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PERFORMANCE MANAGEMENT IN HEALTH CARE: THE PAST, THE PRESENT, AND THE FUTURE

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Abstract
In today's fast changing health care sector, decision makers are facing a growing demand for both clinical and administrative information in order to comply with legal and customer-specific requirements. Performance Management (PM) is thus becoming increasingly important to catch up with the rising informational demands. However, little is known about the PM usage in health care since the constituent research about PM is primarily focussed on the industrial sector. For this purpose, an exploratory survey for the health care sector is presented.

1. Introduction

The adoption of information and communication technology (ICT) in health care is currently seen as an opportunity to improve not only effectiveness, efficiency, and quality of health services but also the transparency of the economic activities and the availability of information in real time [21]. Nevertheless the health care sector shows a relatively underdeveloped information system structure [15, 16]. Conversely, studies on Health Information Technology discovered a significant relationship between the financial well-being, size, and productivity of a health care organization and its level of ICT adoption [3]. For example Parente and Dunbar found that especially health care organizations with integrated information systems (IS) have higher total margins and operating margins than those hospitals that do not have them [17]. However, the causality between ICT investment and economic profitability could not be rigorously demonstrated yet. The question whether health care organizations with greater profits from operations and total assets can afford more sophisticated ICT investments or whether ICT itself has a positive effect on the hospital's performance is still unanswered.

Albeit the uncertainty about the business value of ICT investments, the health care organizations will be in need of acquiring expertise and technology for Performance Management (PM) in order to comply with new legal requirements of gathering systematic performance information (e.g. in the course of DRG introduction in Switzerland the hospital's are facing an advanced duty to supply information to national and local authorities). Also the increasing competition in the sector will foster the dissemination of a wide array of information including for example the provider's experience in treating particular diseases, availability of beds, pricing of health services etc. [18].

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As PM is becoming increasingly relevant for the health care sector, we wanted to know *what the current state of PM adoption is* and *how health care organizations will develop their PM* in future. For this purpose we first discuss, based on the constituent literature, different definitions and approaches of PM in the subsequent section. In a next step, the motivation and corpus of our exploratory survey are described in the third section. The fourth section is dedicated to a discussion of the results obtained from the survey. Finally, the main findings are summarised and subsequent research activities outlined in the outlook.

2. Understanding Performance Management in the Context of Health Care

2.1. Defining Performance

Public sector organizations are differentiated in comparison with their commercial counterparts in the private sector. “There is no profit maximising focus, little potential for income generation and, generally speaking, no bottom line against which performance can ultimately be measured” [4]. Measure *performance* is therefore considered to be a somehow daunting endeavour. However, from a management perspective *performance* is defined as valued contribution to reach the *goals* of an organization [10]. Contributions to performance can be made by individuals or groups of employees as well as by external groups. Using this perspective, *performance management* can be seen as sequence of activities for

- planning the value creation,
- taking action to control value creation,
- measurement of value contribution, and finally
- rewarding the value contribution [20].

But what is *performance* in the context of health care? As the *goals* of health care organizations often are not clearly defined (cf. section 4.1) and the *value* of health care service delivery is difficult to allocate, public sector PM literature tends to use the three E’s – *economy, efficiency,* and *effectiveness* – to define performance for the non-for-profit context [6, 7, 19]. Performance therefore has to be perceived as a multidimensional phenomenon where the financial, respectively value perspective (economy) is only one dimension of the whole. It is also necessary to consider patient-related aspects (effectiveness) and procedural and knowledge-related aspects (efficiency). According to this, potential areas where performance in health care can be measured are [3]:

- *Health care financial strength* (economy): Revenue optimization, productivity improvement, streamlining claims processing, waste and cost control, activity-based costing.
- *Health care operations* (economy): Partner management and measurement, collaboration opportunities, agility improvement, working capital and asset management.
- *Health care people development* (efficiency): Provider experience measurement, provider loyalty and the voice of the provider analysis, learning and growth measures, innovation, knowledge, culture and intangible value analytics.
- *Patient service and satisfaction* (effectiveness): Including patient experience, engagement, delight, loyalty and relationship measurement, as well as the most important of all – measuring and tracking the voice of the patient.

