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DIGITAL MEMORY PRESERVATION IN AGING SOCIETIES: A PUBLIC-PRIVATE PARTNERSHIP IMPLEMENTATION FRAMEWORK

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Abstract— This paper proposes an implementation framework for the Digital Memory Jar initiative through public-private partnership (PPP) models, based on qualitative research with key stakeholders in Japan's aging care ecosystem. Drawing on interviews with elderly caregivers, public welfare officials, and digital technology experts, the study confirms the critical importance of digital memory preservation for maintaining elder dignity while identifying the necessity of governmental leadership in developing prototype applications. The framework transforms older adults from passive service recipients into active wisdom providers, sustaining their IKIGAI while strengthening intergenerational solidarity through PPP models that leverage governmental legitimacy alongside private sector innovation.

Keywords— Digital Memory Systems, Public-Private Partnership (PPP) Frameworks, e-Governance Innovation, Data Ethics and Elder Dignity, AI-Supported Aging Care

I. INTRODUCTION

A. A New Governance Model for Aging Societies

The global aging phenomenon presents societies with a fundamental choice regarding whether to view older adults primarily as burdens requiring care or as repositories of wisdom offering invaluable contributions to community wellbeing [1]. The Digital Memory Jar initiative represents an innovative e-governance approach that preserves and shares older adults' accumulated wisdom and experience through digital technology, facilitating intergenerational knowledge transfer [2]. This framework draws extensively on research demonstrating that IKIGAI in Japanese Blue Zone communities emerges not from individual achievement but from ongoing contribution to community wellbeing [3].

The realization of this vision requires public-private partnership models that fuse governmental public interest with private sector efficiency. Pure public sector implementation offers universal access and democratic accountability but often lacks innovation agility and sustained funding. Conversely, pure private sector implementation enables rapid innovation and self-sustaining business models but risks excluding marginalized populations and prioritizing profitable features over social impact. The PPP model emerges as an optimal approach that captures the benefits of both sectors while mitigating their respective limitations. This aligns with the framework of transpersonal care, which recognizes that wellbeing encompasses physical, mental, social, and spiritual dimensions that cannot be fully addressed through conventional services alone [4].

This paper presents empirical evidence from stakeholder interviews that validate the theoretical framework while identifying practical implementation requirements. The methodology section details the qualitative research approach, followed by findings that inform the PPP model structure and implementation strategy.

B. Research rationale

The rapid aging of societies worldwide has become one of the most profound demographic challenges of the 21st century, reshaping the foundations of welfare systems, intergenerational relationships, and collective memory. Japan, as one of the most aged nations, provides a critical case for examining how digital technologies can sustain elder dignity while preserving cultural continuity. Existing welfare policies have primarily focused on healthcare provision and physical support, often overlooking the psychological and social dimensions of wellbeing that are essential to maintaining purpose and self-worth among older adults.

In this context, the Digital Memory Jar initiative represents a paradigm shift - from perceiving older adults as recipients of care toward recognizing them as active knowledge contributors within communities. This transformation aligns with the broader evolution of digital governance and the increasing demand for inclusive innovation models that merge public legitimacy with private technological expertise. Thus, this study explores

how public–private partnership (PPP) frameworks can operationalize digital memory preservation as a sustainable and dignity-centered model for aging societies.

C. Aim and objectives

The primary aim of this research is to develop and validate an implementation framework for digital memory preservation that integrates governmental, private, and non-profit capacities under a PPP structure.

To achieve this aim, the study pursues the following objectives:

To conceptualize the role of digital memory in sustaining elder dignity and intergenerational solidarity.

To analyze stakeholder perspectives across government, private sector, and community organizations regarding responsibilities, risks, and equity considerations.

To design a practical PPP-based model that ensures technological innovation while safeguarding ethical, cultural, and social sustainability.

To provide empirical evidence from qualitative interviews that inform prototype development and future policy implementation.

This section bridges the theoretical foundation with practical application, positioning the Digital Memory Jar as a replicable model for inclusive governance in aging societies.

