Comparison of Health and Wellbeing Living Lab Business Models – Preliminary result based on Business Model Canvas Evaluation

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Abstract

The most popular thematic focus area among ENoLL members is the health and wellbeing, which covers nearly a half of all the certified Living Labs. However, the studies evaluating Living Lab (LL) business models in general and especially those focusing on health and wellbeing Living Labs are rare. Therefore, the aim of this study is to assess industry standard Business Model Canvas (BMC) usefulness to compare LL business models. The business models among 12 Baltic Sea Region Health and Wellbeing LLs were described and compared. After the recoding process, the original 241 different BMC attribute spellings were reduced to 87 different attributes. On the average 26.7 attributes were used to describe the LL business model. As an example, two network illustrations are presented to showcase the different Living Lab business models. As a result of the assessment, the need to develop LL specific business modelling tool based on fixed a set of valued attributes was recognized.

Keywords: Living lab; Health, Wellbeing, Business model, Business Model Canvas, Lean Canvas, Service Business Model Canvas, Service Logic Business Model Canvas, Baltic Sea

1 Introduction

The number of officially certified Living Labs (later LL or LLs) have been steadily growing since the launch of European Network Living Labs (ENoLL) over decade ago (Garcia Robles et. al. 2016). Historically there have been nearly 400 officially recognised LLs across the world. Currently there are 170 active LL members in ENoLL. Importantly, the most popular LL thematic focus area among ENoLL members is health and wellbeing. This thematic area, covers 44% of all ENoLL LLs (N=74). However, a great majority (78%, N=58) of the Health and Wellbeing LL (later HWLL) are also operating in various other domains such as "Smart cities & Regions", "Culture & Creativity", "Energy, Mobility", "Social inclusion", "Social innovation", "E-government" or "Education".

According to ENoLL's definition, LLs are operating in the real-life environments together with end-users and various other relevant stakeholders while utilizing various research and development methods. As a result, there are multiple implementations and a great variety of locations where LLs are operating. Therefore, it is suggested that there are also multiple business models, which can significantly differ between the LLs. However, studies focusing on LL business models are relatively rare, and therefore the aim of this study is to identify and compare what kind of business model's health and wellbeing LLs are currently following.

2 Living Lab and Business Models

Tools to Evaluate and Develop Business Models

Business model (Osterwalder, 2004) and especially business model innovation (Chesbrough, 2010) as a research domain are both relatively young phenomena. The prior literature reviews have argued that there is no overall definition for business model (Zott et al., 2011). Generally speaking a business model is a method in which an organization builds and uses its resources to offer their customers better value than their competitors, and make profit by doing so (Afuah and Tucci, 2001). Business model combines potential environmental factors and organization's capabilities in order to define and implement a sustainable recipe for competitive advantage.

Multiple theoretical models to evaluate and develop business models have been suggested especially in a form of "canvas". Canvas approach became extremely popular after the introduction of Business Model Canvas (BMC) by Osterwalder and Pigneur (2010). The canvas approach is also an essential element in the service design and co-creation toolbox and a great variety of canvases for different purposes have been suggested. Theoretically BMC is grounded on a system-level holistic view on the business logic of an economic entity (Zolnowski and Böhmann, 2014; Zott et al., 2011). Other rivalling business model canvas approaches include e.g. (1) Lean canvas (Maurya, 2012), (2) multiple embodiments of "Service business model canvas" (Zolnowski and Böhmann, 2014; Daxboeck, 2013) and (3)

also "Service logic business model canvas" (Ojasalo and Ojasalo, 2015) which has similar theoretical foundation as the Service business model canvas.

As a result, all the canvases include partially common and non-common elements (see Appendix 1) while the viewpoints and backgrounds questions for each item varies from focal company, partner to customers perceptive and in some cases even to customer's partnerships.

Living Lab Business Models

In general, most of the LL studies focusing on business modelling have more or less been grounded on single or combination of only few case studies. This is typical approach when a particular research stream is still evolving strongly. Schaffers et al. (2007) identified preconditions and critical aspects for rural LL business model and concluded that LL business model includes "various dimensions of partnership creation and operation across the different Living Labs development stages". This finding highlights the importance of understanding the maturity of LL when defining a business model. Rits et al. (2015) explored the benefits of integrating business model research within LL project and argued that these two methodologies are complementary and should be utilized in conjunction. Mastelic et al. (2015) investigated ENoLL's new member evaluation process and what kind of selection criteria measures are included during this process. As a result, they suggested that the following business model elements are missing from current ENoLL evaluation criteria process: 1) identification of the cost structure, 2) customer segments and 3) the revenue stream. To conclude, the various business model canvases can be promising tools to empirically evaluate the existing business models among the Health and Wellbeing LLs, which are currently more or less uncharted. As a result, the second aim of this study is to test BMC usefulness to compare LLs business models.

