



Consumers' attitudes, purchasing intentions and preferences related to baobab fruit shell briquettes in Malawi

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1. Introduction

- Sustainable energy supply is crucial for the rising global energy demand, driven by population growth, modernization, and urbanization¹.
- Low-income economies in Sub-Saharan Africa, such as Malawi, experience significantly lower energy access².
- Biomass accounts for 88.5% of the country's total energy supply.
- Firewood and charcoal meet majority of Malawi's total energy requirement leading to overexploitation of forest resources³.



Fig. 1: Baobab fruit shell briquette ⁵

- Baobab fruit shell is a cheap and easily accessible biomass resource in Malawi.
- It can be transformed into briquettes (fig. 1) for an environmentally friendly bioenergy source.
- Consequently, baobab fruit shell briquettes can aid in the transition to a bioeconomy⁴.

Objectives

- The study explores consumer attitudes, purchasing intentions, and preferences towards baobab fruit shell briquettes.
- It also investigates whether urban consumers have a higher attitude towards purchasing briquettes than rural ones, and the challenges in futuristic consumers' acceptance of these briquettes.

2. Methodology

Formulated hypotheses based on the following determinants:

- Purchasing intention (PI)
- Attitude (ATT)
- Subjective Norms (SN)
- Perceived Behavioral Control (PBC)
- Purchasing Behaviour (PB)
- Energy Knowledge (EK)
- Perceived Price (PP)
- Environmental Concern (EC)
- Socio-demographic variables

Developed questionnaire using Kobotoolbox software.

Study location: Linlogwe district (urban area) and Mangochi district (rural area) in Malawi.

200 participants.

Statistic analysis:

- Structural Equation Modelling (SEM) – Confirmatory Factor Analysis (CFA)
- Discrete Choice Experiments (DCEs)
- Moderator Analysis

3. Findings

Hypothesis (H)	Relationship	Std. beta β	Significance	Conclusion
H1	ATT → PI	0.69	0.00	Supported
H2	SN → PI	0.62	0.00	Supported
H3	PBC → PI	0.17	0.30	Rejected
H4	PBC → PB	0.12	0.27	Rejected
H5	PB → PI	0.51	0.00	Supported
H6	PB → ATT	0.49	0.00	Supported
H7	EK → PI	0.28	0.00	Supported
H8	EK → ATT	0.34	0.00	Supported
H9	PP → PI	0.51	0.00	Supported
H10	EC → PI	0.67	0.00	Supported

Table 1: Results of the structural model assessment
Source: Own elaboration

Attribute	Attribute level(s)	Coefficient	p-value
Availability and accessibility of fuel	Available and accessible most time	1.19	0.01
	Always available and accessible	0.96	0.07
Level of smoke produced	Emits little smoke	0.14	0.44
	Emits no smoke	0.12	0.59
Burning time of fuel	Longer burning time	0.29	0.19
Convenience of use	Easy to use	0.75	0.00
Proximity of collection site	-	-0.03	0.79
Market price per bundle for fuel	-	-0.00	0.20

Table 2: Results of the DCE
Source: Own elaboration

Parameters	Coefficient	t-value	p-value
Intercept	2.70	9.60	< 2e-16
Attitude	0.32	4.79	3.25e-06
Location	-0.94	-2.31	0.02
Attitude*Location	0.23	2.38	0.01

Table 3: Results of the moderating effect of urban and rural consumers (location).
Source: Own elaboration

4. Discussion and Conclusion

Subjective norms, purchasing behaviour, energy knowledge, perceived price, and environmental concern significantly influence consumers' attitude and intention towards baobab fruit shell briquette, while perceived behavioural control has no significant impact.

Consumers prioritize energy availability and accessibility, preferring products that are easily accessible and user-friendly.

Rural consumers have a more favourable attitude towards baobab fruit shell briquettes than urban consumers, possibly due to Malawi's rural population and rural energy demand.

The acceptance and establishment of baobab fruit shell briquettes in the Malawian market is expected to lead to a favourable future for this energy product, with improved awareness increasing its market success.

Acknowledgements

The project is supported by funds of the Federal Ministry of Food and Agriculture (BMEL) based on a decision of the Parliament of the Federal Republic of Germany via the Federal Office for Agriculture and Food (BLE), which we gratefully acknowledge.

With support from



Federal Ministry of Food and Agriculture

by decision of the German Bundestag

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