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Exploratory Studies of the Business Model Canvas - Differences in the Visualizations of the Business Model

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Abstract:

Purpose: *The aim of this article was the identification of the differences in business models visual templates in relation to Business Model Canvas (BMC) presented by A. Osterwalder. The identification has been based on empirical analysis of the BMC architectural shifts in five dimensions: 1) template names, 2) description of the blocks, 3) number of blocks, 4) utilization of icons, 5) available spaces for the description.*
Design/Methodology/Approach: *Systematic Literature Review has been conducted, including quantification and qualitative assessment. The work utilized the BMC reference model. Visual Basic Application for Excel (VBA) was used. Density analysis along with keywords visualization was performed.*
Findings: *The architectural diversity amongst thinking schematism, reference model, and the makers' creativity has been identified. Keyword density analysis allowed for the extraction of groups clustering two-partial names. It also provided the identification of the most abundantly occurring block names in the templates.*
Practical Implications: *The developed repository of Business Model (BM) templates may be utilized for scientific research, teaching as well as individual purposes and business.*
Originality/Value: *The template repository is currently the largest database enabling creation of new, original BM patterns. Architectural diversity is a consequence of the transformation of BM under external factors resulting from the system of the business environment.*

Keywords: *Business Model, Business Model Canvas, Business Architecture Model.*

JEL codes: *M21, D22, L1.*

Paper type: *Research article.*

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1. Introduction

All business enterprises, regardless of type, sector, experience level, and size share at least one common attribute, which is the business model (BM). Not only already existing business organizations but also concept- and planning-phase enterprises can define their own BMs. Both internal and external business environment factors may imply changes resulting in the alterations of the BM.

Adaptation of BM is a necessity in achieving success in the market in light of overlapping limitations and customer requirements. Organizational complexity shifts from managing a single model to multiple business models in the managed enterprise (Bosbach, Brillinger, and Schäfer, 2020; Schwarz, Terrenghi, and Legner, 2017). The Business Model is not limited to any way of its expression, it's not related to any technique nor technology, neither it's not commonly defined (Szopinski *et al.*, 2020; Spieth, Schneckenberg, and Ricart, 2014; Massa, Tucci, and Afuah, 2017). BM is unique for every organization it is also difficult to copy - in contrast to a product or service. The aforementioned uniqueness brings effectiveness in the field of competition. The popularity of creating and using business models led to many ways of expressing the BM consisting of different methods, techniques, and tools (Goyal *et al.*, 2017).

Analysing the history of BM evolution, an important date is the year 2010 which brought the book 'Business Model Generation' by A. Osterwalder and Y. Pigneur (Osterwalder and Pigneur, 2010). One-page visualization of the BMC changed the approach to creating, analyzing, and modifying business models in the context of visual thinking which allowed for free experimentation. The basic version of the BMC consists of nine appropriately arranged and named component sections, illustrated with icons. In the extended version, two additional blocks have been added to take into account sustainable development. Important reasons for the popularity of the model is a detailed description including examples and its universality. By the time the article was written, there were over 14,500 citations for Osterwalder's 'Business Model Generation' (according to Google Scholar). BMC is also available under an open Creative Commons license CC-BY-SA. Attribution (BY) on the same terms (SA) has allowed for the common creation of business models based on presented BMC. Its publication resulted in the abundant setup of new, original templates.

Eleven years after the BMC went public, many works have been published on the provided foundation. Articles, research papers (Strategyzer, 2015) and a vast number of templates were created utilising the model. Therefore, the analysis of generated templates is difficult and labour-intensive. Source resources are dispersed. A significant number of works has been monetized and available on registration and payment. The literature overview showed a faint number of summaries, reviews, and template databases. Cross-sectional studies of business model patterns (BMP) were most often based on a comprehensive literature review

(Lüdeke-Freund *et al.*, 2019), mutual relation of concepts, (Marczewska and Kostrzewski, 2020), pattern taxonomy (Lüdeke-Freund *et al.*, 2018), and the classification of tools in BMs sustainable development (Schoormann *et al.*, 2016).

