



Developing Business Model Innovation by the Value Proposition Integration in Engineering Consulting Firm

Ainur Ridho Kurnia Setiawati^(✉) and Melia Famiola

Master Business Administration, School of Business and Management, ITB Bandung, Bandung,
Indonesia

ainurridho_kurniasetiawati@sbm-itb.ac.id

Abstract. The consulting firm's role has become inevitable because of the scarcity of expertise in most companies in Indonesia. The consulting engineering firm provides study, analysis, and judgment to make a quick and correct decision on their asset. Nevertheless, the requirement is varied between sectors, and thus providing added value by the engineering consulting company is not straightforward. The consulting firm needs to innovate, creating value for the firm and the customer. In the present work, a business innovation model is presented, taking the case from consulting firm. The study uses qualitative research using structural interviews with 12 respondents from different companies. The respondents were previous and potential customers from the power and petrochemical industries. From the analysis using Amit and Zott's business model innovation framework and value proposition canvas framework by Osterwalder. Both approaches show that a fast delivery through digital reporting, training after project delivery, and shorting the work process by establishing a new business sector (materials testing) are added to the business activities. These are linked, and their governance is set in the new business model value for the customer and expected to add values for the engineering company business.

Keywords: Business Model · Engineering · Consulting · Innovation

1 Introduction

The green transition from coal-based energy into green energy puts coal-based electrifying under significant pressure, thus they need to innovate to reduce the level of emission and operation reliability. As a longtime partner of the industry, the consulting firm needs to innovate as the whole industry ecosystem has changed. The role of Innovation and business innovation can be implemented differently across industries [1, 2]. However, it mainly constitutes the invention of a new business, product, or process that can add to the business value. The business model innovation can be part of the Innovation so that it is clear and visible to the firm and the customer. The essential element of the BM is the value proposition [3, 4]. The practical guide for the value proposition can use a canvas that maps the customer profile and firm profile [5].

© The Author(s) 2023

E. H. Saragih et al. (Eds.): APMRC 2022, AEBMR 221, pp. 230–240, 2023.

https://doi.org/10.2991/978-94-6463-076-3_16

Several companies state that they hire a technical consulting firm because there are many benefits to be gained in the process. Instead of the company investing in expensive technology, the consultant provides specialized technical expertise and the new software. As a result, the company does not have to recruit talented staff, which allows some cost savings. In addition, consultants provide an objective and practical point of view, which allows for ideas that are more diverse and newer than the ideas that employees in the organization can provide.

According to a survey conducted by statista.com in 2020, every consultant faces several challenges: the main business challenges for consulting companies worldwide were the need for new skills and increased competition from new firms, indicated by 43.5 and 42% of respondents, respectively. In addition, 40% of respondents marked a talent shortage as one of the main business challenges for consulting services providers.

However, the process needs to be done individually and can be varied between industries. The present work attempts to determine the value proposition for engineering consulting firm to customers that are mostly power plant industry as the case study.

2 Business Issue and Theoretical Foundation

2.1 Service Innovation

Service innovation and innovation in service have been neglected themes for a very long time. Currently, this topic attracts the attention of researchers and practitioners of various kinds. There is a need to explore processes and innovations beyond what is familiar from the study of automobiles, electronics, and pharmaceuticals. Today we must be prepared to uncover the different structures and strategies evolving as the service economy evolves. Concentrations on service innovation are already starting to produce promising perspectives on service system analysis and design. Then we can see new thinking about services reflected in new forms, strategies, and service innovations over the years to come [6].

2.2 Business Model Innovation

Business model innovation involves reinventing existing business models in new ways that create new value for customers [7]. The change in the market conditions gives a signal that the business model should also be changed (technology venture book). For example, when the product or process is too complicated, disruptors in the market change the competition. In all of these cases, a business model change may be needed [8].

