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Coping with multi-sourcing decisions: A case study from Danske Bank

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Abstract. This chapter presents the design of a *Multi-sourcing Nexus* for Danske Bank Group. Multi-sourcing decisions become important to many companies when they have outsourced something to a single supplier and face a situation in which they can either outsource more to the same supplier or to another supplier. A Design Theory Nexus is a set of constructs and methods that enable the construction of a decision model for a wicked problem, such as the multi-sourcing decision. In sourcing literature, three perspectives that deal with the multi-sourcing decision problem can be found, namely, utility considerations, transaction costs, and risk management. However, it is unclear which perspective to use, as well as how and why? The Design Theory Nexus for multi-sourcing that answers this wicked problem was designed and evaluated in an action–research undertaking in a Scandinavian company. The chapter presents the details of the Nexus design as well as the very positive evaluation that the design received when it was applied.

Keywords: outsourcing, multi-sourcing, decision support, Nexus.

1 Introduction

Outsourcing is the practice in which an organization *purchases goods or services that were previously provided internally* (Lacity & Hirschheim, 1993, p. p. 74). IT outsourcing thus means aggregating specific IT tasks or entire processes and moving them to one or more outsourcing vendors, typically to a place where wages are lower or where a more appropriate business structure can be provided to deliver the IS goods and services (McFarlan & DeLacey, 2004).

Organizations have claimed that IS outsourcing reduces cost and time, increases quality and reliability of products and services, improves business performance, and helps organizations to concentrate on core competencies.

Multi-sourcing decisions become important to many companies when they have outsourced something to a single supplier and face a situation in which they can either outsource more to the same supplier or to another supplier (Swift, 1995).

However, the multi-sourcing decision is very complex (Berger, Gerstenfeld, & Zeng, 2004; Tullous & Utrecht, 1992). When do you need to consider multi-sourcing? When you have a problem with the current outsourcing partner? When you can see that a problem may arise? Or just to keep the current partner on their toes? Another issue is which countries to look at? Same country as the current partner to make the best use of the knowledge obtained? Or in another country to dissipate the risk? And what about the set-up? Should it be a close

partnership? Or just based on simple transactions; ‘here is a package of work, please do’? Or maybe a strategic alliance? Or staff augmentation?

In fact the multi-sourcing decision is what in the literature has been called a *wicked problem* (Rittel & Webber, 1973). What characterizes a wicked (policy) problem is: (1) That there is no definitive formulation of the problem. Typically you need to understand the problem (better) through working with the solution. (2) That there is no stop signal embedded in the problem. This is because the process by which to solve the wicked problem is identical to the process by which one understands the problem. (3) That there are no true or false solutions but only solutions of varied goodness. (4) That any solution to a wicked problem is a unique one-time solution.

One of the few approaches that can handle a wicked problem is a 'Design Science Nexus,' developed by Jan Pries-Heje and Richard Baskerville (2008) for a special issue on Design Science Research and based on an early DESRIST conference paper (Pries-Heje & Baskerville, 2006); so we decided to take a closer look at that.

Pries-Heje & Baskerville (2008) describe a five-step process for developing a *Design Theory Nexus* that can deal with a wicked problem such as the multi-sourcing decision:

1. Analyze different (decision) approaches available in the relevant area
2. Analyze the alternative approaches discovered
3. Design and construct an artifact based on the analysis
4. Design and develop a decision-making process
5. Integrate approaches, conditions, assertions, and process into a tool (an artifact)

Following this 5-step process we have managed to identify and combine three perspectives found in existing literature – utility considerations, transaction costs and risks – into a Nexus where the underlying *Design Theory* is that the higher the transaction cost of multi-sourcing, and the greater the risk, the greater the utility of multi-sourcing has to be to be recommendable.

The remainder of the chapter is organized as follows. First, in Section 2 provides a short introduction to Danske Bank Group, which we use as our case, and the research method we have used. Then in Sections 3–7, we give an account of our five-step development of a *Nexus*. This is followed by Section 8 in which we describe our successful evaluation of the Nexus in Danske Bank Group, and finally we conclude the chapter in Section 9.