The most relevant research, in a taken subject, refers to a pattern database including 182 cases collected on the basis of literature review since 1998 (Remane *et al.*, 2017), hierarchical taxonomy with 164 BMPs distinguishing 194 elements (Weking *et al,.* 2018), 74 BMP classifying six key elements (Echterhoff, Koldewey, and Gausemeier, 2017), 63 BM categorizing 93 different configuration options (Curtis, 2021), 13 MB based on gathered data (Kühne and Böhmann, 2018). A modest number of recent studies focused on BMP cross-sectional analysis has contributed to the development of the template repository. According to the authors' assumptions, template repository will be utilised for 1) research in creating new, original MB templates/patterns, 2) research in a broad analysis of components and their connections, 3) didactic - for exploitation during various types of training, courses, workshops, seminars, 4) practical solutions - as the basis for constructing MB and potential utilization in digital applications.

Taking into account the research and scientific assumptions, three auxiliary questions have been asked. The first question concerns the information architecture: *Is the variability of the templates making possible the identification of significant common architectural structures?* The second question concerns data architecture in relation to the adopted BM reference model: *Can significant differences be distinguished amongst contained data of collected templates set, in relation to the adopted reference model?* The third question concerns the unification of templates and blocks names: *Is templates and blocks names' variability enabling options for distinguishing significant differences among keywords appearing in the collection of templates and allowing to extract the relevant groups of keywords?* The auxiliary questions are an aid in achieving the goal of the article. The aim of the work is to identify differences in the visual templates of the business model in relation to the adopted BMC reference model. As well as understanding the evolution of trends in the conceptualization of MB templates. For the achievement of such a goal, systematic literature review, templates acquirement, creation of a template repository, utilization of analytical techniques and tools for making conclusions were crucial.

2. Research Method

A systematic, methodical literature review, including quantification and qualitative assessment, has been conducted. Business Model Canvas reference model was applied, Visual Basic Application (VBA) for Microsoft Excel was used, Keyword density as well as keyword visualization method have been conducted (Wang *et al.*, 2017). A two-stage approach to bibliographic research including analysis and qualitative/quantitative evaluation was used. The first step was quantitative analysis throughout the exploration of databases and specialized websites for the

purpose of obtaining a set of source files with metadata. Through literature review, the scope of keywords was developed to define the space for the research area as well as to construct vocabulary for the execution of bibliographic queries, consisting of: pattern taxonomy, visual business modelling, business model diagrams, visual templates, visual tools, evolution business model, BM: database, pattern, framework, template, structure, components, research, concept, taxonomy, visual language.

The result of the search throughout bibliographic sources such as Scopus Database, Web of Science and Google Scholar was the number of document occurrences, for selected keywords and phrases derived from them. Quantitative results of the search for the relevant results are presented in Table 1.

Table 1. *Number of records in Google Scholar, Scopus, and Web of Science databases*

Title "business model" AND	Google Scholar	Scopus	Web of Science
framework	199	256	123
concept	90	82	36
structure	70	44	17
components	38	41	12
pattern	7	64	10
taxonomy	6	42	4
archetypes	23	18	10

Source: *Own creation.*

The search for variants of BMC solutions was performed. Only a small set of publications was revealed through quantitative analysis. Hence, the result of bibliographic research captured a deficit of detailed cross-sectional analysis specimens. Thus, a methodological gap was identified as regards the description of many cases of template combinations, their diversity, evolution, historical analysis and the direction of their development.

The unsatisfactory number of templates, insufficient list and description, forced an additional activity in the exploration of bibliographic resources. In order to obtain a greater number of results, the resources of the Google search engine has been exerted using the filters of "All" and "Images". Thanks to Pinterest - visual materials were obtained. Social Networking sites: LinkedIn, Twitter, Fiverr allowed for expansion of the resource collection. The exploration of the Internet has revealed a number of specialized websites collecting BMC templates. Table 2 presents the assemblage of data sources along with the number of acquired templates.

A search performed through social networking sites revealed only a number of individual specimens, therefore quantitative results are not presented. Each template has been identified, licence-checked and saved in a repository. Subsequently, duplicates and older versions of files were removed. A qualitative

analysis of the assemblage has been performed. The templates and metadata went under the process of Systematic Literature Review (Oskam, Bossink, and de Man, 2018).