3 Research Methodology

Sample Selection

The unit of analysis of this study is a LL which is thematically focusing on the health and wellbeing topics. The data for this study is grounded on the self-evaluation of the 16 LL which are taking a part to the Interreg Baltic Sea Region funded ProVaHealth project. Interreg Baltic Sea Region funding supports integrated territorial development and cooperation for a more innovative, better accessible and sustainable Baltic Sea region. The main objective of the ProVaHealth project is to develop sustainable business models and a transnational Living Lab concept for the participating LLs. Country wise ProVaHealth includes 1 Living Lab from Estonia, 1 from Latvia, 1 from Lithuania, 4 from Finland, 1 from Sweden, 5 from Denmark, 1

from Germany and 2 from Poland. The consortium members cover a large variety of health-related fields such as: active healthy aging, homecare, telemedicine, diagnostics, biomedicine, cardiology, oncology, acute care, health tourism, physical rehabilitation, neurorehabilitation, osteoarthritis, public diseases and robotics. Only one ProvaHealth consortium member (Laurea University of Applied Science) was an ENoLL member at the time of the study and thus the only officially recognized LL within the sample selection. Therefore, the estimation of the Living Lab establishment year was somewhat problematic, since the LL operations have been integrated as part of the hosting organization activities. On the basis of the responses from eight ProvaHealth consortium members they had started their LL activities as follows: 2006 =1, 2009 = 1, 2012 = 2, 2013= 1, 2014=1, 2015=1 and 2018=1. For more details about the participating LLs and hosting organizations see Scanbalt website (http://scanbalt.org/livinglabs/).

Data Collection Process

First, the participating LLs and their hosting organisations websites were analysed in order to find basic information about their profile and LL activities. *Second*, the key informants of the LLs were contacted in face-to-face workshop during the project consortium meeting and the data collection process was explained for them. After the consortium meeting the written guidelines and the following four Business Model Canvases were send by email to the consortium member contact persons: 1) Business Model Canvas by Osterwalder and Pigneur (2010), 2) Lean canvas (Maurya, 2012), 3) Service business model canvas (Zolnowski and Böhmann, 2014) and 4) Service logic business model canvas (Ojasalo and Ojasalo, 2015). The selected canvases were including both common and non-common items as defined in the Appendix 1. Using multiple canvases enabled theory triangulation (Smith, 1975:273; Denzin 1978, p. 291) which can provide more insight into topic and as well as a better reliability and validity for the results. However, due space limitations this study is reporting only the data generated by the original Business Model Canvas elements, thus omitting the non-matching elements. Furthermore, those four LL which had not filled the original Business Model Canvas (BMC), the missing information was collected from the other canvases. Data collection took place during March – April 2018 and in the Table 1, number of responses for each canvas are summarized.

Table 1. Comparison of responses between four Business Model Canvas (N = 16)

Business Model Canvas type	Number of responses
Business Model Canvas (Osterwalder and Pigneur 2010)	12 (75%)
Lean canvas (Maurya, 2012)	16 (100%)
Service business model canvas (Zolnowski and Böhmann, 2014)	13 (81%)

Service logic business model canvas (Ojasalo and Ojasalo, 2015)	13 (81%)

Reliability Analysis of the Canvas Data

After receiving the filled canvases, the key informants from each LL were contacted by email to evaluate the reliability of the responses. In all only 10 responses were received for the following questions: (1) Who filled these canvases, (2) How much time did it take to fill out the canvases, (3) If it was difficult to fill these, what would be the reason for that, in your opinion, and (4) Any suggestions of how to develop these canvases to help you out in developing your work / business in the future? The reliability analysis is summarized as follows:

Who filled these canvases? Eight out of ten responding LLs were fulfilling the canvases as a team work. The team composition varied from two persons, four persons or multiple persons in which the number of team members were not explicitly defined. One LL also indicated that an external validation process was taken place in which canvas results were discussed with steering committee and main stakeholders. As a result, can be argued that the responses should be reliable since in most cases multiple persons have been involved in the filling process. Team approach is also typically suggested within Business Model Canvas tutorials and guidelines. The other person who fulfilled canvases alone, indicated strong personal involvement in their LL as well as having a business background. Thus these responses could also considered reliable.

How much time did it take to fill out the canvases? Among the respondents, the process of filling the canvases were ranging from 1.5 hours to about 2-2.5 days. The LL reporting only 1.5 hours workload was clearly the lowest. Three LL spent about half a day and the five remaining LL which had indicated response time were spending more than one day. When including also the number of persons who participated in the data collection process, the amount of resources to give reliable responses is considered sufficient in most cases. The allocated time is also somewhat in-line with typically suggested within Business Model Canvas tutorials and guidelines.