II. LITERATURE REVIEW

A. Theoretical Foundation: Integrating Empirical Insights with Cultural Wisdom

The empirical findings reinforce and extend theoretical foundations drawn from Japanese cultural wisdom and contemporary aging research. The emphasis on dignity protection aligns with the concept of IKIGAI, which represents the sense that one's existence matters to others and that continued living serves purposes beyond mere self-maintenance [5,6]. Interview participants consistently described how digital memory preservation could sustain elder purpose by creating tangible evidence of continued contribution to community wellbeing [7]. Digital memory preservation inherently utilizes reminiscence, a therapeutic tool proven effective in maintaining the cognitive communication skills of the elderly [8].

The principle of okagesama—living in gratitude for others' support—emerged implicitly in stakeholder discussions about reciprocal relationships between generations. Caregivers particularly emphasized how memory sharing transforms one-directional care relationships into mutual exchange where elders give wisdom while receiving support. This reciprocity proves essential for maintaining dignity and avoiding the demoralization that often accompanies total dependency. Research on welfare concepts in Japan demonstrates how systems maintaining space for reciprocal contribution create resilience to socioeconomic challenges [9].

The integration of IKIGAI philosophy with practical interventions requires careful attention to how purpose is cultivated and expressed through digital systems. Technology experts in our study emphasized that platforms must be designed to facilitate authentic engagement rather than imposing artificial structures that feel foreign to Japanese cultural practices. This aligns with research on IKIGAI philosophy and environmental design, demonstrating how intentionally designed systems create affordances for purpose cultivation that isolated individuals cannot generate alone [10].

B. Specific Partnership Structures

Drawing from stakeholder recommendations, several partnership models merit consideration. The outsourcing service model allows government to contract with private providers for Memory Jar service delivery while maintaining oversight and quality standards. This approach leverages private sector efficiency while preserving governmental accountability for public purposes. Public officials interviewed for this study expressed preference for this model given existing procurement frameworks and accountability mechanisms.

The co-development model involves joint platform development between government and technology companies. Government provides specifications reflecting public interest priorities including accessibility, privacy protection, and inclusive design. Companies contribute technical expertise and innovation capacity while sharing intellectual property in ways that ensure public benefit. Technology experts emphasized that this collaborative approach produces superior outcomes compared to government attempting independent development or companies creating solutions without public input.

The revenue-sharing model creates aligned incentives through base governmental funding combined with private sector revenue generation from premium services. Profits are split according to formulas reflecting relative contributions and risk assumption. This enables cross-subsidization where affluent users' payments fund free participation for economically disadvantaged elders. Stakeholders viewed this model as promising for achieving both sustainability and equity objectives.

The multi-stakeholder cooperative structure distributes governance among elder participants, facilitators, government agencies, technology providers, and community organizations. While administratively complex, this model best reflects the philosophical emphasis on interdependence and shared purpose that underlies the Memory Jar concept. Several participants advocated for this approach despite implementation challenges, arguing that distributed governance ensures diverse interests shape priorities.

C. Risk Allocation and Equity Assurance

Stakeholder interviews revealed nuanced perspectives on appropriate risk distribution. Government should accept demand risk given its capacity to maintain services despite participation fluctuations. Private partners should bear performance risk, with payment contingent on service quality and outcome achievement. This allocation creates

incentives for excellence while protecting public resources. Shared risks around technology obsolescence, privacy breaches, or regulatory changes require careful negotiation based on mitigation capacity.

Equity considerations dominated caregiver concerns about PPP implementation. Cross-subsidy mechanisms must ensure that premium services fund free participation for vulnerable populations. This is consistent with the need to ensure social sustainability in PPP elderly care projects [11].

III. METHODOLOGY

D. Research Design and Participants

This qualitative study employed semi-structured interviews with thirteen key stakeholders representing diverse perspectives on elderly care and digital innovation in Japan. The participant sample was purposively selected to capture insights from three critical stakeholder groups. Six elderly caregivers provided frontline perspectives on the daily realities of aging support, including both family caregivers and professional care workers with extensive experience in residential and community settings. Four public agency officials responsible for elderly welfare policy contributed insights on governmental priorities, resource constraints, and regulatory frameworks shaping elder care provision. Three digital narrative experts, including holders of doctoral degrees in engineering and recognized authorities in information and communication studies, offered technical expertise on digital preservation systems, user interface design for elderly populations, and data management considerations.