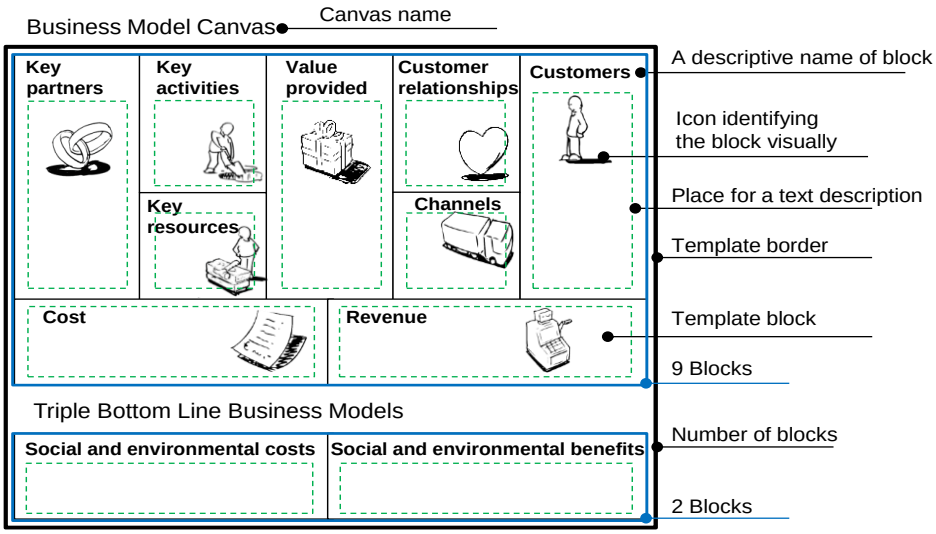
Table 2. *The list of websites gathering BMC templates*

Website/Hyperlink	Source	Number of templates
Canvas Revolution	Browse canvas database	145
Andi Roberts	Web site	115
Canvas Generation	Canvas Generation	92
Canvanizer	Web site	34
Visual Paradigm	Strategy Tools 25 templates	25
Design a Better Business	Web site	19
Platform Innovation Kit	Canvases & Tools	17
Business Model Analyst	Free tools	11

Source: *Own creation.*

The final effect of the effort resulted in the gathered collection of scientific publications convergent to the research area as well as the establishment of a repository containing a list of templates, publications, template metadata, template components, each obtained from the quantitative research stage. Further analysis of the templates required establishing a reference model and its subsequent analysis. The analysis was performed in terms of the information and data architecture. The reference model developed by A. Osterwalder was adopted (Osterwalder and Pigneur, 2010) (Figure 1). A detailed examination was performed in five following dimensions: 1) template names, 2) description of the blocks, 3) a number of blocks, 4) utilization of icons, 5) available spaces for the description.

Figure 1. *Reference template - model of sustainable business*



Source: *Own elaboration based on the source (Osterwalder and Pigneur, 2010; Clark, Osterwalder, and Pigneur, 2012).*

3. Research Results

The quantitative and qualitative analysis of the templates was conducted from November 2020 to May 2021. 231 unique specimens have been collected in the template database (Appendix 1), all of each name contained the Canvas keyword (213 cases), whether ones author invoked to the reference template. The consequence of the effort required to obtain unique specimens of templates in order to examine them was a relatively long period of research which was caused by a number of difficulties such as dispersed data sources, methods of obtaining templates, acquiring copyrights, proceedings with the template commissioned into the database in order of various processing aspects. Vocabulary density analysis of template names showed 725 total words and 233 unique word forms, Vocabulary Density was 0.321, Average Words Per Sentence was 725.0 (voyant-tools.org). The selection of two-partial words using VBA allowed for the extraction of several groups of templates by two-partial names in combination with the word Canvas: Design (9), Strategy (9), Innovation (7), Project (7), Marketing (5), Product (4), Data Strategy (3), Management (3) (Fig. 2).

