Green Digi Fash Tech Manager

Research Methodology for Interviews and Case Studies

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To create a rigorous and impactful case study methodology for WP2 of the "Green DigiFashTech Manager" project, we will use a methodology rooted in established case study research standards (Yin, 2018; Stake, 2006; Eisenhardt, 1989). This methodology is designed to provide in-depth insights into the digital transformation practices of companies within the fashion and textile industry, aligning with the project's objectives of mapping, diagnosing, and fostering sustainable digital innovations. This enables a grounded and adaptable methodology that aligns closely with WP2's objectives of producing a diagnostic tool and job profiles informed directly by empirical data.

Please find in the following the methodology, including research techniques, interview guidelines, and questionnaire design, with respective justifications.

1. Case Study Methodology Choice: Embedded Multiple-Case Study Design

Justification: adopting an embedded multiple-case study design (Yin, 2018) is effective when studying multiple cases (e.g., different fashion and textile companies) within a single project to identify patterns and contrasts. This approach enables each case to be examined individually while also allowing cross-case analysis, which strengthens the generalizability of findings and increases the study's external validity. Each case (company) will have embedded units of analysis, such as *digital tools used, challenges, and training needs*, enabling detailed **exploration**.

2. Case Selection Criteria and Sampling Strategy

Purposeful Sampling

- Sample Size: 5 cases per partner, totaling 20 cases consortium-wide.
- Criteria for Case Selection:
    - Diverse Digital Maturity: Select companies with varying levels of digital maturity to understand the spectrum of digital practices.
    - Sustainability Orientation: Prioritize companies that actively integrate sustainable practices, as this aligns with project goals.
    - Sector Representation: Include companies from different segments within fashion and textiles to provide a comprehensive sector view.

Justification: Purposeful sampling (Patton, 2015) allows us to focus on cases that provide the richest insights into digital and sustainable practices, ensuring that the data collected is relevant and directly contributes to the project's objectives. This sampling strategy is common in multiple-case studies aiming for depth and insight rather than statistical representation.

3. Data Collection Techniques

To achieve a well-rounded understanding of each case, we will use a combination of **qualitative data collection techniques**:

3.1. Semi-Structured Interviews with Key Stakeholders

Participants: Digital transformation managers, sustainability officers, and relevant technical staff within each company.

Purpose: To understand the organization's digital strategies, technology adoption, challenges, benefits, and the environmental and social impact of digital practices.

Structure: Semi-structured, with a predefined guide but flexible enough to explore unexpected themes.

Justification: Semi-structured interviews are ideal for case studies as they provide depth and allow for probing into specific topics while also accommodating the unique contexts of each case (Kvale & Brinkmann, 2015). They are especially suited for collecting insights from professionals who have experiential knowledge of their companies' digital transformation.

3.2. Document Analysis

Sources: Company reports, sustainability statements, technology adoption records, and any available policy documents.

Purpose: To complement interview data with factual information on digital tools used, sustainability initiatives, and organizational strategies.

Justification: Document analysis provides secondary data that can validate or challenge findings from interviews, offering a more comprehensive view (Bowen, 2009). It's valuable in multiple-case studies where triangulation strengthens the reliability of findings.

***Additional Note**: Researchers are encouraged to refer to **Appendix 1 – Practice Themes** for examples of innovative green and digital strategies. This resource outlines categories and descriptions of practices, offering a framework for identifying and documenting impactful initiatives across case studies.*

3.3. Observation (Optional/If feasible)

Method: On-site visits to observe the digital tools in action, production processes, or workflows that incorporate digital innovations.

Purpose: To provide contextual understanding and observe the integration of digital and sustainable practices.

Justification: Observations can reveal insights that may not surface during interviews or document analysis, offering firsthand data on the operational aspects of digital practices (Yin, 2018). However, this may not be feasible for all cases, especially if companies are geographically distant or restricted by confidentiality requirements.

4. Data Analysis Techniques

4.1. Within-Case Analysis

Process: Analyze each case individually to identify key themes related to digital practices, challenges, training needs, and sustainability impacts.

Method: Coding and thematic analysis using software (e.g., Excel, NVivo, or MAXQDA) to organize data into categories.

Justification: Within-case analysis allows each case to be understood on its own terms, providing a holistic view before comparing cases (Eisenhardt, 1989). This approach ensures that the unique context of each company is captured, which is critical in understanding varying levels of digital maturity and sustainability integration.

4.2. Cross-Case Analysis

Process: Compare and contrast themes across all cases to identify patterns, similarities, and differences.

Method: Use pattern matching and explanation building to connect the findings back to the project's objectives, especially regarding the development of a diagnostic tool.

Justification: Cross-case analysis enhances the study's robustness and generalizability (Miles, Huberman, & Saldaña, 2014). This is essential for fulfilling the WP2 objective of creating a diagnostic tool that applies broadly across the fashion sector.

5. Interview Guidelines and Questioning Approach

Guidelines for Conducting Interviews:

- **Preparation**: Review the company's background and digital strategies based on publicly available documents to tailor the interview questions.
- **Setting**: Aim for a neutral, comfortable setting (in-person or virtual), ensuring privacy to encourage openness.
- **Ethical Considerations**: Obtain informed consent, explaining the purpose of the study, data usage, and confidentiality.
- **Recording**: Record interviews (with permission) for accurate transcription and analysis.

