

ACCELERATING MSME DIGITAL TRANSFORMATION THROUGH THE HEXA HELIX MODEL: EVIDENCE FROM PAREPARE'S CREATIVE ECONOMY AND SUSTAINABLE TOURISM

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ABSTRACT

This study examines the digital readiness, constraints, and collaborative opportunities of micro, small, and medium enterprises (MSMEs) in Parepare City in order to strengthen the creative economy and support sustainable tourism. Using a mixed-methods design, the study integrates semi-structured interviews, focus group discussions (FGDs), a structured survey of 47 MSMEs, and MACTOR (Matrix of Alliances and Conflicts: Tactics, Objectives, and Recommendations) analysis. The survey indicates a strong awareness of digital benefits, with 40 of 47 MSMEs recognizing digitalization as important for business development. However, implementation remains uneven because of limited formal training (35 MSMEs), restricted access to capital (33 MSMEs), limited digital skills (32 MSMEs), inadequate infrastructure (29 MSMEs), and limited time to manage digital platforms (28 MSMEs). The MACTOR results show that the local government has the highest influence score (55), while MSMEs are central implementation actors with high dependence on institutional support. Strong convergence appears between government and MSMEs (score 19) and among government, academia, and business associations (score 18), particularly in digital literacy, branding, and ecosystem strengthening. The novelty of this study lies in extending the Hexa Helix Model by positioning tourists not only as consumers but also as digital affiliates who promote local products and destinations through user-generated content. The findings suggest that MSME digital transformation requires coordinated governance, sector-specific capability building, accessible financing, and stronger integration between creative-economy actors and sustainable tourism stakeholders.

Keywords: Digital transformation; Hexa Helix Model; MSMEs; creative economy; sustainable tourism; collaborative governance

INTRODUCTION

Digital transformation has become a central driver of productivity, market expansion, and competitiveness in contemporary economic systems. In Indonesia, the issue is particularly important because micro, small, and medium enterprises (MSMEs) constitute the backbone of the national economy, contributing approximately 61% of gross domestic product and absorbing around 97% of employment. With more than 65 million business units, MSMEs dominate Indonesia's enterprise structure and play an essential role in employment creation, poverty reduction, and regional economic diversification (Tambunan, 2022; Aliyah & Wahyuni, 2023; Syah, Nugrah, & Jumriani, 2023; Wang & Jia, 2025). Despite this strategic position, many MSMEs still experience persistent structural constraints, including limited access to finance, inadequate digital infrastructure, weak managerial capabilities, and low levels of digital literacy (Hendrawan et al., 2024; Purwanto et al., 2022; Hidayatullah et al., 2022).

In the MSME context, digital transformation should not be understood merely as the adoption of digital tools. It involves a systemic reconfiguration of business processes, organizational routines, customer engagement, and value creation mechanisms (Ghobakhloo & Iranmanesh, 2021; Bouwman, Nikou, & de Reuver, 2019). Digital platforms can improve operational efficiency, broaden market reach, strengthen brand visibility, and support customer relationship management. However, prior studies show that the benefits of digitalization are not automatic. MSMEs need complementary capabilities, such as digital marketing competence, financial readiness, platform management skills, and access to supportive ecosystems (Hariyanti & Kristanti, 2024; Sudarsono & Yusuf, 2023).

The relationship between digital transformation, the creative economy, and sustainable tourism is especially relevant for medium-sized cities such as Parepare. The creative economy, which includes culinary businesses, crafts, design, performing arts, music, film, publishing, and cultural tourism, can generate inclusive local growth by converting cultural resources and local knowledge into marketable products (Kacerauskas, 2020; Wibowo et al., 2024). Sustainable tourism further expands this potential by linking local products, destination identity, visitor experience, and environmentally responsible development (Nam et al., 2021). Parepare's Regional Tourism Development Master Plan (RIPPARD) for 2016-2031 emphasizes tourism development based on local resources, culture, competitiveness, and community welfare, creating a policy context in which digital MSME development can support both economic and tourism objectives.

Although the literature has extensively discussed MSME digitalization, most empirical studies remain fragmented. One group of studies focuses primarily on financing barriers and technology adoption; another emphasizes digital marketing and e-commerce performance; while a third examines collaborative governance in tourism development (Purnomo, 2024; Kurniawati et al., 2021; Carlisle, Kunc, Jones, & Tiffin, 2013; Dellyana, Arina, & Fauzan, 2023). These studies offer valuable insights, but they tend to treat digital transformation, creative-economy development, and sustainable tourism as separate domains. As a result, limited attention has been given to how multi-actor collaboration can simultaneously address MSME capability gaps, strengthen local branding, and support tourism sustainability.