2 Our research method and the Danske Bank Group

We have used the design research cycle (Hevner & March, 2003; Hevner, March, Park, & Ram, 2004) as our research approach. For the relevance part, we started out with Danske Bank Group facing a multi-sourcing decision problem and asking for help on how to make that decision. For the rigor part, we found the Design Theory Nexus (Pries-Heje & Baskerville, 2008) as our approach and we used the five steps for our design. A thorough literature survey is included in Step 1, thereby adding more rigor. Danske Bank Group is a leading player in the Scandinavian financial markets. In total, the Group serves more than 5 million retail customers and a significant number of public sector and institutional organizations. During the last ten years, the company has grown considerably through

acquisitions. In 2006, the Danske Bank Group decided to outsource. They found a partner in Bangalore, India, to work with.

Today (2011), close to 500 people work in India for the Danske Bank Group. A year ago, this figure was 400 and Danske Bank Group considered whether future growth should be with the same partner or they should multi-source?

In a concrete cooperation with the Danske Bank Group, we used the five phases recommended by Susman & Evered (1978): (1) Specification of infrastructure in the project. (2) Diagnosis of the problem. (3) Planning of actions. (4) Implementing actions. (5) Evaluation of results. We thus closed the relevance cycle by applying the design to the problem.

3 The Nexus design process Step 1: Approaches available

A Design Theory Nexus is a set of constructs and methods that enable the construction of models that connect numerous design theories with alternative solutions. In the paper published by Pries-Heje & Baskerville (2008), a five-step method for constructing an instance of a theory-nexus artifact was found.

The first step in constructing a Nexus instantiation is an analysis of the different approaches available in the given area of innovation. This analysis requires a survey of existing literature and findings.

In sourcing literature, three perspectives can be found to deal with the multi-sourcing decision problem, namely utility considerations, transaction costs, and risk management. However, it is unclear which perspective to use, as well as how and why?

3.1 Utility perspective

The first approach we found was the classic cost–benefit analysis. Here the idea is that all the pros and cons are converted into dollars and cents. Dollar values in the future are discounted to the present value. Benefits must then surpass the disadvantages (measured in dollars) and one can calculate an Internal Rate of Return (IRR) of the proposed investment – here the multi-sourcing decision.

Many have shown that it is quite difficult to put everything in dollars and cents. An exciting alternative was called *Information Economy* (Parker, Benson, & Trainor, 1988). This alternative was based on studies in the U.S. Fortune 500 companies looking at what actually led to the decision of starting a project. These studies were then translated into an approach where the things that mattered in the start-project decision were scored on a scale from “0” to “5”. One thing to look at, for example, is to assess how the project idea in question provides better management information. Scoring at “5” means that it specifically and directly leads to much better management information. “0,” however, means ‘not in any way.’ Likewise, things like strategic alignment, fit to Enterprise Architecture, and competitive advantage are scored.

To take into account the broader-than-cost–benefit approach represented by, for example, Information Economics, we decided to call this perspective the *utility perspective*.

3.2 Transaction cost perspective

A transaction cost is a cost associated with the transfer of ownership, including organization, adjustment, and regulation of services in the market. The prevailing definition was first proposed by Williamson (1979). Any transaction between a customer and a supplier will cause *friction*. Whether a company is to multi-source or not is determined not only by production costs but also by the friction that is caused by the client's switch over from one to more sourcing partners causes. In summary, the multi-sourcing friction depends also on the degree of uncertainty and measurability of the transaction itself as well as the size of the friction (frequency and uncertainty) incurred. In assessing the friction of multi-sourcing we need to include: (1) The cost of search and information, that is, to find alternative suppliers and assessing their price and quality. (2) Negotiation, that is, to exchange views and agreeing with potential suppliers, and (3) Verify and enforce the agreement, that is, management and undertaking eventual sanctions to ensure that the counterparties meet the contract and penalties.

In principle, if the transaction costs of multi-sourcing are too high, it is viable to stick to 'single sourcing.'

3.3 Risk perspective

A risk is a potential problem. Risk analysis is to list things that can go wrong and then assess the probability and consequence. Many have looked at outsourcing risk classes (cf. Berger & Zeng, 2006; Treleven & Schweikhart, 1988) and it is obvious that one can look at risks in relation to multi-sourcing.

4 Nexus design Step 2 – Analyzing approaches

The second step involves analyzing the alternative approaches discovered in the first step, carefully mapping out the ideal conditions under which each approach has the highest utility.

