

BM Experimentation; A tool for calculating the financial and sustainable business case of new Business Models

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Extended abstract

Keywords

Business model innovation, innovation tools, business case for sustainability, business model experimentation, Sustainable Development Goals.

Purpose of the research

This paper seeks to make a contribution to business model experimentation for sustainability by putting forward a relatively simple tool. This tool calculates the financial and sustainability impact based on the SDG's of a newly proposed business model (BM). BM experimentation is described by Bocken et al. (2019) as an iterative-multi-actor experimentation process. At the final experimentation phases some form of sustainability measurement will be necessary in order to validate if the new proposed business model will be achieving the aims set in the project. Despite the plethora of tools, research indicates that tools that fit needs and expectations are scarce, lack the specific focus on sustainable BM innovation, or may be too complex and demanding in terms of time commitment (Bocken, Strupeit, Whalen, & Nußholz, 2019a).

In this abstract we address this gap, or current inability of calculating the financial and sustainability effect of a proposed sustainable BM in an integrated, time effective manner. By offering a practical tool that allows for this calculation, we aim to answer the research question; "How can the expected financial and sustainability impact of BMs be forecasted within the framework of BM experimentation?"

Literature review; the sustainable business case

A business case is a management tool connected to a business proposal that provides an analysis of a financial prognosis of the costs, benefits, risks that is expected of a new BM (Messner, 2013).

A business case for sustainability is different from a conventional economic business case in that it focusses on more than just the financial value created in the proposal. A business case for sustainability is mostly described as an outcome of a new BM where economic success is increased while performing well in social and environmental issues (Schaltegger, Lüdeke-Freund, & Hansen, 2012). In innovating BMs entrepreneurs are challenged to recognize both economic sustainability, as well as social and environmental sustainability equally (Parnell, 2008).

The proposed sustainable BM must be measured and argued for in a convincing way (Schaltegger, Lüdeke-Freund & Hansen, 2012). Therefore, the sustainability impacts and financial performance of the proposed BM and the trade-offs that ultimately must be made, need to be properly calculated (Epstein & Roy, 2003). For this a tool is presented.

This tool differs from other available tools like the Impact Forecast Tool (Impactforecast.org, 2021) in that it allows participants in the BM experimentation to simultaneously assess the trade-off between financial forecasting and sustainability impact analysis in order to achieve an optimal outcome. The social and ecological value created is based on the contribution to the SDGs. Furthermore the Excel tool is relatively easy to use and can be readily adjusted according to specific needs. Moreover linking results to the SDGs can help to connect to global priorities.

The Tool; The Positive Financial and Sustainability Business Case Calculation

The intention of the instrument is to support students and other practitioners in conceptualising the consequences and interrelatedness of their proposed BM solution. The tool is a predefined calculation model in Excel where users insert numerical variables related to the proposed BM. The inserted values should be validated based on a combination of desk and field research. These relevant variables are:

Financial business case calculation:

- P; Price of product/service;
- Q: Expected quantity sold in a period;
- Costs: Expenditures that are projected initially and after the start;
- F: Financing.

Sustainability case calculation:

- SDGs: The affected SDG(s);
- UN Targets related to SDGs (United Nations, 2015);
- Impact Indicator: Unit of measurement that captures either outputs, outcomes or impacts as contributions to a specific SDG;
- Q: Expected quantity sold in a period;
- Δ SDG; The positive/negative net effect per product/service on a relevant SDG based on the Impact Indicator compared to the initial BM or an industry standard.

The key variable is Δ SDG (Delta SDG). This value connects the Financial Business Case and the Sustainability Case. By linking this value to the expected quantity sold, the sustainability case or contribution to the SDGs is calculated in measurable units. The logic behind this reasoning is that by being successful with a new sustainable BM you drive out non-sustainable competitors like what the economist Joseph Schumpeter called “creative destruction (Hart, 2005)”. The variable Q acts as the driver. Increased sales mean increased sustainability performance of the newly proposed BM.