A business model can be described as a system of interrelated and mutually supportive activities that determine how a company does business with its stakeholders. In other words, a business model is a specific set of activities performed to satisfy a market need. It determines who performs the activity either in or as a business partner and how these activities relate to one another. The three design elements that make up the system of corporate activities are content, structure, and governance. Changing one or more of these elements means changing the entire model. The new business model is “new to the world” and not just “new to the company.”

There are several ways the business model innovation can change illustrated [9] nevertheless it contains the following;

1. By adding novel activities, for example, through forwarding or backward integration, we refer to this form of business model innovation as a new activity system “content”.
2. By linking activities in novel ways, we refer to this form of business model innovation as a new activity system “structure”.
3. By changing one or more parties that perform any of the activities, we refer to this form of business model innovation as a new activity system “governance.”

Content, structure, and governance are the three design elements that characterize a company’s business model. The content of the activity system refers to the selection of activities to be performed; can also be called the ‘What’ of the activity system. The structure of the system that describes how the activities mentioned above and in what order; can also call ‘HOW’ system activity. Activity system governance refers to who performs the activities; it can also be called ‘WHO’ from the activity system.

2.3 Business Issue Exploration

At present, the company’s core business being studied i.e., Mahir Teknologi Utama (MTU), is a consulting service in which we focus on delivering solutions for customer problems. The business element is illustrated as composed of 4 main elements. The first element is problem identification. Failing to identify a problem means that the solution given is not attacking the real problem. This step is crucial for consulting companies. The second is data acquisition, in which data is either already available, for example, maintenance log or not, previous report, sensor log, etc., or data that is not available but required. In most situations, data is scarce and not available. Thus, field data acquisition is usually necessary; this is in the form of inspection using tools and equipment or testing in the laboratory. Then, data processing and analytics are the main activities concerned with using data to analyze the problem. Furthermore, the last is product delivery which consists of the customer on hand education and training.

The second element is that suppliers typically require data acquisition (outsourcing) since we do not invest in equipment. For example, if we have a project on pipeline assessment that requires data about the existing condition of the pipeline, a field inspection is required. In this case, we choose a supplier that can provide the inspection service. Almost 80% of our project requires sub-contracting the data acquisition activities.

The next element is data analysis. It involves an expert not only from the internal company but also involves many experts outside the company. The typical problem for hiring an expert is that concerning the working habit, i.e., difficult to identify how fast they are willing to finish the job as well as the price can be very high depending on the qualification. In some situations, people’s capabilities cannot be accessed easily.

The last element is the delivery of the solution. We currently use common practice for delivering the report, i.e., in the softcopy (in the disk drive) and printed hardcopy. Then, the report gives the result, including all the tests and calculations, a written report, and the presentation of all these results.

Since MTU is at the early growth stage, strategic development must be explored. In addition to the internal condition, business in engineering provides opportunities and challenges. Internally, we started the growth strategy with an increased number of staff, collaborating with other companies to explore further options and expand the

portfolio. Externally, many local and global companies are in a similar business with a wide variety of products. As a result, customers have choices, and the price can be lower. International companies can also pursue a subcontracting strategy where remote visits become standard practice. Thus, they can down-cost the service, which becomes a significant threat for local consulting firms.

Surveys and interviews conducted with company leaders show that companies pay less attention to innovation and focus more on four things: shoring up their core business, pursuing known opportunity spaces, conserving cash and minimizing risk, and waiting until “there is more clarity.”

However, it is believed that, particularly in times of crisis, more urgent actions to take include:

- adapting the core to meet shifting customer needs
- identifying and quickly addressing new opportunity areas being created by the changing landscape
- reevaluating the innovation initiative portfolio and ensuring resources are allocated appropriately
- building the foundation for postcrisis growth to remain competitive in the recovery period

In the present work, the value is created with the aim of finding a new business model. With the help of our customer interview, we used strategic tools and recent frameworks for model business innovation to explore the new business model.

