

3. Research Design

The study presented in this paper is based on the development of an experimental BIS, the review of existing BISs, interviews with experts, the review of literature, and my experiences. The following nine-step process is designed to develop the answers to the shortcomings of ActiveX component technology and the solution to the deployment problem of existing WinBISs (see Figure 2).

Step 1: Review of Literature

The literature review comprised a wide range of papers published in research journals, papers from conference proceedings, relevant doctoral dissertations, authoritative textbooks, and articles on Websites. Coverage is mainly in the fields of legacy systems, software deployment, software architecture, software architecture transformation, software engineering methods, distributed computing, Web technology, and ActiveX components. The results of the literature review are the basis of steps 4-7.

Step 2: Review of Existing Business Information Systems

The purpose of this step is to collect existing ActiveX component-based BISs, and analyze their design in detail, so as to be the basis of steps 4-7.

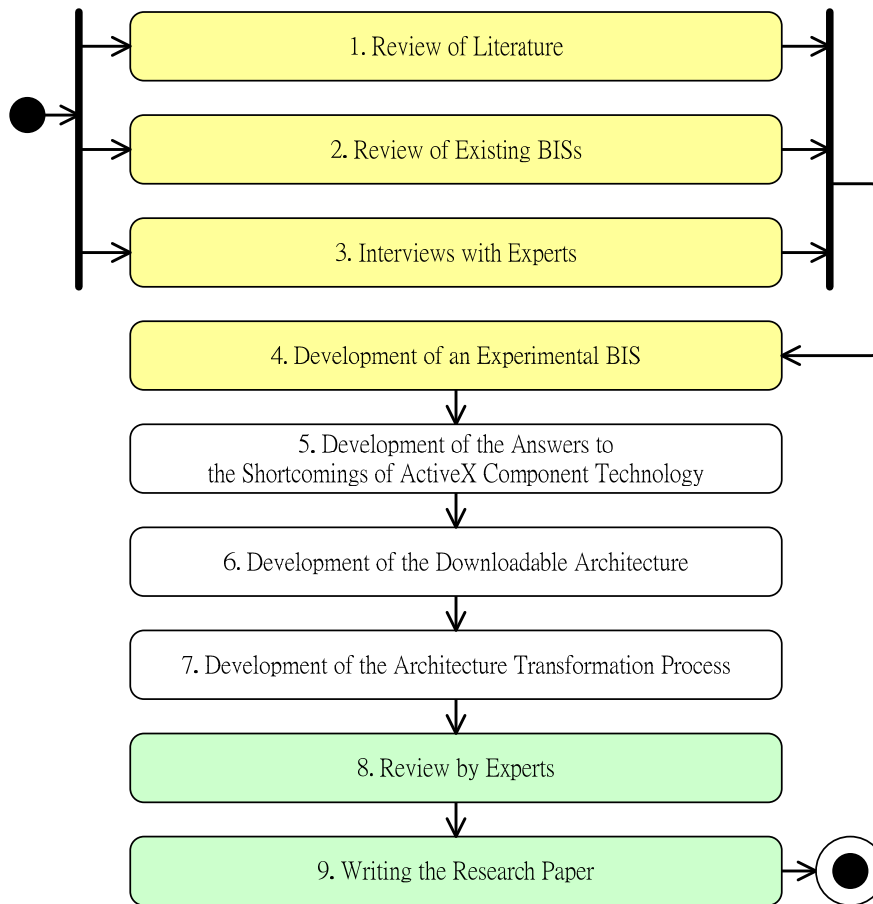


Figure 2. Research Process Model

Step 3: Interviews with Experts

An in-depth interview is a qualitative research strategy that allows person-to-person discussion. It can lead to increased insight into people's thoughts, feelings, and experiences on important issues. Thus, I conducted face-to-face, unstructured, in-depth interviews to collect experiences from experts in ActiveX component-based BIS, so as to be the basis of steps 4-7.

Step 4: Development of an Experimental Business Information System

The purpose of this step was to design and construct an experimental ActiveX component-based BIS, based on the results of steps 1-3 and my experiences, so as to be the basis of steps 5-7. Additionally, this system is an example of how to use the proposed solution, and also provides evidence to support the feasibility of the proposed solution.

Step 5: Development of the Answers to the Shortcomings of ActiveX Component Technology

In this step, I developed the answers to overcome the shortcomings of ActiveX component technology, based on the results of steps 1-4 and my experiences.

Step 6: Development of the Downloadable Architecture

Based on the results of steps 1-5 and my experiences, this step developed the downloadable architecture, which supports the development of automatically-deployed BISs.

Step 7: Development of the Architecture Transformation Process

Based on the results of steps 1-6 and my experiences, in this step, I developed the architecture transformation process, which transforms existing WinBISs into the downloadable architecture.

Step 8: Review by Experts

In this step, the experts in ActiveX component-based BIS evaluated the results of steps 5-7. Subsequently, I corrected the problems identified by the experts.

Step 9: Writing the Research Paper