- *Health care marketing* (effectiveness): Measuring and developing the growing importance of healthcare branding, reputation and trust management, patient/customer segmentation, patient profitability and patient lifetime value.

2.2. Defining Performance Management

Performance management in health care is not only aiming at the systematic generation and control of an organization's economic value but also at the optimization of the efficiency and effectiveness of service delivery. Therefore PM, like other management approaches, only can be implemented successfully, if strategic planning is closely linked to operational execution and controlling [13] (cf. *figure 1*).

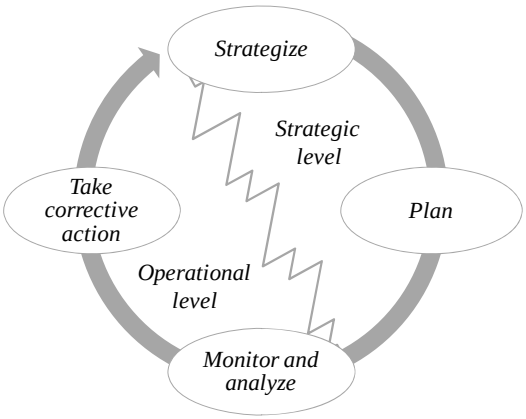

Figure 1: Performance Management life cycle

While on the strategic level key performance indicators (KPI) for shaping the economy, efficiency, and effectiveness of service delivery have to be defined (strategize) and process redesign and process operationalization has to be initiated (plan), the operational level concentrates on the measurement and reporting of performance (monitor and analyze) and on optimizing and adjusting processes (take corrective action) [8, 13]. By the linkage between strategic and operational level, PM provides feedback based on *specifics* rather than *generalisations* [1]. Thereby clinical as well as administrative decision makers are given the ability to know at any point whether the strategy they have formulated is, in fact, working, and if not, why.

3. Method and Data

In 2007, Gartner presented for the second time the *Hype Cycle for Business Intelligence and Performance Management* [2] which is the result of a CIO survey of 2,000 globally operating enterprises. It describes how organizations should prioritize investments in relation to the level of technology impact. In order to 'visualize' technologies which are worth considering for adoption, actual and potential solutions within the area of performance management and business intelligence are placed on a hype cycle.

Motivated by this work, but doubting the representativeness of the hype cycle for the health care sector (health care shows a relatively underdeveloped information system structure compared with other industries [9, 15, 16]), we wanted to explore what the real state of adoption of PM is and in what direction health care organizations will develop their PM.

To try to gain the necessary information on the PM adoption in health care, expert knowledge was required. Therefore, the focus of the study was on the key actors or influential persons who take

part in the PM activities of health care organizations. For this purpose, a total of 20 health care professionals in Switzerland were asked by means of a standardized questionnaire. As we focussed on the quality of answers than rather on quantity, the convenience sampling method was used for the selection of the respondents. From this basic population, 16 were completed by hospital CEOs, hospital CIOs, or governmental health care deputies, and 4 by managers of IT enterprises working for the health care sector. 12 of the respondents described themselves as working in a management position. The remaining respondents were medical or business specialists (5 replies), or people working at the interface between medicine and IT (3 replies). In order to ensure comprehensibility, the respondents were supported by a research assistant in case of an unclear question item. However, external influence over one particular respondent was reduced by answering them simultaneously and conjointly.

The questionnaire was designed as follows (cf. *figure 2*):

- *PM activities* (Arabic numeral): Based upon the PM life cycle (cf. section 2.2) four batteries of questions, respectively eight essential question items for PM adoption were identified. Special emphasis was placed on the dimensions of KPI definition and on the support of process performance analysis.
- *Time dimensions* (capital letters): Every question item was posed for the past, the present and the possible future PM usage. Where the past or present status was not possible to assess (binary, yes/no questions), the respondents had the option to choose the 'unknown' item. For the future development of PM the respondents had to opt for three likelihood dimensions (unlikely, likely, definitively) to estimate its adoption.
- *Influencing factors of PM adoption* (Roman numeral): In a final battery of questions, the respondents were asked about the influence of exogenous and endogenous variables on the PM adoption.