In the case of utility, friction (transaction cost), and risk, the three approaches to considering multi-sourcing that we identified, we found them to be analytically unequal such that hardly any conditions are equivalent for any comparison of the approaches.

Nevertheless, we looked hard and tried many approaches to identify a way to make use of all three approaches in a nexus. To make a long story short it was here that we identified three design theories, written in this context by the use of the technological rules of Van Aken (2004; 2005):

1. If you are in a situation where you can gain high utility value from multi-sourcing, then do it
2. If you are in a situation where you have very little or no transaction friction when moving from single sourcing, to multi-sourcing then do it
3. If you are where you have very little or no risk caused by the switching over from single sourcing to multi-sourcing, then do it

And then – after a few iterations – we can summarize them as follows:

The higher the friction/transaction cost of multi-sourcing, and the greater the risk, the greater the utility of multi-sourcing has to be to make multi-sourcing recommendable.

5 Nexus design Step 3 – Design and construct

The third step shifts the process from an analytic to a constructive design of an artifact that can be used to indicate whether the conditions identified in Step 2 can be found in an actual problem setting.

An early experiment in the case Danske Bank Groups involved a team of four researchers and two practitioners in developing a very simple framework

First, we found six *utility* dimensions of relevance. Our starting point was Information Economics (Parker et al., 1988) as well as a multi-sourcing book (Cohen & Young, 2005):

- U1. (Classic) Return on Investments (ROI) – dollars and cents
- U2. Business alignment
- U3. Competitive advantage
- U4. Innovative ability
- U5. Enterprise architecture
- U6. Flexibility and Scalability

Second, we did a thorough analysis of what had caused friction in the literature in the case company and in another company that we had access to. We ended up with 16 causes of friction/transaction cost:

- TC1. Contract negotiation and signing
- TC2. Friction related to transferring the necessary knowledge to the multi-sourcing site
- TC3. Loss of performance when moving tasks to a new site
- TC4. Cultural distance and differences causing friction in the form of misunderstandings and need for more specification
- TC5. Differences in the levels of maturity
- TC6. Friction in establishing communication infrastructure (telephone lines, video conferences, tele-presence)
- TC7. Friction in establishing working infrastructure (server, clients, networks)
- TC8. Training people and management from multi-sourcing sites
- TC9. Finding and establishing liaison officers at multi-sourcing sites
- TC10. Cultural training
- TC11. Friction in developing processes to move tasks from the single-sourcing site to the new site
- TC12. Having liaison officers permanently stationed at multi-sourcing sites
- TC13. Analyzing which country and company should be the multi-sourcing site
- TC14. Visiting a number of potential countries than can become multi-sourcing sites

TC15. Ensuring that contractual agreements are kept

TC16. Friction caused by the varying price and salary level and structure at multi-sourcing sites

Third, we analyzed what had caused trouble in the past as well as problems found in the literature. We ended up with a list of 18 risk areas:

- R1. The current single-sourcing partner shows resistance to the new multi-sourcing site
- R2. The current single-sourcing partner decides that we (the customer) are not important any more
- R3. Unexpected unrest or instability, for example, because of war or terrorism in the single-sourcing partner country
- R4. Important knowledge only at single-sourcing partner site (and not at original customer site any more)
- R5. That single-sourcing partner comes too close and gets to know too much
- R6. That we (the customer) becomes too dependent on one company
- R7. Price raises because the single-sourcing partner establishes a monopoly-like situation
- R8. That the investment in multi-sourcing does not give the expected benefits
- R9. That delivery times from the existing single-sourcing partner lengthens
- R10. That our people become tired of the single-sourcing partner
- R11. That the single-sourcing partner closes down or goes bankrupt
- R12. That it is difficult to keep attrition rate down
- R13. That salaries in single-sourcing partner rises at the rate of, for example, 10% a year
- R14. That we have too little negotiation power in relation to the current single-sourcing partner
- R15. That existing single-sourcing partner's share of work grows too large
- R16. That it becomes impossible to find willing liaison officers (Danske Bank Groups outsourcing coordinators/managers)
- R17. Cooperation deteriorates suddenly
- R18. That our people show resistance against the new multi-sourcing site

6 Nexus design Step 4 – Design decision making process

The fourth step is to design and develop a decision-making process for the evaluation of the formulated assertions.