Collaborative innovation frameworks provide a useful basis for addressing this gap. The Triple Helix model emphasizes interaction among government, academia, and industry as a foundation for innovation (Etzkowitz & Leydesdorff, 2000). The Quadruple Helix adds civil society, while the Penta Helix includes media as an additional actor in communication and promotion (Carayannis & Campbell, 2009; Pratiwi et al., 2024). Recent tourism studies suggest that tourists should also be conceptualized as active actors because they influence destination reputation through online reviews, testimonials, social media content, and other forms of user-generated promotion (Chen, Munoz, & Aye, 2022; Lohmann et al., 2023). This extension provides the theoretical basis for the Hexa Helix Model.

In the Hexa Helix Model, the six actors are interdependent. Government provides regulation, incentives, and infrastructure support; academics contribute research-based training and knowledge transfer; MSMEs act as implementers of digital adoption; communities and business associations mobilize networks and trust; media strengthen communication and brand visibility; and tourists function as consumers as well as digital promoters. This arrangement is particularly relevant for MSMEs in tourism-oriented creative sectors because their competitiveness depends not only on internal business capability but also on the quality of the surrounding institutional and promotional ecosystem (Basri & Marta, 2025; Setiawan et al., 2025; Tuthaes, Toda, & Lake, 2024).

Based on these considerations, this study addresses the following research problem: how can the digital transformation of MSMEs in Parepare City be accelerated through the Hexa Helix Model to strengthen the creative economy and sustainable tourism? Specifically, the study aims to identify MSME readiness and barriers, map stakeholder roles and actor-objective alignment, and formulate strategic recommendations for collaborative digital transformation.

The contribution of this study is threefold. First, it provides empirical evidence on the awareness-implementation gap in MSME digitalization in Parepare's creative-economy and tourism ecosystem. Second, it applies MACTOR analysis to clarify stakeholder influence, dependence, convergence, and divergence in a Hexa Helix setting. Third, it advances the Hexa Helix literature by explicitly positioning tourists as digital affiliates who can amplify MSME branding and destination promotion. This contribution offers both theoretical and practical value for policymakers, MSME development agencies, academic institutions, business communities, media actors, and tourism stakeholders.

METHODOLOGY

This study used a sequential mixed-methods design because the research problem required both contextual understanding and structured stakeholder mapping. The qualitative component explored perceptions, barriers, and collaborative expectations, while the quantitative component measured MSME digital readiness and supported MACTOR-based actor analysis. The integration of these methods strengthened triangulation and reduced the risk of relying on a single source of evidence.

Research Setting and Unit of Analysis. The study was conducted in Parepare City, South Sulawesi, Indonesia. The unit of analysis was MSMEs operating in the creative-economy and tourism-related sectors, including culinary businesses, handicrafts, local products, and tourism-supporting services. These sectors were

selected because they are directly connected to local destination branding and have a strong need for digital promotion, customer engagement, and market expansion. Sampling Technique and Inclusion Criteria. The survey involved 47 MSMEs selected through purposive sampling. The inclusion criteria were: (1) operating in Parepare City; (2) being active in the creative-economy or tourism-supporting sector; (3) having used, attempted to use, or expressed interest in using digital platforms for promotion, sales, or customer communication; and (4) being willing to participate in the study. Because the sample was purposive and city-specific, the findings are not intended to be statistically representative of all MSMEs in Indonesia. Instead, the results provide analytical generalization for MSME digital transformation in comparable medium-sized tourism-oriented cities.

Data Collection. Data were collected through semi-structured interviews, FGDs, field observations, and a structured survey. Interviews were conducted with MSME owners, local government representatives, academic actors, community and business association representatives, media practitioners, and tourists. The FGDs brought these actors into a shared discussion space to validate the interview findings, identify common priorities, and refine collaboration strategies. The structured survey captured MSME perceptions of digital benefits, barriers, collaborative readiness, and priority needs.