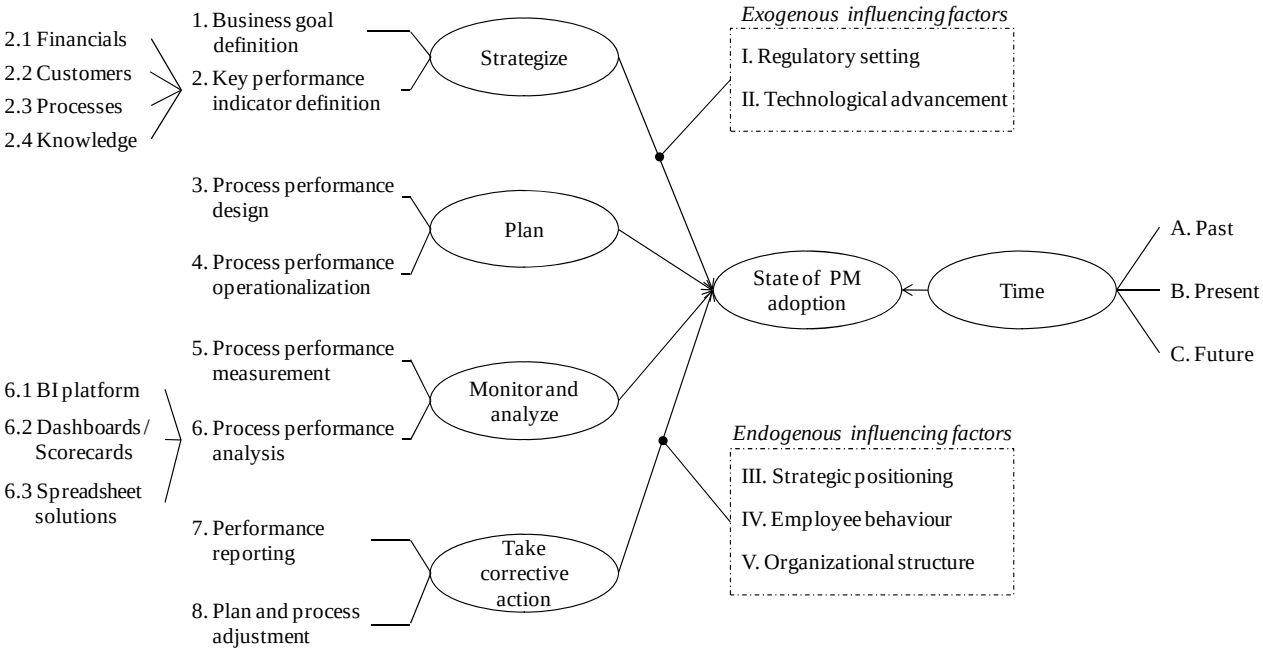

Figure 2: Conceptual representation of the exploratory survey

4. Results

The analysis of the results was performed in accordance with the two dimensions of the PM life cycle – strategic level (cf. section 4.1), and operational level (cf. section 4.2). In addition, a brief discussion about the influencing factors of PM adoption is given in section 4.3.

4.1. Strategic level

Figure 3 provides a summary of the evolution of strategic PM activities. Looking at this figure it is possible to determine that the emphasis of strategic PM is today taking place in the *strategize* task, with 75 percent of all health care organizations defining business goals (only 37.5 percent in the past), and nearly all defining KPIs (only 50 percent in the past). This result is also reproduced by other studies in the field [11]. However, the constitution of the KPIs in the respective health care organizations is different. Only 12.5 percent use customer-related, and 18.8 percent use process-related performance indicators. Interestingly, although it is more difficult to define, 43.8 percent of the health care organizations currently include knowledge-related performance indicators, whereas financial indicators are only used by 31.3 percent.

In contrast, the performance *planning* task is still underdeveloped, with 25 percent doing process performance design (12.5 percent in the past), and 43.8 percent doing process performance operationalization (6.3 percent in the past).