.Depending on the area of innovation, there may be more or less facilitation required in this decision-making process.

The three perspectives for multi-sourcing that we had identified above – utility, transaction cost, and risk – themselves represent a wicked problem. Nobody can say which of the three

perspectives is best and they are not comparable at once; no rational, hierarchical, or optimal solution model presents itself.

We used the overall Design Theory to come up with the decision model presented in Figure 1.

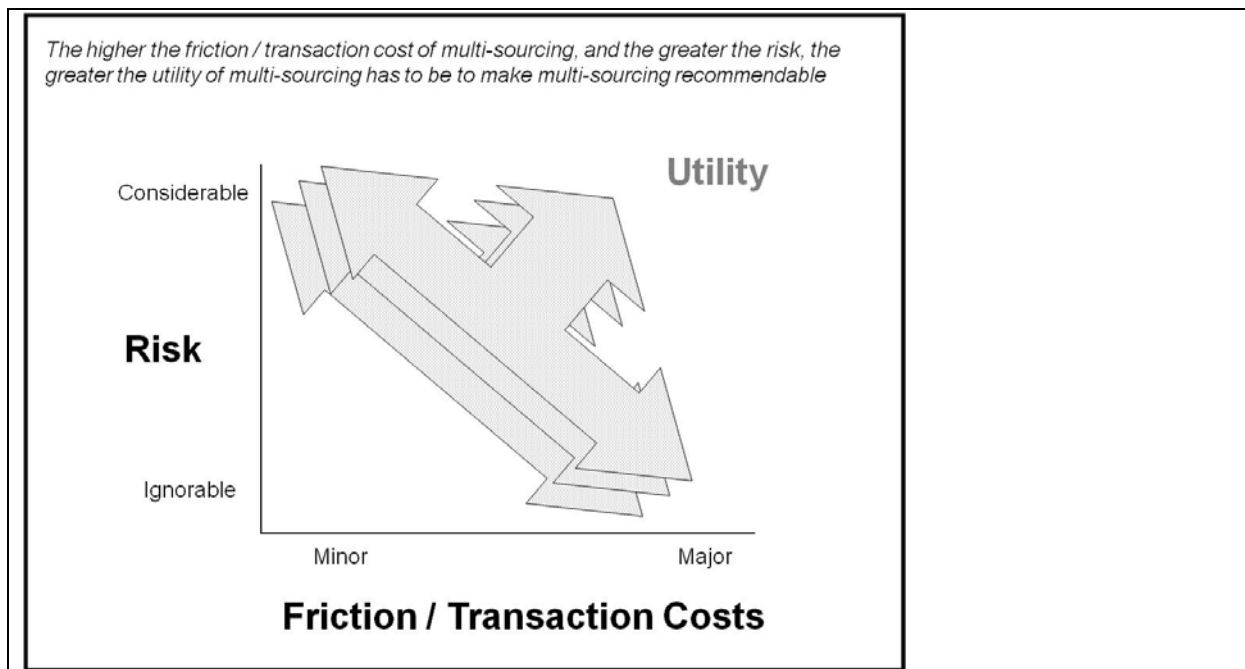


Figure 1: The overall design theory used in the multi-sourcing nexus.

Figure 1 shows the relationship between utility, risk, and friction. The more utility the more acceptable higher risk and friction costs.

We decided to use a 1–5 scale to measure utility. For each of the six sources of utility we derived a scale from 1–5, where “5” meant yes, considerably and “0” meant no utility at all.

An example is shown in Figure 2 of Utility area no. U6. on Scalability and Flexibility.

Flexibility and scalability are first of all about obtaining resources with new skills and getting them 'up to speed'. Second, it is about the ability of rapidly scaling up or down, for example, with several hundred new resources (people) in a few months:

5. Multi-sourcing will significantly increase our flexibility and scalability
4. Multi-sourcing will increase our flexibility and scalability
3. Multi-sourcing will increase either our flexibility or scalability
2. Multi-sourcing will either make us somewhat increase our flexibility or our scalability
1. Multi-sourcing will have only peripheral effects on flexibility and scalability
1. Multi-sourcing has no effect whatsoever on flexibility and scalability

Figure 2: Example question on utility from the multi-sourcing nexus.