In order to visualize the tool an example is presented based on the start-up KLEER, a circular startup based on exchanging fashionable women’s clothing.

- Financial business case calculation of KLEER:

Figure 1;

Financial Business Case Calculation:

Designed for:

KLEER

Designed by: Owners

Date: 01/04/2021

Month	0	1	2	3	4	5	6	7	8	9	10	11	12	Total yr 1	Total yr 2
Revenues (cash-in)															
Expected sales in quantity	Q	194	388	582	776	800	800	825	825	830	830	830	830	8.510	9.960
Price product or service (incl VAT)	P	€ 43,00	€ 43,00	€ 43,00	€ 43,00	€ 43,00	€ 43,00	€ 43,00	€ 43,00	€ 43,00	€ 43,00	€ 43,00	€ 43,00	€ 43,00	€ 43,00
Sponsoring, etc.		€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0
Sales revenue (incl VAT)		€ 8.342	€ 16.684	€ 25.026	€ 33.368	€ 34.400	€ 34.400	€ 35.475	€ 35.475	€ 35.690	€ 35.690	€ 35.690	€ 35.690	€ 365.930	€ 428.280
VAT payable		€ 1.448	€ 2.896	€ 4.343	€ 5.791	€ 5.970	€ 5.970	€ 6.157	€ 6.157	€ 6.194	€ 6.194	€ 6.194	€ 6.194	€ 61.938	€ 74.330
Cash receipts excl. VAT		€ 6.894	€ 13.788	€ 20.683	€ 27.577	€ 28.430	€ 28.430	€ 29.318	€ 29.318	€ 29.496	€ 29.496	€ 29.496	€ 29.496	€ 303.992	€ 353.950
Costs (expenditures/cash-out)															
Total Initial Investment (specification)		€ 15.000													
Investment (pay out)		€ 15.000	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 15.000	€ 0
Cost of Goods sold (moment of payment, incl VAT)		€ 2.494	€ 4.989	€ 7.483	€ 9.977	€ 10.286	€ 10.286	€ 10.607	€ 10.607	€ 10.671	€ 10.671	€ 10.671	€ 10.671	€ 109.414	€ 128.057
Payroll expenses owner(s) (no VAT)		€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 30.000	€ 30.000
Payroll expenses staff members (no VAT)		€ 5.000	€ 5.000	€ 5.000	€ 5.000	€ 11.000	€ 11.000	€ 11.000	€ 11.000	€ 11.000	€ 11.000	€ 11.000	€ 11.000	€ 108.000	€ 132.000
Housing expenses		€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 2.500	€ 30.000	€ 30.000
Marketing expenses		€ 2.500	€ 750	€ 750	€ 750	€ 750	€ 750	€ 750	€ 750	€ 750	€ 750	€ 750	€ 750	€ 10.750	€ 10.750
Energy costs		€ 650	€ 650	€ 650	€ 650	€ 650	€ 650	€ 650	€ 650	€ 650	€ 650	€ 650	€ 650	€ 7.800	€ 7.800
Obsolete stock (10%)		€ 249	€ 249	€ 249	€ 249	€ 249	€ 249	€ 249	€ 249	€ 249	€ 249	€ 249	€ 249	€ 2.993	€ 12.806
VAT receivable		€ 4.060	€ 1.586	€ 2.019	€ 2.452	€ 2.505	€ 2.505	€ 2.561	€ 2.561	€ 2.572	€ 2.572	€ 2.572	€ 2.572	€ 30.538	€ 32.873
VAT net payable(-)/receivable					€ 1.022			€ 10.269		€ 10.813				€ 22.105	€ 41.958
average VAT%		21,0%													
Expenditures enterprise in period		€ 30.894	€ 16.638	€ 19.132	€ 22.648	€ 27.935	€ 27.935	€ 38.526	€ 38.526	€ 39.134	€ 39.134	€ 39.134	€ 39.134	€ 336.062	€ 426.244
Cash Balance		-€ 22.552	-€ 22.506	-€ 16.612	-€ 5.892	€ 572	€ 7.037	€ 3.986	€ 11.205	€ 18.574	€ 15.130	€ 22.499	€ 29.868	€ 31.904	€ 31.904
Business Case before Financing:														Positive business case	
														€ 31.904	

Conclusion: the financial business case is positive. After two years, the expected net cash inflow is €31,904.