Qualitative Analysis. Interview and FGD data were analyzed thematically following the stages of data condensation, data display, and conclusion drawing (Miles, Huberman, & Saldana, 2014). Codes were grouped into themes related to digital readiness, structural barriers, stakeholder roles, collaborative opportunities, and sustainability implications. The qualitative findings were then compared with survey results to identify areas of convergence and inconsistency.

MACTOR Analysis was used to analyze the strategic positions of six Hexa Helix actors: government, academics, MSMEs, community or business associations, media, and tourists. The procedure consisted of four steps: (1) identifying the key actors and strategic objectives; (2) constructing an actor-objective matrix to assess each actor's position toward each objective; (3) developing the Direct and Indirect Influence Matrix (MDII) to calculate influence and dependence scores; and (4) interpreting competitiveness, convergence, and divergence among actors using the LIPSOR-EPITA-MACTOR framework (Fauzi, 2019). This technique was appropriate because it reveals not only who is influential but also which goals create alignment or potential conflict.

Ethical Considerations. Participation was voluntary, and respondents were informed about the purpose of the research before data collection. The study maintained confidentiality by reporting findings in aggregate form and avoiding the disclosure of individual business identities. If a formal institutional ethics clearance number is required by the target journal, it should be added in this section by the authors.

Validity and Reliability Strategies. Triangulation was achieved by comparing survey results, interview narratives, FGD insights, and MACTOR outputs. The use of multiple actor groups also improved interpretive validity because government, academic, business, community, media, and tourist perspectives were considered simultaneously. In addition, preliminary findings from interviews were discussed in FGDs to verify whether the emerging interpretation was consistent with stakeholder experience.

The research process generated two types of outputs. The first output was a descriptive and interpretive assessment of MSME digital readiness, barriers, and collaboration needs. The second output was a strategic map of actor influence, dependence, convergence, and divergence, which served as the basis for formulating recommendations for digital transformation governance in Parepare's creative-economy and sustainable tourism ecosystem.

RESULTS AND DISCUSSION

Digital Readiness of MSMEs: Field Survey and Observation

The field survey of 47 MSMEs shows a clear awareness-implementation gap. On the one hand, 40 MSMEs reported that digitalization is important for promotion, sales, and market expansion. On the other hand, actual adoption remains constrained by lack of formal training (35 MSMEs), limited access to capital (33 MSMEs), limited digital skills (32 MSMEs), inadequate infrastructure (29 MSMEs), and limited time to manage digital platforms (28 MSMEs). These findings suggest that MSMEs do not reject digital transformation; rather, they face capability and resource constraints that prevent them from moving beyond basic digital communication tools toward more strategic uses of e-commerce, digital branding, and customer analytics.

This pattern is consistent with previous studies showing that MSME digitalization requires more than platform availability. Kurniawati et al. (2021) found that many MSMEs struggle to move from basic messaging applications to more advanced digital commerce, while Hariyanti and Kristanti (2024) emphasize that training and ecosystem support are prerequisites for sustainable digital adoption. In Parepare, the main challenge is therefore not awareness but the conversion of awareness into operational capability. This conversion requires training that is practical, sector-specific, and linked to daily business routines.

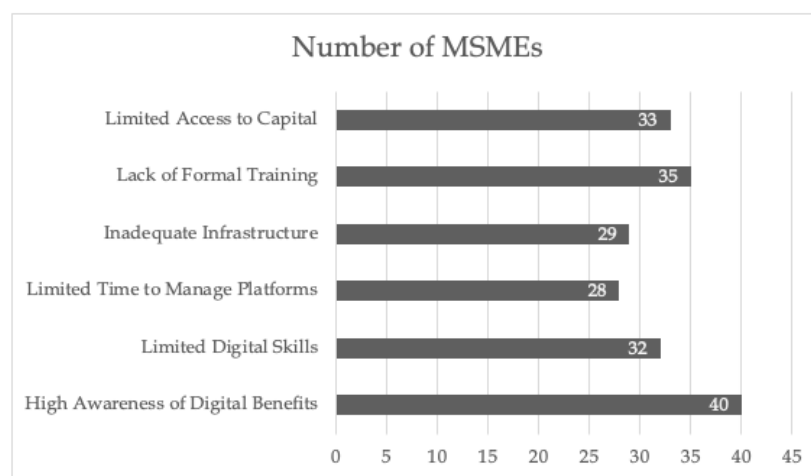


Figure 1. Perceived benefits and barriers to MSME digital transformation (Source: Authors' field survey, 2025).