Summing up the scoring, we calculated an overall utility level as shown in Figure 3.

Scoring in question U1: _____	Sum of scoring from 0 to 6 points => Utility level = 1
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Scoring in question U2 : _____	Sum of scoring from 7 to 12 points => Utility level = 2
Scoring in question U3 : _____	Sum of scoring from 13 to 18 points => Utility level = 3
Scoring in question U4 : _____	Sum of scoring from 19 to 24 points => Utility level = 4
Scoring in question U5 : _____	Sum of scoring from 25 to 30 points => Utility level = 5
Scoring in question U6 : _____	

Figure 3: From scoring to utility level.

For risk and transaction cost, we decided to apply a scale from 0 to 100 points. First, we assigned the same number of points to each. However, we quickly found that we needed to assign them different weights. In a workshop in October 2009 with the Danske Bank Group, we divided the areas of risk and transaction cost into three groups: large, medium, and small. This division into groups was mainly based on the concrete figures that came out of the experience from zero-to-single sourcing as well as research literature and experience from other companies.

An example of a large transaction cost is given in Figure 4 (no. 2 in the list above).

Estimate the transaction cost in the following situation	
After the multi-sourcing decision: to add the necessary domain and technical knowledge	
9 points	Involves significant and very expensive cost
6 points	Involves significant cost
3 points	Involves smaller cost
0 points	No cost whatsoever

Figure 4: Example question on Friction/Transaction cost

The following transaction costs were considered large (and therefore scoring 9, 6, 3 and 0):
Number TC1, TC2, TC3, and TC12

The following transaction costs were considered medium (and therefore scoring 6, 4, 2 and 0):
Number TC4, TC5, TC9, TC11, TC13, TC14, and TC15

The following transaction costs were considered small (and therefore scoring 3, 2, 1 and 0):
Number TC6, TC7, TC8, and TC10

Transaction cost TC16, on friction caused by different price and salary level and structure at the multi-sourcing site, was given special treatment in that a scale from +10 over zero to -10 were assigned here. Thus, if the multi-sourcing site had a relatively better salary and pricing structure we assigned -10 (= reducing friction) and if the multi-sourcing site had relatively higher cost we assigned +10 (= adding friction). And if it was about the same we put it at zero points.

All in all, the point structure chosen to be assigned for friction/transaction cost could sum up to 100.

An example of a small risk is given in Figure 5 (No. P in list above).

Estimate the likelihood that it will not be possible to find liaison officers for the new multi-sourcing country:	
3 points	Happens almost certainly
2 points	Likely to happen
1 points	Will hardly happen
0 points	Completely unlikely

Figure 5: Example question on Risk

The following risk areas were considered to have large consequences (and therefore scoring 9, 6, 3, and 0): Number R7, R8, R9, R10 and R11G, H, I, J, and K

The following risk areas were considered to have medium consequences (and therefore scoring 6, 4, 2, and 0): Number R1, R2, R3, R4, R5, and R6

The following risk areas were considered to have small consequences (and therefore scoring 3, 2, 1, and 0): Number R12, R13, R14, R15, R16, R17, and R18

All together the points can sum up to 102 points. Therefore, for the sake of symmetry we decided to subtract 2, thereby ending up with a scale from 0 to 100.

7 Nexus design Step 5 – Bringing it all together

Finally, the approaches, conditions, assertions, and the process are integrated into a tool (an artifact) to support the evaluation.

The multi-sourcing nexus was implemented as a series of questions to be answered as explained in the previous section. It is meant as a tool to help a company – typically top and middle managers – make a decision on whether to outsource or not. Thus, we need to facilitate a discussion for a group of people. Second, the answers are put into an information system artifact (based on a spreadsheet). The answers decided on by the group will then result in a number between one and six for utility. A number between 0 and 100 for friction/transaction cost and a number between 0 and 100 for risk.

As a result of answering the questions regarding a concrete multi-sourcing decision using the nexus tool, we decided to provide the recommendation in the form of a ‘traffic light’ where green (light gray) means that multi-sourcing is very favorable, yellow (medium gray) means that multi-sourcing is worth considering, and red means (dark gray) that multi-sourcing has no intrinsic interest. The two figures 6 and 7 show the resulting output screen (from the spreadsheet artifact) if utility is 5 and an overview of outputs if utility is 1, 2, 3, or 4.