E. Data Collection Process

The interviews were conducted between September 6 and 26, 2025, with the research team dividing responsibility for conducting sessions to accommodate participants' schedules and geographic dispersion. Each interview lasted between sixty and ninety minutes, allowing for in-depth exploration of participants' experiences, perspectives, and recommendations. The semi-structured protocol enabled consistency across interviews while permitting flexibility to explore emergent themes relevant to each stakeholder group's expertise. All interviews were recorded with participant consent and transcribed verbatim in preparation for systematic analysis.

F. Data Collection and Analytical Approaches

The research team employed NVivo version 15 software to conduct systematic thematic analysis of interview transcripts. The analysis process began with initial coding to identify recurring concepts and patterns across interviews. Major themes were extracted through iterative coding cycles, with particular attention to convergent and divergent perspectives across stakeholder groups. The contextual flow of utterances was carefully examined to understand how participants constructed meaning around digital memory preservation, elder dignity, and systemic support requirements. Word cloud visualizations provided overview perspectives on dominant concepts and their relative emphasis across interviews. Key statements were identified and analyzed to understand deeper meanings and implications for framework development.

The DMJ is structured as a platform that actively encourages the contribution of "life capsules"—digital narratives of wisdom, history, and advice. This active reflection on life's experiences serves to renew an individual's sense of meaning and purpose in later life [12], directly translating the cultural concept of Ikigai into a technological service.

G. Data Analysis

Using NVivo 15, we conducted thematic analysis to identify patterns in how participants integrated nature therapy into daily life [13]. The analysis process involved multiple rounds of coding, with themes emerging through iterative engagement with the data rather than being imposed through predetermined categories.

IV. FINDINGS

H. Key Findings from Thematic Analysis

The analysis confirmed several critical themes that inform the PPP framework design. Participants consistently emphasized the importance of elderly memories in the digital age, viewing these narratives not merely as historical records but as living wisdom essential for community continuity and individual meaning-making. The protection of personal dignity emerged as a paramount concern in welfare provision, with stakeholders stressing that technological solutions must enhance rather than diminish elders' sense of worth and autonomy. The utility and importance of digital transformation systems for supporting aging welfare societies received strong endorsement, though participants noted significant implementation challenges requiring systematic approaches.

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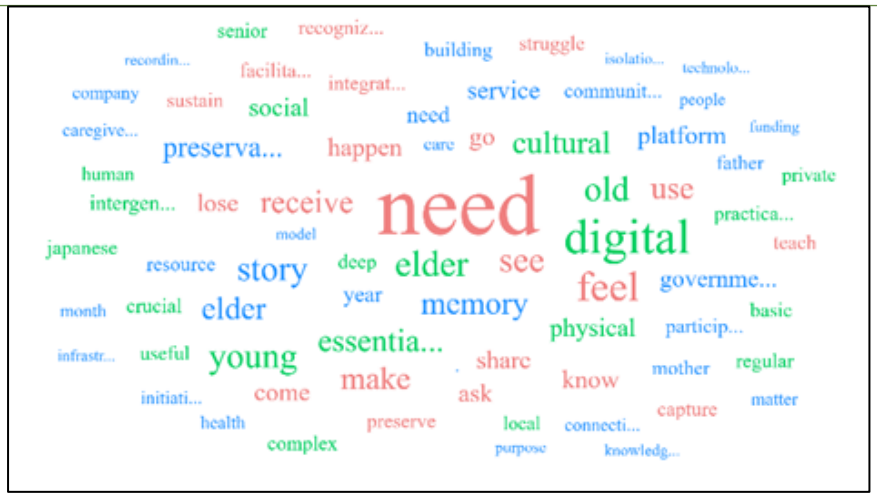

Fig. 1 Word Cloud of Major Themes from Caregivers

Most significantly, interviewees converged on the critical importance of governmental leadership in initiating and sustaining digital memory initiatives. Public officials acknowledged their unique responsibility for ensuring universal access and ethical standards, while caregivers and technology experts emphasized that government involvement provides essential legitimacy and coordination capacity. The necessity of developing prototype applications for experimental deployment and iterative evaluation emerged as a practical requirement, with participants stressing that theoretical frameworks must be tested through real-world implementation to identify unforeseen challenges and refine approaches based on user feedback.

