

# A Business Case Method for Business Models

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**Abstract:** Intuitively, business cases and business models are closely connected. However, a thorough literature review revealed no research on the combination of them. Besides that, little is written on the evaluation of business models at all. This makes it difficult to compare different business model alternatives and choose the best one. In this article, we develop a business case method to objectively compare business models. It is an eight-step method, starting with business drivers and ending with an implementation plan. We demonstrate the method with a case study for innovations at housing associations. The designed business case method can be used to compare and select the best business model successfully. In doing so, the business case method increases the quality of the decision making process when choosing from possible business models.

## 1 INTRODUCTION

Due to shortening product lives, intense global competition, a disruptive and agile environment, business models need to be renewed more rapidly and more frequently (Chesbrough 2007). In addition, the chosen course of action is of great importance for the future performance of organizations. With the renewal of business models, multiple possible directions can be defined. A recent example is seen in the automotive industry. Car manufactures need to choose if they want to produce cars running on alternative energy, and next, which type of energy. Hybrid, bio-fuel, electric, or hydrogen are all options. Making the choice is hard, for each of the alternatives require a business model change and the success of the produced car is unsure. This is an example of the need for a method to objectively compare alternative business models, and choose the best course of action.

A business case can be of help to form the answer to this question. A business case is a tool for identifying and comparing multiple alternatives for pursuing an opportunity and then proposing the one course of action that will create the most value (Harvard Business School Press 2011). Making a business case for the possible business model alternatives, gives the decision makers a solid and objective as possible basis, to make the best choice (Meertens et al. 2012).

Choosing one of the business model alternatives, should be well considered. Instead of a gut feeling, each of the alternative's consequences, impact, risks, and benefits for the organization, should be assessed as objectively as possible. This will result in a better choice, and better organizational performance.

However, the main problem is that it is unclear how alternative business models can be compared to choose the best course of action. A business case could be one of the solutions, for it compares alternatives in terms of costs, benefits and risks. Existing problems are that it is unclear how a business case should be made from a business model. Also, it is unclear what good business case components are, and which business model components are of relevance for the development of the business case.

## 2 METHODOLOGY

The research design is based on the design science research methodology (DSRM) by Peffers et al. (2007). This method is chosen because it creates an artefact as solution to a problem. In this research, the problem is the unstructured decision making of potential business models. The artefact designed is a business case method which enables objective comparison of business models. Further, the DSRM enables process iterations, so that it is possible to

adjust previous phases to increase the quality of the artefact. However, because the review of academic literature is less emphasized, the method is adjusted to include the valuable academic literature in the process. For the literature study, the five-stage grounded theory method for rigorously reviewing literature by Wolfswinkel et al. (2013) is used. This method assures solidly legitimized, in-depth analyses of empirical facts and related insights, including the emergence of new themes, issues and opportunities (Wolfswinkel et al. 2013). Figure 1 shows the five sequential steps integrated with the DSRM method.

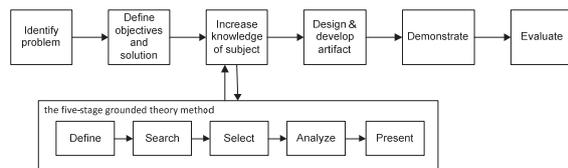


Figure 1: DSRM process of Peffers et al. (2007) with the grounded theory method from Wolfswinkel et al. (2013).

Starting with the first step of the DSRM of Peffers et al. (2007), the introduction to this article identifies the problem. Namely, the need to objectively compare business models. Following the DSRM, we identify the research objective: design a structural method to create a business case of business models, to be able to objectively compare the assessed business models, and choose the best alternative. We present the literature review of business cases and business models, which increases our knowledge on the subject, elsewhere.

### 3 THE BUSINESS CASE METHOD

This section creates a new artefact in the form of a business case method. The design of our business case method is based on the two approaches identified by literature review: Ward et al. (2008) and the Harvard Business School Press (2011). Both of them have a list of components. These lists partly overlap, yet each has distinct advantages and disadvantages. Based on the comparison of these two approaches, eight main components can be identified, which Table 1 lists.