Figure 1 indicates that the most prominent barrier is the absence of formal digital training, followed by limited capital and weak digital skills. This combination points to an integrated constraint: MSMEs need knowledge, devices, connectivity, and financing at the same time. Consequently, isolated training programs are unlikely to produce strong results unless they are connected to mentoring, affordable digital tools, and access to small-scale digital investment financing.

MSME Needs and Collaboration Opportunities

The survey and FGDs identified four priority needs for accelerating MSME digital transformation: (1) practical training in digital marketing and online business management; (2) access to financing for digital devices, internet services, and promotional costs; (3) improvement of digital infrastructure in public markets, business clusters, and tourism areas; and (4) stronger collaborative networks among MSMEs, government, academia, communities, media, and tourists. These needs demonstrate that MSME digital transformation is both a firm-level capability issue and an ecosystem-level governance issue.

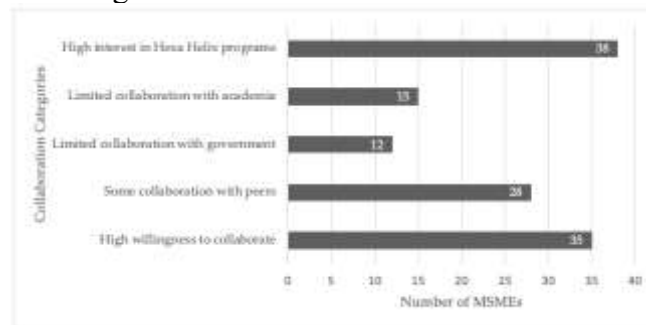


Figure 2. MSME readiness for collaboration (Source: Authors' field survey and observation, 2025).

MACTOR Analysis: Roles and Goals of Actors

The MACTOR analysis formalizes the strategic relationships among six Hexa Helix actors: the Department of Cooperatives and MSMEs (DISUKM), academics from Muhammadiyah University of Parepare, MSMEs, the business community represented by HIPMI, media, and tourists. Each actor has a distinct role, but their objectives are interdependent. The government is expected to provide policy support, incentives, and infrastructure; academics contribute training and research-based assistance; MSMEs implement digital practices; communities and business associations strengthen networks; media amplify branding; and tourists expand digital reach through reviews, testimonials, and content sharing.

Table 1. Actors and objectives in the digital transformation of Parepare MSMEs

No.	Actor	Role in the Hexa Helix Model	Main Objective
1	Government (DISUKM)	Regulator, policy facilitator, provider of incentives and infrastructure support	Improving access to financing (T2) and digital infrastructure (T3)
2	Academics	Knowledge producer, trainer, and research-based assistance provider	Improving MSME digital literacy and managerial capability (T1)

No.	Actor	Role in the Hexa Helix Model	Main Objective
3	MSMEs	Core implementers of digital adoption and value creation	Adopting digital technology and strengthening digital branding (T4)
4	Community/business association (HIPMI)	Network accelerator and facilitator of peer learning and collaboration	Strengthening the Hexa Helix collaborative ecosystem (T5)
5	Media	Information disseminator, digital storyteller, and promotional channel	Supporting MSME branding and digital marketing (T4)
6	Tourists	Consumers, reviewers, content creators, and digital affiliates	Promoting sustainable tourism and digital destination visibility (T6)

The actor-objective mapping shows that the Hexa Helix Model is not merely a list of stakeholders but a governance mechanism for allocating complementary functions. Government and MSMEs are central because policy support and business implementation determine whether digital transformation can occur. Academics and communities serve as capability-building intermediaries, while media and tourists strengthen market visibility. This role distribution supports findings from Tuthaes, Toda, and Lake (2024), who show that Hexa Helix collaboration can balance economic development and cultural sustainability in creative-economy settings.

Actor Influence and Dependence

The Direct and Indirect Influence Matrix (MDII) calculates the influence score (Ii) and dependence score (Di) of each actor. The results show three important patterns: First, DISUKM has the highest influence score (55) and a relatively lower dependence score (38), confirming its position as the key institutional driver of policy coordination, incentives, and infrastructure support.

Second, MSMEs have a high influence score (48) but also the highest dependence score (53). This means that MSMEs are central implementation actors, yet their capacity to act depends strongly on external support, particularly training, finance, and infrastructure.

