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FROM SKILL TRANSFER TO MARKET LEADERSHIP: A LONGITUDINAL EVALUATION OF THE BATIK CHEMPAKA INTERVENTION AT PPDK MERBOK

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Abstract:

Evaluations of disability-inclusive economic empowerment programmes in Malaysia rarely extend beyond the intervention period itself. Yusoff and Abdul Rahman (2025), reporting on a batik motif development programme at a Pusat Pemulihan Dalam Komuniti (PPDK) centre for persons with disabilities, documented gains in skill and confidence but were unable to measure sustained economic outcomes. This study addresses that gap. In the intervention, delivered under the University Social Responsibility (USR) and Knowledge Transfer Programme (KTP) frameworks of Universiti Teknologi MARA, trainees designed original batik motifs which were then carved into commercial printing blocks and used to produce items sold through the Economic Empowerment Programme (EEP) that supports 32 PPDK centres in Kedah. Drawing on all monthly EEP sales returns for the 2025 calendar year together with two decades of centre-level historical records, we set the post-intervention performance of the participating centre against three reference points: its own 2024 result, its own pre-intervention history, and the 31 other centres in the state network. PPDK Merbok recorded RM 10,288 in sales during 2025, a 76 per cent

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increase on the RM 5,836 recorded in 2024 and approximately eleven times its pre-intervention annual average of RM 917 (2004–2022). More importantly, with programme structure held constant across the 32 centres in Kedah, PPDK Merbok accounted for 28 per cent of state-wide EEP sales for the year and ranked first or second in eight of its nine active months. Because programme structure, administrative support and trainee profiles are broadly consistent across the network, the findings are consistent with a positive contribution of the intervention, although a single-case design cannot establish causality. Read through the capabilities approach and the Triple Helix framework, the results indicate that pairing a university partner with a master artisan and a government welfare anchor supplied the design capability, market-ready product and institutional continuity the centre previously lacked, and that the gains extend beyond the immediate skills and confidence reported by Yusoff and Abdul Rahman (2025). On this evidence, PPDK Merbok is a promising candidate for replication elsewhere in the state network.

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Keyword:

Batik Chempaka; Capabilities Approach; Community-Based Rehabilitation (CBR); Disability Empowerment; Longitudinal Evaluation; Sales Performance; Triple Helix

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Introduction

Evaluations of Community-Based Rehabilitation (CBR) programmes in Malaysia have grown considerably over the past decade, but the balance of that literature has been uneven. Studies of programme design, worker satisfaction, and parent or caregiver perception are relatively well developed (Hasan & Aljunid, 2019; Ahmad et al., 2021; Hasan et al., 2021). What remains thin is the body of work that tracks CBR-linked economic empowerment initiatives over subsequent years, against measurable economic indicators, and against comparator institutions operating under similar conditions. The result is a literature rich in immediate outcome data and poorer in confirmed medium-term outcomes. Recent international scholarship (Ramanujam & Caivano, 2023) has argued that economic inclusion needs to be centred more explicitly in disability rights policy; measured outcome data is a precondition for that argument to have traction.

Yusoff and Abdul Rahman (2025) provide a case in point. They report on a batik motif development programme at PPDK Merbok in Kedah, conducted under the University Social Responsibility (USR) and Knowledge Transfer Programme (KTP) frameworks of Universiti Teknologi MARA (UiTM) Kedah. In that programme, trainees with disabilities were taught to design original batik motifs, four of which were subsequently carved into wooden printing

blocks and used in commercial production. The paper documents qualitative gains in skill acquisition, self-perception, and community recognition. The authors are explicit about the limitations: a six-month observation window, no comparator institutions, and no economic data beyond the immediate intervention period. They call for follow-up work that addresses these gaps. The intervention itself is described in detail below.