In contrast to the business case method proposed by Ward et al. (2008), this method does take alternatives into account, similar to the model of Harvard Business School Press (2011). This is because in most cases more than one solution can be

thought off and applied to reach the goal. Therefore, it would be bad to go with the first possible solution without putting some effort in the quest for other compelling solutions. Furthermore, the third point, alternatives, is different from the business case methods proposed in the reviewed literature, in which authors only look to the benefits that the proposal brings. Of course, the benefits are important for the business case. The possible negative effects, however, cannot be dismissed. Therefore, a good overview of not only the benefits but also the disadvantages should be presented in the business case as an overview of the caused effects of the proposed project. According to Ward et al. (2008), organizations who overstate the benefits to obtain funding are the least likely to review the outcome and less than 50% of their business case projects deliver the expected benefits resulting in unsatisfied senior management.

Table 1: Components of the business case method.

1.	Business driver	The cause, problem, or opportunity that needs to be addressed
2.	Business objectives	The goal of the business case stating which objectives are aimed for
3.	Alternatives	Representing the options to reach the objectives
4.	Effects	Positive and negative effects that come with the pursued alternative
5.	Risks	Risks that come with the pursued alternative
6.	Costs	Costs that come with the pursued alternative
7.	Alternative selection	Based on gathered data the best alternative is chosen
8.	Implementation plan	Plan which explains when and how the alternative is implemented

As the components are the main concepts of the proposed method, we clarify all eight components individually in this section.

#### 3.1 Business Drivers

The meaning of the business drivers originates from the business case method by Ward et al. (2008) and has not changed. The business drivers stand for a statement of the current issues facing the organization that need to be addressed. These can either be problems or opportunities and ideas with enough potential to make it worth pursuing. Applied to business models, the business driver is most likely to originate from the need for business model

innovation. Chesbrough (2007) argues that due to shortening product lives, even great technologies can be relied upon no longer to earn a satisfactory profit before they become commoditized. Practice has learned that even great business models do not last forever. Therefore, he argues, a company needs to think hard about how to sustain and innovate its business model. For future markets will be smaller, more highly targeted (and effective), and the new environment will require different processes to develop and launch products successfully.

### 3.2 Business Objectives

The business objectives are the goals of the innovation. Both methods discussed in the theoretical framework advice to set business objectives. They state which business drivers are addressed and how these are hoped to be achieved with the proposed project. This can be one or more specific aspects of the strategy that need to be improved or modified; one or more of the business model components that need improvement; or processes or products that need to become more efficient and better address the needs of customers.

### 3.3 Alternatives

The alternatives represent the available options to reach the objectives. At the start of this section, we describe the reasoning to include identification and assessment of alternative solutions in the method. Summarized, the argument is that it would be unwise to go with the first idea that comes along that addresses the business drivers, without investigating whether other, perhaps better, alternatives exist.

Sometimes, the benefits of a single specific opportunity or idea are assessed. In such cases, it might be hard to find a substitute or alternative to the opportunity. Thinking of alternatives and assessing them increases the chance of pursuing a better-balanced alternative, instead of the first that comes to mind. All alternatives need to be compared with the current situation.

Amongst others, identification of alternatives can be done by assigning a senior manager with the task to define and launch business model experiments (Chesbrough 2007). Harvard Business School Press (2011) proposes brainstorm sessions as a tool to identify alternatives. Both tools can be used to identify alternative business models. Next to those tools, market assessment tools or SWOT analysis may be suitable to come up with alternatives.

### 3.4 Effects

The effect component is the largest of all. This is because a variety of actions needs to be performed with the effects to create a consistent and structured overview of the effects on the organization per alternative. Effects are the positive (benefits) and negative (disadvantages) effects that an alternative causes. First, effects need to be identified. Second, it is important to come up with measures for each effect. Third, each effect must be connected to an owner. This increases involvement with the project within the organization, and stimulates owners of benefits to help establishing the alternative when it is approved. Fourth, each effect needs to be placed in the framework in Table 2 (Ward et al. 2008). For each effect, the framework determines the type of organizational change (do new things, do things better, or stop doing things) and the degree of value explicitness (from observable to financial). Fifth and final, a time frame is estimated per alternative. This time frame gives information of when the project starts, when it delivers results, and when it finishes. Each alternative goes through these five steps.

