

# Identifying, Analyzing and Evaluating Risks of Service Development A Quality-oriented Approach

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**Abstract.** Services offer a great innovation potential due to their adaptability to individual customer problems. Thus many companies meet the challenge to consider customer-driven innovation ideas in a way that market-ready services match the customers' needs. Instruments are needed, which allow for identifying, analyzing and evaluating the risks that come along with the development of innovative services. Combined with the knowledge about the needs of the customer an evaluation of the innovation ideas should be realized. This evaluation is the basis for the decision, which innovations are brought to market. The aim is to develop a concept that allows companies in a simple way to identify, analyze and evaluate potential risks that arise in the implementation of innovative ideas. In addition, a comprehensive catalogue of possible risk factors is created that is of meaning in the service development.

**Keywords:** Service, Innovation, Risk Management, Quality Management

## 1. Introduction

Innovation is a key driver of economic development. In the view of increasing market dynamism and the rising complexity in the corporate environment the targeted management of innovation becomes more and more important [1]. Companies are forced to differentiate themselves from competitors with products and services of comparable quality. A successful, innovative company is characterized by the fact that its services, products and internal processes at least as rapidly evolve as market and competitive requirements change [2]. Innovations not only hold for opportunities but are also fraught with risks. Therefore, companies must keep chances and risks at the different levels of the business environment in view. Unidentified risks can cause serious consequences. Beside warranty and goodwill costs, a huge loss of image can occur [3], which can effect intensive costs for the company.

A decisive factor for the competitiveness of service providing companies is the concatenation of innovation and service quality [4;5]. Recent studies show, however, that depending on the branch 30 - 50% of all newly introduced services on the market prove as a "flop". This means that the implemented services not meeting the expectations of the provider will be removed from the market. [6] The most common causes are the lack of customer orientation as well as the capacity overload of companies having to handle too many projects in parallel [7]. In addition, innovation in services are often "accidental by-products" and arise ad hoc based on feelings or intuition. This implementation follows the idea that services are easier to develop than physical goods. Thus, the complexity of the innovative service development is systematically ignored. [8] Another cause for the failure of innovation projects is the rapid change of decision-relevant information. From this follows that a dynamic view of the success potential of innovative projects is of great importance.

Particularly the service sector provides a strong innovation potential because of the adaptability of individual solutions to customer problems. Many companies, however, face the challenge of considering their own or through the customer-driven innovation ideas in the development process of new services so that the marketable services meet exactly the demand of the customers. Furthermore the companies are forced to prioritize the innovation ideas and decide for or against one idea because of their abundance and

complexity. This decision is, as mentioned above, often made from the gut and not made methodically [9]. Thereby sometimes profitable ideas are dropped away and doomed ideas are pursued. Such mistakes cost companies considerable time and money [10].

Picking up the described problem, it is the goal of the research project “ServRisk” to develop a concept in collaboration with three industrial partners which allows industrial service providers to identify, analyze and evaluate potential risks that arise in the implementation of innovation ideas on a simple way.

In the following methods are presented that serve to identify risks of existing innovation ideas and transform them into a comprehensive catalogue of possible risk factors which may be of interest in the service development. In addition, methods and concepts for analyzing and evaluating the identified risks are presented. For this purpose assessment criteria have been designed by which such an evaluation can be done. Umschrift

## **2. Service Quality and Risks**

### **2.1. Service Quality**

A key success factor for companies is the quality of services. Service providers are increasingly recognizing that a competitive profiling is possible only by a consistent customer orientation, which is able to meet the expectations of the customers. Therefore, the consideration of the quality of services, particularly with ensuring a consistently high quality, has gained in importance in recent years. [11;12]

“Service quality is the ability of a provider, to create the consistence of a primary intangible and customer participation needing service according to customer expectations on a certain level of requirements. It is determined from the sum of the properties or the characteristics of the service to meet the requirements.” [11]

A direct measurement of service quality is often problematic due to the complex relationships and the abstract nature of services. That is why the GAP model fits better for the measurement of individual quality components. The GAP model represents a comprehensive framework for determining the quality of services from customer and company perspective [11;13]. Basis of the GAP model is a division of the interaction relationship into the levels service provider and customer. The GAP model gives an important approach for the detection of faults and gaps in the information flow. The Gaps of this model describe the reasons of quality defects or rather risks within the service production. Many services are generated in cooperation of customers and the employees of the service provider. Therefore especially in the service sector an intact, interpersonal information flow determines the competitiveness of the service providers at the market [14].

### **2.2. Risk**

In the literature the term of risk is defined in various ways [15;16;17;18]. This applies either for the scientific debate as well as for general linguistic usage. In everyday speech the term usually is equated with unpredictability and is often used in the context of dangers [19;20]. The term therefore is defined as “the possibility or increased probability of occurrence of a negative rated incidence” [17].