The present paper takes up that call. The data source is one that, to our knowledge, has not been used in the Malaysian disability inclusion literature: the monthly EEP returns submitted by all 32 PPDK centres in Kedah and compiled at state level by the Penyelaras PDK Negeri Kedah. These returns provide standardised monthly sales figures for an entire state network, generated by an external administrative process, and they cover the first full year of post-intervention commercial activity at PPDK Merbok. Three questions follow.

1. Did the USR/KTP intervention change the sales trajectory of Batik Chempaka compared to its pre-intervention baseline?
2. How does PPDK Merbok perform against the 31 other PPDK centres operating under the same state-level programme?
3. What conditions need to be in place for the intervention model to last, and to work at additional sites?

Literature Review

CBR Research in Malaysia and the Evaluation Gap

The Malaysian CBR system, known locally as Pemulihan Dalam Komuniti (PDK), has been in place since 1984 and now operates through more than 500 centres nationwide. The published research on this system covers organisational practice (Ahmad et al., 2021), workforce satisfaction (Hasan & Aljunid, 2019), and parent or caregiver experience with services (Hasan et al., 2021). What is notably underdeveloped is comparative evaluation of the Economic Empowerment Programme (EEP) activities that many PPDK centres run for trainees. Most existing evaluations focus on a single centre or a small group of centres, and few use standardised administrative data that would allow performance comparison across the wider network. Ramanujam and Caivano (2023) argue, in a related Asian context, that this kind of comparative outcome evidence is precisely what disability policy reform requires but rarely receives.

The methodological case for longer follow-up windows in participatory action research is established (Reason & Bradbury, 2008; Yin, 2018). Patton (2015) sets out developmental evaluation as an approach that follows interventions across multiple time horizons, which is what a study of CBR-linked economic empowerment programmes ideally requires. In practice, however, the standard for CBR evaluation research in Malaysia remains cross-sectional or short-window studies. The present paper responds by using state-level EEP data as a comparative reference. That data source is produced by an external administrative process, covers all 32 centres in Kedah simultaneously, and uses a single reporting calendar. This approach does not remove all confounders, but it controls for many more of them than a single-institution study can.

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USR, Community Engagement, and Malaysian Higher Education

In an earlier publication, Yusoff and Abdul Rahman (2025) covered a motif creation program run by PPDK Merbok (Centre for Rehabilitation in the Community) which trained disabled persons in motif design and the commercial carving of these designs into blocks. The earlier report covered skill development, confidence and identity but noted lack of empirical data regarding the longer-term economic impact of the intervention. This paper addresses the economic impact.

University Social Responsibility has expanded rapidly across Malaysian higher education. Ahmad et al. (2024) map USR initiatives against a Carroll-type model of institutional responsibility and find community engagement to be among the most developed dimensions, while Chan et al. (2025) show that USR practice is now sufficiently embedded to shape institutional reputation. What this literature documents far less often is what USR activity leaves behind for the participating community once the university team withdraws.

The present paper addresses that question directly. It reports the first full post-intervention year of commercial activity at PPDK Merbok and interprets the results through the capabilities approach (Sen, 1999; Nussbaum, 2011; Ramanujam and Caivano, 2023) and the Triple Helix framework (Etzkowitz, 2008). The sales evidence is presented in the Findings section, and its implications for institutionalisation and for diffusion across the Kedah PPDK network are considered in the Discussion.

Sales Performance as a Capability Indicator

Sales data are a partial indicator of empowerment, and the literature divides on how much weight they should carry. Scott (2000) treats sales, employment, and capital accumulation as material flows that combine with symbolic flows (identity, recognition, narrative) to constitute artisan livelihoods. On this reading, a sales increase is itself a meaningful outcome. Sen's (1999) capabilities approach takes a different position. Sen treats income not as an end but as an instrument, useful to the extent that it expands the substantive freedoms a person possesses. Nussbaum (2011) extends this in her list of central capabilities, several of which (affiliation, control over one's environment, the social bases of self-respect) are relevant here. Ramanujam and Caivano (2023) build on this tradition to argue that in developing-country disability policy, the practical test of a capabilities-based framework is whether it produces measurable economic outcomes for the persons concerned.

