

# DISSERTATION DEFENSE

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**“An Empirical Assessment of Knowledge Management Systems”**

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Today knowledge is viewed as a more important production factor than traditional resources of capital, labor, and land. To effectively manage firms' knowledge assets with the aid of advanced technology, many companies have deployed KMS. The organizations with IT-enabled knowledge management face two fundamental questions. First, how will knowledge management efforts with technologies pay off with what measurable outcomes? Second, if KMS pay off, how can the organization assimilate the KMS better? In my dissertation I identify three common forms of KMS, repository, business intelligence, expert directory KMS, and study the outcomes and drivers of usage for each category. I collected rich panel data from a retail grocery chain with more than 40,000 employees.

Study 1 investigates the contingent impact of KMS usage as a production factor on the group level performance measured by department-level weekly sales in a retail grocery chain. First, I find the direct positive impact of repository, business intelligence, and expert directory KMS usage on weekly sales of a store department. For example, I find that one percent increase in the repository use is associated with 0.018 percent increase in weekly sales of a store department, which is substantial. Second, I find that the positive impact of KMS use on sales as the group performance measure is greater when a group is endowed with fewer alternative sources of information and knowledge (in terms of social capital and physical documents), or the external business environments are less dynamic, or knowledge workers are more geographically dispersed. Third, I find that the use of knowledge from repository KMS and business intelligence produce substitutive outcomes on the output level. Fourth, I find that as the level of business dynamics increases, it is more beneficial for knowledge work groups to increase the proportion of shorter life-span knowledge and fine-grained knowledge in knowledge consumption. Overall, Study 1 contributes to general understanding of the differential value of knowledge contingent on the mix of the type of knowledge, group conditions, and external business environments.

Study 2 examines how and why KMS in business environments influence individual knowledge workers. I find that knowledge worker can not only perform better than their colleagues by more use of KMS but also improve (deteriorate) her performance by increasing (decreasing) the amount of knowledge sourcing from KMS. Interestingly, I further find that the performance impact of KMS usage is greater when KMS is used in a more exploratory manner. The performance impact of KMS usage is also greater when an employee is endowed with little social capital from which to obtain knowledge as an alternative source. I also find that the overall usage of KMS by the employees in the same business group as one's internal competitors decreases the relative individual performance and slows the rate of one's improvement in relative performance by using KMS. These findings suggest that for those without good alternative sources of knowledge, KMS will help overcome "knowledge divide" within a company due to limited access to information and knowledge. However, those who already with superior alternative knowledge sources to those of internal competitors may be most resistant to the adoption of KMS because of weakened competitive positions.

Study 3 examines what contextual factors specific to different types of KMS influence the usage at the weekly level. For example, I identify such factors as actual usage by frequently interacting co-workers, alternative sources of information and knowledge, environmental turbulence, and task information and

knowledge intensity, and study how they drive the usage of each type of KMS to a different degree. I also consider the interdependent nature of different types of KMS and examine how more use of one type of KMS may lead to more use of other types of KMS in the subsequent period. This research sheds light on how to deploy different types of KMS that are appropriate for an organization and better promote the usage by knowledge workers to maximize the organizational returns on investments in knowledge management with technology.

My research will make important contributions to the literature by providing a systematic approach to measure the contingent value of KMS and increase the use of different forms of KMS with more precise measurements of both the use and performance. I study not only whether the implementation of KMS helps an organization manage organizational assets or not, but also further examine why a specific KMS and a certain type of knowledge is more effective for certain knowledge workers and how to target them to promote the use of KMS by their task and individual characteristics.