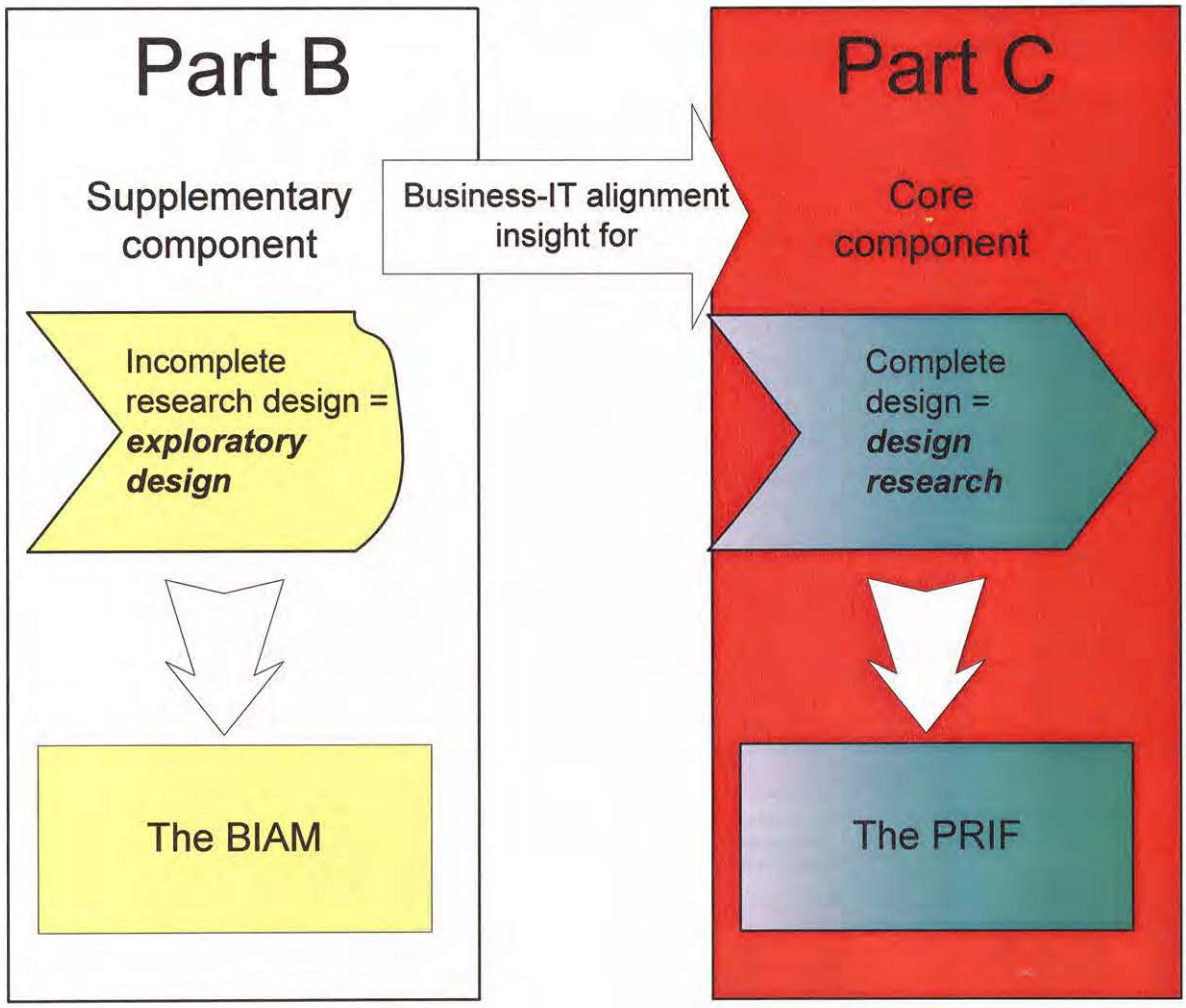
PART C: THE PRIF

Insanity is doing the same thing over and over again and expecting different results. ~ Albert Einstein

As stated in Chapter 2, this thesis follows a mixed methods design, with two design components: (1) a supplementary component, and (2) a core component. Part B discussed the result of the supplementary component, the BIAM, since the BIAM provides insight for the core component in developing the PRIF (Process Reuse Identification Framework). Part C discusses the development of PRIF and the role of BIAM during the PRIF development process.

