Risks and Controls in Facility Management Processes During the Real Estate Utilization Phase

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Abstract

Purpose

The purpose of the authors' current research and especially of this paper is to provide a methodology for facility managers in order to identify and tackle possible business risks during the real estate utilization phase. The paper documents the current status of the authors' research.

Methodology / approach

Risk identification is founded on a business process-oriented perspective. This means that so-called reference processes which were mapped inductively are used as a basis. Subsequently, the reference models are enlarged by possible key risks and related control activities. Risk identification is done by means of expert interviews, the analysis of companies' strategic and operational planning and the analysis of existing risk check lists.

Findings

As an example, the results of the described methods' application on the „Inspection and maintenance of facilities and machinery" process is shown.

Research limitations / implications

For further risk management decisions, a closer evaluation of possible risks seems to be necessary, because the relevance of a single risk is a significant factor. Only when the probability of entry of a certain risk and the amount of possible damages are known, a differentiation between critical and non-critical risks is possible. Further research of the authors will therefore focus on these items.

Originality / Value of paper

The amendment of reference processes by possible process risks and the corresponding control resp. risk management activities shown in the paper should be an advantage for industry as it sharpens risk awareness and points out possible measures to tackle risks. On the basis of valid risk and control

tables for a certain business process, risk and control check lists could be developed for the use in business practice.

Keywords

Process management; Reference process; Risk management; Risk quantification; Inspection and maintenance of facilities and machinery; Research paper

Introduction

Taking risks may stimulate entrepreneurial activity, but may also threaten it in case of inadequate risk handling. In medium enterprises, the avoidance of risks which could jeopardize a company's existence was always a matter of concern of entrepreneurs. On the other hand, risk management as a systematic approach has gained relevance not only in large concerns, but also in small and medium enterprises just in recent times (Gleißner, 2008, 1-7).

Facility management deals with important assets of companies. (Redlein and Giller, 2008) cited an IFMA study which showed that between 10 and 19 percent of companies' expenditures and 25 to 50 percent of companies' assets are related to real estate. As processes in facility management can therefore materially effect the financial statements of a company, risk management within FM processes should also attract the attention of facility managers.

Caused by financial scandals and collapses of large companies and concerns, different legislative initiatives have been started to implement and optimize risk management systems in the field of financial reporting during the last years. In the United States, the „Public Company Accounting Reform and Investor Protection Act of 2002" („Sarbanes Oxley Act" or „SOX") has been passed into law; in Europe, the directive 2006/43/EC of the European Parliament and the Council was enacted and states „*that for public interest authorities stricter requirements should apply for the statutory audit of their annual or consolidated accounts*" (Redlein and Giller, 2008, 183). Of course, these legislative acts have had a strong impact on process and risk management activities in companies, especially on those of public interest (i.e. corporations, co-operatives etc.). But as the focus of these activities was drawing up reports as part of the companies' financial statements, critics may raise the objection that they only led to documenting and not to tackling risks (Gleißner, 2008, 4).

This paper therefore wants to put the main emphasis on a methodology which allows an identification of risks and also of possible activities to manage and control risks in the field of FM. Risk identification in this context is based on a business process-oriented perspective and shall not cover only financial risks or those being interesting for financial reporting but also business risks within FM processes in the broader sense.

The objective of the authors' current research is to provide a methodology for facility managers in order to identify and tackle possible business process risks during the real estate utilization phase. This paper documents the current status of the authors' research and shall be seen as a working paper.

Basic concepts and terms

(Gleißner, 2008, 8-11) defines risk as the possibility to deviate from defined targets, caused by „accidental“ disruptions resulting from the impossibility to foresee the future. Risk management is seen by Gleißner as systematic thinking and acting in dealing with risks, risk quantification as the description of risks by means of a suitable density or distribution function (or historic data) and the assignment of statistical measures of risks' extents.

(Romeike, 2005, 22/23) distinguishes between financial and operational risks. The operational risks are furthermore divided into strategic risks (e.g. the possible danger that a certain business strategy does not lead to the best result) and operative risks caused by an inadequate performance of technology or processes, personnel, organization or external events.