If it was difficult to fill these, what would be the reason for that, in your opinion? The responses relating how easy the canvases were to fulfil were clearly mixed. Partially this could be explained if LL had or not had the previous canvas filling experience or a person having business consulting experience (or similar). If the canvases had been used in the team before or person(s) had business consulting experience, filling the canvases were somewhat straight forward process. In contrast, without prior experience seemed to require more efforts. However, the prior experience was not the only nominator when considering the effortless of filling process. Few respondents also argued difficulties were derived by the fact that their LL was at early development stage or the LL was a part of larger organization and therefore not

considered as a own business unit, which have a specific business model. As a result, these respondents did not have a clear vision what is their business model, which naturally makes canvas filling difficult. There are also indications that some of the canvas elements and the questions derived from these elements were hard to interpret. Therefore the help from business consulting (or similar) expert who would thoroughly understands the canvas models, would valuable help in the filling process. Also Service Logic Business Model Canvas by Ojasalo and Ojasalo (2015) was considered by one LL more as B2C rather than B2B tool.

Any suggestions of how to develop these canvases to help you out in developing your work / business in the future? It appears, according to the few respondents, the current canvas tools are not optimized for LL business development. Developing tailor made "Business Model Canvas" tool for LL needs was e.g. suggested as one option or at least having a more specific guidelines for filling process (note from authors: few reference pointers were given in the filling guidelines, but not step-by-step instructions). Using Excel sheet as data collection tools also gained critics by one LL. One of the LLs was also currently using Balance Score Card approach to define their further strategy and argued that Business Model Canvas was therefore not perfectly fitting to their needs. Using only one simple canvas tools as a starting point was suggested by one LL as a good starting point to define business model. Based on the above feedback, evidently there is a need to develop better and simpler tools for LL business modelling development. However, the composition of respondents, and the amount of the allocated resources could be considered as a sufficient for our research purposes. Therefore, the data is a robust enough to preliminary compare the LL business models.

Data Analysis and Attribute Clustering Process

After receiving the four canvases from LLs, the data analysis process was conducted as follows.

First, the "master list" of the individual attributes, included within each of the nine BMC elements, was constructed by the second author of this study on the basis of the set of examples given by the first author. At this stage, the master list included also all the different spelling variation and the amount of hits each individual attribute had generated.

Second, in order to make sure that no coding errors were made, the first author of this study evaluated the master list attributes by comparing the attribute list to the original canvas data. Afterwards the two authors discussed about the few coding differences and agreed about the final attribute names to be included into on the master attribute list.

Third, in-depth analysis, which was done collaboratively by the two authors, revealed that in the master list´s great variety of wordings had been used to describe somewhat similar

attributes. Therefore, on the basis of the several iterations between the two authors, the thematically similar attributes were combined into the single attribute and a simplified name with additional descriptions the descriptions were given. The combined attributes to be used on comparison are presented in Appendix 2 while in the Table 2 attribute reduction rates are presented.

Table 2. Attribute reduction rate

BMC element	Number of original attributes	Number of new combined attributes	Combined / Original
1. Key partners	32	8	25,00 %
2. Key activities	34	7	20,59 %
3. Key resources	29	9	31,03 %
4. Cost structure	20	8	40,00 %
5. Value proposition	42	12	28,57 %
6. Customer relationships	13	9	69,23 %
7. Channels	25	13	52,00 %
8. Customer segments	26	12	46,15 %
9. Revenue streams	20	9	45,00 %
Total	241	87	36,10 %

The raw data included 241 different attribute spellings which after recoding and combination were reduced to 87 (i.e. 36% from original). The key activities (21 % from original size) and key partners (25% from original size) were compressed most, whereas customer relationship decreased the least (69% from original size). However, it must be remarked that some of the attribute descriptions were relatively short, and therefore somewhat blurry to make fully reliable conclusions what is the attribute actually describing.

Furthermore, in the case of few LLs, it appeared that some of the key attributes were omitted from a certain business model canvas element, even if the same attribute was highlighted in some other canvases. This could partially be explained by the fact that the available space within canvas is limited and therefore only the most important attributes were presented by the LLs. This observation supports the need for (at least partially) quantitative business model evaluation tool which is tailor made for LL business model evaluation. Furthermore only 12 LL filled the business model canvas. Thus, only these LL´s canvases will be used for business model comparison.

Finally, on the basis of the above classification process binary data ATTRIBUTE x LL matrix in which individual attributes were represented as rows and LL were presented as columns was constructed in collaboration by the two authors.