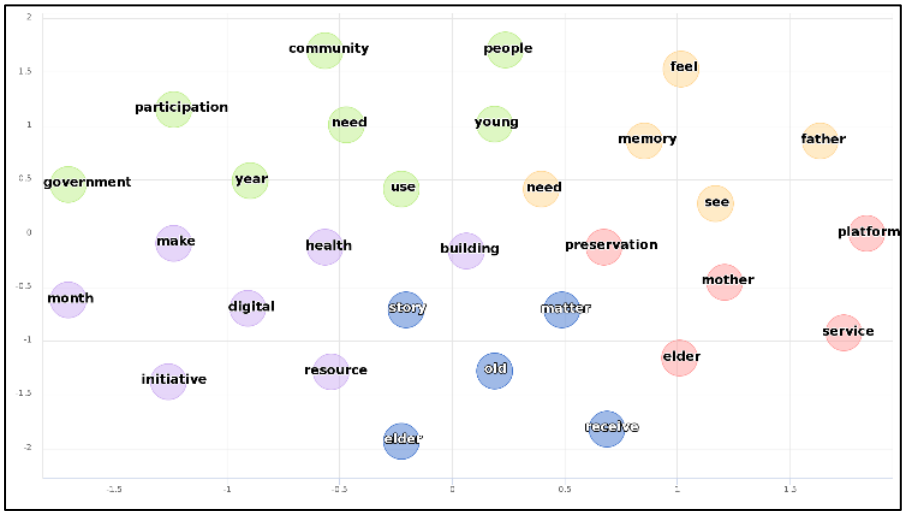

Fig. 2 Thematic Network Analysis Showing Relationships Between Key Concepts

Each narrative provides insight into caregiving realities, cultural values, and systemic gaps. According to the findings shown Fig. 1 and 2, the information provided by caregivers had illustrated a sentimental contribution as well as 40% positive outcomes, 25% neutral responses and 35% negative results. As a result, majority of caregivers have experienced a significant portion of positive experiences regarding digital memory preservation. Thematically, coding and notes have been presented through virtual presentations below (Figure 3).

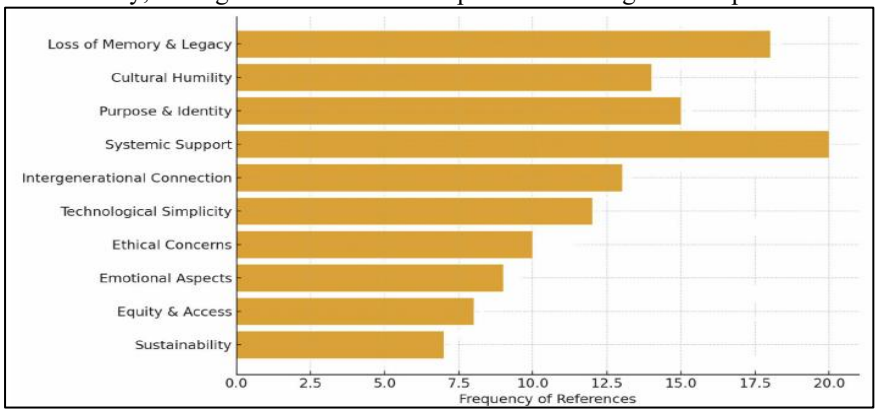

Fig. 3 Thematics Chart of categories and frequencies of responses

These clusters can be grouped in NVivo as nodes under “Cultural”, “Systemic”, “Technological”, “Psychological”, and “Social” categories (Table 1).

TABLE ICLUSTER EXPLANATION AND QUOTATION

Cluster No.	Keyword Cluster	Frequency	Meaning in Context	Representative Quote	Thematic Category
1	memory / story / preserve	53	The central focus — preserving elders' experiences, wisdom, and emotions digitally.	"We need systems that make elders understand their experiences are treasures."	Cultural & Emotional Core
2	elder / senior	48	Refers to older adults as knowledge bearers who wish to remain relevant and useful.	"Elders should be positioned as givers, not recipients."	Identity & Purpose
3	government / policy	34	Emphasizes institutional validation, funding, and the need for public trust.	"Government involvement provides the trust framework."	Systemic & Policy Context
4	technology / platform / digital	31	Discusses ease of use, accessibility, and integration of digital memory tools.	"It needs to be incredibly simple or it won't be used."	Technological Accessibility
5	caregiver / support	29	Represents caregivers' workload and emotional strain; desire for simple integration.	"We can't handle complex platforms; we're already overwhelmed."	Care Infrastructure
6	connection / community	25	Focuses on authentic intergenerational exchange and community vitality.	"Digital platforms should facilitate authentic need-based connections."	Social Connection & Inclusion
7	purpose / useful	22	Elders' need for purpose and validation through sharing their expertise.	"That sense of being needed that's what digital preservation must capture."	Psychological Wellbeing
8	trust / validation	18	Concerns about ownership, legitimacy, and data ethics in storytelling platforms.	"Who owns the stories? Will their memories be sold?"	Ethical / Legitimacy Concern
9	grief / emotion / healing	12	Addresses the therapeutic and emotional complexity of storytelling and loss.	"Creating memory jars can be therapeutic but also trigger sadness."	Emotional & Therapeutic Process
10	inequality / access / funding	10	Highlights digital divide and social inequality in participation.	"If premium services are only for those who can pay, we create inequality."	Equity & Justice