The disagreement matters for how the sales data reported below are read. On Scott's view, the numbers speak for themselves. On Sen and Nussbaum's view, the numbers matter only because, and to the extent that, they track a real expansion in what the trainees can do and be. The present paper takes the second view. The sales figures are used as an indicator of capability expansion, not as the outcome itself.

Beverland (2005) adds a third frame relevant to Batik Chempaka. His work on brand authenticity in artisan markets argues that sales growth in heritage sectors should be read as evidence of an authentic identity successfully communicated to consumers. On Beverland's account, an authentic artisanal brand is distinguished from a commodity by uniqueness, sincerity and a sense of place. Since the centre's earlier product offering gave buyers little basis for telling a generic product from an artisan one, the introduction of original local motifs might

be expected to elicit an authentic response. The comparative sales evidence in the Findings section speaks to this proposition, although, as the Discussion notes, it cannot confirm the consumer-side mechanism that Beverland describes.

Batik, Craft Sustainability, and the Creative Economy

Recent scholarly work on batik and craft sustainability has expanded beyond documentation to address more difficult issues of economic sustainability. Syed Shaharuddin et al. (2021) offer an overview of Malaysian and Indonesian batik production and issues relevant to micro enterprises competing with mass-market producers. Focusing specifically on Batik Merbok, Zainal @ Ismail et al. (2025) emphasize the role of education, industry, and community in the sustainability of the local batik tradition and employ a framework that highlights contextual moderators such as policy support, finance, digital literacy and community practices to guide an examination of the PPDK Merbok case.

In an adjacent literature on craft as a generator of sustainable development, Dhar (2025) proposes that craft communities produce value that cannot be completely captured by traditional economic indicators.

This background material is a guide to interpreting the case data in the present study. Batik Chempaka is situated within a larger and evolving context for Malaysian batik.

Triple Helix and the Question of Scalability

Scalability is the question on which many disability inclusion programmes stall. Prahalad (2004) and London and Hart (2011) both emphasise that inclusive enterprises only scale where the underlying business model can absorb additional sites without proportional loss of effectiveness. Mitra (2018) argues that persons with disabilities in low- and middle-income countries face structural barriers, including limited access to markets and productive assets, that individual programme success does not necessarily overcome.

Etzkowitz's (2008) Triple Helix model has been proposed as a partial answer to the scaling problem. By linking universities, industry, and government in formalised partnerships, the model creates the institutional anchoring that single-site interventions usually lack. Most empirical applications of Triple Helix have been in the technology sector, and applications to disability-inclusive cultural enterprises are scarce. The PPDK Merbok intervention does have Triple Helix structure: UiTM as the academic partner, a Kelantanese master block carver as the industry-equivalent expert, and the Department of Social Welfare as the government anchor. Whether this structure produces replicable outcomes is the empirical question that the present paper addresses.

The Yusoff and Abdul Rahman (2025) Intervention

The follow-up analysis presented in this paper depends on a clear understanding of the original intervention. This section summarises what was done, what frameworks guided it, what findings were reported, and what limitations the authors acknowledged. Readers familiar with Yusoff and Abdul Rahman (2025) may treat this section as a recap; readers approaching the case for the first time will find it necessary background for the analysis that follows.

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Setting and Participants

The intervention was carried out at PPDK Merbok, a Community-Based Rehabilitation centre in Kuala Muda district, Kedah. The centre's craft business unit, Batik Chempaka, is staffed by trainees with disabilities. Before the intervention, production relied on commercially available design patterns and generic motifs sourced from third parties. Trainees had no opportunity to design original motifs, limited access to master craftsmen, and no brand concept distinguishing Batik Chempaka from other small-scale Malaysian batik producers (Yusoff and Abdul Rahman, 2025).

