

Do SME food processors with certification perform better environmentally, socially and economically? A case study from Kyrgyzstan’s dried fruits and nuts industry

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1. INTRODUCTION AND PROBLEM STATEMENT

- Kyrgyzstan’s dried fruits and nuts (walnuts, apricots, almonds, and pistachios) are central to rural livelihoods and small and medium food processing enterprises (SMEs)<sup>1</sup>
- Global demand for **certified** sustainable food is rising rapidly<sup>2</sup>.
- **Problem**
- Despite the potential, many SMEs in Kyrgyzstan struggle benefits of certification.
- Challenges include:
  - High costs of certification
  - Limited technical and managerial capacity<sup>3</sup>
  - Uncertainty over whether certification leads to higher returns
- **Research Gap**
- While much is known about certification in global agri-food, little evidence exists from Central Asia, where forest- and agroforestry-based SMEs dominate.
- Understanding the real impact of certification on SME performance is crucial for inclusive and sustainable value chain development.
- **Research Question**
- *How does certification affect the economic, environmental, and social performance of food processing SMEs in Kyrgyzstan?*

2. CONCEPTUAL FRAMEWORK OF RESEARCH

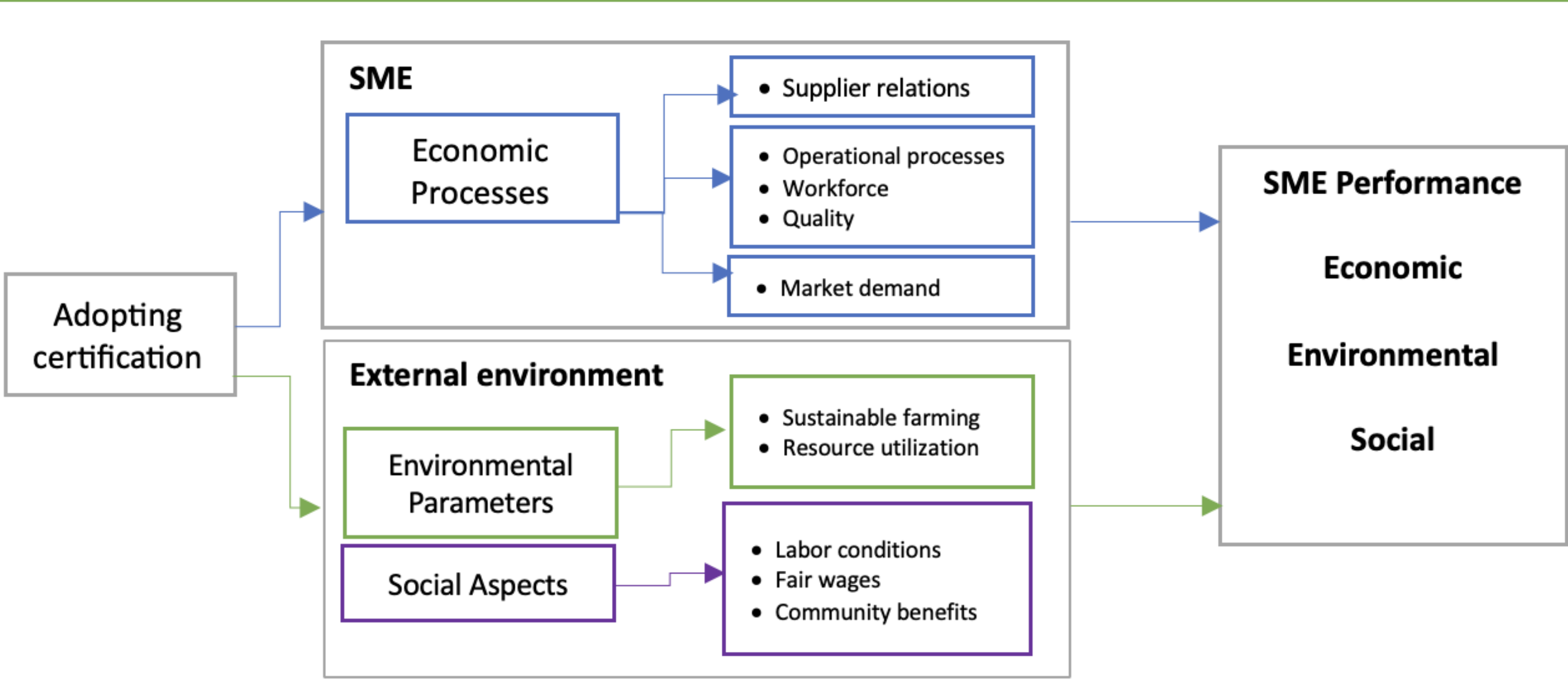


Fig. 1: Conceptual Framework. Source: own construct based on literature review

3. Methodology

- Multiple-case study design<sup>4</sup>
- Resource-Based View<sup>5</sup>
- Study area**
- Kyrgyzstan: Jalal-Abad & Batken
- Case selection:**
- In consultation with local communities, development stakeholders, and industry representatives
- Data collection**
- Semi-structured interviews (managers, workers, farmers, collectors)
- Facility and field observations
- Internal documents (protocols, financials, reports)