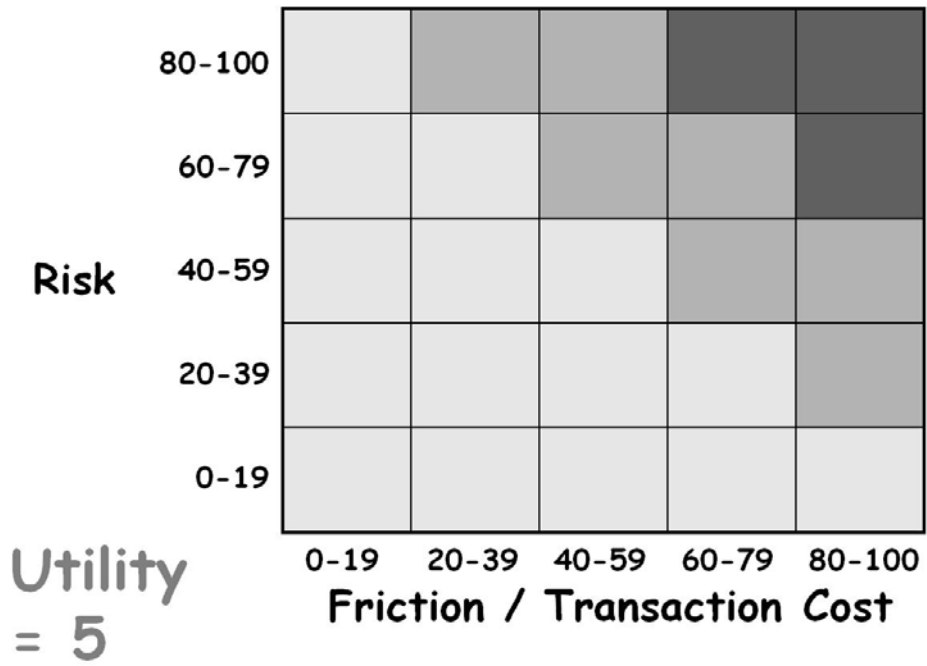


Figure 6: The output from the Nexus artifact when utility level = 5 (very high)

