

Progress Report: Digital Product Passport Research Project, Fall 2025

By Janejira Sutanonpaiboon

This report summarizes the progress of my Fall 2025 sabbatical research project, titled *Leveraging Digital Product Passports for Sustainable Business Strategies: Integration of Technology and Environmental Accountability*, conducted in collaboration with Dr. Wanida Kanakard and Dr. Kulyakorn Khuanmar from the Faculty of Engineering at Khon Kaen University.

The project investigates the role of Digital Product Passports (DPPs) in supporting sustainable business strategies by integrating digital technologies with environmental accountability frameworks. Our interdisciplinary approach draws from digital innovation, business strategy, and environmental science.

Over the reporting period, our research team achieved several critical milestones:

1. Development of Theoretical Framework and Research Model

We constructed a comprehensive theoretical framework that integrates two key models:

- **Unified Theory of Acceptance and Use of Technology (UTAUT)** by Venkatesh et al. (2003), to assess user acceptance and behavioral intention toward DPP adoption.
- **Task-Technology Fit (TTF) Theory**, as conceptualized by Goodhue & Thompson (1995) and later extended by Zigurs & Buckland (1998), Yen et al. (2010), and Howard & Rose (2018) to evaluate the alignment between DPP capabilities and business needs.

This integrated framework serves as the foundation for our research model, which we refined through team discussions and consultations with academic peers.

2. Formulation of Research Questions and Hypotheses

We developed a focused set of research questions addressing:

- The technological readiness and perceived usefulness of DPPs.
- The fit between DPP functionalities and business tasks.
- The influence of environmental responsibility on adoption intention.

Based on these questions, we formulated testable hypotheses derived from the UTAUT and TTF constructs, including performance expectancy, effort expectancy, task fit, and behavioral intention.

3. Literature Review

Our team conducted an extensive review of scholarly and industry literature related to:

- Digital Product Passports and their role in supply chain transparency.
- Technology adoption models in business settings.
- Sustainability reporting and environmental accountability frameworks.

This review helped identify current research gaps and establish the relevance of our study.

4. Survey Instrument Design

We developed a structured survey instrument using validated items from UTAUT and TTF literature, adapted to the DPP context. The survey includes both quantitative Likert-scale items and qualitative prompts for business insights.

5. Pilot Testing and Initial Data Collection

We are currently conducting a pilot study with a sample of local businesses in the Khon Kaen University area. Feedback from this ongoing pilot will help refine survey clarity and structure. However, progress has been slower than initially anticipated due to funding constraints, which delayed the start of data collection. Despite this, we remain committed to completing the pilot phase as planned.

Moving forward, our research will expand to include broader and more diverse samples:

- **Data Collection Expansion:** We plan to conduct large-scale surveys with businesses across various regions of Thailand. This will enhance the generalizability of our findings.
- **Data Analysis:** Once sufficient data is collected, we will employ statistical techniques (e.g., Structural Equation Modeling) to test our hypotheses and validate the research model.
- **Working Paper Submission:** While the project is ongoing, we aim to submit a working paper to an international academic conference. Presenting the research at this stage will allow us to receive critical feedback from global peers and improve the study before final publication.
- **Peer-Reviewed Publication:** Upon completing the full research cycle, we plan to submit the finalized paper to a reputable peer-reviewed journal in the fields of sustainable business or digital innovation.

During my sabbatical leave in Fall 2025, our research team made substantial progress in building a solid foundation for our investigation into Digital Product Passports. By developing a theoretical framework, formulating hypotheses, designing a survey, and initiating pilot testing, we are well-positioned for the next phases of our research. While some delays were encountered, we are moving forward with renewed focus and look forward to presenting our work at an international conference and continuing toward peer-reviewed publication.