The COSO framework defines the comprehensive approach of enterprise risk management: „*Enterprise risk management is a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives*“ (COSO, 2004, 2). Enterprise risk management shall align risk appetite and strategy of a company or institution, improve risk response decisions, reduce operational surprises and losses, identify and manage multiple and cross-enterprise risks, seize opportunities and improve the deployment of capital (COSO, 2004, 1).

Introducing enterprise risk management starts with the identification of possible key risks. These are valued and subsequently potential risk management measures are developed (Gleißner, 2008, 6/7). A possible approach of risk identification is to examine the different steps a typical business process might consist of and analyze possible risks for each process step. In this context, the concept of reference process identification is of specific significance: It is based on the hypothesis that generally valid, typical enterprise processes (reference processes, also referred to as reference models) can be identified which run in all enterprises on the whole in the same way (Becker and Meise, 2008, 123-124). As (Fleischmann, 2007) has shown, reference processes can be found also in the field of facility management. In the following section, we will focus on the question how this approach of reference process identification may be combined with risk aspects and therefore may be used for our topic of interest.

Research methods for data collection

According to (Schwegmann and Laske, 2008, 176), reference processes may be deduced

- inductively by means of consolidation of know-how from existing process models, documentations of software systems, expert interviews, expert concepts etc. or
- deductively from theoretical findings.

The reference process described later in this paper was mapped inductively and is based on existing process models developed for specific companies and on expert interviews; an important input for the current work are the reference models for nine FM processes in the real estate utilization phase developed by (Fleischmann, 2007) in his PhD thesis.

As (Redlein and Giller, 2008) have shown for the „Purchase and Payables“ process, already existing reference models may be enlarged by possible key risks and related control activities in order to adapt them to the requirements of risk management. Possible methods of risk identification are risk workshops (especially for operative risks), analysis of strategic and operational planning in companies, analysis of risk check lists (cf. e.g. Deloitte Touche Tohmatsu, 2008), brainstorming, expert and employee interviews etc. (Gleißner, 2008, 46-60). For this paper, mainly expert interviews, the analysis of companies' strategic and operational planning and the analysis of existing risk check lists were used as research methods.

In their current research work, the authors focus on the one hand on a progressive completion of process descriptions for the real estate utilization phase and their validation and on the other hand on the analysis of risks and controls for defined reference processes.

The nine FM processes mapped by Fleischmann in 2007 are continuously amended by further process descriptions, e.g. for object security and catering services. In the authors' point of view, about ten process descriptions from companies at the minimum are needed as a basis to define a new FM reference process.[1]

In addition, the analysis of risks and controls for reference processes that are defined already is done continuously. This work may be combined with expert interviews targeting on a further validation of already existing reference models. Ten to 15 expert interviews are seen as a minimum for a valid definition of process risks and controls covering these risks.

[1] The problem of relevance of a reference process and the number of actual business processes needed to create a reference model is discussed by (Fleischmann, 2007, 90).

Performance of expert interviews and enlargement of original reference processes

As described above, expert interviews are used as an important source of data collection in the authors' current research work.[2] Criteria for the selection of the interviewees are that

- they have at least three years of working experience within the specific field of activity (particularly for office buildings) that shall be mapped in the reference model and
- are in control of budgets and/or personnel, i.e. hold at least the position of a head of department, or work as external FM consultants for companies.

Otherwise, the industry affiliation of the companies the interviewees work for is not used as a selection parameter as the reference models in the end shall be relevant for FM processes in different industries.

During the interviews, the experts are at first confronted with the reference processes developed by Fleischmann which are presented to the interviewees as flow chart documents. The experts are then asked to describe differences resp. similarities between the mapped process and the process flow in their own companies or in those of their clients. After documenting necessary changes in the flow chart from the interviewees' point of view, the experts are asked to name relevant process risks and possible risk management resp. control activities which are considered as useful and efficient. All interviews are tape recorded, and after the interview the list of process steps (if necessary adjusted) and a corresponding table of risks and controls are sent to the interview partners for confirmation.