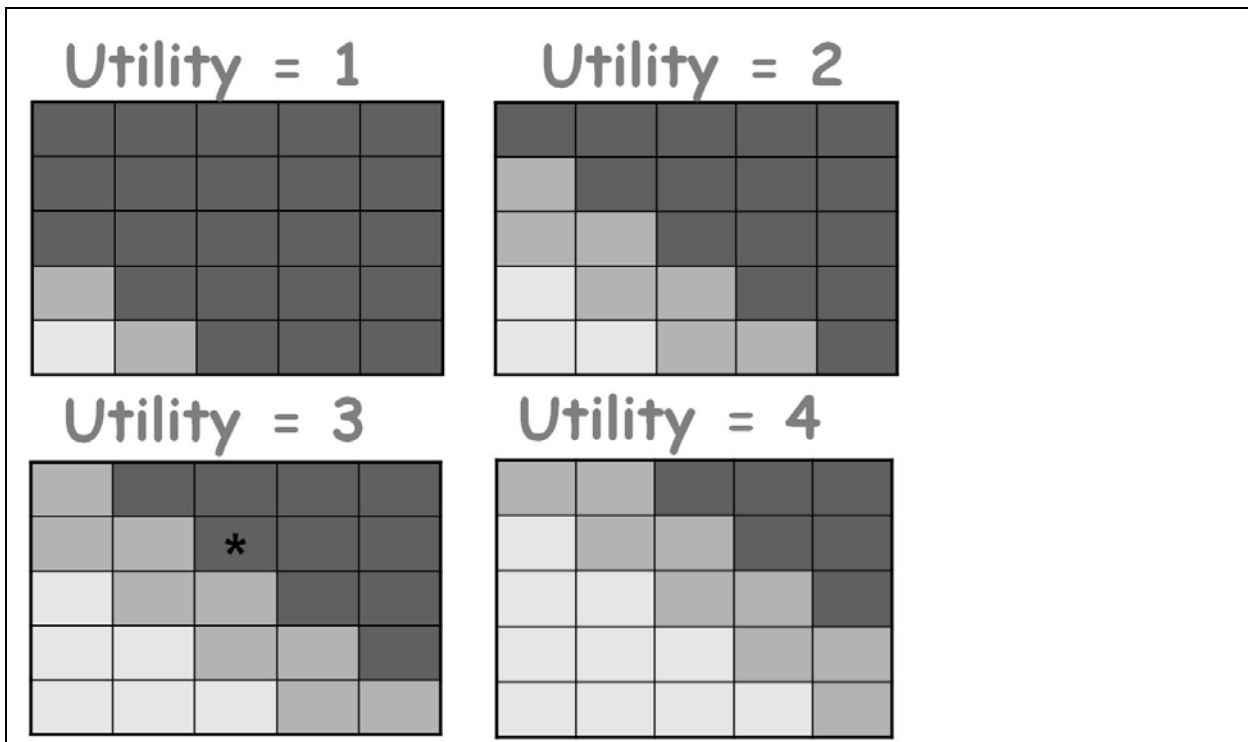


Figure 7: The outputs from the Nexus artifact when utility level is 1 to 4

8 Evaluation

Evaluation is a core activity in any kind of Design Science Research. Hevner et al (2004, p. p. 85) even opine that evaluation is “crucial” and ask for researchers to demonstrate the utility, quality, and efficacy of a design artifact. Evaluation can take different forms depending on whether the output of research is design theory (Gregor & Jones, 2007; Walls, Widmeyer, & El Sawy, 1992) or an artifact (March & Smith, 1995). In the case of an artifact – as this multi-sourcing nexus – Vaishnavi and Kuechler, (2004) state that designed artifacts must be analyzed for their use and performance as possible explanations for changes (and hopefully improvements) in the behavior of systems, people, and organizations.

Our aim was to design a nexus to facilitate a group decision process, so that was what we asked Danske Bank Group for. However, in December 2009, they were in the middle of a process of creating the material for making a multi-sourcing decision. So, the first vice president, responsible for the outsourcing site that had been entrusted with making the material on multi-sourcing, asked us to carry out the first evaluation with her alone.

In the first evaluation, we went over all the questions. The first vice president decided an answer and at the end our artifact calculated the following figures:

- Utility at 11 point => Utility at level 3
- Friction/Transaction cost at 40 points
- Risk at 65 points

This meant that the recommendation (illustrated with a small star in figure 7, bottom left) was “that multi-sourcing has no intrinsic interest.”

Overall, this pre-evaluation with one person gave some very valuable feedback. The evaluation of our multi-sourcing artifact was considered “surprisingly useful.” On a scale from 1 to 5, we were close to 5 (= best), thus in that sense the evaluation was a success. There were also some minor comments on the design and the wording of friction and risks. These things were changed before the second evaluation.

The second evaluation took place in Danske Bank Groups tele-presence room(s) on 19 January 2010. The managers involved in the decision were present. Three people were in the room in which we were (2 researchers). Two in another room but connected via tele-presence, and one person participating from India via tele-presence.

This time utility was evaluated at level 2. Especially, enterprise architecture was evaluated to have lower utility. Friction ended up at 47 points, a little more than in the first round. And risk was at 44 points, a little less than in first round. Again, the outcome of the exercise and the use of the multi-sourcing nexus was “that multi-sourcing has no intrinsic interest.”

There were several important outcomes of this second evaluation. First of all the usefulness of the multi-sourcing nexus was again considered high. When the recommendation came “that multi-sourcing has no intrinsic interest” it became clear that the first round evaluation had led to the decision of not doing multi-sourcing. Thus a senior vice president said “that was also the decision we have made” and “it is good to have it confirmed.”

Another outcome was that the cost–benefit perspective and the transaction cost perspective were too close. That led to the renaming of the cost–benefit perspective to “utility

perspective” instead – as we have done it throughout this chapter. We also emphasize the friction part of the transaction cost perspective as a result of the second evaluation.