3 Methods

The present work uses a qualitative methodology for research. Qualitative research is a descriptive research and tends to use analysis and framework of analysis used as the tool. Process and meaning (subject perspective) are more highlighted in qualitative research.

The theoretical basis is used as a guide so that the research focus is in accordance with the facts on the ground. In addition, this theoretical basis is also helpful for providing an overview of the research background and as a material for discussing research results. In quantitative research, research departs from theory to data and ends in accepting or rejecting the theory used.

Qualitative research relies on data obtained by researchers from direct observations, interviews, questionnaires (in which participants write descriptively), focus groups, participant observations, recordings made in natural settings, documents, and artifacts. Data are generally non-numeric. Qualitative methods include ethnography, grounded theory, discourse analysis, and interpretive phenomenological analysis [10].

The data presented in this study was achieved by structured interviews using an electronic form. The correspondent was the managerial level person who was responsible and had day-to-day contact with the engineering consulting firm. A total of 12 respondents filled the form, of which five people were previous MTU customers and seven people from potential customers. The question is related to what they think about previous services (if any) and their challenges in their current business. In addition, the

question is related to customer satisfaction and design in the context to grasp the customer condition that can be listed in the “customer profile” in which the customer pain is well captured.

4 Result and Discussion

4.1 Data Analysis

The interview was conducted using structured interviews in which the questions were made in a structured way. The respondents were the previous customers who used the MTU services and prospective customers in the same industry. The respondent was a person in charge of engineering and maintenance in their companies, such as, for example, an engineering manager. Figure 1 shows the respondent distribution that most respondents work in the power industry. Two responses come from the petrochemical industry, and their correspondence comes from the other sector but is related to engineering and maintenance.

All the interview results were collected and analyzed using Nvivo software for qualitative type data analysis. Theme analysis was done by coding the interview results, case classification, and attributes given. One simple output of Nvivo is that word clouds represent the sentiments of the data. The most frequent word is “knowledge,” which can be perceived as something related to the knowledge that can be much concerned for the services and business model innovation. The second most frequent word is the analysis which means that analysis type job can be an essential concern for the industry.

For the value creation and business model innovation, we need to understand the concern of present customers as well as the possible future customers. The data were coded, and the hierarchy plot of the coded theme is given in Fig. 2. It is shown that the main difficulty of the customer handles their problem related to the human resources, and when we ask the most challenge their company face related to the maintenance, they are told that:

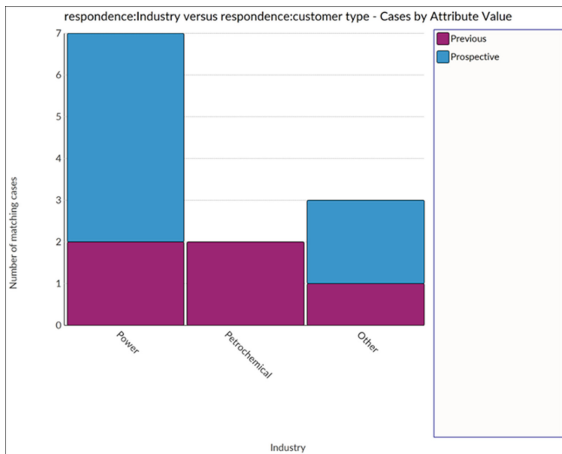


Fig. 1. Respondent’s distribution in this present research.

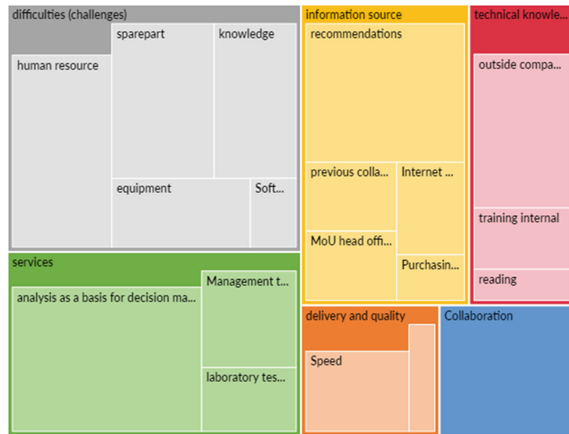


Fig. 2. Hierarchy plot of coded words from the interview results

“We have a limited number of manpower & qualifications.”