In the following section, the results of the described methods' application on the „Inspection and maintenance of facilities and machinery" process is shown.

Research findings: The example of the „Inspection and maintenance of facilities and machinery" process

The reference process referred to in this section was at first described by Fleischmann in his PhD thesis completed in 2007; it's definition was based on eleven process descriptions available (Fleischmann, 2007, 125-130). The process is targeting on the examination of the actual condition of facilities and machinery and on a preservation or improvement of this condition by means of maintenance; it comprises the planning and execution of inspection and maintenance of facilities and machinery, but does not treat specific activities in detail.

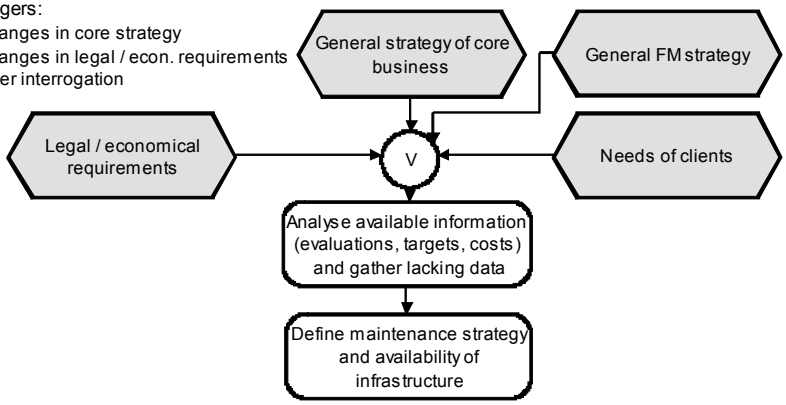
[2] Detailed information about the performance of interviews for process management purposes can be found in (Feldbrügge and Brecht-Hadraschek, 2008, 129-143).

Fleischmann's reference process started at the level of operational planning; the authors amended it by preceding process activities on a tactical level, integrating inputs from members of a working group preparing a new European standard on FM processes (prEN 15221-5:200x: „Facility Management – Part 5: Guidance on the development and improvement of processes"). The amended reference process was then validated by five further interviews. In general, the reference model was considered as applicable by the interview partners. Only two minor modifications were suggested by the experts: In process step 6 (after the definition of the intervals for preventative maintenance / inspection) not only a check of economic feasibility, but also a plausibility check was demanded. Furthermore, it was suggested to define the activities following a faulty execution of a preventative maintenance or inspection task because of their complexity as a sub process of its own. As both modifications were endorsed by the majority of the experts, the reference process flow was altered correspondingly. Figure 1 shows the updated definition of the reference process flow.

Figure 1: „Inspection and maintenance of facilities and machinery" process flow (own figure based on Fleischmann, 2007, 127-129).

