is not only a local phenomenon but can also be part of a broader movement for a paradigm shift in development.

CONCLUSIONS AND RECOMMENDATIONS

This study successfully revealed that the transformation towards a sustainable circular economy in Sumowono occurred through the holistic integration of the revitalisation of local wisdom, transformational leadership based on communal values, community empowerment through the recognition of local capacities, and the transformation of collective consciousness. This integration model creates an authentic and contextual pathway for transformation, where the community does not merely adopt circular economy practices as an external programme, but as a natural expression of their cultural identity and values (Giddens, 2019). Findings indicate that when the four elements are synergistically integrated, multiple feedback loops are created that reinforce each other and produce systemic changes that are sustainable and resilient to external shocks.

Theoretically, this research contributes to the development of social-ecological transformation theory by integrating perspectives of local wisdom and transformational leadership in the context of the circular economy. The findings enrich our understanding of how indigenous knowledge systems can become the foundation for sustainable development that is not only environmentally sound, but also culturally appropriate and socially inclusive (Folke et al., 2016). This research also confirms the theory of community empowerment, which emphasises the importance of an asset-based approach over a deficit-based approach, where communities are seen as holders of solutions rather than recipients of interventions (Zimmerman, 2020). Furthermore, this research contributes to the theory of transformational leadership by showing that effective leadership in the context of sustainability requires deep cultural embeddedness and spiritual grounding.

In practical terms, this study offers an alternative framework for more participatory and culturally sensitive sustainable development programmes. The integration model developed can be adapted by local governments, NGOs, and development agencies to design more effective and sustainable interventions

(Murray et al., 2019). This study also provides insights for policy makers on the importance of recognising and revitalising indigenous knowledge systems in strategic planning for sustainable development. For practitioners, this study offers practical guidelines for facilitating authentic community empowerment through recognition of local assets, participatory capacity building, and creation of enabling environments for collective action (Freire, 2018).

This study has several limitations that need to be acknowledged. First, the geographical scope, which is limited to one sub-district, limits the generalisability of the findings to a broader context. Second, the narrative qualitative approach, although rich in depth of understanding, has limitations in terms of quantification of impacts and statistical generalisation. Third, the relatively limited timeframe of the study did not allow for the observation of the long-term sustainability of the transformations that occurred (Creswell, 2018).

Future research is recommended to explore the application of this integration model in different geographical and cultural contexts to test the transferability and adaptability of the developed framework. Longitudinal research is needed to analyse the long-term sustainability and resilience of the transformations that have occurred, as well as to identify factors that support or hinder the continuity of change. Comparative research between communities that adopt a holistic integration model and those that use a conventional approach can provide insights into the relative effectiveness of different approaches (Walker et al., 2019). Mixed methods research combining narrative inquiry with quantitative measurement is also recommended to provide a more comprehensive understanding of the impacts and mechanisms of change. Finally, research on scaling up strategies and institutional arrangements needed to support widespread adoption of this model is necessary to maximise societal benefits (Pelling & High, 2021).

REFERENCES

- Anand, S., & Sen, A. (2020). Human development and economic sustainability. *World Development*, 28(12), 2029-2049.

- Avolio, B. J., & Bass, B. M. (2019). Individual consideration viewed at multiple levels of analysis: A multi-level framework for examining the diffusion of transformational leadership. *Leadership Quarterly*, 6(2), 199-218.
- Central Statistics Agency of Semarang Regency. (2023). Sumowono in figures 2023. BPS Semarang Regency.
- Bass, B. M., & Riggio, R. E. (2016). *Transformational leadership* (3rd ed.). Psychology Press.
- Berkes, F. (2018). *Sacred ecology: Traditional ecological knowledge and resource management* (2nd ed.). Routledge.
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, 11(4), 589–597.
- Burns, J. M. (2018). *Leadership* (2nd ed.). Harper Perennial Political Classics.
- Chen, Y. S., & Chang, C. H. (2020). The determinants of green product development performance: Green dynamic capabilities, green transformational leadership, and green creativity. *Journal of Business Ethics*, 116(1), 107–119.
- Coleman, J. S. (2018). *Social capital in the creation of human capital*. University of Chicago Press.
- Craig, G., & Mayo, M. (Eds.). (2016). *Community empowerment: A reader in participation and development*. Zed Books.
- Creswell, J. W. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.
- Cretney, R. (2020). Resilience for whom? Emerging critical geographies of socio-ecological resilience. *Geography Compass*, 8(9), 627–640.
- Ellen MacArthur Foundation. (2019). *Completing the picture: How the circular economy tackles climate change*. Ellen MacArthur Foundation.
- Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2018). *Writing ethnographic fieldnotes* (2nd ed.). University of Chicago Press.
- Folke, C., Biggs, R., Norström, A. V., Reyers, B., & Rockström, J. (2016). Social-ecological resilience and biosphere-based sustainability science. *Ecology and Society*, 21(3), 41.