Other respondents say that.

“Limited software to perform analysis, does not have engineering to do the research related to failure and performance.”

From the data presented in Fig. 2 as well as understanding the interview results, one can see that the human resource limitation relates to the knowledge of the present human resource they have. They are also concerned about part availability during the process. This fact needs to depend further on why that is the case, either because of part availability in the market or lousy scheduling—the first related very much to the purchasing strategy during the second related to maintenance strategy.

Another significant finding presented in Fig. 2 is the services that the respondents think are essential for them is the analysis. Since our existing products are “consulting services,” this matches our present product attributes. Nevertheless, we found an interesting fact that ‘collaboration’ can be one of the essential parts of the relationship of the consulting company with the customers.

The content of the business model is related to the activities to deliver the product; following Fig. 3, activities in the blue boxes are within the company while the grey boxes are outside the firm. The product started with problem identification, which is, in many cases, not well defined by the customers. Some customer has a specific objective of the project that needs consultants and make the term of reference for the project. In many cases, the term of reference is not available. In this case, our company helps them determine the problem based on the fact faced by the customer and the goal they would like to have within the project’s scope.

The following is related to the data since analysis works depend very much on the data and the reliability. The data can be design data of the plant, notes on the modification, or redesign data. If the data is not sufficient, there is a need for measurement so that inspection must be conducted, and thus there are activities for the non-destructive

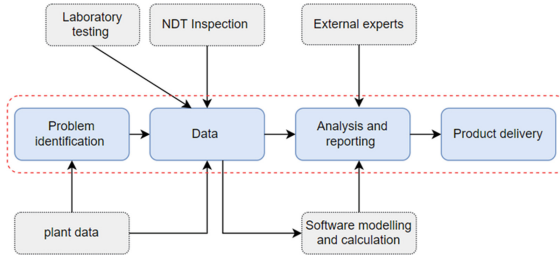


Fig. 3. The present activities by MTU for delivering the products. The main activities are enclosed with a red line.

inspection (NDT). Another case required data from testing, and thus, the testing activities need to be performed.

The next and very important activity is the data and analysis, which is a core competence of the MTU. Calculation and data analysis or detail modeling using software in some cases is required, and thus it is performed outside the MTU. Since there is also the possibility of a diverse project, an external expert may need. The product delivery containing the soft copy, hardcopy, and presentation is a crucial part of the solution to the customer. It contains detailed recommendations and technological approaches leading to that solution. It also has a role in transferring the knowledge so that the recommendation can be implemented well within the customer company.

The structure is the link between all activities to deliver the solution. As shown in Fig. 3, the product is delivered in a linear structure, in which one activity should precede the others. Analysis and reporting can be done after the data is available and is calculated or modeled. The arrow represents the flow of information and which activities are required before activities can be done. This structure seems relatively rigid and instead challenges to be modified.

These activities’ structures show dependence and interdependence and affect the quality of work to deliver the speed of the solution as well as the customers. The quality of the solution depends on the solution of each activity, and the speed of product delivery to the customer depends on the speed of the work done in each activity.

Governance refers to who performs each activity for delivering products. As shown in Fig. 3, all activities enclosed by the red dash line are performed within MTU, and outside that enclosed line, which is in grey boxes, are performed by partners’ companies/persons.

The plant data mainly consists of plant design and historical data that customers can release only by the plant owners. So, these activities lock-in within customers; our approach typically uses company management visits to speed up the process. Laboratory testing and NDT inspection are also activities performed by the partner company outside the MTU and depending on the project. It can involve a single partner or several partners on a project.