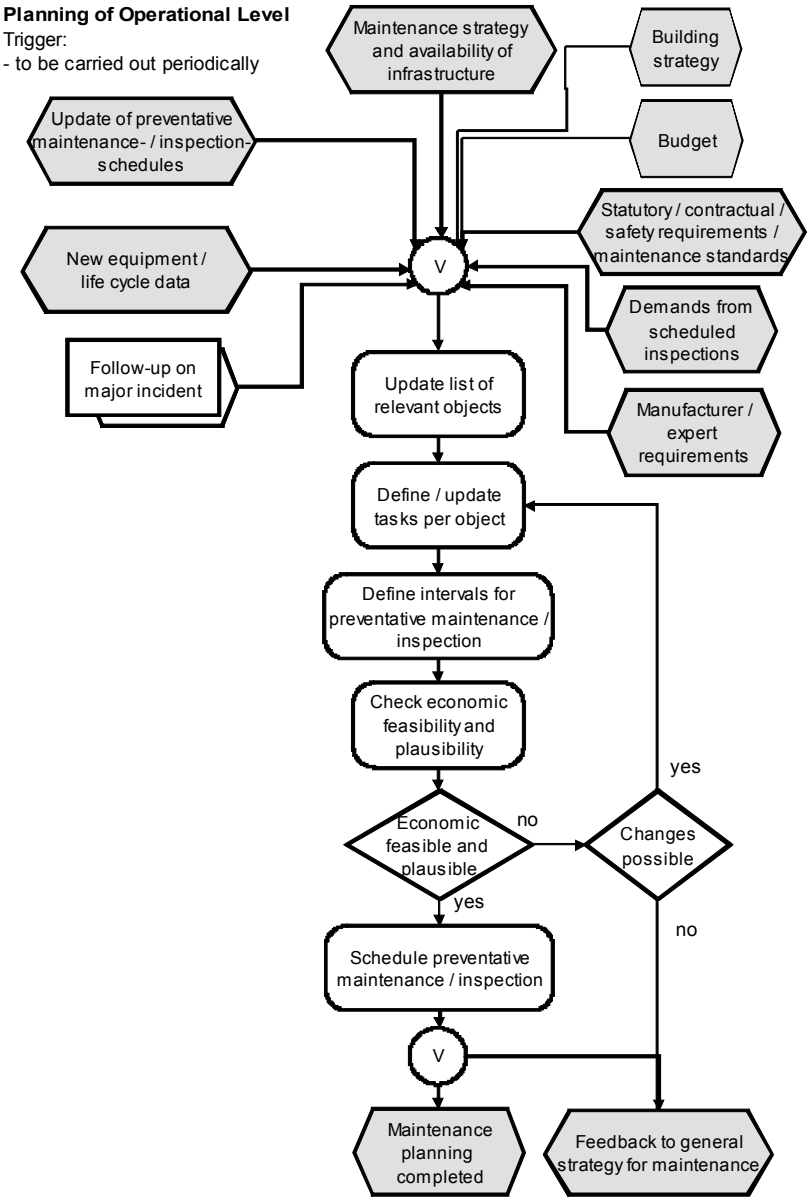
Tactical Level

Triggers:
- changes in core strategy
- changes in legal / econ. requirements
- user interrogation