Third, academics, HIPMI, media, and tourists occupy complementary positions. Academics and HIPMI function as intermediary actors through knowledge transfer and network mobilization, while media and tourists have lower formal influence but are important for branding, promotion, and digital market reach.

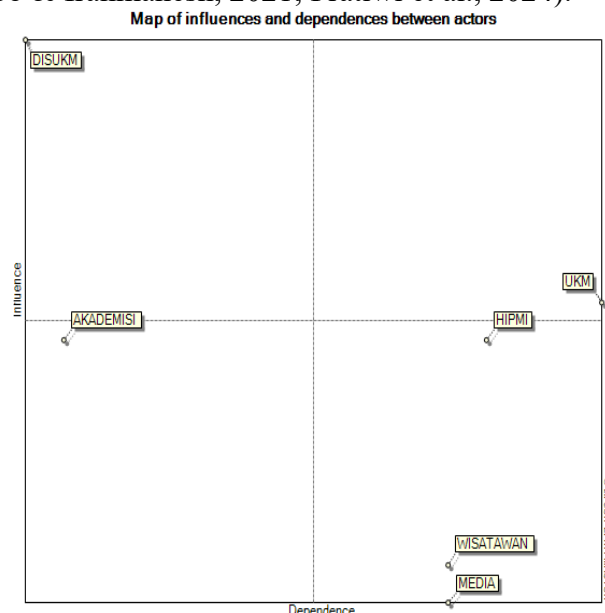
These findings are consistent with collaborative governance theory: actor influence alone is insufficient if dependent actors lack access to resources. For Parepare, the critical governance task is to connect influential actors with dependent but strategically important actors so that digital transformation becomes an ecosystem-level process rather than an individual MSME burden.

Table 2. Direct and Indirect Influence Matrix (MDII) from MACTOR analysis
(Source: Authors' MACTOR output using LIPSOR-EPITA-MACTOR, 2025).

MDII	DISUKM	AKADEMISI	UKM	HIPMI	MEDIA	WISATAWAN	Di
DISUKM	8	9	14	12	10	10	55
AKADEMISI	8	8	10	10	9	10	47
UKM	8	8	12	11	11	10	48
HIPMI	8	8	11	11	10	10	47
MEDIA	7	7	9	8	9	9	40
WISATAWAN	7	7	9	9	9	10	41
Di	38	39	53	50	49	49	278

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The actor influence and dependence map provides a more nuanced interpretation of stakeholder positions. DISUKM appears as the strongest driving actor because it has authority over local policy instruments and program facilitation. MSMEs are not passive beneficiaries; they are central actors because digital transformation ultimately occurs within their business processes. However, their high dependence indicates vulnerability: without sustained support from government, academia, and business networks, MSMEs may remain trapped in low-intensity digital use. Academics and HIPMI occupy bridging positions by converting policy intentions into training, mentoring, and network expansion. Media and tourists, although less powerful in formal governance, function as market amplifiers. This supports the argument that stakeholder mapping is useful for clarifying power relations and coordination mechanisms in regional policy development (Ariyani, Fauzi, & Umar, 2020; Ghobakhloo & Iranmanesh, 2021; Pratiwi et al., 2024).

**Figure 3. Actor influence and dependence map (MDII)** (Source: Authors' MACTOR output, 2025).

Competitiveness and Mobilization of Actors

The competitiveness histogram generated by MACTOR further illustrates actor dynamics. DISUKM has the highest competitiveness score (1.5), reflecting its structural authority and capacity to coordinate public resources. Academia follows with a score of 1.1, indicating a strong role in capability development and research-based assistance. MSMEs and the local business community obtain a score of 0.9, showing their importance as operational actors in the adoption of digital tools. Tourists (0.8) and media (0.7) have lower formal competitiveness but remain strategically important because they influence visibility, reputation, and market expansion. Thus, competitiveness in this ecosystem is not limited to formal power; it also includes the capacity to mobilize knowledge, networks, and promotional influence.