### 3.5 Risks

The fifth component is concerned with risk assessment of each alternative. Risk is defined as the probability that input variables and outcome results vary from the originally estimate (Remenyi 1999). How risks are assessed depends on the situation and needs further research per case. Amongst many others, the “best case/worst case scenario” method can be used to assess the risk of the alternatives. With this method, two scenarios are developed and the effects of each scenario on the organization are estimated. In the first scenario, the alternative will perfectly result in the expected benefits. In the second scenario, the worst reasonable possible situation will evolve caused by the alternative.

### 3.6 Costs

Costs are one of the most important aspects of a business case. The costs give an indication of the total expected investment costs, and expected profit over a specific time period. The investment costs represent the money needed to implement the business model change in the organization. Also, in the costs section, the expected payback time is calculated to indicate how long it will take for the break-even point is reached.

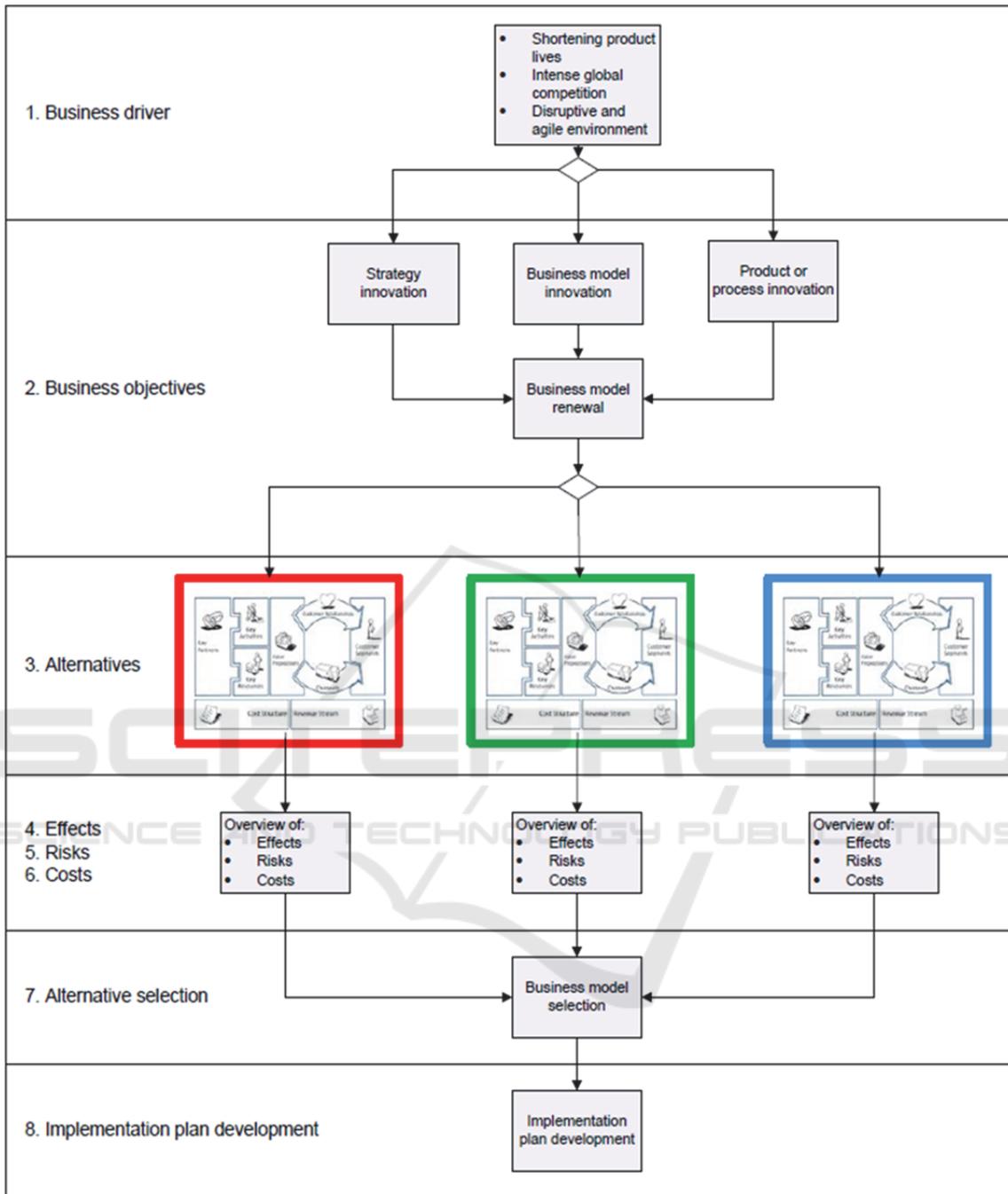


Figure 2: Business modelling connected to the business case method.