I. Implementation Strategy Based on Empirical Findings

a) The research findings strongly support phased implementation beginning with prototype development and experimental deployment. Initial pilots should focus on single communities where trusted relationships facilitate participation and honest feedback enables rapid iteration. Government leadership in convening stakeholders and providing base funding proves essential for pilot success. Technology partners should develop minimum viable platforms that can be refined based on user experience rather than attempting comprehensive solutions from the outset.

b) Stakeholders emphasized that success metrics must extend beyond technical functionality to encompass dignity preservation, IKIGAI cultivation, and genuine intergenerational exchange. Quantitative indicators such as participation rates and platform usage should be complemented by qualitative assessment of meaning-making and purpose sustainment. Regular feedback loops involving all stakeholder groups enable continuous improvement while maintaining focus on core social objectives.

c) Scaling strategies should proceed deliberately based on demonstrated success rather than rushed expansion that compromises quality. Geographic expansion to additional communities should be accompanied by platform enhancement, partnership network growth, and revenue model refinement. The ultimate goal is sustainable systems that honor elder dignity while preserving cultural wisdom for future generations.

Public officials interviewed for this study acknowledged their unique capacity to provide existing infrastructure through senior centers, public health systems, and social services. This infrastructure offers direct access to target populations, particularly those most isolated and vulnerable. Government funding provides the stable base that enables long-term planning, addressing concerns raised by technology experts about the sustainability challenges facing purely grant-dependent initiatives. Furthermore, governmental convening power assembles diverse stakeholders and coordinates across sectors in ways that private entities rarely achieve. Democratic accountability ensures that public purposes remain central even as commercial partners pursue revenue generation.

Private sector contributions emerged as equally essential in stakeholder discussions. Technology experts emphasized that government agencies typically lack the technical expertise, development capacity, and innovation culture necessary for creating user-friendly digital platforms. Private sector partners bring experience with interface design, data management, and scalable systems crucial for creating accessible tools that older adults can actually use. [14].

Media companies offer content expertise and storytelling skills that transform individual memories into compelling narratives. Several participants noted that simply recording memories is insufficient; the content must be curated and presented in ways that genuinely serve younger generations' needs. Senior living providers maintain direct relationships with target populations and possess operational capacity that would be difficult for government agencies to develop internally. Each private sector partner brings resources and capabilities that complement governmental assets in creating comprehensive service delivery.

Non-profit organizations emerged from stakeholder interviews as ideal intermediaries bridging public and private sectors. These organizations hold community trust while engaging in commercial relationships necessary for financial sustainability. Caregivers particularly valued non-profits' ability to advocate for elder interests when tensions arise between governmental efficiency demands and corporate profit motives. Non-profits employ the

social workers, gerontologists, and community organizers whose skills prove crucial for successful facilitation of memory sharing processes.

The ability to receive both public contracts and private donations enables flexible funding that reduces dependency on any single source. This diversification addresses sustainability concerns raised by all stakeholder groups. Non-profits maintain independence to advocate for participant interests, providing a buffer between vulnerable elders and powerful institutions. Research on community-based approaches to healthy aging confirms that such intermediary organizations play essential roles in translating policy intentions into lived experiences [3].