4 Results

Evaluating Business Model Description Accuracy

To evaluate the business model description precision, the total number of identified attributes per each LL was compared (Figure 1).
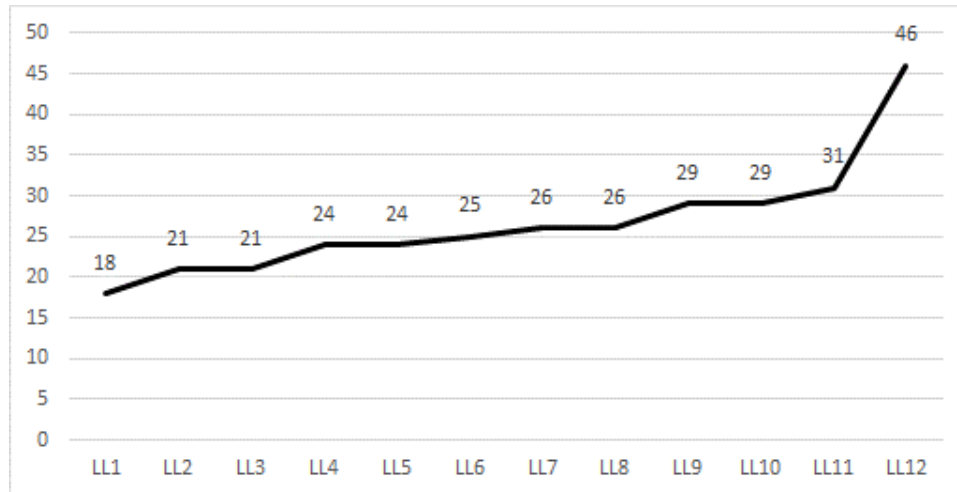

Figure 1. The number of attributes distribution on each LL BMC

On the average 26.7 attributes were used to describe the LL business model, while standard deviation was 7.1. The minimum attribute number was 18 and the maximum value was 46. The maximum value was also identified as an outlier. This could partially be explained by the fact that this particular LL was responsible for the data collection and leading the ProVaHealth project's development of sustainable business model work package. Therefore, this particular LL could have done more thorough analysis process than the others in order to anticipate the follow up tasks. Importantly, even this LLs attribute descriptions covered only 52.9 percent of all attributes. Therefore, it is more than likely that also this LL could have omitted some of the key attributes during their analysis process.

On the basis of these observations, it is argued that the business model evaluation tool for LL should not only evaluate the existence of the given attribute, but estimate also the perceived importance of the different attributes. This kind of valued tool could more easily distinguish the key attributes for different living labs.

Business Model Comparison Testing

In Figure 2 the 12 LLs business models are visualized as a two-mode network dataset in which the connections are representing LL's linkage to individual business model canvas attributes. Since the attribute labels becomes unreadable, they are omitted from the illustration and only the LL labels are presented.
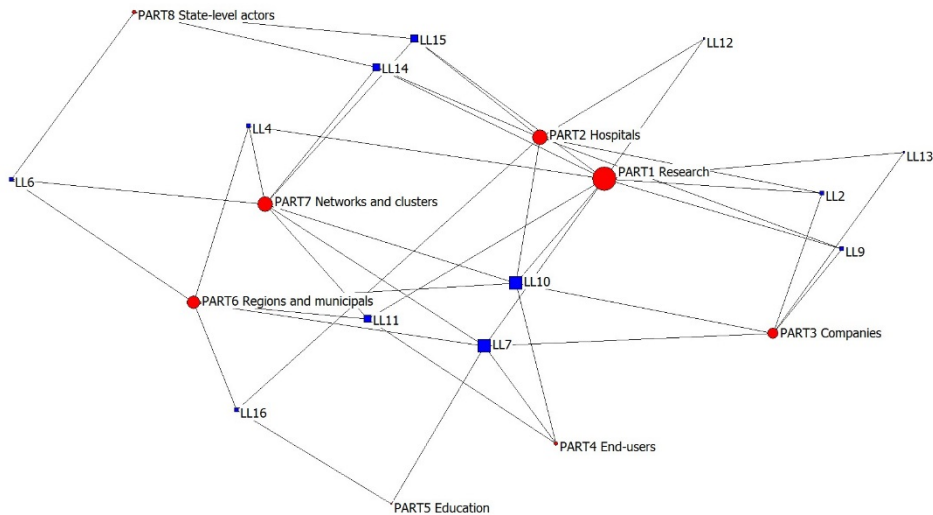
Figure 2. Living lab business model comparison visualization