Tab. 1: Characteristics of case study food processing SMEs as of December 2024

SME	Region	Type	Product	Export markets	Type of certification	Funding
A	Jalal-Abad	P	Wild walnuts 90% Others (Capers, Almonds, Pistachios) 10%	Turkey 70% Uzbekistan 20% EU 10%	Organic (2021-2024)	own
B	Jalal-Abad	P	Wild walnuts, 90% Capers 5%, Dried apples 5%	EU 70% Turkey 20% Uzbekistan 10%	Organic (2017-2024)	own
C	Jalal-Abad	C	Wild walnuts 50% Almonds 40% Pistachios 10% Walnut oil 1%	Kyrgyzstan 10% Uzbekistan 86% U.S. 4%	Organic (2022-2023)	Grant
D	Batken	C	Dried apricots 90% Apricot oil 5% Apricot kurut* 5%	Kyrgyzstan 100%	Organic (2022-2023) Fairtrade (2018-2019)	Grant
E	Jalal-Abad	P	Wild walnuts 92% Dried prunes 5% Fresh cherries 3%	Kyrgyzstan 100%	No certification	No
F	Batken	P	Dried apricots 100%	Kyrgyzstan 90% Russia 5% Uzbekistan 5%	No certification	No

Notes: P = Private SME; C = Cooperative; \*Capacity refers to annual processing volume

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4. RESULTS

Tab 2: Performance of SMEs across Economic, Environmental, and Social dimensions

	Economic Performance	Environmental Performance	Social Performance
Privately Certified SMEs	<b>Strong</b> ✓ traceable sourcing ✓ protocols; ✓ trust of buyers; ✓ price premiums	<b>Moderate</b> ○ Focused on compliance rather than on environmental concerns to meet certification	<b>Strong</b> ✓ Improved hygiene, ✓ Structured labor practices ✓ Infrastructure investments ✓ Performance focused
Group-Certified Cooperatives	<b>Moderate</b> ✓ Improved coordination with farmers through training and documentation ○ Limited export due to lack of managerial capacity and short-term donor support	<b>Strong</b> ✓ Promoted composting, organic inputs, and sustainable harvesting ✓ Internal monitoring enabled collective ecological practices	<b>Moderate</b> ✓ Knowledge-sharing among producers ○ Informal labor practices ○ Gender imbalances
Non-Certified SMEs	<b>Weak</b> ○ Informal sourcing and low-cost production ○ No formal buyer relationships or export capacity	<b>Weak</b> ○ Depended on minimal compliance ○ Lack of internal initiatives / monitoring of practices	<b>Weak</b> ○ No formal labour contracts ○ Minimal attention to workforce well-being or community engagement