These baseline challenges closely resemble those described for small-scale Malaysian batik production more generally (Syed Shaharuddin et al., 2021).

Conceptual Frameworks

The study draws on a cluster of interrelated frameworks rather than a single one. The institutional anchor is UiTM Kedah's USR and KTP model, under which universities act as agents of community development through the transfer of knowledge, skills and creative capacity. Methodologically, the original intervention was grounded in participatory action research, in which researchers and participants learn through cyclical rounds of action and reflection rather than implementing a predetermined programme. Theoretically, three domains inform the work. The first is the capabilities approach, which frames the objectives of the project.

It was applied by treating the goal of the intervention as an expansion of the trainees' real freedoms: to work, to create, and to take part in economic life. The second is the social model of disability, used to frame the analysis of the barriers facing trainees with intellectual disability.

On this view, barriers to participation are socially and environmentally constructed rather than inherent to the individual. The third is the cultural economy framework, which treats cultural production as an economic sector and cultural tourism as a route to local development. These are the frameworks the original study employed; the present paper retains them but focuses on measuring quantitative outcomes rather than observing processes qualitatively.

Intervention Activities

The intervention was structured in three phases. First, a needs assessment was undertaken, involving direct observation of PPDK's training processes and outputs, semi-structured interviews with PPDK trainers and trainees, and analysis of available documentation. Based on this, the need for formal design training, opportunities for mentorship by design experts and a pool of market-relevant creative resources were identified.

Second, an eight-week, hands-on workshop was conducted with the assistance of three academic facilitators.

The training covered introductory drawing techniques, the principles of motif composition, and cultural symbolism in designs. Visual resources and existing motifs were used, as were opportunities for peer review. The third phase was the commercial production of four of the

developed motifs as wooden blocks to be used in traditional stamping processes by a master woodcarver from Kelantan. The production of the stamp blocks was particularly significant in its integration of traditional crafts and contemporary production.

Reported Findings

Design skills were the most fully developed and described; participants demonstrated the transition from copying established motifs to producing their own creative designs, with four original motifs chosen for commercial production. Second, a stronger brand identity was created; the motifs helped to give Batik Chempaka a unique aesthetic identity beyond commercial design templates. This aspect resonates strongly with Zainal @ Ismail et al.'s (2025) identity-based framework for the sustainability of the wider Batik Merbok industry.

Third, a greater sense of social awareness and inclusion was developed among the trainees; their innovative outputs were showcased at a local exhibition and social media, changing public perception of them from merely receiving aid to become active participants in the preservation of cultural heritage. Finally, the fourth, and least strongly reported, area was impact in economic and social terms; trainees reported psychological changes toward greater feelings of valued contributor status and early signs of increased buyer interest were observed, but a sustained, long-term economic assessment was not yet available. The authors of the original study also included survey data (n=12) that is included below as part of the established record, without further analysis in the present paper: 75 per cent of participants recorded 'Very Satisfied' (Sangat Puas Hati) responses for all six criteria on a 5-point scale; and on a self-assessed knowledge scale ranging from 'Strongly Disagree' (Sangat Tidak Setuju) to 'Strongly Agree' (Sangat Setuju), post-intervention assessment revealed a majority of 'Strongly Agree' compared with pre-intervention majority responses of 'Uncertain' (Tidak Pasti).

Acknowledged Limitations

Yusoff and Abdul Rahman (2025) listed three limitations that the present paper directly addresses. First, the six-month observation window precluded longitudinal assessment of economic sustainability. Second, the single-case design did not include comparison with other PPDK centres operating under similar conditions. Third, the absence of formal partnerships with private-sector stakeholders or government agencies limited what could be claimed about institutional anchoring. The present paper addresses the first two limitations directly through the use of state-level EEP data spanning the full 2025 calendar year, and engages with the third through the documentation of the UiTM–PPDK Merbok MoU and the Japan distribution channel.