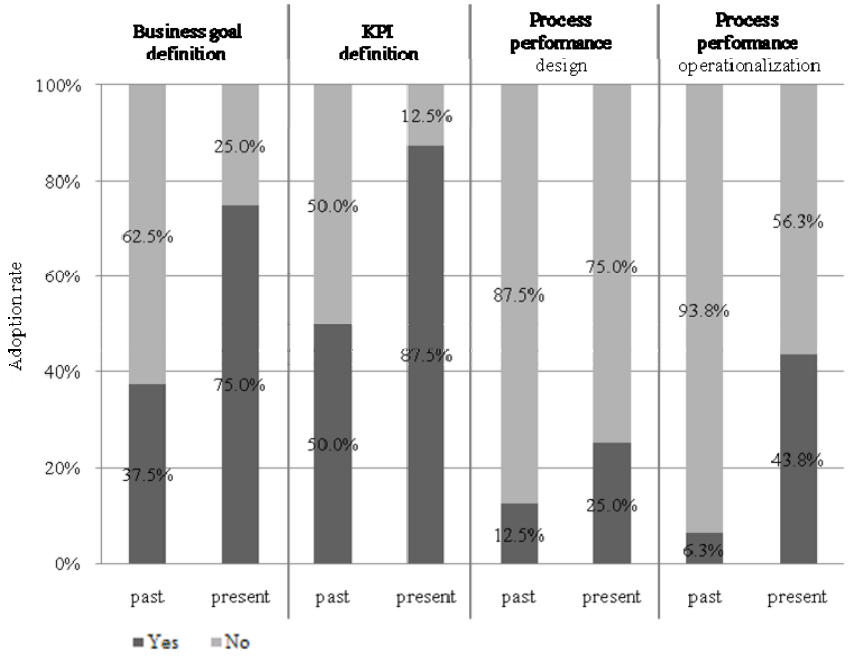

Figure 3: Past and present adoption rate of strategic PM activities

The analysis of the past and present PM usage raises the question for its evolution in the future. This is illustrated in *figure 4*. All of the asked health care professionals appraised that their organization will likely or definitively initiate business goals in the near future. 75 percent of them valued that KPIs definitively, and 25 percent that they likely will be introduced. Opinions differ in the future adoption of performance planning activities. Process performance design will definitively be introduced by 18.8 percent, whereas 56.3 percent said that it is likely and 25 percent that it is unlikely to happen in the next years. Practically the same situation can be found in the process performance operationalization, with 31.3 percent of definitive, 50 percent probable, and 18.8 percent improbable adoption.

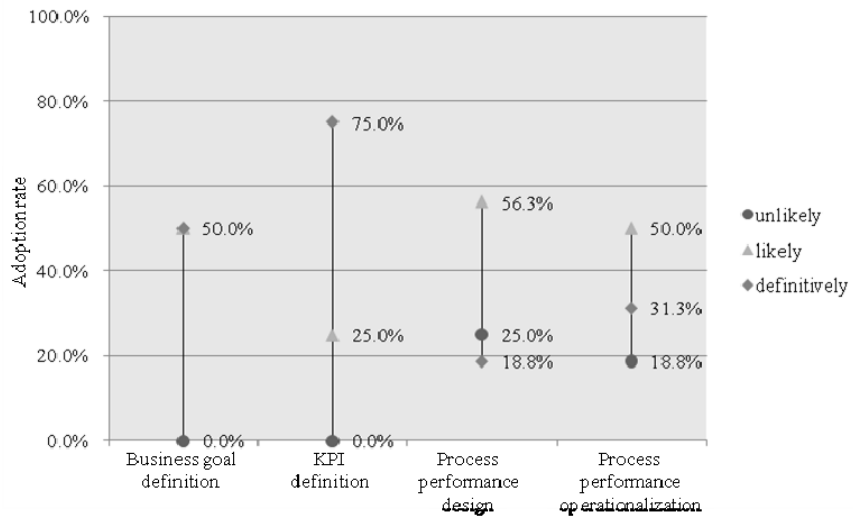

Figure 4: Manifested future adoption behaviour of strategic PM activities

4.2. Operational level

To successfully implement PM it is necessary to link strategic planning with operational execution. However, as discussed in the prior section, only a small part of the health care organizations really accomplish the full range of strategic PM activities. Therefore, the operational excellence of PM is highly important as it often builds the basis for improving the strategic level (in many other industries the concept of PM emerged bottom up, i.e. starting with performance measurement as means of monitoring and maintaining organizational control and not till then to ensure the fulfilment of the organizational strategy [1, 14]). Thus, operational PM is not an end in itself but an instrument for more effective strategy realization.