As shown in the image, some business model differences can be observed among the 12 LLs. Since the interpretation is difficult without showing the attribute labels, as an example the connections within KEY PARTNER attributes and LLs are presented in Figure 3.
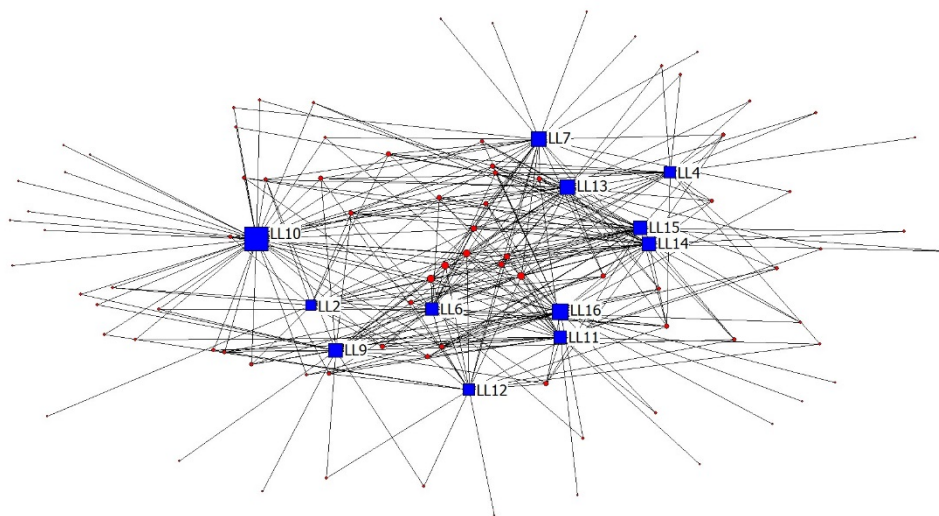

Figure 3. KEY PARTNER attribute connections

For example, the visual observation suggests that the partnership with state level actors might be one of the distinguishing factors between the different LLs. Only LL6, LL14 and LL15 have indicated state level actors as their partners, whereas all the other LL are not. Therefore, in order to evaluate what kind of clusters the LLs are forming on the basis of their partnerships, the following convergent correlations approach was applied. The matrix correlations for LL X KEYPARTNER matrix was calculated several times in succession in which the resulting correlation matrix was used as a starting point in the next round. The goal of this convergent

process was to identify groups of LLs which share a correlation in some of their attributes. As a result, LL4, LL6, LL7, LL10 and LL11 formed one cluster and the remaining LLs the other cluster (i.e. LL12, LL13, LL14, LL15, LL16, LL2 and LL9).

The similar matrix correlation analysis was done for key partner attributes in order to reveal which attributes could be clustered. As a result, HOSPITALS AND HEALTH SERVICE PROVIDERS, RESEARCH and MANUFACTURERS formed one cluster, while END-USER, EDUCATION, REGIONS AND MUNICIPALS, NETWORKS AND CLUSTERS and STATE ACTORS formed the second cluster. Notably the largest relative difference was the partnership with REGIONS AND MUNICIPALS, NETWORKS AND CLUSTERS since in the second cluster all LL had relationship with those partners.

Similar analysis process could be conducted also to other business model canvas elements. However, due space limitation and the robust analysis presented in section 4.1 these analyses are omitted from this paper.

5 Discussion – BMC tool usefulness to identify and compare the LL Business Models

The LL Business Model Comparison testing with LL X KEYPARTNER matrix resulted two LL clusters and two attribute cluster, which verifies that different business models are existing among the LL at least when it comes to key partner selection. Therefore, it is argued that the BMC tool can be used as tool to compare the LL business models if the list of attributes within each BMC is valid and covering the essential attributes.

However, it appeared that using the Business Model Canvas (BMC) tool to describe LL business model was resulting high variety of attribute descriptions among the investigated Living Labs. This is not a big surprise since the BMC tool can be regarded as a standardized open-ended interview approach. In this kind of research approach, respondents are asked identical questions, which helps to reduce the researcher biases and enable respondents to describe their responses in as much detail as they desire. As a result, the coding of the open-ended responses into unambiguous variables can be difficult task, as described in the 3.3 Data Analysis and Attribute Clustering Process section.

Even if the streamlining and clustering of attributes reduced the number of different attributes from 241 to 87, some doubts remained relating attribute unambiguity. The number different attributes used by an individual LL to describe their business model, varied from 18 to 46. At the lower end of the scale this means that LL was on the average using only two attributes per BMC element to describe their business model. On the contrary, the LL having maximum number of attributes was identified as an outlier although it covered barely over half of the all identified attributes. Thus, the business model canvas tool usability and usefulness as a

robust comparison tool could be questioned if the BMC is used as an open-ended tool.