Methodology

Research Design

The study uses an embedded single-case longitudinal design (Yin, 2018) with PPDK Merbok as the focal case and the 32-centre Kedah PPDK network as the comparative reference. The design supports two kinds of comparison. Within-case comparison sets the 2025 performance against the centre's own pre-intervention history. Between-case comparison sets PPDK Merbok against the other 31 centres in the same year. Holding the state-level programme structure constant across centres is the methodological move that gives the comparison its force. Self-

reported single-institution data, which is the norm in this literature, cannot support claims of this kind.

Data Sources

Three sources of data are used:

- Kedah State EEP Monthly Reports, January to December 2025. Standardised monthly returns of the Laporan Program Pemerkasaan Ekonomi (EEP) OKU PPDK Negeri Kedah, containing sales figures for all 32 PPDK centres in Kedah.
- Historical PPDK Merbok records, 2004 to 2024. Annual sales totals maintained by the PPDK Merbok administration, providing the pre-intervention baseline.
- Intervention documentation. Yusoff and Abdul Rahman (2025) together with related materials, which establish what the intervention consisted of and which findings have already been reported.

Analytical Approach

Two analyses were carried out. Within-case temporal comparison contrasts 2025 with the 2004–2022 baseline and the 2023–2024 transition years. Between-case comparative ranking sets PPDK Merbok against the 31 other centres month by month, producing both rank position and share-of-state-total metrics.

Interpreting Zero-Sales Months

One issue requires explicit treatment. The PPDK Merbok records show zero sales in three months of 2025 (March, April, and November). Read against a conventional commercial benchmark, these would suggest operational failure. That reading is wrong for OKU-operated enterprises. Mitra (2018) argues that persons with disabilities in low- and middle-income countries face structural constraints that make direct application of conventional productivity expectations inappropriate. In the PPDK Merbok context, trainees legitimately spend weeks on other scheduled activities (audits, examinations, welfare assessments), during which no sales are made. Production cycles are slower because the work fits around cognitive, physical, and emotional capacities. Periods of stock preparation are not accompanied by promotional activity.

The implication for analysis is that performance in OKU-operated enterprises should be evaluated cumulatively, on an annual basis, rather than month by month. Zero months are part of the labour-rights-respecting production model, not a sign of failure.

Ethics and Limitations

All data comes from records prepared for public administrative reporting; no identifying trainee information is used. Three limitations should be noted at the outset. Sales data cannot capture the full social and psychological dimensions of an intervention. The post-intervention window is twelve months, which is short. And the state-level comparison cannot fully control centre-specific factors such as leadership quality. The Limitations section returns to these points.

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Findings

The Twenty-Two-Year Sales Trajectory

Table 1 presents annual sales for Batik Chempaka from 2004 to 2025. Four phases are visible. The first decade (2004–2014) is sporadic, with recorded sales in only three of eleven years and an annual average below RM 200. The period 2015–2018 is one of modest stabilisation, with annual sales between RM 600 and RM 2,100. The year 2019 is the first significant outlier at RM 7,314, followed by COVID-19 disruption from 2020 to 2022. The years 2023 and 2024, during which the USR/KTP intervention was designed, piloted, and rolled out, see sales stabilise between RM 5,700 and RM 5,850. The year 2025, the first full post-intervention year using the new motifs, records RM 10,288.

Three reference points help calibrate the 2025 result: the immediately preceding year, the centre's own pre-intervention history, and the low point of the COVID-19 period. Cumulative sales for the pre-intervention period 2004 to 2022 (nineteen years) total RM 17,425.99, meaning that the single year 2025 produced 59 per cent of the cumulative revenue of the preceding nineteen years combined. The 2025 figure is approximately eleven times the pre-intervention annual average of RM 917 (RM 17,425.99 spread over nineteen years) and roughly fifteen times the 2022 figure of RM 690. Measured against 2024, the final year of the intervention period, the increase is 76 per cent (RM 10,288 against RM 5,836).