Figure 2. *Keyword density of the template names visualization and analysis*

Source: *Own study based on: edwordle.net, voyant-tools.org, VBA.*

Keyword Density Analysis of 2538 templates' descriptive block names showed 4891 total words and 1051 unique word forms, Vocabulary Density was 0.215, Average Words Per Sentence: 61.1. The selection of 1243 two-partial words allowed for distinguishing several groups of block names: value proposition (45), cost structure (26), key activities (23), key resources (18), customer segments (16), value propositions (16), key partners (13), revenue streams (13), customer relationships (10) (Figure 3).

Figure 3. *Visualization and analysis of blocks' descriptions keyword density*

Source: *Own study based on: www.edwordle.net, voyant-tools.org*.

There is a great deal of heterogeneity in the namespace in the BMC regarding the number of occurrences of descriptive block names in the reference model. By considering the original descriptive names of the BMC and the versions with the same meaning derived from them, the most commonly used block names can be determined. Out of 231 template names in 140 templates, the term Value (61%) appeared in its structure, then in percentage terms: 103 Customer (s) (45%), Resource (s) (26%), Channel (s) (21%), Activities (20%), Partners (19%), Costs (25%), Revenue (8%), Customer Relationships (7%).

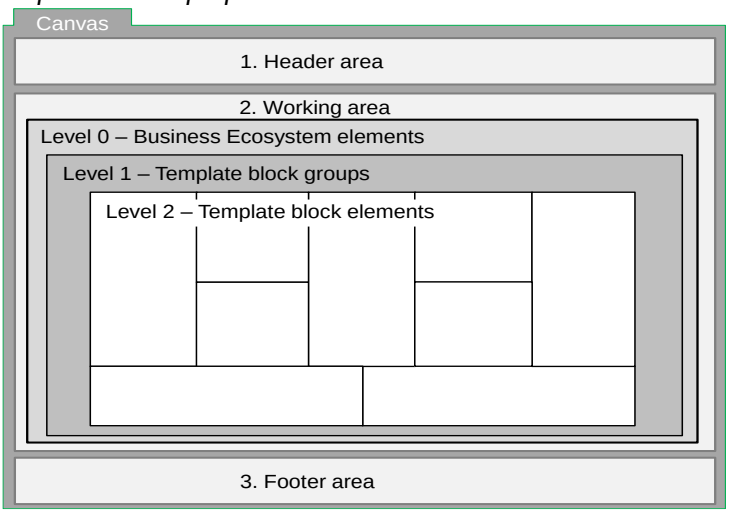
4. Conclusion

The one-page template developed by A. Osterwalder and documented in the items "Business Model Generation" and "Business Model You" (Osterwalder and Pigneur, 2010; Clark, Osterwalder, and Pigneur, 2012) is a visual tool allowing teamwork on business concepts, shifts in BM, creating valuable offers, balancing efforts and profits. Nearly eleven years have passed since the publication of the "Business Model Generation". Time in which the social, economic and environmental areas have been strongly changed, having an inevitable influence on the business ecosystem.

The aforementioned changes have forced ways of evolution and adaptation of templates for the Business Plan creation. Ways, that would allow for bearing successes on the market and coping with the competition. Template analysis in this

article allowed us to distinguish three main areas of the informational architectures organisational structures: 1) template header, 2) workspace area, 3) footer. Also, three levels of detail in the template have been recognized. Level 0 (L0) only concerns elements of the business ecosystem. Level 1 (L1) - business template block groups. Level 2 (L2) consisted of detailed template block elements (Figure 4).

Figure 4. *The framework of information architecture and data architecture*



Source: *Own study.*

The header predominately consists of a template name and the following elements: Designed for…, Designed by…, Date…, Version…, Description…, Team name…, Logo. The workspace contains various types of blocks and/or complex block clusters. The footer usually contains the following information: QR code, copyright, website link, and a company logo.

