



Stakeholder-oriented Canvas business model: A tool for sustainable adoption of new technologies



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Introduction & Goals

- Adoption and dissemination of new agricultural technologies is associated with two main issues: (i) suitable means for demonstration, and (ii) factors associated with adoption
- Study focuses on digitalized decision tool providing personalized advice to rice producer, and modern threshing machine to increase rice farmer efficiency
- Study tests oriented business model approach as a pathway for the sustainable adoption of new technology
- Questions to be answered: (Q1) What is willingness to pay among farmers? (Q2) What business model can be used for adoption? (Q3) What are the weaknesses of proposed business model?



Figure 1. RiceAdvice interface and Output page
Source: AfricaRice (2021)

Methodology

- Quantitative data were collected by AfricaRice through Randomized Control Trial
- Delphi method was used to collect qualitative data from five experts in each technology, i.e. RiceAdvice and the threshing machine
- Data were analysed in 3 steps:
 - Willingness to pay analysis (Q1): t-test analysis to compare the mean for the three different groups/treatments (A, B, and C)
 - Business model formulation and cost-benefit analysis (Q2): Business Model Canvas (BMC) [1]
 - Business model simulation (Q3): "One-at-a-time" sensitivity approach [2] and run two scenarios at 10% marge. The simulation was done using a linear programming in MS Office Excel

Conclusion

- Q1: Rice farmer are willing to pay for the digitized extension service (\$12 to \$20/hectare);
- Q2: Business model is profitable and more when both technologies are combined, The business model pathway developed shows the steps for the sustainable adoption of new agricultural technologies;
- Q3: Price of service is an important factors of the business model, and need to be further analyzed;
- Further analysis following the pathway design in the figure 2.

Results and discussion

- Rice farmers are willing to pay between \$3 and \$5 per quarter acre to receive personalized advice, similarly to [3]

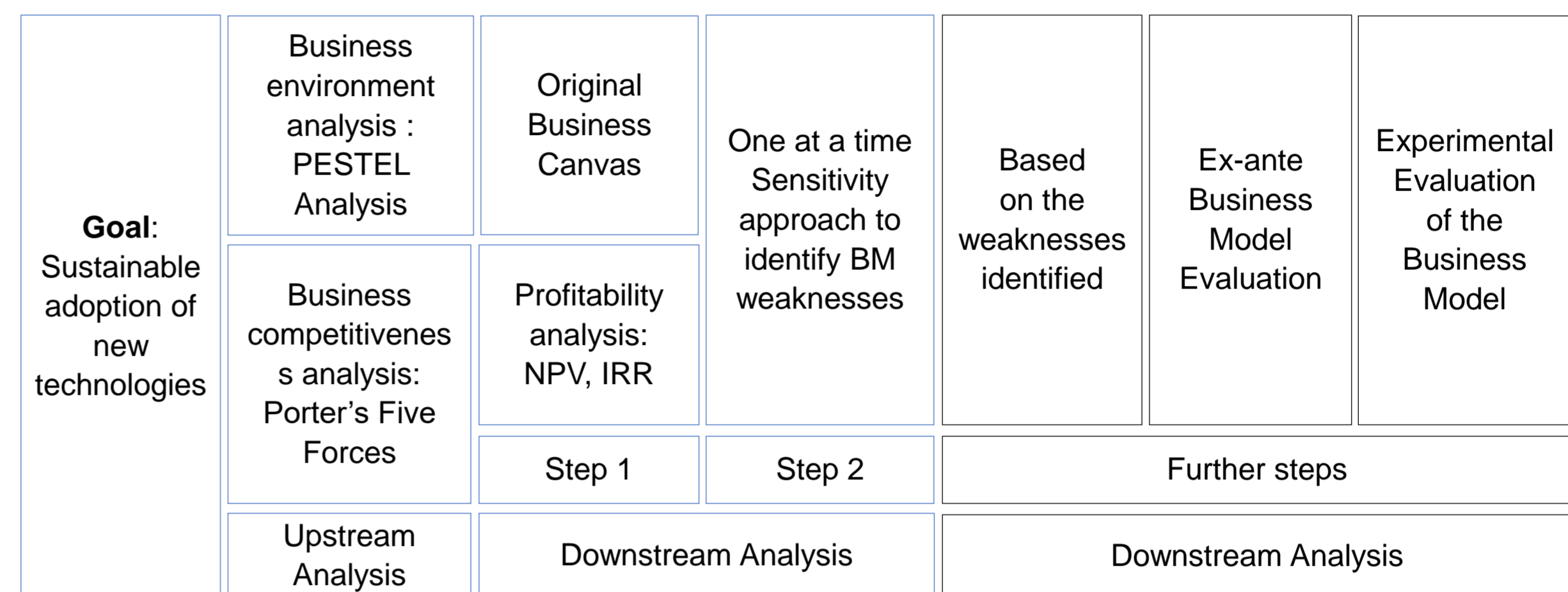


Figure 2. Proposed pathway of the Stakeholder - oriented business model

- All technologies can be chosen because they are independent of each other since both are positive and will then generate wealth for the shareholder