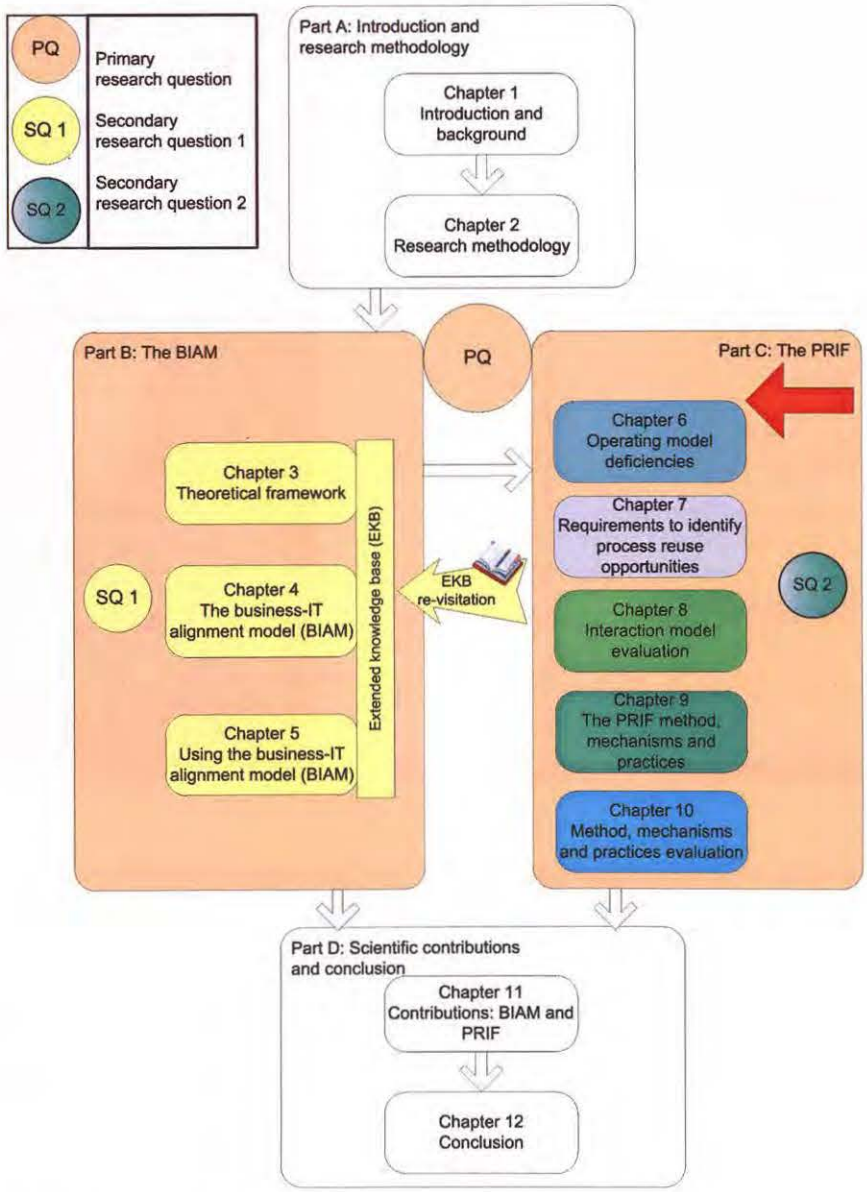


Part C answers *Research Question 2*, as defined in section 1.4, namely:

What constructs are required for a process reuse identification framework to enhance the operating model concept, using the business-IT contextualisation model?

Part C contains Chapters 6 to 10 to develop a PRIF (Process Reuse Identification Framework), using *design research*, as described in sections 2.3.2 and 2.6.2. Figure 50 guides the reader through the different cycles of the design research process in developing a PRIF.

