

Chapter 14

A Practical Approach to Theory Structuring and Analysis: A way to Structure Research and Perform Sub-Problem Solving in a Changing IS Landscape

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ABSTRACT

A large proportion of students who enroll for postgraduate degrees never finish their studies, with non-completion rates yielding 30% for a sample size of 2000 students. A number of empirical studies have been conducted indicating the possible factors for the non-completion rate. This chapter briefly highlights such factors and proposes a possible solution to increase the number of successful studies using relevant philosophies and problem-solving to build insight in determining IS/IT solutions and innovations. A research methodology is suggested to enable data capturing aligned to research objectives and organise sub-problem solving effectively. The process of finding information, determining if it is relevant, and then relating it to existing keywords and topics can be facilitated by using a spreadsheet as a data generation method. The outcome may lead to a research proposal and study to investigate the problem identified, search for possible solutions, and prove/disprove the validity of the suggested solutions.

INTRODUCTION

A large proportion of students who enroll for postgraduate degrees never finish their studies (Mouton, 2001). For instance, the non-completion

rate for sample size of 2000 doctoral students yields 30% (Rudd and Hatch, 1968). Among Canadian postgraduates, 7% had a master's degree and only 1% had a doctorate (Statistics Canada, 2000). In the United States, doctoral student attrition rates

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have been measured at 57% across disciplines (Council of Graduate Schools 2008).

The purpose of this chapter is to briefly highlight possible reasons for postgraduate non-completion rates and discuss a possible solution in the following sections.

In science and technology for instance there are many examples of both theoretical and fundamental research conducted as well as radically new innovations that solve practical problems and contribute to creating new knowledge. These two types of research differ regarding their fundamental goals (understanding vs. use), nature (theoretical vs. industrial), and timing (long-term oriented vs. immediately applicable) but both have a place in science and technology (Mulkay, 1977).

Science and technology, though distinguishable, are linked, not by the scope or nature of the investigative activities (basic vs. applied research) but, rather by the problem-solving nature of research and in the procedural rationality which drives both (Franzoni, 2006).

The Johnstone El-Bana Model highlights the fact that if a problem has many sub-problems, the more difficult it will be for the researcher to solve it. “The researcher must use working memory to simultaneously recall needed knowledge from long-term memory and to process demands of each sub-problem.” (Johnstone, 1977). The difficulty creates an overwhelmed researcher with a high likelihood of failure. This is a major hindrance in solving any research problem and may cause the researcher to end the research project prematurely.

There are a number of research methodologies that describe the steps in conducting research. For this chapter the Johnstone and El-Bana model was used to glean an alternative research methodology, i.e. structuring one’s research to focus on problem management, sub-problem-linkage and resolution to ensure focus on research objectives.

The purpose of the exploratory research methodology is, therefore, to illustrate a new approach that can be used by novice researchers in performing research, conducting problem solving

and developing research topics, title, objectives, problem statement, significance of study, literature study and ultimately gearing towards a theoretical solution or concept that can be further explored or validated. The research methodology or approach caters for discovering information through journals, articles and conference papers, linking information to existing facts, and then making sense of it so as to gain new insights or identify gaps that require further investigation.

The objectives of this chapter are to outline possible philosophies and methods for students conducting sub-problem solving thereby building insight and determining IT/IS solutions and innovations.

The remainder of the chapter is structured as follows:

- Section 2 gives an overview and brief explanation of some of the existing research approaches and research terminology;
- Section 3 is a high-level overview of the proposed methodology and approach;
- Section 4 proposes a detailed method; and
- Section 5 concludes the chapter.

2. BACKGROUND

This section provides background on the basic research terms and concepts as the foundation of any research methodology in setting direction for a research project.

There are various definitions for research, with Redman & Mory (1923) defining it as the “systemized search for new knowledge” or an investigation to establish new facts using a scientific method. The term “method” leads to the term “methodology”. Many people use the terms methodology, design and strategy and method interchangeably (Buchanan & Bryman, 2009).

“The purpose of conducting research is to discover new answers to questions by applying scientific procedures to find out new hidden truths

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