Justification: Following these guidelines ensures high-quality data collection and respects ethical considerations, which are crucial in case study research to build trust and collect authentic information (Kvale & Brinkmann, 2015).

6. Questionnaire Design

The questionnaire should be structured to align with the project's goals while remaining adaptable to each company's specific context.

Section 1: Background Information

- Company size, sector, digital maturity level.
- Sustainability strategy/goals
- Digitalization strategy/goals

Section 2: Digital Tools and Technology Adoption

- What digital tools (e.g., AI, 3D design, data analytics) does your company use in operations?
- How were these tools integrated into your processes?

Section 3: Benefits and Challenges

- What benefits has your company experienced from using digital tools?
- What challenges have you faced in implementing and scaling these technologies?

Section 4: Training and Skill Requirements

- What training do employees need to use digital tools effectively?
- Are there any gaps in digital skills that your company is actively addressing?

Section 5: Sustainability and Social Impact

- How do your digital practices align with sustainability goals?
- What environmental or social impacts have you observed from using these technologies?

Justification: This questionnaire design ensures alignment with the WP2 objectives of understanding digital tools, assessing training needs, and evaluating sustainability impacts. Each section is designed to collect specific information relevant to the diagnostic tool and job profile, making the data actionable for project deliverables.

Deductive vs. Inductive Approach: Project Suitability and Justification

Inductive: An inductive approach is generally more appropriate for this case study design, particularly because the project's objectives aim to explore, understand, and map out patterns of digital transformation and sustainability practices across diverse companies. Here's why an inductive approach aligns well with the project's goals:

Exploratory Nature of the Project: The project aims to diagnose current digital practices, challenges, and training needs without a predefined framework, allowing the data collected to shape understanding. An inductive approach enables researchers to gather diverse perspectives from industry practitioners and build knowledge from specific observations without assuming outcomes based on existing theories or frameworks.

Complexity and Diversity in Company Practices: Each company may vary widely in digital maturity, sustainability goals, and operational contexts. An inductive approach allows flexibility in analyzing the unique characteristics and emerging themes within

each case, rather than testing a predefined hypothesis. This is essential for creating a diagnostic tool and job profiles tailored to real-world observations rather than imposed assumptions.

Data-Driven Insights to Inform Tool Development: Since WP2's ultimate goal is to develop a diagnostic tool, an inductive approach will allow the team to ground the tool in the empirical insights and themes derived directly from companies' experiences. The patterns identified can guide the design of the diagnostic tool to ensure it is relevant and useful across various levels of digital maturity.

Considerations for an Inductive Approach

- Openness to Emerging Themes: The research team must remain open to new, unexpected themes that emerge during data collection. This requires flexibility in interview questions and adaptive coding during data analysis.
- Depth in Data Collection: To ensure that the inductive approach fulfills the project goals, detailed data must be collected from each case, including rich descriptions of practices, experiences, and perspectives on digital transformation and sustainability.
- Iterative Data Analysis: Inductive analysis is typically iterative, requiring continuous back-and-forth between data collection and analysis. The research team should plan to revisit earlier interviews or documents if new patterns arise, refining and validating emerging themes.

When a Deductive Approach Could be Useful

A purely inductive approach may not fully meet project needs if there are very specific hypotheses or constructs that need testing. In that case, a hybrid approach might be considered, where an inductive approach forms the primary basis of exploration, and deductive elements are introduced to assess particular patterns (e.g., whether companies with higher digital maturity face fewer skill gaps).

In summary, an inductive approach is well-suited to exploring the digital transformation landscape in the fashion and textile industry without constraining findings to preconceived hypotheses.

Appendix 1 – Practices themes

Category	Practice	Description
Green Practices	Organic Materials	Use of materials like organic cotton, hemp, etc.
	Recycled Materials	Use of recycled fibres and fabrics
	Low Water Usage	Processes that minimize water consumption
	Renewable Energy	Use of renewable energy sources in production
	Waste Reduction	Practices to minimize waste in production
Digital Practices	Digital Design Tools	Use of digital tools for designing and prototyping
	Virtual Fashion Shows	Hosting fashion shows in virtual environments
	E-commerce Sustainability	Implementing sustainable practices in online retail
	Digital Marketing Ethics	Ethical practices in digital marketing and advertising
	Stakeholder Communication Tools	Using digital platforms like Microsoft Teams, Slack, and Zoom for seamless stakeholder engagement and collaboration.

Category	Practice	Description
	Project Management Software	Implementing tools like Trello and Asana to enhance project coordination and alignment with sustainability goals.
Educational Practices	Sustainability Training	Providing vocational training programs to equip professionals with skills in sustainability and digital tools.
	Circular Economy Awareness	Offering workshops on circular economy principles, including recycling, upcycling, and resource optimization.
	Industry Collaboration	Facilitating partnerships between educational institutions and industry leaders to drive green and digital innovation.
Innovation Practices	AI-Driven Insights	Leveraging AI to analyze data and predict trends for optimizing sustainability in production and operations.
	Digital Collaboration Platforms	Using cloud-based tools like Google Workspace for real-time collaboration and resource sharing among teams.

References

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