Another thing that confused the participants was that some of the risks were related to the situation today (as-is) and some of the risks were related to risks that would occur in the future potential multi-sourcing situation (to-be). We therefore ended up dividing the risks into two groups:

- As-Is: R1-R7 and R9–R15
- To-be: R8 and R15–R17

But keeping the same scales and scoring

The third round of evaluation took place in November 2010. Here the Danske Bank Group again faced a multi-sourcing decision and the first vice president was interested in going over the dimensions in our nexus again.

Again the utility level ended up at 2. However, it was emphasized that flexibility and scalability were the two main courses for single sourcing and thus would need to be taken into account in the multi-sourcing decision. That is why we have added flexibility and scalability as dimension VI to consider in relation to utility.

Friction/transaction cost ended up at 39 points and risk ended up at 53 points. Thus, this time we were right at the border with our recommendation between “no interest at all” (red) and “maybe consider further” (yellow).

A final thing that was revealed in this third evaluation was that the response time – from using the nexus and making the multi-sourcing decision – to a future 1–3 years ahead where the multi-sourcing decision is firmly established – needs to be taken into account. Possibly in the formulation of risks; instead of asking as-is questions such as “that we (the customer) becomes too dependent on one company” we could instead say “will we (the customer) in the next 1–3 years become too dependent on one company?”

Again, the third evaluation was considered very useful and it ended up having a considerable and important impact on the multi-sourcing decision made in the beginning of 2011 by the Danske Bank Group.

Seen from a Danske Bank Group perspective, the participation in the development of the multi-sourcing nexus has added a large value to the decision to multi-source or not and it has given a clear overview on how to tackle the different factors that have a large impact on the decision.

When Danske Bank Group used the multi-sourcing nexus for the first evaluation, the outcome from the evaluation was used, in combination with other inputs, to actually produce the recommendation for continuing with the single sourcing set-up.

Danske Bank Group has decided to do the multi-sourcing evaluation with a fixed interval, to evaluate if the situation has changed, and the decision with a single sourcing set-up needs to change.

The third evaluation of the model was made in connection with this recurring evaluation, and in the third evaluation it became clear that it was not enough to evaluate the current situation,

as the time line for the establishment of a multi-sourcing set-up also would have an impact when multi-sourcing could be relevant – estimated at 1–1.5 years ahead. Combined with the fact that the change of outsourcing situation do not change significant from evaluation to evaluation, when it is done frequently.

So the use of the multi-sourcing nexus was combined with a set of scenarios with a 3 year projection , and result was that dependent on choice of scenario, the outcome from the multi-sourcing nexus actually varied from a recommendation of a single sourcing set-up to a recommendation of a multi-sourcing set-up. Again the outcome from the multi-sourcing nexus was used in connection with the actual evaluation of the need for multi-sourcing in the Danske Bank Group (combined with other inputs), and the outcome from the evaluation was used as input for the recommended action plan for each scenario.

The impression is that multi-sourcing nexus actually covers the primary factors that will have an impact on the decision on multi-sourcing, it simplifies the rather complex decision, and it is easy to provide a management overview, based on the multi-sourcing nexus.

9 Discussion

During some of the reviews of the model and the article, some of the reviewers asked if the model could be used for the initial evaluation of whether to start up with outsourcing or not.

Our conclusion is the overall approach with the evaluation of the 3 problem areas:

1. Utility perspective.
2. Transaction costs perspective
3. Risk perspective

All will add value in an initial evaluation of whether to initiate outsourcing or not, but the specific questions for each perspective are all designed for a multi-sourcing evaluation, and cannot be used for an initial evaluation in connection with the decision of whether to initiate outsourcing or not.

10 Conclusion

More and more companies are in a situation where they have outsourced something to a single supplier and face a situation where they can either outsource more to the same supplier or to another supplier – a multi-sourcing decision.

In this chapter, we have now described the iterative design and evaluation of a multi-sourcing nexus combing through utility considerations, transaction costs, and risk management. We have showed that the Nexus derived performed well and worked as a solution when it was applied to the practice in a Scandinavian company; it was actually considered very useful.

Furthermore, we have followed the 5-step process of developing a Nexus that was published in a special issue of MIS Quarterly (Pries-Heje & Baskerville, 2008). We have found it relatively easy to follow and apply the outcome of our Nexus in practice in three rounds of evaluation

Throughout the chapter, we have tried to give sufficient details as to allow the reader to follow our design process and eventually use the design presented if ever facing a multi-sourcing decision.

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