- The sustainability case calculation:

Exchanging clothes means producing less new clothes. KLEER has a net positive effect on several SDGs (SDG3/6/11/12/15). Below the sustainability calculation of SDG12. This calculated effect on the SDG can be measured in reduced waste generation in kg's. The Delta SDG or ΔSDG in this case is the average weight of a piece of clothing sold at KLEER (0,36 kg). This ΔSDG is multiplied by the expected quantity sold (Q).

Figure 2:

Sustainability Case Calculation:															
Designed for: KLEER															
Designed by: Owners															
Date: 2021															
UN Sustainable Development Goal (17):	12. Ensure sustainable consumption and production patterns														
UN Targets (169):	12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse														
Impact indicators for the SDGs:	12.d Reduce waste generation through reuse in kg														
Period	0	1	2	3	4	5	6	7	8	9	10	11	12	Total yr 1	Total yr 2
Expected sales in quantity	Q	194	388	582	776	800	800	825	825	830	830	830	830	8.510	9.960
Impact indicator p/product compared to original BM	ΔSDG	0,36	0,36	0,36	0,36	0,36	0,36	0,36	0,36	0,36	0,36	0,36	0,36		0,36
Calculated effect on SDG's		70	141	211	281	290	290	299	299	301	301	301	301	3.083	3.608
Calculated effect of Entreprise on SDG in two years:														6.690	12.d Reduce waste generation through reuse in kg

The conclusion is that KLEER is expected to have a positive sustainability effect on SDG12 by reducing waste generation of 6.690 kg in two years.

Method

The tool has been iteratively developed and tested with a total of 400 students in a variety of national and international projects. To explore how the tool is used, 32 completed student projects were studied. The output was collected and analyzed and users and lecturers were questioned. The outcome of this analysis was used to improve the instrument in several iterations. The progress development of the instrument was controlled using the checklist for CBMI tool development.

Preliminary findings

Table 1: Checklist for CBMI tool development (Bocken, Strupeit, Whalen, & Nußholz, 2019a)

Criterion	Obtained Result	Remark
The tool is purpose-made for sustainable BMI?	Yes	
The tool is rigorously developed—from both literature and practice insights?	Yes/No	To be improved
The tool is iteratively developed and tested with potential users?	Yes/No	Only with students
The tool integrates relevant knowledge from different disciplines.	Yes	
The final tool version has then been used by practitioners, preferably multiple times and an evaluation of this process is done to assess tool usefulness?	No	Final version not available
Evaluation of this process is done to assess tool use and usefulness.	No	Not available
The tool provides a transparent procedure and guidance on how others can use the tool?	No	Not available
Sustainability objectives and impact are firmly integrated into the tool and safeguarded when tool application is facilitated by others than the tool developer?	Yes	
The tool is simple and not too time-consuming?	Yes	
The tool inspires or triggers (business) change?	Yes	
The tool is adaptable to different (business) contexts?	Yes	

Preliminary conclusions

The tool is work in progress but is already used in several programs at different universities. Once tested, programs stick to it, which displays a strong demand for such a tool in educational programs. However, to be considered 'validated in practice', a tool must be empirically tested not only in student projects and needs to be documented in a future publication (Bocken, Strupeit, Whalen, & Nußholz, 2019a). This is not yet the case. Based on the preliminary findings we propose the following directions for future research. First, the design of a final version and empirical evaluation on its usefulness based on the data retrieved from students and actual practitioners. Secondly, the creation

of a transparent procedure and guidance on how others can use the tool. Finally, the tool should be documented in a future publication to explain the "what, why, how and so-what" of the tool and the benefits of using it in practice.

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