As a result, it is concluded that reliable business model comparison within LL context should include a common set of attributes in which the given attribute importance to a specific LL is evaluated based on valued Likert scale. Even if this limits the number of options within each BMC element, it should result unambiguous description of the LL business model if the attribute set is including all the relevant items. Since the current set of attributes described in Appendix 2 was only validated by the authors of this study, further refinement and validation round within the ProvaHealth consortium members and/or other LL communities is needed.

6 Conclusions

The business models among the Living Labs, and especially in the case of health and wellbeing thematic area, have been uncharted. By applying industry standard Business Model Canvas (BMC) approach, the business models among 12 Baltic Sea region Health and Wellbeing Living Labs were described and compared in order to test the usefulness of the BMC tool. Grounded on the list of provisional BMC attributes, the BMC tool was found a suitable tool to identify the differences between the LL business models. However, developing a reliable business model comparison tool would require further research efforts due following limitations.

Limitations of the study. *First,* the ProvaHealth consortium includes only one ENoLL member and thus is the only officially recognized LL within the sample selection. Even if LL operations can be executed by non-ENoLL members, the follow-up sample selections should include a larger set of ENoLL members, which have been officially verified as LLs. *Second*, all ProvaHealth consortium members were operating in the health and wellbeing thematic area, which business model can differ from the other thematic LLs. This thematic bias limits the generalizability of the results and therefore the sample selection should include also non-health and wellbeing LLs. *Third*, few LL in the sample selection had just started their LL activities and evidently their business model was still somewhat vague. As a result, their business model description could reflect more on the desired business model rather than actually implemented business model. However, on the other hand, the sample selection which includes different maturity level LLs could also increase the reliability and reveal how the business models between experienced and newcomer LLs are differing. *Finally,* by the definition a business model describes how an organization uses its resources to offer their customers value and make profit by doing so. In this study the LL business performance was not investigated and therefore conclusion cannot be made what kind of impact business model have to business performance.

Directions for the future studies. *First*, collaboratively refine the suggested attribute list among ProvaHealth consortium members, but rather with ENoLL community, which includes more experienced and diverse LLs than ProvaHealth consortium. *Second*, once the agreement of

the attributes has been achieved, a Likert-scale based survey questionnaire should be formulated, which evaluates the perceived importance of the given attributes within each of the nine BMC elements. *Third,* after receiving the perceived importance data from each LL, interviews with selected LL should be conducted to investigate the story behind each attribute value selection and make adjustments to the valued scale if needed. The interview process will help to triangulate the valued data selections and provides more in-depth understanding how the LLs is operating. *Finally,* the data collection process should be scaled up with the all ENoLL members in order to include also non-health and wellbeing LLs as well as more experienced LLs.

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APPENDIX 1: Business Model Canvas element comparison and added attributes

Canvas elements	Business model Canvas	Lean Canvas	Service Business Model Canvas	Service Logic Business Model Canvas
1. Key partners	X		X, but partner(s) also analysed via same 7 attributes as the focal company	X, but also from customer viewpoint
2. Key activities	X		X, but also from customer(s) and partner(s) point of view	
3. Key resources	X		Also from customer(s) and partner(s) point of view	X, but also from customer viewpoint
4. Value proposition	X	X, with unique notation	Also from customer(s) and partner(s) point of view	X, but also from customer viewpoint
5. Customer relationships	X		named customer(s) and partner(s) point of view	
6. Channels	X		Also from customer(s) and partner(s) point of view	
7. Customer segments	X	X	Customer(s) analysed via same 7 attributes as the focal company	
8. Cost structure	X	X	Also from customer(s) and partner(s) point of view	X, but also from customer viewpoint
9. Revenue streams	X	X	Also from customer(s) and partner(s) point of view	X, but also from customer viewpoint

Attributes beyond original Business Model Canvas: (1) Early adopters as sub customer segment, (2) Problem, (3) Existing alternatives, (4) Key metrics, (5) Unfair advantage, (6) Solution (note: might be also considered as activities but using a different name), (7) Mobilizing resources and partner, (8) Interaction and co-production and (9) Customer's world and desire for ideal value.