V. DISCUSSION

A. Lessons from Japanese Practice

Japanese communities offer valuable precedents for systematic memory preservation and intergenerational exchange that illuminate both theoretical principles and practical implementation strategies. Okinawan practices of yuimaru (reciprocal support) and moai (lifelong social groups) create contexts where elder wisdom naturally transmits through sustained relationships. These traditional systems embody the principle of rita-teki kōken (altruistic contribution), where individuals find fulfillment through serving others rather than pursuing individual achievement. Digital implementations can honor these principles while extending reach beyond geographic limitations, creating virtual spaces where the spirit of mutual support transcends physical boundaries.

The concept of kenjō no kokoroe, the virtue of humility and modesty, emerged repeatedly in stakeholder interviews as essential to successful memory sharing. Elders often hesitate to share their experiences, viewing their knowledge as ordinary rather than valuable. Successful facilitation requires acknowledging this cultural tendency while gently affirming that lived experiences constitute irreplaceable wisdom. This delicate balance between respecting elder humility and encouraging contribution reflects deeper Japanese values where true worth emerges through quiet service rather than self-promotion. The digital framework must therefore create contexts where sharing feels like responding to genuine need rather than boastful self-assertion.

Critical success factors identified through both literature review and stakeholder interviews reinforce the importance of cultivating spaces for altruistic expression. Genuine voluntary participation emerges when elders perceive that their contributions will tangibly benefit others, particularly younger generations facing challenges they once navigated. This rita-sei (altruistic nature) provides sustainable motivation far exceeding any external incentives or institutional mandates. The framework succeeds when it channels this natural inclination toward helping others into structured opportunities for meaningful contribution.

Authentic respect for elder autonomy proves equally crucial, reflecting the Japanese principle of jiritsu (self-reliance) balanced with kyōzon (coexistence). While elders value independence, they also recognize their embeddedness in networks of mutual support. The Memory Jar framework honors both dimensions by providing elders control over their contributions while facilitating connections that strengthen community bonds. Participants decide what wisdom to share, how to frame their narratives, and who may access their memories, maintaining agency even as they contribute to collective resources.

Tangible evidence of impact emerged as perhaps the most powerful sustaining force for continued participation. When elders learn that their shared experience helped a young parent navigate work-life tensions, guided a new immigrant through cultural adjustment, or provided comfort to someone facing loss, the confirmation of their continued relevance generates profound meaning. This feedback loop transforms abstract concepts of legacy into concrete experiences of ongoing contribution, sustaining what research participants described as ikiru imi—the meaning of continuing to live—through demonstrated service to others.

Skilled human facilitation proves as important as technical platforms for eliciting meaningful memories and creating safe spaces for vulnerability. Facilitators trained in ma no bunka (the culture of space/pause) understand when to remain silent, allowing elders time to gather thoughts and courage. They recognize that the most profound wisdom often emerges after long pauses that impatient interviewers might rush to fill. This patience, combined with genuine appreciation for elder experiences, creates conditions where participants feel safe exploring difficult memories and articulating hard-won insights.

Community events celebrating archived memories and facilitating intergenerational dialogue create essential feedback mechanisms that sustain participation. These gatherings, reminiscent of traditional storytelling circles, transform digital archives into living repositories actively engaged with contemporary challenges. When younger community members publicly acknowledge how elder wisdom helped them navigate difficulties, the recognition validates not just individual contributions but the entire framework's premise that older adults remain valuable community resources deserving respect and attention.).

VI. CONCLUSION

This empirical study confirms that Digital Memory Jar initiatives require public-private partnerships to achieve both social impact and financial sustainability. Stakeholder perspectives converge on the necessity of governmental leadership to ensure legitimacy, equity, and coordination while private sector innovation enables technical excellence and operational efficiency. Non-profit intermediaries bridge these sectors while maintaining focus on elder dignity and community benefit.

The research findings demonstrate that theoretical frameworks must be grounded in practical realities of implementation. Prototype development and experimental deployment enable iterative refinement based on user

feedback. Success requires attention to cultural context, human facilitation, and genuine respect for elder autonomy. Technology serves humanity best when guided by deep cultural wisdom about interdependence and contribution. Public-private partnerships work best when structured to honor rather than exploit vulnerable populations.

The question facing aging societies is not whether we can afford to implement such initiatives but whether we can afford not to. The social costs of isolation, purposelessness, and eroded intergenerational connection far exceed the investments required for Digital Memory Jar implementation. PPP models provide pathways that are ambitious in vision yet pragmatic in execution, honoring elder dignity while building sustainable systems for cultural preservation and intergenerational solidarity.

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