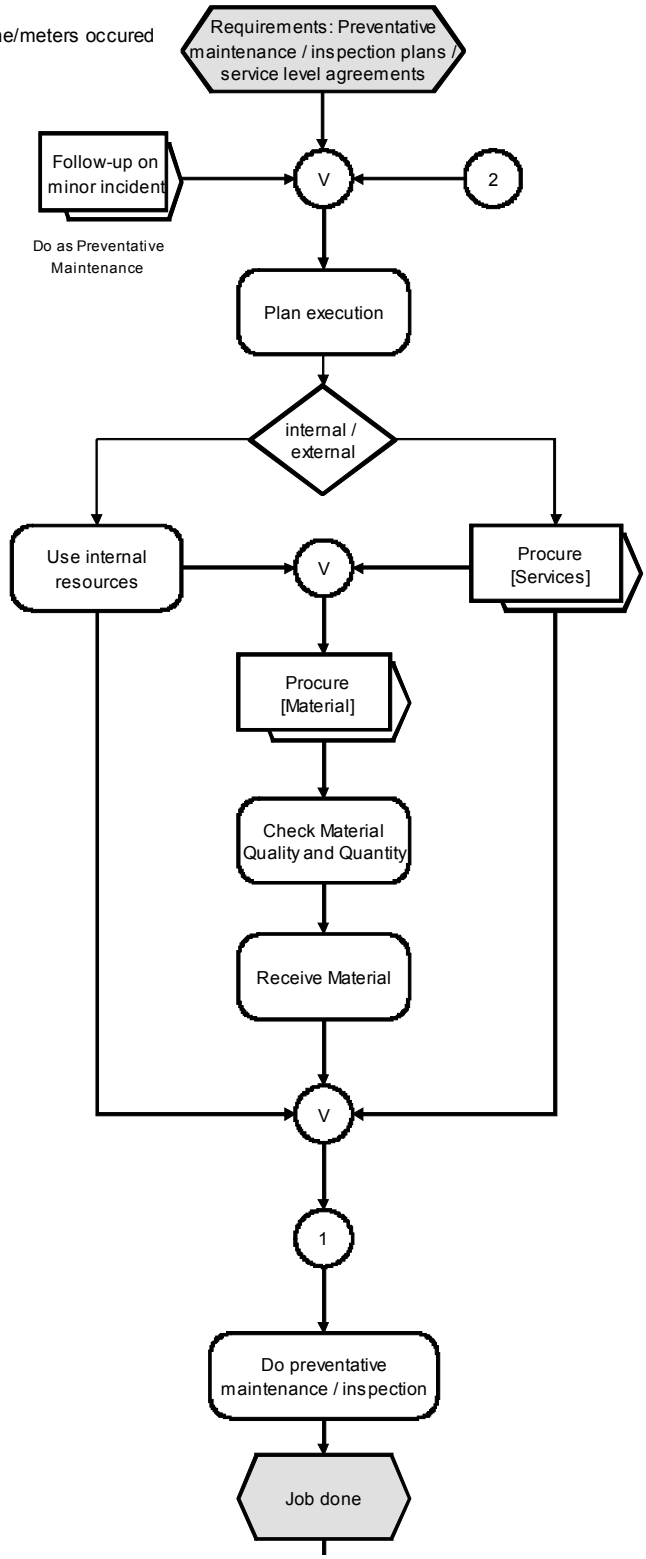
Planning of Operational Level

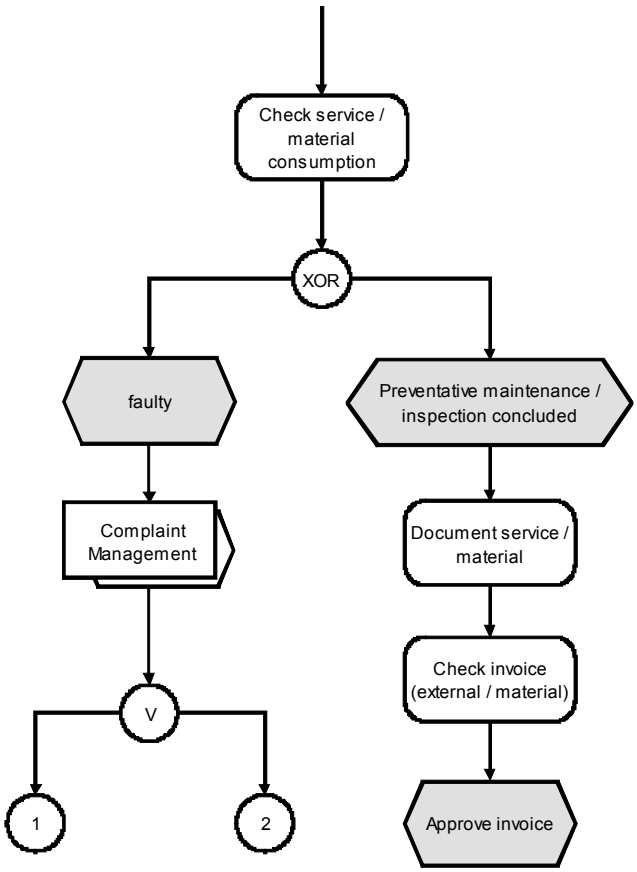
Trigger:
- to be carried out periodically



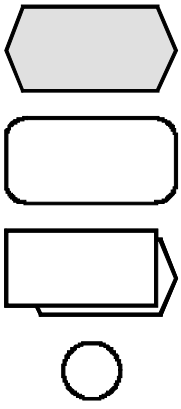
Operational Level

Triggers:
- planned time/meters occured
-





Key



Event

Activity

Sub process

Connector:
V ..... or
XOR ... exclusive or
1, 2 ..... continue at ...

Based on the activities defined in the amended reference process flow, the five experts were interviewed in order to identify possible risks and corresponding risk management resp. control activities for each process step. The risk check list developed by Deloitte was used for crosschecking. The results of the interviews and the crosschecking is shown in Table 1; sub-processes and their risks were described separately and are not contained in detail in the table.