Table 1: Annual Sales of Batik Chempaka (2004 to 2025)

Year	Annual Sales (RM)	Phase / Context
2004	380.00	Inception (capital: RM 500)
2005–2009	0.00	Skill and product trial period
2010	740.00	
2011	410.00	
2012–2014	0.00	Inactive period
2015	615.00	
2016	2,065.00	
2017	1,234.50	
2018	1,143.00	
2019	7,314.49	First strong year
2020	80.00	COVID-19 collapse
2021	2,754.00	Partial recovery
2022	690.00	
2023	5,710.25	USR/KTP development phase
2024	5,836.00	Intervention period (Yusoff & Abdul Rahman, 2025)
2025	**10,288.00**	**Post-intervention (state EEP reports)**

Table 2: PPDK Merbok 2025 Monthly Sales with State-level Comparative Data (32 PPDK Centres in Kedah)

Month	PPDK Merbok (RM)	State Total (RM)	Merbok Share	State Rank
January	1,400.00	2,335.00	60.0%	1st

February	433.00	2,722.00	15.9%	3rd
March	0.00	2,456.50	0.0%	—
April	0.00	1,517.00	0.0%	—
May	390.00	2,415.00	16.1%	2nd
June	450.00	1,758.00	25.6%	2nd
July	2,710.00	4,905.50	55.2%	1st
August	2,400.00	5,132.50	46.8%	1st
September	602.00	3,317.90	18.1%	2nd
October	1,215.00	4,771.80	25.5%	1st
November	0.00	1,962.00	0.0%	—
December	688.00	3,466.00	19.9%	2nd
Total 2025	**10,288.00**	**36,759.20**	**28.0%**	**—**

The 2025 Monthly Profile and State-Level Comparison

Disaggregating 2025 by month permits direct comparison with the other 31 PPDK centres in Kedah, as the same EEP reports provide standardised data for all centres in the same calendar (Table 2).

PPDK Merbok recorded sales in nine of twelve months, with three zero-sales months (March, April, November) interpreted as set out in the Methodology section. In the nine active months the centre ranked first four times (January, July, August, October) and second four times (May, June, September, December), placing first or second in eight of its nine active months. The annual share-of-state-total figure of 28 per cent is the most striking single statistic in the dataset: one centre out of 32 accounts for over a quarter of the state's EEP sales.

The Comparative Picture

The state-level comparison is the analytical core of this paper. Across the 32 PPDK centres in Kedah, only one other (PPDK Felda Lubuk Merbau) approached PPDK Merbok's level of activity in 2025, with annual sales of approximately RM 9,400. The remaining 30 centres recorded annual totals well below this level, and many recorded zero sales in most months. The two leading centres together accounted for more than half of the state's 2025 EEP sales.

This concentration is the finding that disciplines any interpretation of the result. The 32 centres operate under the same state-level programme, receive comparable administrative support, and serve trainee populations with broadly similar disability profiles. With these structural variables held constant, the variation between centres has to be explained by centre-level factors. The USR/KTP intervention is the most distinctive of these factors at PPDK Merbok. While the design does not permit a strict causal claim, the comparative pattern is consistent with an intervention effect rather than with background variation.

The presence of a second strong performer (PPDK Felda Lubuk Merbau) complicates this slightly. That centre has not received comparable USR/KTP intervention, which means that strong performance is achievable through other routes. The point this raises is one this paper cannot fully resolve from the available data: whether PPDK Merbok's outcome reflects the specific USR/KTP intervention, the more general fact of having any structured external

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support, or something idiosyncratic to the centre itself. A follow-up comparative case study of the two centres would be the appropriate next step.