SCHULTE reflects these characteristics in his definition of risk and comes to the following definition, which also is the framework of this paper:

“Risk cause-related arises from the uncertainty of future events – whereupon this regularly comes along with an incomplete level of information – and is reflected in the action related effect of a negative discrepancy from a fixed aim.” [21]

### **2.3. Service Risks**

Risks can be classified in several ways. The types of risk and especially the relative importance for a company very much depends on the specifics of the company, especially as branch-specifics, regional characteristics, etc. [22] KALWEIT therefore differs quite widely between strategic, operational and financial risks, whereupon a distinction being made at the strategic and operational risks between external and internal risks.

Strategic risks arise from the risk that a strategic decision leads not to the desired strategic success. They have, therefore, like the decision itself a long-term nature, are comparatively rare and are usually at each

unique. External strategic risks relate to the activity field of the company and enclose for the company relevant markets, customer groups and products. Thus, these risks are of political, social, legal and economic nature. [18] On those risks, the company has no look, they work extrinsic. The situation is different with internal strategic risks. These are caused or originated by the company. For example internal strategic risks arise in the design of the value chain of the company. The key points here are outsourcing, scheduling resources and investment policies, etc. [16;18]

Operational risks refer to the risk of losses that occur because of inadequate or failed processes, people, systems or from external incidents. [23] External operational risks are therefore risks, which act from external site at the company, such as natural disasters or fraud. Internal operational risk, in contrast, are risks that are initiated from internal sources, such as human error, IT problems or accidents. [18]

The last form of risk represent the financial risks. These arise due to possible changes in market prices, the credit quality of counterparties and their ability to pay.

### 3. Procedure model for Identifying and Evaluating Service Risks

In the following a concept is presented which helps companies to identify and evaluate risks for their innovation ideas within the service sector to make substantiated decisions for or against an innovation idea.

Integrating the risk assessment into the development process allows for containing the risk of developing a new service without considering the customers and the market demands. This risk assessment is carried out between the step of brainstorming, where new ideas are generated for a service innovation, and the step of realizing the idea of an innovation. Thus the process model prevents that a "service concept", which most likely is doomed to failure, will be pursued and unnecessarily financial and human resources are wasted. In other words, this tool puts companies in a position to evaluate the performance of innovation ideas and increases the accuracy regarding the customers wishes.

In the opinion of the cooperating companies such process models only have a chance to be applied if their adaptability is easy and not very time-consuming. To use the process model a special skill or training therefore should not be necessary. To satisfy the requirement of low complexity demands the procedure can be broken down into manageable steps.

Based on the ideas for new or modified services each module of the existing and traditional risk management process has been checked on functionality and applicability. At this it emerged that some modules can be adopted, others need to be adjusted, but also modules have to be deleted or new developed. Adapted from the traditional risk management process figure 1 shows the resulting new procedure. By the representation of the process steps it becomes apparent that the developed approach significantly contains fewer steps than the classic approach of risk management and therefore allows for faster processing.

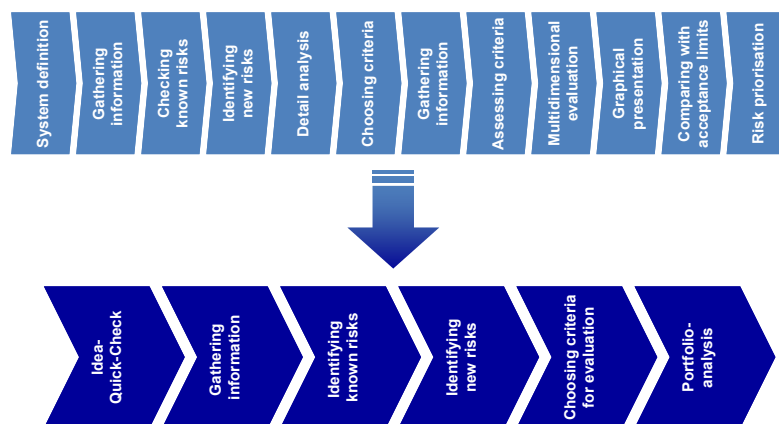


Fig. 1: Risk Assessment Approach

### 3.1. Idea-Quick-Check

The first step is called "Idea-Quick-Check" (see figure 2) and serves to check whether an idea for a new service generally has the potential to become a service innovation. Hereby a first selection can be done.

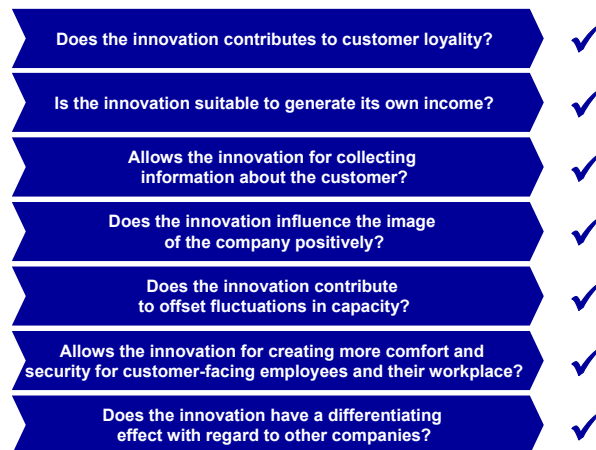


Fig. 2: Idea-Quick-Check

For passing the filtering of the ideas at least one question should be answered with „yes“. If this applies to an innovation idea, it should be pursued and the further steps should be continued. If in this first step no question could be answered with “yes”, there seems no benefit to be given for the company and the service idea can already be discarded at this early stage.