APPENDIX 2: Living Lab Business Model Canvas combined attributes

Key partners

1. RESEARCH (e.g. research institutions, universities, national research centres and institutes, research councils, researchers, experts).
2. HOSPITALS AND HEALTH SERVICE PROVIDERS (e.g. public, regional district and private hospitals, primary care units)
3. MANUFACTURERS e.g. companies/Industry partners, International mHealth/IT industry, long term company relationship, SMEs, medical devices and equipment providers, industry experts (groups)
4. END-USER e.g. 3rd sector organizations, NGOs, Senior associations, End-Users
5. EDUCATION e.g. educational institutions, universities, students, teachers
6. REGIONS AND MUNICIPALITIES (e.g. Regional support and administrative departments, council, government, development, municipals, Public organizations
7. NETWORKS AND CLUSTERS (e.g. Company cluster organizations, Company networks, international partners and networks, cluster members, ecosystem partners, Life science cluster, accelerator, life science innovation, affiliated LLs)
8. STATE ACTORS: (e.g. State budgetary unit, Health data authority)

Key activities

1. R&D SERVICE e.g. projects, test medical equipment or orthosis, Medtech solutions, Externally funded R&D projects, User-center workshops, Project management, Clinical trials, Provide consultations, Guidance to develop Medtech solutions, Need and market analysis, Customer journey
2. EDUCATION AND TRAINING (e.g. basic, in-service training, simulated learning environments, expert lectures, , Educational training for SMEs, Consulting stakeholders (for LL methods)
3. NETWORK MANAGEMENT (e.g. Management of stakeholder and customer networks, Single point entry, Connecting partners, develop relations, Networking and networking meetings, Open access to infrastructure,
4. FUNDING SUPPORT e.g. Acquire project funding
5. REGIONAL SUPPORT e.g. Regional innovation governance and support system, Regional virtual app centre, Public-Private-Partnership, Support to political committees
6. MARKETING AND SALES e.g. Marketing and sales support, Raising awareness and knowledge in healthcare data, writing articles, Outside events, Technology library,
7. END-USER SERVICES e.g. services for end-users, personal wellbeing data

Key resources

1. PERSONNEL e.g. personnel, staff, human resources, researchers, cross disciplinary teams, Arena management team, Project management
2. INFRASTRUCTURE AND TECHNOLOGIES e.g. facilities, infrastructure, premises,

wellcome center tools, regional campuses, Simlab services, Virtual App Centre, Single Point Entry, technology library, local LLs, access to health care data infrastructure, IT infrastructure, technologies

3. EXTERNAL EXPERTS e.g. consultants, health care professionals, high level medical personnel, steering group for innovations
4. MANUFACTURERS e.g. Equipment vendors / manufacturers
5. STUDENTS e.g.-bachelor, master level
6. DATA AND SCIENTIFIC DATABASES e.g. Databank (wellbeing from clients, internally collected data), access to scientific publication databases
7. IPR e.g. Intellectual property, know-how, TTO specializes in building value from new technologies and Intellectual Property Rights (IPR).
8. EXTERNAL NETWORKS e.g. memberships in (established) international network, university networks
9. END-USER (PATIENTS) with wide range with different diagnosis

Value proposition

1. R&D SERVICES e.g. research services (developmental), to test equipment and tool in real environment, research and development of medical robotics, research with R&D and regional development, refinement in various product dev phases
2. R&D WITH END-USER e.g. app testing on patients before launching on IT-platform, Everyday teamwork with patients and families, Fast access to agile piloting with users, Organizing test groups for companies and their products, User and customer feedback, usability
3. POSITIVE ARGUMENTS: fast development, Cost effective LL development, high quality research, long-term and wide-range experience, reliable partnership for cooperation
4. CUSTOMIZED AND PERSONALIZED SERVICES e.g. Personalized wellbeing services, Custom-made assistance for collaborative projects, adjustments of test apps, sustainable concept or solution tailored to custom needs,
5. UNIQUE INFRASTRUCTURE e.g. unique testbed for devices and healthcare data solutions, Unique test setup for technical and user elements, Facilities and technology available for partners, Access to novel equipment and research services, Access to public facilities and resources
6. FUNDING e.g. access to grants (that need public partner), full or partial funding of innovation project, Feedback on project applications
7. VALUE AND IMPACT EVALUATION e.g. Healthcare economics, Determination of potential value of cooperation, Sparring and analytical support
8. MULTI-DISCIPLINARITY e.g. Inter-professional testing at different development phase, ensuring multidisciplinary development, Testing according to international protocols and validation
9. ECOSYSTEM AND PROJECT MANAGEMENT e.g. single point entry by customers to access partners, Orchesterating innovation ecosystem, Partner identification, One

point for all questions, Project management

10. EDUCATION AND TRAINING e.g. updating professional competence, distribute latest info about the technologies, safe simulated learning environment (medical), Seamless integration with education and LL/SD activities

11. METHOD DEVELOPMENT e.g. new scientific discoveries to improve LL / CC / SD methods and pedagogy

12. MARKETING SUPPORT e.g. develop visibility of medical services for medical institutions

Customer relationships

1. LONG-TERM RELATIONS e.g. existing long-term contacts and relations, Partner for manufacturers, Permanent and non-permanent agreements with internship providers, institutional relationships