### 3.7 Alternative Selection

After gathering the data for all alternatives in the previous steps, the best option can be chosen by weighting the expected effects against the expected calculated costs. Harvard Business School Press (2011) suggests that the best alternative is partly chosen based on feelings. However, if the risks are

translated into expected costs, this can be added to the costs-effect equation. Then the alternatives have to be compared based on the non-financial effects and the total expected costs/profit of the alternative. Many methods to do this exist, varying from complex to rather simple (e.g., the direct-rating method, point-allocation method, and analytical hierarchy process; Van Ittersum et al., 2004).

### 3.8 Implementation Plan

Now that the best alternative is selected, it is important to develop a plan of action. Tasks, roles, objectives, resources, dates, and responsibilities are parts of this implementation plan. The level of detail of an implementation plan varies depending on the case. The plan lays out how progress can be tracked and success measured when the proposed solution is put into action. Without this, actual success of a business case is hard to verify.

## 4 CONNECTING THE BUSINESS CASE METHOD TO BUSINESS MODELLING

In this section, the developed business case method is applied to the business model concept. Figure 2 visualizes the connection. The figure shows the business case steps on the left. The sources, types of information, or input for each of those steps are on the right.

The first step contains the business driver. Business drivers for business model innovation can come from different sources. In general, shortening product lives, intense global competition, and the disruptive and dynamic environment are the main sources (Chesbrough 2007). This can lead to one of the three causes for business model renewal. The business objective represents the goals that the business model change aims to achieve.

The next step is identification of alternatives. In this step, multiple business models can be developed with the focus on meeting the business objectives. Next, the effects, risks, and costs of each of the business model alternatives are assessed. The effects represent the positive and negative non-financial effects that alternatives cause. The effects can be represented with a framework for business case development (Ward et al. 2008). To assess the risks of the project, one of the risk assessment methods described in literature for project management can be used. The risk assessment part should at least cover the points of Remenyi (1999). The risk can be represented in a probability vs. impact matrix.

Often, the expected financial benefits, and the costs of the project, are the most important part for decision makers using business cases. In the costs section, changes in the business models costs and revenue component need to be assessed. The cost component of a business model must cover costs created in other components (Iacob et al., 2012),

such as key activities. Next to the expected costs and profits, the payback period and return on investment should be presented.

Using a multi-criteria method, the most suitable business model can be selected in the seventh step. After that, an implementation plan can be developed. During step three till eight, alternative business models should be compared to the current business model to assess the changes and effects that it causes. For example, in the fourth step, only the effects that differ from the current business model are assessed. The reason for this is that the other effects remain the same for both alternatives, and thus only increases the size and complexity of the business case.

## 5 METHOD DEMONSTRATION AND EVALUATION: DEA LOGIC AND HOUSING ASSOCIATIONS

Having created the artefact (business case method), the next step is to demonstrate it. We use a case study of the company DEA Logic, which provides products and services for Dutch housing associations. The main two stakeholders in the case are the company DEA Logic and the Dutch housing associations. The innovation is developed by DEA Logic, and the target customers for this innovation are Dutch housing associations. The innovation will have an impact on the business model of the Dutch housing associations.

DEA Logic is an engineering company specialized in advanced electronics, security software, and consulting in information technology, information management, and building management. Over the last years, DEA Logic developed an access control system called C-Lock, which has a major position in their product portfolio currently. The C-Lock system can be extended with multiple solutions. This way, apartments can be better adjusted to the needs of the tenants. In this case, DEA Logic wants to discover whether their product is favourable for (Dutch) housing associations. A business case needs to be developed.

In the Netherlands, a housing association is a non-profit organization, which' mission is to build, manage, maintain, and rent houses and apartments. The responsibilities are defined and assigned by the Ministry of the Interior and Kingdom Relations. Each housing association is private, but can only operate within boundaries set by the Dutch

government. Therefore, housing associations do not differ much. In addition, all housing associations have more demand than supply currently, which causes waiting lists. The houses they rent are favourable for citizens with a low income (an annual income of € 43.000 is the maximum). The associations are tasked to supply good housing possibilities for the relatively more vulnerable and poorer people in society. Similar constructions exist in other countries. For example, the United Kingdom has government-regulated housing associations with the same goal; to provide housing to people on a low income or people who need extra support.