- Chapter 6 delineates the operating model (OM) deficiencies and the need to identify process reuse opportunities at an enterprise.
- Chapter 7 elicits requirements to identify process reuse opportunities at an enterprise.
- Chapter 8 evaluates the use of the interaction model in addressing a sub-set of requirements identified in Chapter 7.
- Chapter 9 delineates the proposed PRIF *method, mechanisms and practices.*
- Chapter 10 evaluates the proposed PRIF and its associated *method, mechanisms and practices.*



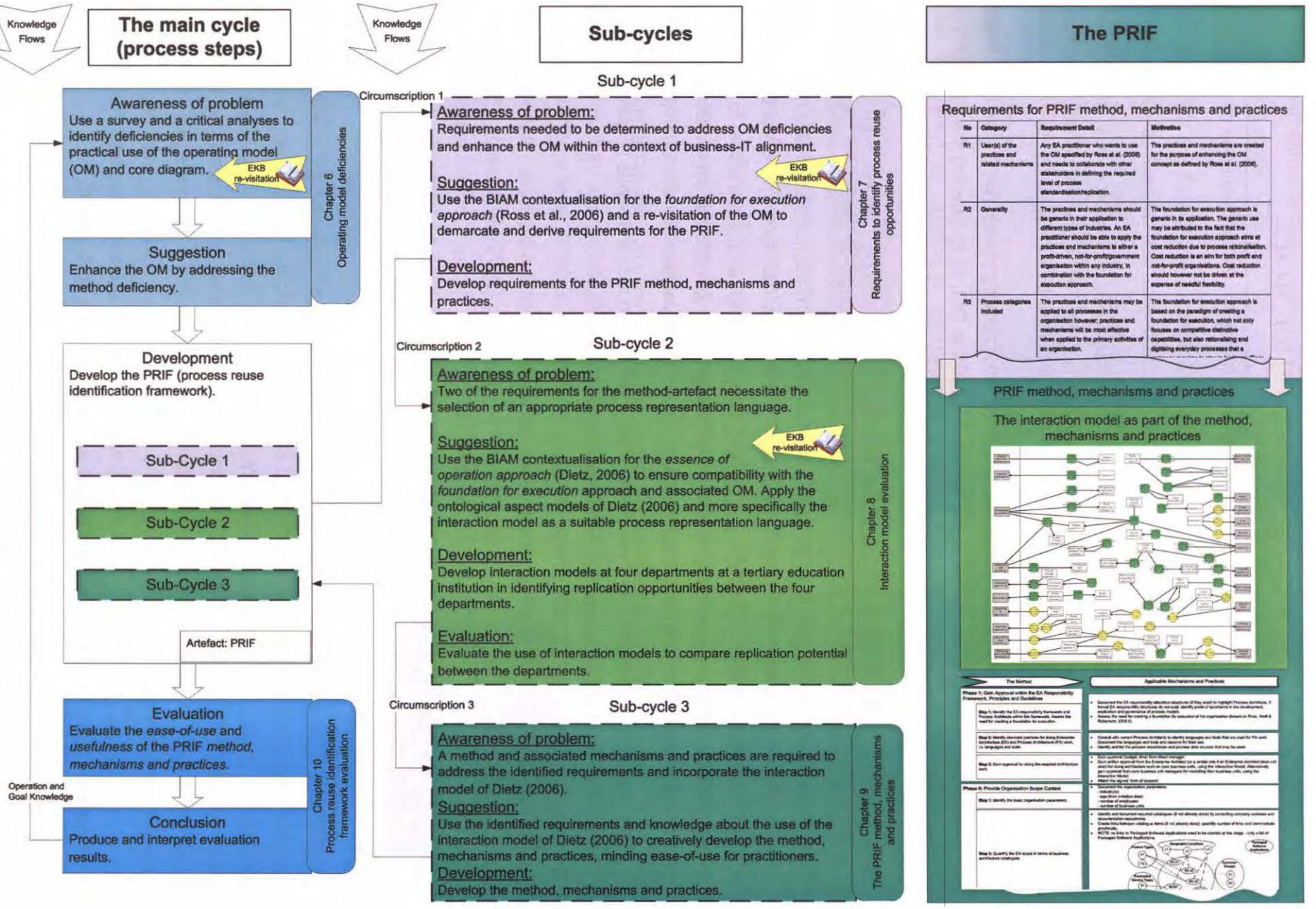


Figure 50: Design research for building and validating the PRIF (duplicate of Figure 15)

6.1 INTRODUCTION

The previous part (Part B) provided theory about various alignment approaches, also proposing a Business-IT Alignment Model (BIAM) to provide a business-IT alignment contextualisation for alignment approaches.

One of the main goals of this thesis is to enhance the operating model (OM), due to its inherent deficiencies. This chapter conveys the deficiencies of the OM, as to develop the PRIF (Process Reuse Identification Framework), to address the second research question, namely:

What constructs are required for a process reuse identification framework to enhance the operating model concept, using the business-IT contextualisation model?