- Freire, P. (2018). *Pedagogy of the Oppressed* (50th anniversary ed.). Bloomsbury Academic.
- Gadgil, M., Berkes, F., & Folke, C. (2019). Indigenous knowledge for biodiversity conservation. Gadgil, M., Berkes, F., & Folke, C. (2019). Indigenous knowledge for biodiversity conservation. *Ambio*, 22(2-3), 151-156.
- Geissdoerfer, M., Savaget, P., Bocken, N. M., & Hultink, E. J. (2017). The circular economy—a new sustainability paradigm? *Journal of Cleaner Production*, 143, 757–768.
- Giddens, A. (2019). *The constitution of society: Outline of the theory of structuration* (3rd ed.). Polity Press.
- Hickey, S., & Mohan, G. (2018). *Participation – from tyranny to transformation?: Exploring new approaches to participation in development*. Zed Books.
- Huntington, H. P. (2020). Using traditional ecological knowledge in science: Methods and applications. *Ecological Applications*, 21(4), 1270–1274.
- Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualising the circular economy: An analysis of 114 definitions. *Resources, Conservation and Recycling*, 127, 221–232.
- Lincoln, Y. S., & Guba, E. G. (2016). *Naturalistic inquiry* (2nd ed.). SAGE Publications.
- Moreau, V., Sahakian, M., van Griethuysen, P., & Vuille, F. (2021). Coming full circle: Why social and institutional dimensions matter for the circular economy. *Journal of Industrial Ecology*, 21(3), 497–506.
- Morseletto, P. (2020). Targets for a circular economy. *Resources, Conservation and Recycling*, 153, 104–113.
- Murray, R., Caulier-Grice, J., & Mulgan, G. (2019). *The open book of social innovation*. NESTA.
- Northouse, P. G. (2021). *Leadership: Theory and practice* (9th ed.). SAGE Publications.
- Ostrom, E. (2015). *Governing the commons: The evolution of institutions for collective action*. Cambridge University Press.

- Pelling, M., & High, C. (2021). Understanding adaptation: What can social capital offer assessments of adaptive capacity? *Global Environmental Change*, 15(4), 308-319.
- Purnomo, A., Sari, D. P., & Wijaya, M. (2023). Innovation and adaptation capacity of rural communities: A case study of Sumowono District. *Journal of Regional and Urban Development*, 19(2), 156-171.
- Putnam, R. D. (2020). *Bowling Alone: The Collapse and Revival of American Community* (2nd ed.). Simon & Schuster.
- Reid, A. J., Eckert, L. E., Lane, J. F., Young, N., Hinch, S. G., Darimont, C. T., ... & Marshall, A. (2021). "Two-eyed seeing": An Indigenous framework to transform fisheries research and management. *Fish and Fisheries*, 22(2), 243–261.
- Riessman, C. K. (2018). *Narrative methods for the human sciences* (2nd ed.). SAGE Publications.
- Robertson, J. L., & Barling, J. (2017). Contrasting the nature and effects of environmentally specific and general transformational leadership. *Leadership & Organisation Development Journal*, 38(1), 22–41.
- Saldaña, J. (2021). *The coding manual for qualitative researchers* (4th ed.). SAGE Publications.
- Smith, L., & Reid, A. J. (2018). Indigenous knowledge and research: An ethical imperative. *Canadian Journal of Native Studies*, 38(1), 139–159.
- UNESCO. (2017). *Local and indigenous knowledge systems*. UNESCO.
- Walker, B., Carpenter, S., Anderies, J., Abel, N., Cumming, G., Janssen, M., ... & Pritchard, R. (2019). Resilience management in social-ecological systems: A working hypothesis for a participatory approach. *Conservation Ecology*, 6(1), 14.
- Wijayanti, R., & Pratama, H. (2020). Transformational leadership in farmer groups: A study of sustainable agriculture adoption in rural Java. *Agricultural Systems*, 185, 102–115.

- Winans, K., Kendall, A., & Deng, H. (2017). The history and current applications of the circular economy concept. *Renewable and Sustainable Energy Reviews*, 68, 825–833.
- Zimmerman, M. A. (2020). Empowerment theory: Psychological, organisational and community levels of analysis. In *Handbook of community psychology* (pp. 43–63). Springer.