In contrast to the strategic level where the survey data showed a clear difference of the maturity of the single tasks (i.e. *strategizing* performance is more common than *planning* performance), no such conclusion can be made for the operational level when comparing the *monitor and analyze* task with the *take corrective action* task. Therefore, the survey data is analyzed on activity level. *Figure 4* provides a summary of the evolution of operational PM activities.

Looking at this figure it can be determined that a little bit more than the half, notably 56.3 percent, currently measures the performance of their processes (only 25 percent in the past). Thereof 43.8 percent use automatic measurement mechanisms (e.g. data generated from work flow management systems or other information systems). Interestingly, all the organizations that perform a form of process performance measurement confirmed to also analyze the collected information. For doing so, 75 percent of the surveyed organizations use simple spreadsheet solutions. Other 50 percent of the cases additionally apply a business intelligence platform, or in 12.5 percent of the cases dashboards and scorecards solutions.

Surprisingly, more of the surveyed health care organizations perform some kind of performance reporting (62.5 percent) than performance measurement is conducted (56.3 percent). This raises some further questions, e.g. how health care organizations generate their reports, what exactly is reported, and what quality do these reports have. Anyway, it was not the focus of the survey to answer these questions but this certainly can be used as a good starting point for future research.

Another interesting question is: What is done with the results of performance analysis and reporting? Today, only 31.3 percent of the surveyed health care organizations (12.5 percent in the past) actively integrate some kind of *plan and process adjustment* activity in their operational PM. In our opinion this is a key activity that needs to be better reflected by the health care organizations since it is needed to close the feedback loop between the operational and the strategic level of PM.

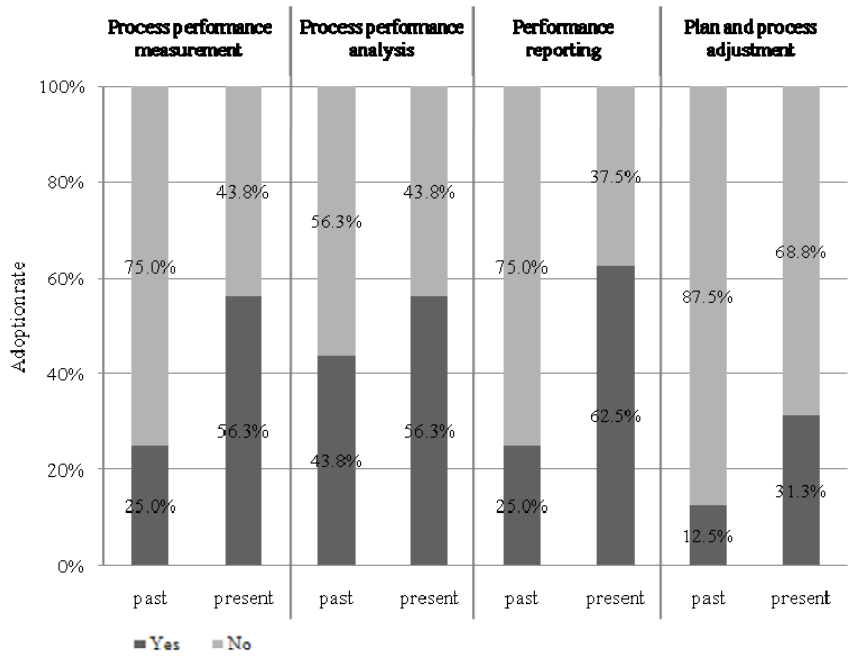

Figure 5: Past and present adoption rate of operational PM activities

Figure 6 illustrates the manifested future adoption behaviour of operational PM activities. Interestingly, the majority of the respondent recognizes that they definitively have to improve measurement, analysis, and reporting. In doing so, 81.3 percent want to implement a BI platform, another 31.3 percent dashboards and scorecard solutions in the future. However, the adoption of the *plan and process adjustment* activity is definitively intended by only 43.8 percent, and probably by other 43.8 percent of the surveyed health care organizations.