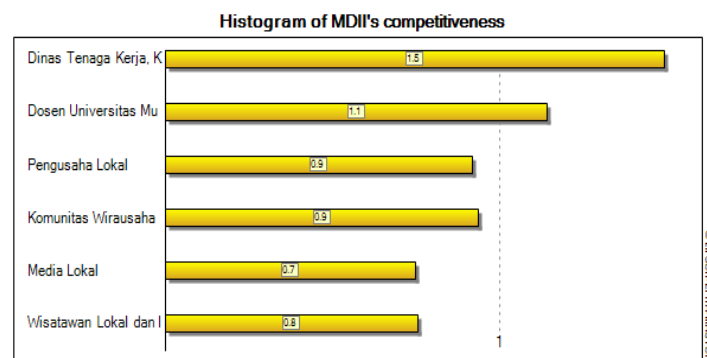


Figure 4. Histogram of MDII actor competitiveness (Source: Authors' MACTOR output, 2025).

Objective-based competitiveness shows that digital literacy (T1), digital branding (T4), and ecosystem strengthening (T5) are the most mobilized objectives. These objectives are attractive because they can be pursued through relatively low-cost collaboration, such as training, mentoring, content creation, and networking. In contrast, access to financing (T2) and infrastructure provision (T3) generate weaker mobilization because they require larger resource commitments, institutional coordination, and budget allocation. This distinction is important for strategy design: Parepare can begin with high-convergence, low-cost interventions while simultaneously preparing longer-term financing and infrastructure mechanisms.

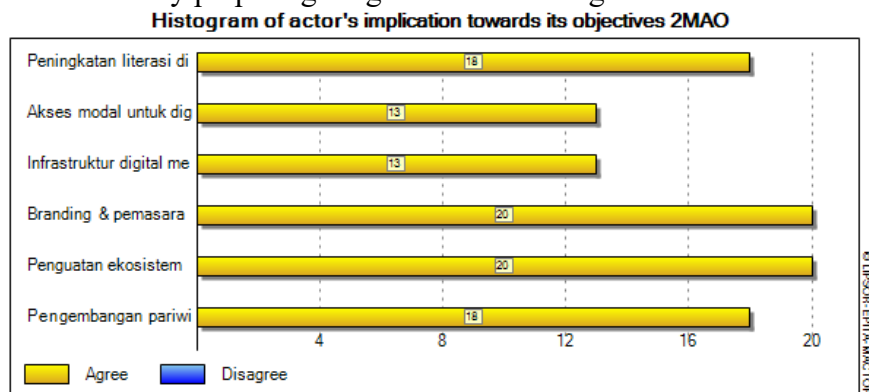


Figure 5. Actor mobilization toward strategic objectives (Source: Authors' MACTOR output, 2025).

The actor-objective mobilization pattern suggests that MSME digital transformation should be phased. The first phase can prioritize digital literacy, branding, and collaborative networks because these goals attract broad support from government, academia, MSMEs, communities, media, and tourists. The second phase should address financing and infrastructure through more formal policy instruments, such as digital equipment grants, microcredit schemes for digital investment, public internet access in tourism hubs, and partnerships with telecommunications providers. This sequencing is consistent with evidence that branding, ecosystem collaboration, and capacity building are low-cost, high-impact entry points for MSME digital transformation (Garzoni et al., 2020; Kraus et al., 2022).

Convergence and Divergence among Actors

Table 3 shows high convergence among the Hexa Helix actors. The strongest convergence appears between DISUKM and MSMEs (score 19), followed by strong convergence between DISUKM, academia, and HIPMI (score 18). Media and tourists also show positive convergence, although their alignment is more closely associated with branding, promotion, and destination visibility. The overall convergence pattern indicates that the actors share a common orientation toward digital literacy, collaborative ecosystem development, and sustainable tourism promotion.

Table 3. Convergence matrix among actors (Source: Authors' MACTOR output using LIPSOR-EPITA-MACTOR, 2025).

2CAA	DISUKM	AKADEMISI	UKM	HIPMI	MEDIA	WISATAWAN
DISUKM	0.0	18.0	19.0	18.0	17.0	17.0
AKADEMISI	18.0	0.0	18.0	17.0	16.0	16.0
UKM	19.0	18.0	0.0	18.0	17.0	17.0
HIPMI	18.0	17.0	18.0	0.0	16.0	16.0
MEDIA	17.0	16.0	17.0	16.0	0.0	15.0
WISATAWAN	17.0	16.0	17.0	16.0	15.0	0.0
Number of convergences	89.0	85.0	89.0	85.0	81.0	81.0
Degree of convergence (%)	100.0					

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The convergence graph demonstrates that the strongest relationships are concentrated among government, academia, MSMEs, and HIPMI. This pattern is theoretically meaningful because these actors control or mobilize the resources required for digital transformation: regulatory instruments, knowledge, business implementation, and entrepreneurial networks. The relatively thinner convergence links involving media and tourists should not be interpreted as weak relevance. Rather, they indicate that these actors depend on a functioning institutional and business ecosystem before they can effectively amplify digital branding and tourism promotion.