Thanks to the public character of the housing associations, all needed information for this case is public and presented on websites of housing associations, the government, and the central fund for people housing. For the scope and purpose of this research, applying the DEA Logic case on Dutch housing associations in general is sufficient to demonstrate the designed method.

The data and numbers used in the business case are based on calculations by DEA Logic, and internet sources. For reasons of confidentiality, the numbers are not accurate. The business case gives an indication of the order of magnitude of the costs difference between the two discussed alternatives. If in the future, a housing association would like to realize the project, a new business case has to be made, to assess the effects of the innovation on their specific situation. For the purpose of demonstrating the business case method, the used numbers and accounted variables are sufficient.

DEA Logic develops technological and electronic innovations for real estate amongst others. The C Lock access control system is one of those products. The latest innovation for newly built or renovated apartment buildings is IP-infrastructure. In the current situation, each apartment in a building complex is supplied with public utilities and digital infrastructural connections. In the Netherlands, each apartment is provided with at least a telephone line, television cable, intercom system, and often fiberglass connection for internet. Each of these connections makes use of their own wires. The main idea of IP-Infrastructure is to supply each apartment with only one TCP-IP connection, combining telephone, television, intercom, and internet, as well as other possible data connections.

This infrastructure not only reduces infrastructural costs and materials of newly built or renovated apartments, but also increases the amount of possible functionalities. The currently developed functionalities are derived from the C-Lock access

system, and can be connected to the receiver easily. Tenants can choose individually which solutions they need. The core of the innovation is to increase apartments' flexibility, functionality, and luxury, and to minimize the maintenance costs.

The C-Lock and IP-Infrastructure innovations by DEA Logic are suitable for Dutch housing associations, for they build, rent, manage, and maintain apartments for a diverse target group. The target group is diverse, as their customers are young as well as old people. In addition, families with children and people who need daily nursing support belong to the target customers. Introducing DEA Logic's innovations increases the suitable target group for each apartment, as it can be adjusted to the needs of the tenant more easily. Furthermore, the use of IP-infrastructure decreases maintenance costs.

The innovations affect the housing association's business model. Renting out C-Lock solutions and IP-infrastructure becomes a new key activity. DEA Logic becomes a new key partner, together with several service providers. Also the value proposition is extended, for apartments are more secure and luxury. The suitable customer segment for each apartment increases, as it can be adjusted to the needs of various tenants. Finally, a new revenue stream is added, for the IP-infrastructure is rented out, in combinations with C-Lock solutions, in addition to the traditional rent of apartments. Therefore, DEA Logic's innovation and Dutch housing associations form a good combination to test the business case development method.

The following eight paragraphs represent the eight steps of the business case method. We compare two scenarios. In both scenarios, the same apartment complex is built with one hundred apartments. The first scenario represents the current situation. In the second scenario, the IP-infrastructure is implemented together with C-Lock solutions.

## 5.1 Business Drivers

Based on the vision and strategy of the three largest housing corporations (CFV 2012), their mission is to build, manage, and maintain quality tenement housing for people with a low income and vulnerable groups in society. Therefore, it is preferable that building, managing, and maintenance costs of houses to be low. Housing corporations continuously seek possibilities to reduce costs and still deliver high quality, and affordable homes for a large and diverse target group. IP-infrastructure, in combination with the variety of possible C-Lock solutions provided by DEA Logic, is an innovation

that contributes to the corporations’ mission.

### 5.2 Business Objectives

In accordance with the business drivers, the pursued objectives of the IP-infrastructure presented in this business case are the following:

- Reduce maintenance costs
- Increase compatibility with target tenant group
- Increase quality of living environment
- Increase security of tenants
- Increase luxury

### 5.3 Alternatives

The yellow post-its in Figure 3 show the current business model of a Dutch housing association. The value proposition offers low-priced rental houses in a good living environment for people with low income belonging to vulnerable groups in society. Revenue is generated via monthly rent and subsidy from the government.