Table 1. Cost-benefit analysis of various business models

	Thresher	RiceAdvice	Thresher & RiceAdvice
Net Present Value	\$2,403.00	\$1,515.73	\$17,381.84
Internal Rate of Return	23%	28%	33%
Payback Period (years)	3.56	3.91	3.12
Profitability Index (PI)	\$1.29	\$1.59	\$1.67

- Sensitivity analysis results (figure 3) show:
 - At 10% increase in the forecast amount of rice to be threshed will increase the net present value by 19% and otherwise decrease it.
 - At 10% increase in the thresher price also increases the net present value by 19.4% and otherwise decreases it.
 - The model is weakly sensitive to the variable costs per unit for both the RiceAdvice and ASI threshing technologies.

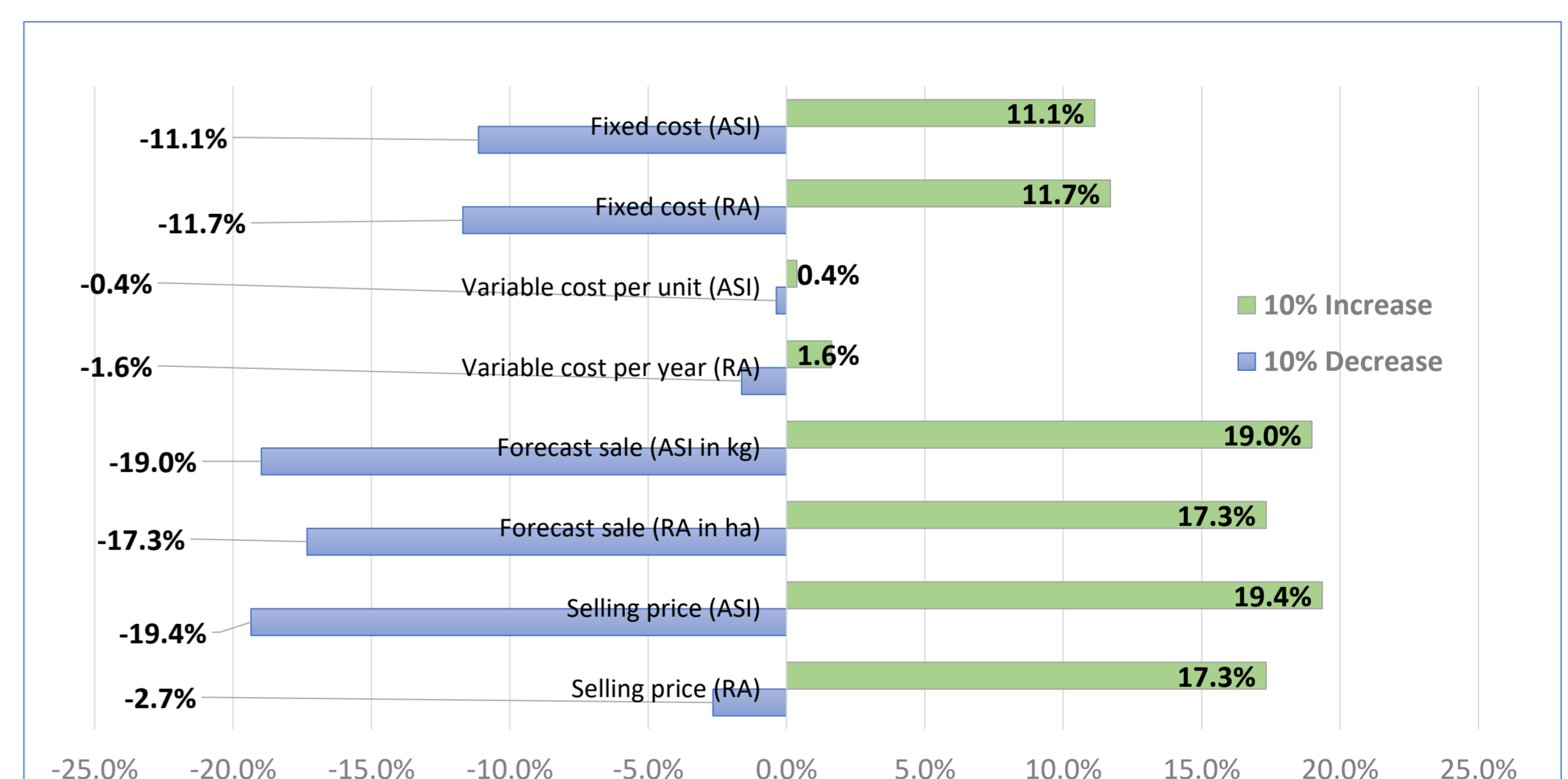


Figure 3. Sensitivity analysis

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