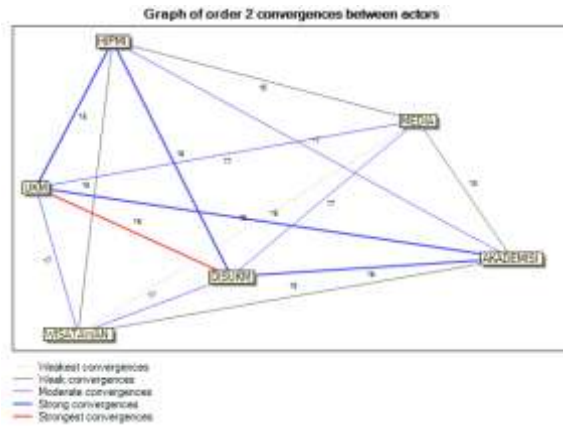


Figure 6. Convergence graph among actors (Source: Authors' MACTOR output, 2025).

High convergence does not eliminate potential tension. It means that actors broadly support the same objectives, but the intensity and resource implications of those objectives differ. Resource-intensive goals, such as financing and infrastructure, tend to create narrower alignment because they involve budget discipline, institutional mandates, and investment decisions. This supports stakeholder theory: collaboration becomes more effective when shared goals are translated into clear roles, responsibilities, and resource commitments (Ozdemir et al., 2023; Nuryanto, Quraysin, & Pratiwi, 2024).

The divergence map confirms that disagreement is relatively limited but still strategically important. The most visible tensions concern access to financing and infrastructure provision. Government actors tend to prioritize regulatory feasibility, fiscal prudence, and program accountability, whereas MSMEs require flexible credit, affordable digital equipment, stable internet access, and rapid infrastructure improvement. Media and tourists also depend on infrastructure quality because digital promotion becomes less effective when local businesses cannot maintain consistent online presence or service quality.

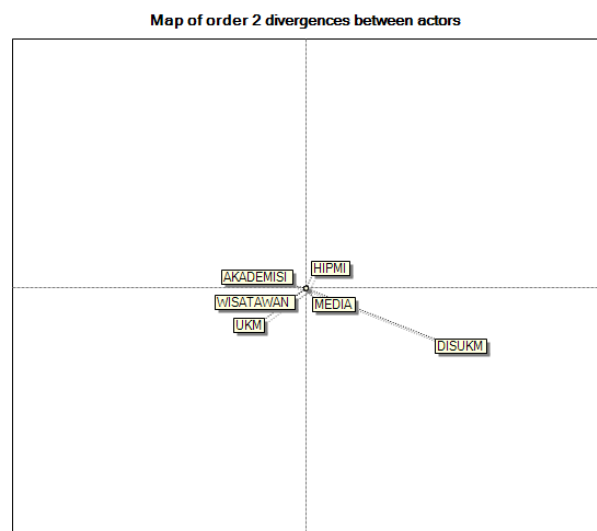


Figure 7. Divergence map among actors (Source: Authors' MACTOR output, 2025).

These differences are manageable if collaborative governance is institutionalized. Parepare needs a coordination mechanism that allows actors to negotiate priorities, assign responsibilities, and monitor implementation. For example, DISUKM can coordinate policy and incentives, universities can provide training and evaluation, HIPMI can organize mentoring and peer learning, media can develop promotional narratives, and tourists can be engaged through digital campaigns that encourage reviews and content sharing. Such a mechanism would reduce the risk that digital transformation programs become fragmented, short-term, or limited to ceremonial training activities.

The actor-objective relationship map further shows that each actor contributes to different dimensions of digital transformation. Government is closely linked to financing and infrastructure; academics to digital literacy; MSMEs to adoption and branding; communities to collaborative networks; and media and tourists to market visibility and sustainable tourism promotion. This division of roles confirms that the Hexa Helix Model is useful for designing an integrated digital transformation strategy. It also shows that tourism sustainability is not achieved only through destination management but also through strengthening local MSME competitiveness, cultural product visibility, and community-based economic participation.