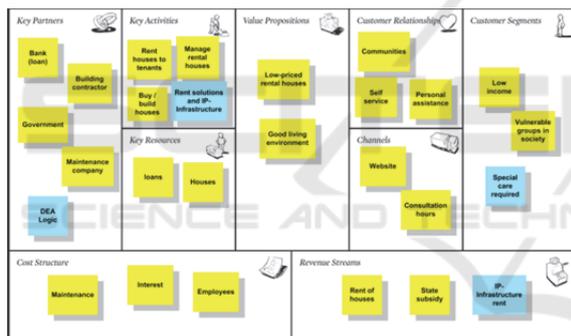


Figure 3: Business model of Dutch housing associations with IP-infrastructure and C-Lock solutions.

The blue post-its in Figure 3 are additions that show an alternative business model of a housing association with an apartment complex with IP infrastructure. In addition to the current key activities, renting out infrastructure and solutions form a new key activity. DEA Logic becomes a new key partner of the housing corporation, as they provide the solutions and maintain the system. Furthermore, the customer segments are extended with a target group including tenants who require special care. The fourth change is in the revenue stream building block. Next to the rent of houses and state subsidy, the housing corporations receive rent for the use of the IP-infrastructure by tenants.

Next to changes visible in the business model, many benefits of IP-infrastructure are within the

tactical set of the current business model (Casadesus-Masanell & Ricart 2010). Therefore, they do not influence or change the business model. However, the resulting business case includes those effects as well.

### 5.4 Effects

Implementing IP-infrastructure in renovated or newly build apartment buildings affects the organization. Table 2 presents the effects of the new IP-Infrastructure compared to the current, classic infrastructure. The table structures them according to two factors. Horizontally, they are categorized according to the type of required organizational change. Vertically, they are categorized according to the degree of explicitness. Because the only difference between the two alternatives, in terms of business model, is the revenue model, other effects of both alternatives are equal. Therefore, they are represented in only one effects overview table.

Table 2: Effects of IP-infrastructure

Degree of explicitness	Do new things	Do things better	Stop doing things
Financial	Rent C-Lock solutions and IP-infrastructure		Reduce maintenance costs by not replacing door locks & nameplates
Quantifiable			
Measurable		Increased target group Increased security	
Observable	Dependable on non-standardized technology In line with mission and vision	Increase quality living environment	

### 5.5 Risks

As with each innovation, risks are involved. To assess the risks, we use a construction project risk assessment method (Tah & Carr 2000). This method is suitable, as renovating or building the apartment complex is a construction project. Most risks can be prevented, resulting in a very low overall project risk. However, some risks of the IP-infrastructure alternative remain, due to the following two points:

1. The technology is new. So far, it has been deployed in one apartment building only.

- The technology is developed and built by one company. The current market does not provide any substitutes that work with the same infrastructure.

These two points are interconnected. A small change exists that the technology does not work as good as was hoped for, or the subcontractor stops supporting the technology. In that scenario, the costs to transform the infrastructure back to the current standard are high. Other risks for both alternatives can either be prevented, or do not have a negative influence on the organization. The total risk of IP-Infrastructure, before prevention, is one and a half times the risk of the classic approach. This is mostly because the classic infrastructure is used almost everywhere and has been improved over time.

## 5.6 Costs

The cost difference, between the current situation and the IP-Infrastructure alternative, depends on two variables. First, the number and type of C-Lock solutions affect the costs. The second variable is time. Time is important, as the housing association's objective is not only to build apartment complexes, but also to maintain them. Therefore, the cost overview also includes maintenance.

To compare the costs of both approaches, an indication of the costs for an apartment complex with 100 apartments is calculated. Only the costs for the infrastructure and the C-Lock solutions are covered. The other building costs are equal for both alternatives. Because the costs for construction and maintenance of the infrastructure and the C-Lock solutions vary from situation to situation, several assumptions and raw cost estimates are used.

Table 3 shows estimates of construction costs, yearly maintenance costs, and yearly profit, per function. Next, the maintenance costs and profits are extrapolated over five years to get more insight in the breakeven point of the alternatives. The initial costs for the IP-Infrastructure are higher compared to the current situation. However, the difference is not very big, and within three years, the IP-Infrastructure in combination with the access C-Lock solution is cheaper than the current alternative.

Table 3: Estimated costs of construction and maintenance, and estimated profit.