● Strong effect / ● Moderate effect / ● Weak effect

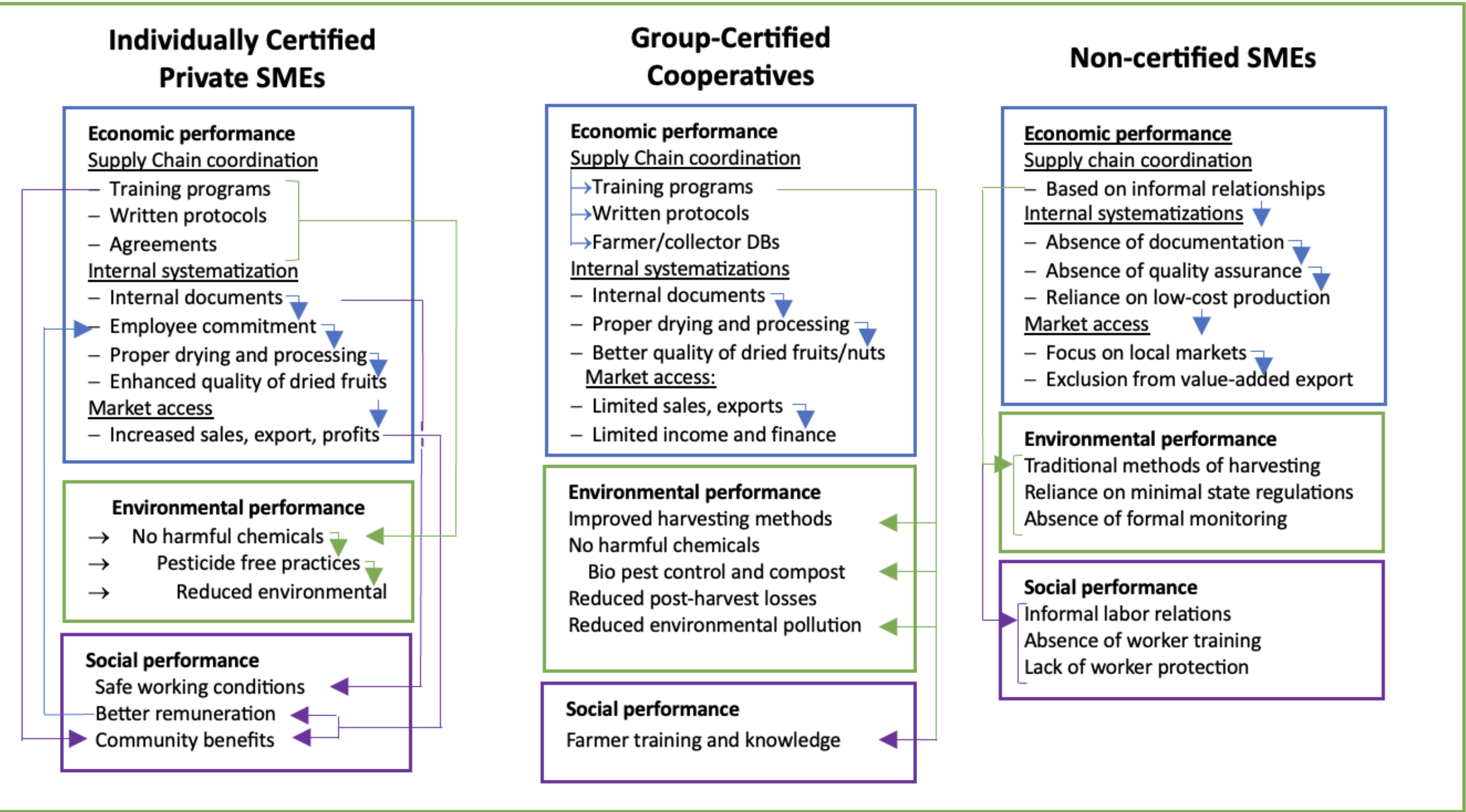


Fig. 2: Causal Mechanisms of Certification Effects on SME Performance

5. Conclusion

- Certification improves SME’s economic, environmental, and social performance of SMEs.
- Privately certified SMEs achieved the highest value through export contracts and premiums.
- Cooperatives showed strong environmental gains but struggled to capture economic and social benefits.
- Non-certified SMEs remained confined to low-value domestic markets with minimal sustainability practices.
- Effectiveness of certification depends on internal capacities, managerial skills, and long-term support.
- Policy should prioritize capacity-building, labor formalization, and sustained support to foster inclusive and sustainable agri-food value chains.

6. References

1. Rehnus, M., Mamadzhanyan, D., Venglovsky, B.I., Sorg, J.-P., 2013. The importance of agroforestry hay and walnut production in the walnut-fruit forests of southern Kyrgyzstan. Agrofor. Syst. 87, 1–12. <https://doi.org/10.1007/s10045-012-9516-6>

2. Bellassen, V., Drut, M., Hilal, M., Bodini, A., Donati, M., de Labarre, M.D., Filipović, J., Gauvrit, L., Gil, J.M., Hoang, V., Malak-Rawlikowska, A., Mattas, K., Monier-Dilhan, S., Muller, P., Napasintuwong, O., Peerlings, J., Poméon, T., Tomić Maksan, M., Török, Á., Veneziani, M., Vittersø, G., & Arfini, F., (2022). The economic, environmental and social performance of European certified food. Ecol. Econ. 191, 107244. <https://doi.org/10.1016/j.ecolecon.2021.107244>

3. Shigaeva, J., & Darr, D. (2020). On the socio-economic importance of natural and planted walnut (Juglans regia L.) forests in the Silk Road countries: A systematic review. *Forest Policy and Economics*, 118(June), 102233.

4. Yin, R.K., 2018. Case study research and applications (Vol. 6). Thousand Oaks, CA: Sage.

5. Barney, J., 1991. Firm resources and sustained competitive advantage. J. Manage. 17, 99–120. <https://doi.org/10.1177/014920639101700108>