A comparative analysis of the templates has proven their evolution in the data architecture -comparing to the adopted reference BMC in the following ways:

- employing colours either in the names of block groups (L1) and template blocks (L2),
- creating a three-dimensional (L1) template to build a 3D model structure, such as Session Design Canvas,
- inserting complex graphic blocks with internal descriptions, in various directions of text placement, background colors and fonts (L1),
- implementation of complex graphic blocks with internal descriptions, shiftable location, and allowing for directions variability (L1),
- utilization of complex block architecture in the template; implementation of additional graphic objects, such as arrows, connectors, ballons, irregular items,

either dashed curved or straight lines, open/closed objects, sections amongst the blocks (L1),
- introduction of a matrix architecture in the template which allows for enabling rows and columns for data input (L2). The addition of a block in a rows or columns header results in the automated insertion of row/column with input to the other blocks in the row or column,
- implementing empty blocks to be completed (L1), also in clusters,
- the BMC reference template contains 11 blocks. During analysis of 231 templates, 2538 blocks were recognized. The average number of blocks in the template is 11 (10.98), the lowes block count template consisted of 4 blocks (L2) (Semantic Environment Canvas), the highest number of blocks in the template was 25. (L1, L2) (Brand-Building Canvas),
- the BMC reference template contains 11 unique icons. 145 templates with icons were identified amongst 231 of the analyzed templates (62.8%),
- the BMC reference template contains 11 spaces for the description. Amongst 231 analysed templates high individualism of arranging the space for description was recognized.

The analysis of 231 templates identified the architectural diversity, which arose by the creative approach to resembling the BMC reference model. The specimens of templates reflect individual as well team efforts in problem-solving. Evolution of templates as expressed in the variety and complexity of architectural diversity as a consequence of the transformation of BM under external factors resulting from the business ecosystem. Amongst the assemblage of various templates, two important architectural structures have been distinguished in order to ease the exercise of the template. The three main organizational areas of the template (header, canvas, footer) and three levels of detail (L0-L2) have been discovered. Vocabulary density analysis throughout template and block namespaces has quantified the ratio of the total words number to the number of unique words in the template names was 0.321 (L1). In terms of block names, the ratio was 0.215 (L2).

When comparing vocabulary density values, a lower value often means multi-faceted names with an abundance of unique words. A higher ratio, on the other hand, stands for the elevated level of repeatability. Level 0 - the business ecosystem has not been analysed. The evolution of the BMC is progressing throughout the shifting business environment, building a necessity to continue and extend the research. Therefore, the BMC repository will be continuously growing, being actualized and subjected to further research.

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Appendix 1: *List of templates in exploratory research*

1. 4by4 Business Model Patterns
2. #EMG Canvas (Event CanvasTM)
3. 4 Returns Landscape Business Model Canvas
4. A business model canvas for the 21st century
5. Agile Project Canvas v.2
6. Agile Sprint Report Canvas
7. AI Project Canvas
8. Alignment Canvas
9. Blue Canvas
10. Blue Ocean 4 Actions Framework Canvas
11. Brand Canvas
12. Brand Story Canvas
13. Brand Strategy Canvas
14. Brand Thinking Canvas
15. Brand-Building Canvas
16. Branding Canvas
17. Branding Components Canvas
18. Business Approach & Structure Elements Board
19. Business Ecosystem Design Canvas
20. Business Innovation Canvas
21. Business Macroeconomics Canvas
22. Business Model Canvas
23. Business Model Canvas M15™
24. Business Model Environment Canvas
25. Business Model Matrix™
26. Business Model Zen Canvas
27. Business Transformation Canvas (BTC)
28. Canvas Canvas
29. Canvas4Change v.08
30. City Model Canvas (CMC)
31. Civic Tech Project Planning Canvas
32. Co.Starters Canvas
33. Coaching Canvas
34. Collaborative Engagement Canvas
35. Collaborative Innovation Canvas
36. Community Canvas
37. Competitive Positioning Canvas
38. Consumer Trends Canvas
39. Consumer Trends Canvas (2)
40. Content Strategy Canvas
41. Corporate Rebel Canvas
42. Council Business Model
43. Cultural Value Proposition Canvas
44. Culture Canvas
45. Culture Canvas (2)
46. Curriculum Innovation Canvas
47. Customer Journey Canvas
48. Data Ethics Canvas
49. Data Strategy Canvas (1)

… …

231. Workshop Preparation Canvas