Function Costs (€)	Infrastructure		Access		Intercom		Care		Communication	
	Old	New	Old	New	Old	New	Old	New	Old	New
Construction (Initial)	13,000	26,000	30,000	30,000	52,000	50,000	800	400	-	-
Maintenance (Yearly)	500	1,000	11,250	6,950	16,500	7,000	3,600	1,800	750	0
Profit (Yearly)	-	-	-	-	-	-	-	300	-	-

## 5.7 Alternative Selection

The effects, risks, and costs of IP-infrastructure, compared to the classic infrastructure, are discussed in the previous sections. Based on this information, one of the alternatives needs to be selected. Looking at the effects, IP-infrastructure is the best choice as it increases the amount of target groups, quality of living, and security of tenants. Additionally, with the new technology, apartments become more luxury. The risks, however, are one and a half times higher than with classic infrastructure. Again, this can be reduced using available risk prevention options.

Initial costs of IP-infrastructure are higher, but within four years it becomes cheaper than the classic alternative. Depending on the functions, the estimated IP-infrastructure savings are around € 70.000 after five years. Initial costs are higher, yet maintenance costs are much lower.

IP-infrastructure offers new functionalities and increases security of tenants, quality of living, and target group. Risks are higher, but can be prevented. Initial costs are higher, but money is saved due to the low maintenance costs over time. Therefore, IP-infrastructure is the best alternative to choose.

## 5.8 Implementation Plan

After their board of directors approves this project, the housing association can implement the project. In this phase, however, it is too far stretched to determine an explicit implementation plan.

## 6 DISCUSSION

The objective for designing the business case development method to compare business models was to design a method to create a business case of business models, to objectively compare the assessed business models, and choose the best alternative. Because of the abstract descriptive nature of business models, it is often required to involve more tactical and operational details, only implicated by changes in the business model. Deciding which details are useful and which are not must be judged by the maker of the business case. This allows for a certain amount of subjectivity. Table 4 represents which method steps are objective and which are open for subjectivity.

During creation of the business case, one of the experienced difficulties was switching between abstraction levels. A business model is an abstract representation of an organization. Processes and

products are on a more tactical or even operational organizational level. The outcome of comparing business models in the business case depends on choices made in organizationally lower abstraction levels, like the tactical and operational level. The distinction between a process or product business case, and a business model business case needs to be made. In the first case, focus is on cost and benefit comparison of the innovated process or product. In the second case, it is about choosing the best alternative way of how an innovated product or process affects the business model.

Table 4: Assessment of the objectivity of the business case method.

Method step	Objective / Subjective
Business driver	Objective
Business objectives	Objective
Identification of alternatives	Subjective
Effects	Subjective
Risks	Subjective
Costs	Objective
Alternative selection	Objective / Subjective
Implementation plan	Subjective

Furthermore, we found some empirical evidence supporting the “strategy – business model – tactical set” framework by Casadesus-Masanell & Ricart (2010). In hindsight, the case study is mostly a product innovation within the tactical set of the building association’s business model. Some minor changes were made in the business model. This made it hard to devote the business case to the business model, and forced us to include more operational aspects in the business case. This is not per se negative for the demonstration, the method, or the outcome of the business case, but the goal and focus of the designed method, is to objectively compare two business models, in contrast with assessing the costs and benefits of a product innovation.

A limitation of the research is due to an almost complete lack of academic literature about business cases. The concept is used often, but without a well-designed and widely accepted methodology. As well as for the business model concept, it would have been better if a general accepted business case development method would have existed in academic literature for the reliability thoroughness of the research.

Overall, the method does what it is designed for. It is a method to develop a business case, which allows different business models to be compared, and the best one to be chosen as objective as possible.

## 7 CONCLUSIONS

The designed business case method to objectively compare business models can be used to compare and choose the best business model successfully, as demonstrated by the case study. The goal of this research was to increase the quality of the decision making process between possible business models, by developing a method to objectively compare the alternatives. Based on literature research, the business case method was designed. This method contains the eight components that Table 1 lists.

The case study showed that the developed method can be used to compare business models and choose the best one. However, the output of the business case depends partially on the people making the business case. Steps 3, 4, 5, and 7 are relatively subjective steps, which gives freedom to decision makers. Further research is needed to establish the effects of this decision freedom on the quality of the outcome of the business case. Still, the method fulfils the defined goal of the research.

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