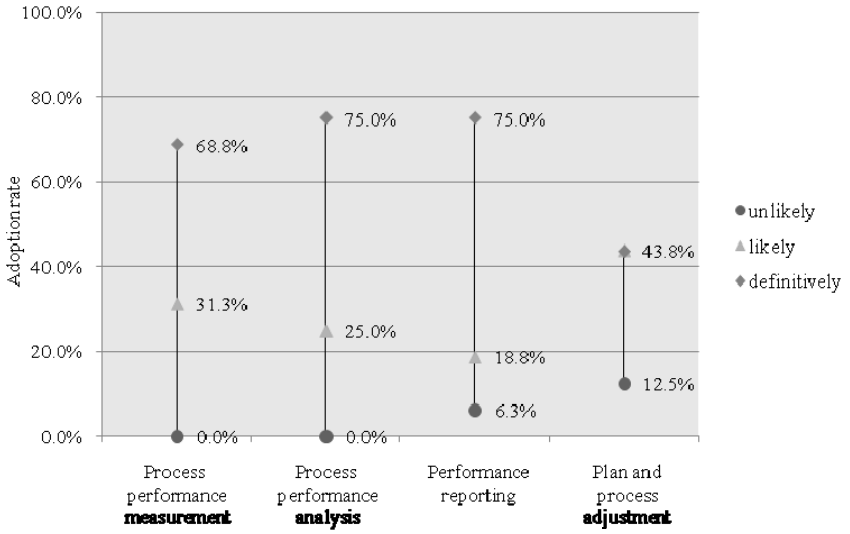

Figure 6: Manifested future adoption behaviour of operational PM activities

4.3. Influencing factors of PM adoption

It is a fact, that the adoption behaviour of an organization (cf. *figure 4* and *6*) is influenced by a number of exogenous and endogenous factors. For example Burke et al. [5] point out, that especially the organizational structure (e.g. size, location) and strategic positioning (e.g. economic orientation, degree of cooperation) have a significant impact on the success of IT adoption of hospitals. Others emphasise the importance of the employee behaviour (e.g. flexibility, professionalism) [12] or the influence of external factors like regulatory conditions (e.g. laws, policy) [9] or the technological advancement itself.

Looking at *figure 7* it is possible to determine that especially the regulatory setting (with 80 percent of the respondent rating it highly influential) and the strategic positioning (with 60 percent rating it highly influential) are going to have a strong impact on the PM adoption in future. A possible explication for this is that the Swiss health care sector is currently facing a period of extreme change (e.g. introduction of DRG, accumulation of purchase and sale of hospitals). However, persistently but not less important is the behaviour of employees (with 46.7 percent rating it highly influential) as it is often a question of *culture* to permit the planning, measurement and communication of performance. The technological advancement and the organizational structure seem to be less influential.