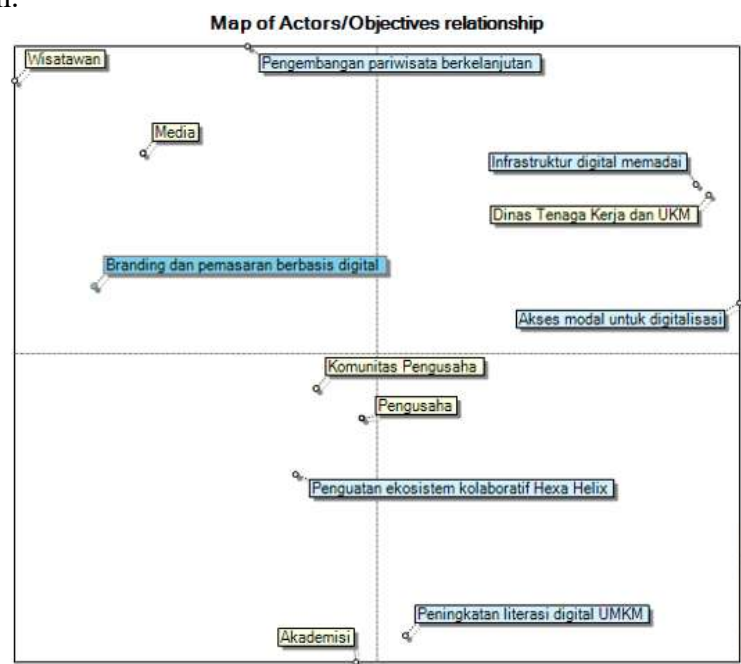


Figure 8. Actor-objective relationship map (Source: Authors' MACTOR output, 2025).

Overall, the results extend previous digital transformation frameworks by demonstrating that MSME digitalization in a tourism-oriented creative economy is shaped by both internal firm capability and external ecosystem alignment. The Parepare case shows that the most promising pathway is not a technology-first approach but a governance-first approach: actors must agree on objectives, mobilize resources, and coordinate their roles before digital tools can generate sustainable economic value. This finding is consistent with studies emphasizing actor alignment, dynamic intermediation, and ecosystem governance in SME digital transformation (Mohammadparast Tabas, Komulainen, & Nätti, 2023; Hafeez,

Shahzad, & De Silva, 2025; Mbanefo & Grobbelaar, 2024; Visscher, Hahn, & Konrad, 2021).

CONCLUSIONS

This study examined MSME digital transformation in Parepare City through the Hexa Helix Model, focusing on the integration of creative-economy development and sustainable tourism. The results show that MSMEs have a high awareness of digital benefits, but their implementation capacity remains constrained by limited formal training, limited access to capital, inadequate infrastructure, weak digital skills, and limited time to manage digital platforms. MACTOR analysis indicates that DISUKM is the strongest institutional driver, while MSMEs are central implementation actors with substantial dependence on external support. Strong convergence among government, academia, MSMEs, and business associations indicates that digital literacy, branding, and ecosystem strengthening are feasible entry points for collaborative intervention.

Theoretically, this study contributes to the Hexa Helix literature by positioning tourists as digital affiliates who influence MSME competitiveness and destination image through online reviews, testimonials, social media content, and other forms of user-generated promotion. The study also demonstrates the usefulness of MACTOR analysis for examining actor influence, dependence, convergence, and divergence in MSME digital transformation governance. This approach extends the discussion beyond technology adoption by showing that digital transformation is fundamentally shaped by institutional coordination and stakeholder alignment.

Managerially, the findings imply that policymakers should design inclusive and sector-specific digital literacy programs, universities should provide mentoring based on real MSME business problems, and business associations should strengthen peer learning and market access. Financing schemes should be flexible enough to support small-scale digital investment, including devices, internet access, digital advertising, and platform management. Media and tourism stakeholders should be integrated into branding strategies through digital storytelling, destination campaigns, and user-generated content initiatives.

The study has several limitations. The sample was limited to 47 purposively selected MSMEs in one city, so the findings should be interpreted as contextual and analytically generalizable rather than statistically representative. Future research should compare multiple tourism-oriented cities, use longitudinal designs to examine changes in digital capability over time, and incorporate performance indicators such as sales growth, market expansion, customer engagement, and sustainability outcomes.

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