MTU does not have modeling software and engineers in charge dedicated explicitly to the modeling, so other companies or engineer freelancers must do it for the modeling. In some projects, other experts are needed and thus must rely on the pool of experts in the university to support our project.

4.2 New Business Model

Having analyzed the response survey data and presented the business model, a new business model is proposed and presented schematically in Fig. 4. In the new business model, new activities have been added within-firm activities. The first activity that can increase value to the customer is laboratory testing. In the present MTU business model, as presented in Fig. 3, that laboratory testing done by external stakeholders and time can be constraints. Thus, by adding to internal activities, the speed might increase and reduce the total time to project delivery. The speed of delivery is a concern of our previous customer as one response said:

“What needs to be improved is the speed and even better final results.”

The requirement is that we need to analyze the investment needed and possibly add human resources for laboratory testing. Nevertheless, what will be taken as internal activities that are common, such as microstructural testing and mechanical testing.

The second activity is related to the reporting, and in many cases, the report is delivered as progress reports. For example, preliminary reports, middle reports, and final reports. In some projects, a monthly report is also required. However, in most cases, it failed to be delivered on time, especially for the monthly report, since the report is not organized within or by stakeholders involved in supporting the project. Therefore, adding digital reporting, the online report in the cloud could be promising to make the job easier and deliver the report faster to the customers.

Dashboard related to the data visualization makes customers easy and short learning curves for better understanding the data and the analytical tool with predictive capability for reliable operation. To respond to the needs for asset integrity software raised by the customer as well as prospective customers, asset management software can be added to future activities in the business model. These activities also respond to technological trends and push for consulting company sustainable growth.

Both digital reporting and dashboard and integrity software required other activities by external stakeholders. The dashboard and integrity software requires capability in machine learning and data analytics that external stakeholders must do. In contrast, digital reporting activities require cloud providers and web tool developers as part of our activities and shall be done externally.

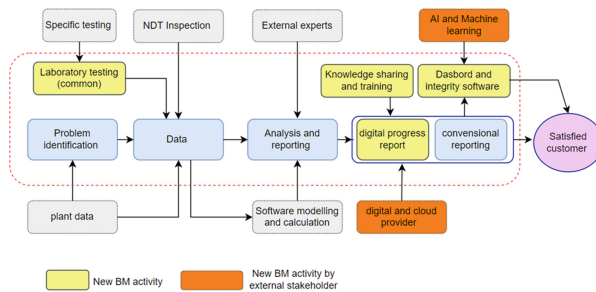


Fig. 4. New proposed business model of the engineering firm.

4.3 Value Proposition Canvas

The first step toward business innovation is analyzing the interview results. In the context of value proposition, the value proposition canvas [5] can be used to list and do an iterative search of the customer value proposition. The value proposition canvas has two sides, with the customer profile on the right and the company profile on the right, which clarifies customer understanding. The value map describes how we intend to create value for customers. Value proposition design can be considered a never-ending process in which one needs to evolve the company value proposition(s) constantly to keep it relevant to customers. Most importantly, there must be a fit between the two sides when one meets the other.

The match between customer conditions and the services we offer is not easy. We must be able to adjust the customer profile, pain, and gain in terms of product and services, pain reliever, and gain creator. Of course, the customer will be happy when we can solve problems, overcome pain and provide benefits.

Figure 5 illustrates how we find out customer pain and gain and then propose a pain reliever and gain creator before creating products and services. A great value proposition can fit between pain and pain reliever as well as between gain and gain creator. The map shows that each value we offer is based on pain and gain from the customer profile. Thus the MTU's new value proposition Our product and consulting services help engineers in power and the petrochemical industry to finish their job with the best quality at the competitive prices.