Institutional Outputs

Four institutional outputs support the sustainability argument developed in the Discussion. The UiTM–PPDK Merbok MoU formalises the academic partnership beyond the original intervention. The peer-reviewed publication of Yusoff and Abdul Rahman (2025) in the *International Journal of Modern Education* provides academic recognition. The long-standing distribution channel through Piglet Mama Shop in Matsusaka Mie, Japan (operating since approximately 2013) provides a stable international demand base. And subsequent engagements with the Japan International Cooperation Agency (JICA) Malaysia under the Kagoshima Prefecture International Cooperation Youth Experience Program, and with the Orang Asli Kensiu community in Ulu Legong, Baling, indicate that the intervention has generated subsequent activity rather than tapering off.

Discussion

What the Data Support

The strongest claim the data support is the comparative one. PPDK Merbok's 28 per cent share of state EEP sales, sustained across multiple months and produced under the same programme structure as 31 peer institutions, is not adequately explained by background variation. The pattern is consistent with a positive contribution of the intervention, even though the design cannot rule out unmeasured centre-level factors. The temporal claim is weaker. A 76 per cent year-on-year increase is large, but a single post-intervention year cannot distinguish a durable shift from a launch-period spike, and the historical sales record includes one previous outlier year (2019, RM 7,314) that suggests episodic peaks are part of the centre's pattern. The participant survey reported by Yusoff and Abdul Rahman (2025), summarised above, provides further corroboration: the shift from a majority 'Uncertain' to a majority 'Strongly Agree' on knowledge self-assessment maps onto the subjective dimension of capability expansion that the sales data alone cannot capture. The combined picture is more robust than any single line of evidence on its own, but the case rests primarily on the state-level comparison.

Engagement with the Capabilities Literature

Where this paper contributes to the capabilities literature on disability and enterprise is in its use of market-validated outputs as the empirical indicator. Sen (1999) would not necessarily endorse this paper's emphasis on sales, since he is explicit that income is instrumental rather than constitutive of capability. The position taken here is closer to Nussbaum's (2011) and to the recent argument of Ramanujam and Caivano (2023): if a person can convert their own labour and creativity into income that the market actually recognises, this reflects an expansion of agency that self-report measures alone cannot capture, and it is the kind of evidence that disability policy reform requires.

On Beverland's (2005) authentic-branding argument, the data are supportive but partial. The sales data and state-level outperformance confirm that original local motifs can generate measurable consumer response. What is not confirmed is the mechanism. Beverland's account requires that consumers perceive the motifs as authentic and respond to that perception; the

present study has no consumer-side data, and the alternative explanation (that consumers respond to the disability-inclusive narrative rather than to motif authenticity) cannot be ruled out. This ambiguity is worth taking seriously in light of Dhar's (2025) argument that craft communities produce cultural value that is not fully captured by market signals.

Sustainability

The argument for sustainability rests on three points. First, the wooden printing blocks are durable and reusable, so the marginal cost of producing additional items is low. Second, dependence on any single individual is limited, because design and production knowledge has been transferred to several staff and trainees rather than held by one person.

Third, the UiTM–PPDK Merbok MoU is in place, the Japan distribution channel has operated for more than a decade, and the intervention has been documented in a peer-reviewed publication. Together these provide a reasonable degree of institutional anchoring, though not a guarantee of permanence.

Zainal @ Ismail et al. (2025) argue that the sustainability of Batik Merbok requires coherence across the pillars of education, industry and community, supported by enabling conditions of policy, finance, digital literacy and community values. Batik Chempaka at PPDK Merbok corresponds reasonably well to the education–industry–community configuration they propose, but digital literacy remains underdeveloped. Two risks follow. First, the digital marketing barrier identified by Yusoff and Abdul Rahman (2025) is not addressed by the present data, and further revenue growth is likely to depend on overcoming it. Second, the concentration of state-level sales in two of 32 centres is itself a concern: it is not clear from the available data whether the leading centres are expanding total demand or capturing sales that would otherwise have gone to centres nearby.