### 3.2. Gathering of Information

In this step all relevant information are collected that are necessary for a successful identification and evaluation of innovation risks. This step should be handled with great care because it represents the basis for the following steps. In detail the aspects of experience and implicit knowledge of the customer contact personnel, explicit or documented knowledge (eg. from the complaints management, error and complaint catalogs), customer touch points and customer needs have to be considered.

### 3.3. Identifying Known Risks

In order to identify risks as efficiently as possible, at first the innovation idea should be checked out on those risks that are known based on existing experience with similar innovations or innovation ideas. For testing an innovation idea with regard to known risks the industrial partners selected the method checklist out of the methods checklist, SWOT analysis, risk identification matrix and interview. It serves as a catalogue of risks and fulfils the required criteria, such as less manpower, time and preparation for conducting it, easy manageability, intuitive handling with less previous knowledge as well as digitalisation.

### 3.4. Identifying New Risks

The test of innovation ideas on known risks usually not reliably detects all of the risks [24]. It must be complemented by the determination of not yet appeared or not previously identified risks. The impulse for the identification of new risks provides the question: “What’s different at the considered service than at the previously considered products and which consequences can be effected from these changes?”

The identification of new risks as a creative step of risk identification can be supported by the use of creative techniques. From the methods questionnaire, morphological processes, FMEA, tree analysis, brainstorming, brain writing, Delphi method, Syntectics and scenario analysis, using similar criteria as in the identification of known risks, the methods of brainstorming and writing, as well as the questionnaire have been selected as suitable of the industrial partners.

### 3.5. Choosing Criteria for Evaluation

As in the traditional risk management also in the developed approach the evaluation on a single criterion is not enough. For a full risk assessment the two dimensions of probability and severity have to be used. The second one of the two criteria can be divided in separate dimensions which are assessed individually in order

to grasp the extent of loss more concretely. These individual dimensions are: financial loss, reputational damage and level of customer anger. These three individual dimensions are related to each other so as to assess the risks with a characteristic number afterwards.

The probability is determined with the four forms improbably, rare, possible and often. In collaboration with the project partners these characteristics have proven themselves as useful, cause they are not too inexact, but as well are not complicating the assessment by a too narrowed grid pattern. Because what occurs frequently or infrequently is relative and depends largely upon the company’s size and its employment field. At this point it is important to match the characteristics of the evaluation criteria in the team that carries out the risk assessment.

For the extent of damage five characteristics have found to be useful: bagatelle risk, low risk, medium risk, high risk and catastrophe risk. Again the characteristics are not clearly defined and it is advisable to re-communicate them with the team.

### 3.6. Portfolio Analysis

In the final step the identified risks are evaluated and illustrated in a portfolio diagram, see Figure 3. In this portfolio diagram all identified risks are applied. The axes Severity and Occurrence probability are ordinally scaled.

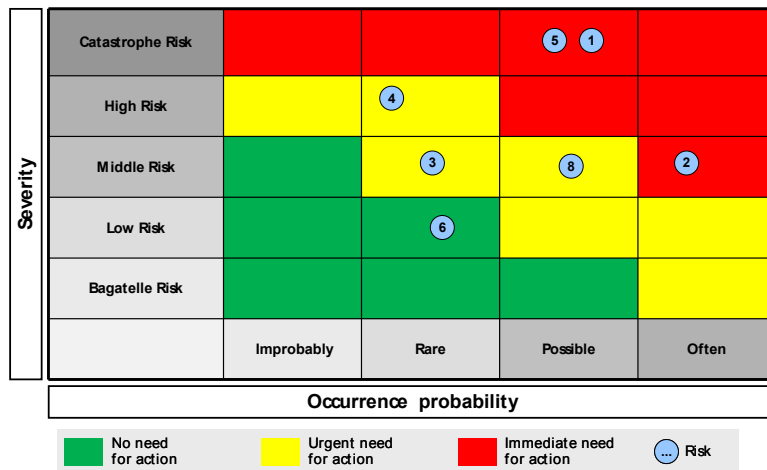


Fig. 3: Portfolio Analysis

By defining an acceptance line the diagram can be directly used for the subsequent step of comparing the risks with the defined acceptance limits. Thereby it will be immediately apparent, which risks exceed a predetermined value and therefore are considered unacceptable or which risks are still in the acceptable range. In the portfolio diagram, which has proven to be adequate for the developed approach, the acceptance line separates the acceptable (green) area from the unacceptable (yellow and red) area.

### 4. Conclusion

The systematically developed approach for minimizing the risk of service development was validated with the three project partners. It supports the companies considerably within the quality-oriented service development. It enables the identification of risks and the subsequent analysis and evaluation of innovation ideas in the service sector, in order to make an well-funded decision for or against an innovation idea. This will counteract the present trend in practice, in which many decisions are made ad hoc and thus not only financial losses have to be suffered, but also customer loyalty may be damaged.

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## 6. References

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