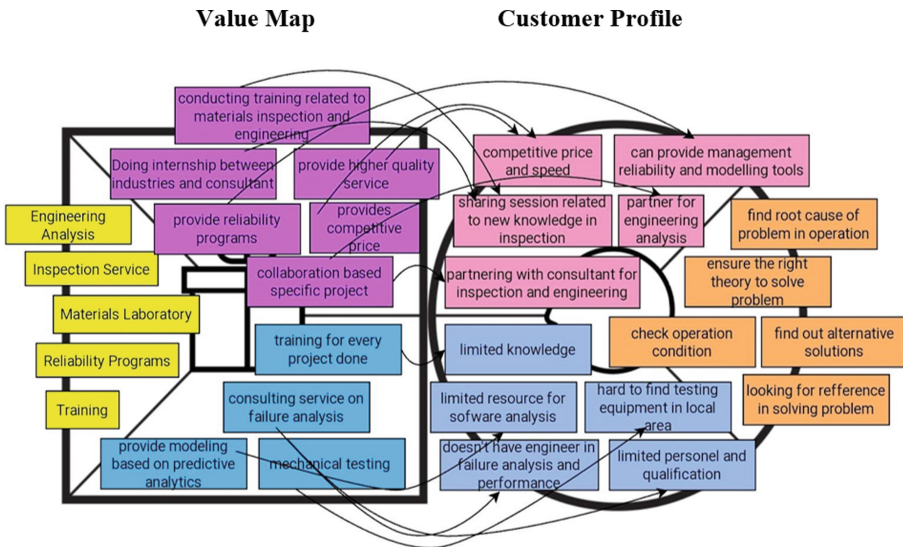


Fig. 5. Fit between the value map and customer profile

5 Conclusion

The present work analyses the business model of the engineering consulting firm using the data of interviews with previous and prospective customers. The business model is analysed on the Amit and Zott framework on the business innovation model. The works show that it is possible to deliver value to customers by adding activities, changing the structure, and modifying governance. An example is that a bottleneck activity can be included in the firm activities and governed internally, for example, laboratory testing and digital reporting. The power and petrochemical industry are typical process industries. Thus, the present approach can be used for other consulting firms working in the widespread field of engineering.

References

1. Si, S., & Chen, H. (2020). A literature review of disruptive innovation: What it is, how it works and where it goes. *Journal of Engineering and Technology Management*, 56, 101568. <https://doi.org/10.1016/j.jengtecman.2020.101568>
2. Tavoletti, E., Kazemargi, N., Cerruti, C., Grieco, C., & Appolloni, A. (2021). Business model innovation and digital transformation in global management consulting firms. *European Journal of Innovation Management*. Advance online publication. <https://doi.org/10.1108/EJIM-11-2020-0443>
3. Frow, P., & Payne, A. (2011). A stakeholder perspective of the value proposition concept. *European Journal of Marketing*, 45(1/2), 223–240. <https://doi.org/10.1108/0309056111095676>
4. Payne, A., Frow, P., & Eggert, A. (2017). The customer value proposition: Evolution, development, and application in marketing. *Journal of the Academy of Marketing Science*, 45(4), 467–489. <https://doi.org/10.1007/s11747-017-0523-z>
5. Osterwalder, A., Pigneur, Y., Bernarda, G., & Smith, A. (2014). *Value proposition design: How to create products and services customers want*. Wiley.
6. Miles, I. (2022). *Innovation and the service economy*. OpenMind. Available <https://www.bbvaopenmind.com/en/articles/innovation-and-the-service-economy/>
7. Gary, H. (2000). *Leading the revolution*. EBSCO Host. Available <http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&AN=54517>
8. Johnson, M. W., Christensen, C. M., & Kagermann, H. (2008). Reinventing your business model. *Harvard Business Review*. <https://hbr.org/2008/12/reinventing-your-business-model>
9. Zott, C., & Amit, R. (2017). Business model innovation: How to create value in a digital world. *NIM Marketing Intelligence Review*, 9(1), 18–23. <https://doi.org/10.1515/gfkmir-2017-0003>
10. Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Pearson. Available <https://books.google.co.id/books?id=4PywcQAACAAJ>

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

