The link between information technology, performance management and school effectiveness: An empirical study in German schools

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1 Introduction

In the last decades, several research studies have been executed on the key factors that influence school effectiveness [1]. Taking state of the art literature into account, six broad areas can been identified: student, home, school and leadership, curricula, teachers and teaching/learning approaches. As part of the area of school and leadership, the overarching topic of performance management has been empirically tested to be an effective strategy for improving student outcomes [2]. The role of organizational performance metrics and monitoring cannot be overstated as a success factor of an organization because they affect strategic, tactical and operational planning in setting objectives, evaluating performance, and determining future courses of action [3].

Consequently, the research project at hand aims to analyze, as a first step, the interrelation between the use of technology and performance monitoring and, as a second step, the impact of these management practices on the organizational effectiveness of schools. For that, an online survey is sent to about 20.000 principals in Germany. Statistical analysis will be conducted.

2 Derivation of the research question

Technologies enable managers, mainly in private sector industrial organizations, to access large sets of data collected by surveys and machines in order to monitor specific measures. But how does the use of technology affect performance monitoring practices in German schools and organizational effectiveness? Hence, among others, the following hypotheses can be formulated:

H1 = The use of technology in management has an effect on performance monitoring practices in German schools.

H2 = Structured performance monitoring practices have an effect on organizational effectiveness.

3   Method of the research project

3.1   Conceptual framework

The conceptual framework mainly consists of three variables: technology use in management, performance monitoring practices and organizational effectiveness.

Technology Use in Management

In order to assess the degree of technology use in school management, a novel holistic framework has been developed based on previous work of Visscher et al. [4]. [4] identified six data processing functions that can be executed by management information systems. These are (1) data base input, (2) information retrieval, (3) data communication, (4) automated decision making, (5) structured decision making, and (6) ill-structured decision making support. These functions are mapped against internal and external target groups: (a) students, (b) staff, (c) management, (d) service providers, (e) parents, and (f) educational authorities. Hence, a matrix of 36 different dimensions accrues. By asking about the use of specific functionalities, the degree of maturity in each dimension will be assessed.

Monitoring Practices in Schools

To measure performance monitoring practices in schools, a survey methodology described in [5] was adapted. Originally, the face-to-face interview investigates the adoption of 20 basic management practices across four dimensions. The level of adoption is rated on a scale from one to five. The higher the score, the more the school adopts structured management practices. The project at hand focuses on five basic management practices of one dimension: monitoring – continuous improvement, performance tracking, review and dialogue as well as consequence management. By outlining situations of the daily school routine, principals will be asked for their level of approval (from one to five) to certain ways of handling them. The average of all items per management practice constitute a *management practice score*. The average of all management practice scores form the *school score*. To calibrate the answers, the social desirability of each principal will be taken into consideration.

Organizational effectiveness

In order to measure organizational effectiveness, various items will be considered reflecting three perspectives: Students (e.g. final results, hours lost, repeater), teachers (e.g. hours lost, turnaround) and management (e.g. applicants-seats ratio).

Apart of these variables, the survey asks principals about their socio-demographic details, technology skills and affinity and the degree of social desirability of their behavior. Figure 1 illustrates the overall coherence.
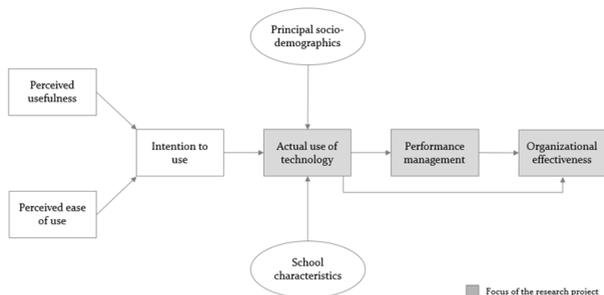
Figure 1: Conceptual Framework

3.2 Data collection

In order to be able to conduct scientific research in schools in Germany, official requests needed to be registered. With three exception (Lower Saxony, Hesse and Bavaria), all ministries supported the execution of the research project with an adequate administrative burden. Hence, the project includes 13 out of 16 German federal states. An online survey with around 40 questions has been conceptualized. In order to contact all principals, a national database of around 20.000 schools – public and private, general and vocational, lower and higher – has been generated by drawing on data of statistical offices and manual research. Between July and September all principals have been contacted via email with a personalized link.

4   Results

As data is still being collected, results are not available yet. However, if the analysis shows that the hypotheses are confirmed, it adds value twofold: First, it gives an indication of the importance of performance monitoring practices for selected facets of organizational effectiveness of schools. Thus, drawing on a quantitative database, new insights for scientific discussions in the field of school effectiveness are offered. Second, technology as a facilitator of structured performance monitoring practices is analyzed. This is specifically relevant in order to shape the way forward of digitizing schools – not in the area of teaching and learning but in management, which has not got the needed attention yet.

As the project gains Germany-wide data of schools, overarching differences between federal states, school forms and types can be identified, best practices highlighted and practical recommendations derived.

References
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