Table 1: Inspection and maintenance of facilities and machinery – Risk and control table

Activity	*Risk(s)*	*Risk management / control activity*
Tactical level		
1. Analyse available information (evaluations, targets, costs) and gather lacking data	▪ Undetected objects, lack of information	Examine relevant facilities periodically, update documentation
2. Define maintenance strategy and availability of infrastructure	▪ Wrong assumption(s) concerning availability / risk of breakdown of infrastructure	Periodical consideration of needs of core business and practical experience
Planning of operational level		
3. Update list of relevant objects	▪ Undetected objects	Examine relevant facilities periodically, update documentation
4. Define / update tasks per object	▪ Failure to undertake timely maintenance of facilities and machinery incl. procurement	Orientate intervals for preventative maintenance / inspection to life cycle data and practical experience of experts, take into consideration period of time for procurement
5. Define intervals for preventative maintenance / inspection	▪ To high or low maintenance frequence	Check relevant norms and documentation
6. Check economic feasibility and plausibility	▪ Approval of check is not done by different persons ▪ Specific requirements e.g. because of location of facility are not taken into account	Check duty segregation Consideration of specific requirements during check of economic feasibility
7. Schedule preventative maintenance / inspection		
Operational level		
8. Plan execution		
9a. Use internal resources		
9b. *Procure services *)*	▪ *procurement risks*	
10. *Procure material *)*	▪ *procurement risks*	
11. Check material quality and quantity		
12. Receive material	▪ Material not available ▪ Use of wrong spare parts and material	Store relevant spare parts and material Check specifications
13. Do preventative maintenance / inspection	▪ Use of wrong material(s) ▪ Preventative maintenance / inspection is done poorly	Check material(s) and service (see activity 14), check service manual

14. Check service / material consumption	▪ Checking can not be done / can only be done poorly because of lacking specialized knowledge of responsible employee(s)	Take into account availability of employees, improve selection and training of employees
15. Document service / material	▪ Fragmentary documentation	Define standards for documentation

**) Sub-process*

The second column of Table 1 may be seen as a „risk inventory“. An interpretation of this inventory at first glance seems to suggest that the operative risks are of much more importance than those at the tactical level. But for further risk management decisions, a closer evaluation of possible risks seems to be necessary, because the relevance of a single risk is a significant factor. In this context, the probability of entry of a certain risk and the amount of possible damages are important. Only when these parameters are known, a differentiation between critical and non-critical risks is possible. As only relevant risks should be shown in the risk and control table of a reference process, further research of the authors will focus on a clearer specification of the different risks' relevances. For this purpose, further expert interviews resp. a survey are planned. After defining the actually relevant risks, necessary changes in the reference process flow because of needed control activities shall be carried out.

Reflections

In general, reference processes can be used by companies and institutions as recommendations for their organisational development, the design of software systems etc. Of course, an individual adaptation of reference processes is needed in the case of an application in a specific entity; this includes the definition of different „roles“ and responsibilities in a certain entity's business processes.

On the other hand, the importance of risk and control activities in companies and institutions has increased because of different legislative initiatives in the European Union and the United States, but also because of the current economic crisis. In this context, the paper suggests a methodology that allows deducing business risks from reference models of business processes and seeks for possible risk management measures. The proposed amendment of reference processes by potential process risks and the corresponding control resp. risk management activities shown in the paper should be an advantage for industry as it sharpens risk awareness and points out possible measures to tackle risks.

On the basis of valid risk and control tables for a certain business process, risk and control check lists could be developed for the use in business practice.

Suggestions for the research agenda

As stated above, reference process descriptions amended by risks and controls may be of great value for FM industry in developing own business processes. Therefore the authors are convinced that reference processes in facility management and managing risks and controls within these processes are an important topic also for an FM research agenda resp. for the EFMC action agenda 2015. Research done by the authors and other members of their research group should be continued, i.e. the range of reference process models already developed should be enlarged and the existing process models should be detailed and further validated. Furthermore, the reference process models should be extended by valid risk and control tables as described in the paper. In addition, a validation of possible control activities regarding their efficiency in simulation and reality is an interesting topic for further research; based on the results of this research work, adaptations of control activities could be recommended.

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