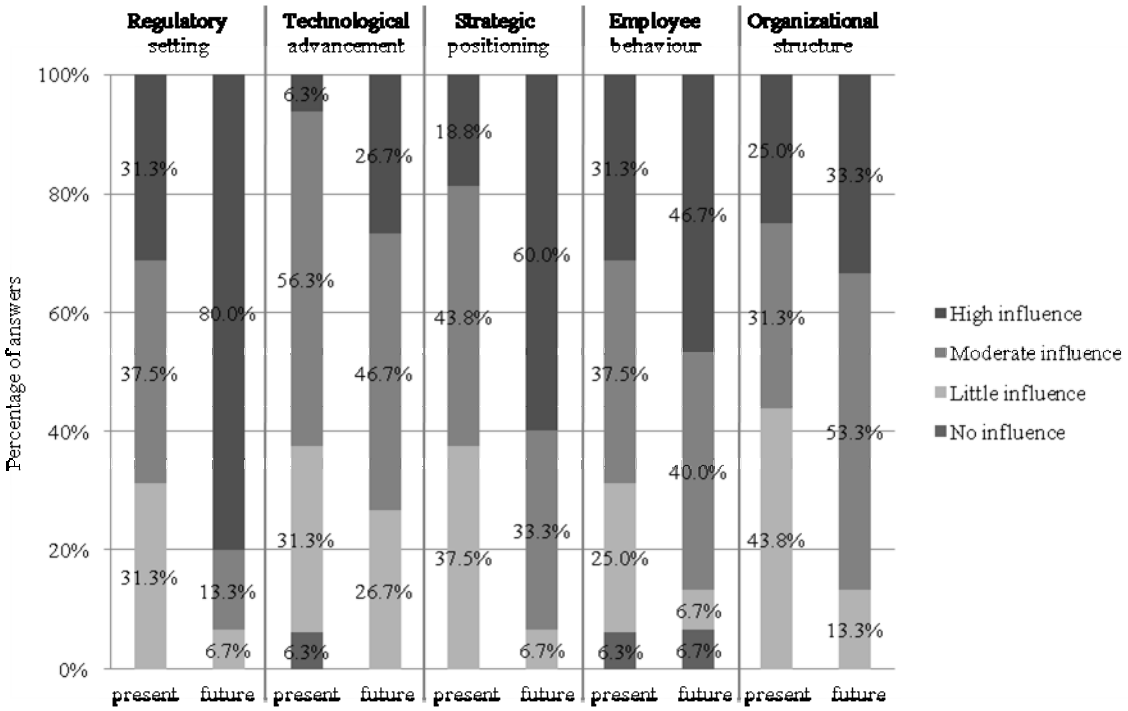

Figure 7: Present and future influencing factors of PM adoption

5. Conclusion and Outlook

In other industries PM is generally regarded as an important driver, or at least as a trigger, for understanding organizational performance in order to better fulfil the strategic targets [14]. Thus, technology to support PM activities like business intelligence platforms, dashboard solutions, data-mining tools etc. are seen as commodity with less than 2-5 years to mainstream adoption [2]. As health care significantly differs from other sectors, the aim of this contribution was to analyze the current state of PM adoption and how health care organizations will develop their PM in future.
On the other hand, future and present adoption of PM is influenced by a wide range of factors such as the regulatory setting where the health care organizations is embedded, the complexity and compatibility of new technologies, the strategic targets of the organization, the attitude of the employees, and the organizational structure. It was found that especially the changing regulation and the increased market dynamics are major drivers for the PM adoption. However, the needs of the employees and the organizational structure still are important parameters to consider.

From a strategic PM perspective, it can be said that health care organizations realize that is important to define business goals and KPIs in terms of economy, efficiency and effectiveness of health service delivery. However, the design of appropriate processes (e.g. how is data collected, analyzed and communicated?) and the planning of the operationalization (e.g. which tools support the data collection?) is practically omitted. This raises the question about the *quality of the PM* currently available in the surveyed health care organizations. But as this was not the focus of this survey, it will be a good starting point for another study.

From an operational PM perspective, health care organizations seem to be more familiar with these kinds of activities. Performance measurement, analysis and reporting are conducted by more than the half of the surveyed organizations. The use of sophisticated tools for measurement (e.g. work flow management systems) and analysis (e.g. business intelligence, dashboards) is rather uncommon yet. Again, this raises the question about the quality of data generated by such a PM system but also about the *efficiency* (e.g. how much time is used to manually collect and analyze data?). Another interesting result from the survey is that only a third of the respondent affirmed to actively use the output of the performance monitoring and analysis phase to enhance strategy formulation and planning. Thus, the *effectiveness* of the PM in use can be doubted as well, since the crucial link between organizational level and strategic level does not exist.

Building on the results presented in this paper, future work should be directed at prioritising areas for action in the sense of a roadmap for optimizing PM quality, efficiency, and effectiveness of the health care organizations. This will certainly help the health care sector to catch up with other industries.

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