2. NETWORKING e.g. networking / collaborating with other innovation and/or research actors

3. EVENTS e.g. National and International events

4. DIRECT e.g. email, phone, face-to-face, skype

5. PROJECT BASED e.g. project and need based collaboration

6. ADVISORY e.g. business advisory with potential customers

7. INTERNAL e.g. Internal business supporting projects

8. STEERING e.g. Ministry of Educations

9. CO-CREATION e.g. co-creation and community

Channels

1. ONLINE e.g. internet, social media, Youtube

2. DIRECT e.g. direct marketing, direct contacts, personal contacts, word of mouth

3. EVENT PARTICIPATION e.g. participating conferences and events (fairs e.g.), presentations

4. EVENT HOSTING e.g. hosting conferences and events, Annual events for selected stakeholders, workshops, customer journey meetings

5. MEDIA PROMOTION e.g. newsletters, media, printed media, PR

6. NETWORKS e.g. national and international networks, Scanbalt promotion list, ENoLL

7. REGIONAL LEVEL CHANNEL e.g. Regional inter- and intranet

8. CO-OPERATION PROJECTS e.g. participating as a partner in projects, co-operation partners, other innovation actors

9. SCIENTIFIC AND LAYMAN PUBLICATIONS e.g. articles, scientific articles

10. EDUCATIONAL CHANNELS e.g. degree programs and individual courses, training courses in simulation, Internship as a part of studies

11. LOBBYING AND POLICY CHANNELS e.g. public sector policy and strategy papers and recommendations, advisory meetings, Information meetings with hospitals and

administrative

12. NATIONAL LEVEL CHANNEL Single point of entry
13. OWNERS e.g. Owner stakeholders

Customer segments

1. HOSPITALS e.g. Hospitals (regional)
2. CARE PROVIDERS e.g. care providers, nursing homes, Housing companies (assisted living)
3. WELLBEING SERVICE PROVIDERS e.g. Wellbeing service providers (gyms, wellbeing centers)
4. LAYMAN END-USERS: e.g. Individual clients, service users, end-users, Common people (elderly), Foreign medical tourists
5. PRIVATE COMPANIES e.g. startups and SMEs, Developers and producers of medical equipment, medical devices, medical supply stores, distributors, Medtech (with focus on ehealth), healthcare solutions
6. RESEARCH ORGANIZATION e.g. Public(research) organizations (THL , Danish Health data authority), scientific units
7. EDUCATIONAL INSTITUTES e.g. students, teachers, researchers, staff, schools, universities, technical universities
8. HEALTCARE PROFESSIONALS e.g. medical professionals, healthcare professionals
9. REGIONS AND MUNICIPALITIES e.g. regional support and administrative units, Cities, region and municipalities, policy makers, public sector actors
10. VARIOUS INDUSTRIES e.g. healthcare Biotech, Pharma, Acro biotech, chemical industry, food industry, All healthcare related areas where competences
11. NGOs e.g. 3rd sector actors
12. NETWORK AND ECOSYSTEM PARTNERS e.g. ecosystem partners, International partners and network

Cost structure

1. PERSONNEL e.g. personnel costs, human resources, administrative costs, internship fees, PERSONNEL e.g. personnel cots, human resources, administrative costs, internship fees,
2. EXTERNAL EXPERTS e.g. external consultants (incl legal)
3. INFRASTRUCTURE AND FACILITIES e.g. facilities, technical environments (rent), equipment, amortisation of equipment, (software) licences, , Outsource expences, depreciation of the truck, utilities costs, common costs, memberships, distribution and hosting costs fees in networks
4. SOFTWARE DEVELOPMENT
5. MARKETING AND SALES e.g. Marketing costs, materials and consumables, Customer acquisition costs (webpage expences), engaging users, own share of

external funded projects, conference and event participations

6. VARIABLE COSTS e.g. arranging LL activities, reagents
7. IPR e.g. Patents and IPR protection
8. TRAVELLING costs

Revenue stream

1. GRANTS e.g. Grants from national and international partnership and projects
2. SERVICE AND PROJECT CONTRACTS e.g. Contracts and Invoicing from the services, Royalties, consulting, membership fees, organizing test groups, annual fees, events, certifications, workshops
3. BASIC FUNDING e.g. regional fixed grants, or basic funding, internal funding
4. SITE VISITS e.g. Visit to the facilities
5. RETAIL e.g. equipment dealer
6. RENTAL e.g. Rental living lab, truck, equipment
7. DONATIONS e.g. Individual donations
8. EDUCATION
9. ROYALTIES e.g. Royalties from IP properties or elsewhere