

Chapter 5

Some Insights in Computer Science and Information Technology

ABSTRACT

Research supervision data from graduates and supervisors at a doctoral program in IT were collected and analyzed by the author to complement other insights regarding the supervisor and candidate perspectives given in this monograph. Some issues experienced in practice, and the background to the collected evidence, are described in this chapter. The approach, methodology and data collection are presented, followed by findings of the collected evidence. A Supervision Model and a Multi-disciplinary/ Trans-disciplinary Doctoral Research Framework (MT-DRF) are proposed that may be considered for adoption to facilitate the establishment and sustainable growth of doctoral programs.

5.1 ISSUES IN PRACTICE

Research done with the conjecture that supervisors fulfill instrumental brokering roles in a candidate's research project to achieve successful and timely completion of dissertation (thesis), was done by faculty members in their roles as supervisors at universities on three continents (Steenkamp, Bosua & de Villiers (2013). The research questions in that collaborative investigation were: 1. How, and to what extent, do approaches to supervision

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differ across the three educational domains, from initial acceptance to successful completion of the research process? 2. How are research approaches to supervision influenced by the research context, environment and student culture in which they are conducted? The data from each context were compared and analyzed, and some recommendations were made. These included that supervisors should serve as boundary brokers among research participants engaged in the research in different scholarly roles, and between inter-/ trans-disciplinary knowledge systems pertinent to multi-disciplinary domains and contexts; that academic and practical (applied) perspectives should be bridged and integrated, as informed by both academia and industry; that the supervisory role should facilitate the progression from conceptual to physical solutions; that the supervisor should ensure that consistent engagement of the supervisory team be maintained; that the supervisor should ensure that the ethical requirements related to data collection is maintained; and lastly, that the supervisor should ensure that methodological rigor is maintained in a graduate research project.

For this monograph, supervision data were collected from doctoral supervisors and candidates in CS and IT, who had graduated from one university in North America over a period of 11 years. In this population automotive companies, suppliers, IT system vendors, and the United States government were sponsors of the research projects. The data were analyzed to develop a theoretical conjecture regarding the following issues: 1. How are research approaches to doctoral supervision influenced by the research context, environment, and student culture in which research is conducted; 2. The roles and degree of engagement of supervisors during the research process, namely during Research Planning, Conceptualization, Research Design, Demonstration of Concept, and Research Validation; 3. Factors influencing collaborative experiences of a research candidate with the supervisor and dissertation committee; 4. The changing role of the supervisor in the global environment of community-of-scholars. The doctoral research projects represented in the data population were empirical and trans-disciplinary, and supervised by several faculty members, with support of the respective dissertation committee members. As defined by Parchoma and Keefer (2012) these Mode 2 investigations yielded knowledge that may be understood as 'flexible' in terms of problem-solving in form and orientation, and were uniquely specific to the application context, meaning that each problem was different since the context was different and unique.

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