If the second interpretation holds, the net return from transplanting the Merbok model across the network would be smaller than the gross figures suggest.

Scalability and the Replication Question

The gap between PPDK Merbok and the majority of peer centres is the policy-relevant finding. Most other Kedah PPDKs recorded annual totals well below RM 1,000, with many at zero in most months. Since structural conditions are broadly comparable across the network, the most parsimonious explanation is that PPDK Merbok benefited from a specific intervention (USR/KTP partnership with academic and master-artisan expertise) that other centres have not received.

If this is correct, the Triple Helix framework (Etzkowitz, 2008) offers a workable blueprint. The Merbok configuration paired a university partner, which supplied design training and mentorship, with a master block carver, who converted trainee motifs into production-grade tools, and a government welfare structure, which provided the centre, the trainee cohort and the EEP distribution channel. Reproducing that combination elsewhere, formalised through an MoU, would recreate the conditions associated with the Merbok result. This is also consistent with the broader USR agenda that Ahmad et al. (2024) and Chan et al. (2025) document as expanding across Malaysian higher education. The major caveat, as noted in the Findings, is that the data cannot exclude the possibility that PPDK Felda Lubuk Merbau's comparable

performance was achieved by a different route, which would make the USR/KTP partnership one viable approach among several rather than the only one.

Limitations

Four limitations are material. The post-intervention window is one calendar year, which cannot distinguish a sustained shift from a launch-period spike. Sales data cannot capture the full social and psychological impact of the intervention; participant interviews and consumer surveys would be needed for a richer picture. The state-level comparison does not control for unmeasured centre-level factors such as leadership quality or pre-existing artisan networks, which could partly explain the gap between PPDK Merbok and peer centres. And the relatively short historical baseline includes one outlier pre-intervention year (2019, RM 7,314), which suggests that episodic peaks may be part of the centre's natural variability and not solely a product of the intervention.

Four directions for further research follow. First, extending the sales series through 2026 and 2027 would show whether the effect persists. Second, a mixed-methods design combining sales data with measures of trainee and household well-being (contribution to household income, savings, subjective well-being) would test the capability argument more directly. Third, a comparative case study of PPDK Merbok and PPDK Felda Lubuk Merbau could help disentangle the causal pathways. Fourth, a piloted replication of the USR/KTP model at one or two additional centres, with PPDK Merbok as the reference case, would provide the most direct test of scalability.

Conclusion

The study set out to test whether the USR/KTP batik motif intervention at PPDK Merbok produced measurable economic effects. It drew on twenty-two years of centre-level sales records and one year of standardised state-level comparison data. On the within-case dimension, the sales trajectory changed sharply after the intervention; on the between-case dimension, the centre performed well above its peers; on sustainability, the evidence is encouraging but provisional.
In 2025 sales reached RM 10,288, a 76 per cent increase on 2024 and approximately eleven times the pre-intervention annual average of RM 917.

PPDK Merbok accounted for 28 per cent of all Kedah EEP sales and ranked first or second in eight of its nine active months. Read alongside the qualitative account of Yusoff and Abdul Rahman (2025), these figures add quantitative weight to outcomes previously reported only in qualitative terms. The policy implication is reasonably clear even though the causal question remains open: the Triple Helix partnership architecture that supported the Merbok result is worth piloting at other PPDK centres, with performance monitored over several years to establish whether the effect is durable.

Few community-based enterprises in the state network have produced returns of this magnitude, and the evidence assembled here suggests that developing the model into a replicable programme is a more productive next step than accumulating further standalone case studies.

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Ethics Statement: This study analysed aggregate administrative sales records held by PPDK Merbok and compiled by the Kedah state PDK coordinating office, accessed with the written permission of the centre's management. It involved no direct contact with human participants or animals, and no personally identifying trainee data were accessed or reported. The authors confirm that the research was conducted in accordance with accepted academic integrity and ethical publishing standards.

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