The purpose of Chapter 6 is to focus on the *foundation for execution* approach and its associated OM, to identify OM-deficiencies[2]. Re-visiting the *foundation for execution* approach (previously discussed in section 3.3.5), this chapter used a questionnaire to identify OM deficiencies. Later in section 7.2, additional deficiencies are identified when the BIAM is used to provide a business-IT alignment contextualisation for the *foundation for execution* approach.

This chapter presents the first three steps of the main design research cycle (Figure 51), namely *awareness of problem, suggestion* and *development* initiation.

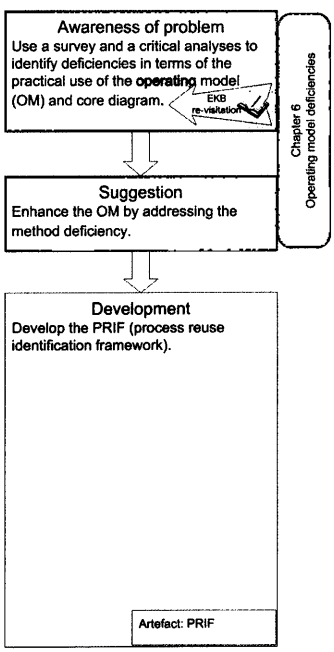


Figure 51: Design cycle context for Chapter 6 (duplicating part of Figure 50)

[2] The content of Chapter 6 is based on: De Vries, M., & Van Rensburg, A. C. (2009). Evaluating and refining the 'Enterprise Architecture as Strategy' approach and artefacts. *South African Journal of Industrial Engineering, 20*(1), 31-43.

A survey and critical analysis were used to identify deficiencies in terms of the practical use of the operating model (OM) and the core diagram that led to the *awareness of a problem* and a *suggestion* to enhance the OM within the context of business-IT alignment.

In section 6.2, the *foundation for execution approach* is revisited with the intent to evaluate the practical use of the OM and core diagram. Section 6.3 delineates the research process and survey to evaluate the OM and core diagram, followed by the results in section 6.4 and interpretation of results in section 6.5. Section 6.6 summarises the a*wareness of a problem,* a *suggestion* and initial *development* to solve the problem. The chapter concludes in section 6.7.

6.2 FOUNDATION FOR EXECUTION APPROACH RE-VISITED

The *foundation for execution* approach provides a new approach in preventing piece-meal/disjointed IT developments that react to every new strategic initiative (Ross et al., 2006). Contrary to other business-IT alignment approaches where IT supports strategy (Lapkin, 2005; Rosser, 2004), Ross *et al.* (2006) maintains that management needs to make a strategic decision on the required operating model (OM) of the enterprise, that would guide systematic development of the supporting ICT systems. A decision about a required OM would assist in creating a *foundation for execution*, i.e. rationalising and digitising the routine, everyday processes and competitively distinctive capabilities of the enterprise. If enterprises fail to decide and implement the required OM, their ICT systems would remain a bottleneck, reacting to piece-meal strategic initiatives that contribute to incoherent and inconsistent IT landscapes.

The selection of an *appropriate OM* is paramount, as it "articulates a vision of how the company will operate" (Ross et al., 2006, p. 44). The OM is also a "choice about what strategies are going to be supported", driving the implementation of a whole set of strategic initiatives (Ross et al., 2006, p. 26). Ross et al. (2006) warn against the consequences of using an incorrect OM, as the OM constrains the type of growth opportunities available to the enterprise. The OM ultimately directs IT principles decisions (Weill & Ross, 2008; Weill & Ross, 2004) and also indicates "what type of interoperability approach will be appropriate" (The Open Group, 2009, p. 331).

Since the OM is the cornerstone of the *foundation of execution* approach, this study intended to evaluate the practicality of defining an OM and its translation, the core diagram (translating the OM into high-level enterprise architecture components). A survey was used to receive qualitative feedback on the difficulties experienced in defining the current OM and the core diagram for an enterprise / sub-division. As a frame of reference, Figure 52 depicts the four *stereotypical OMs* (discussed in section 3.3.5), whereas Figure 53 depicts the *core diagram* template for a unification OM (discussed in section 3.3.5).

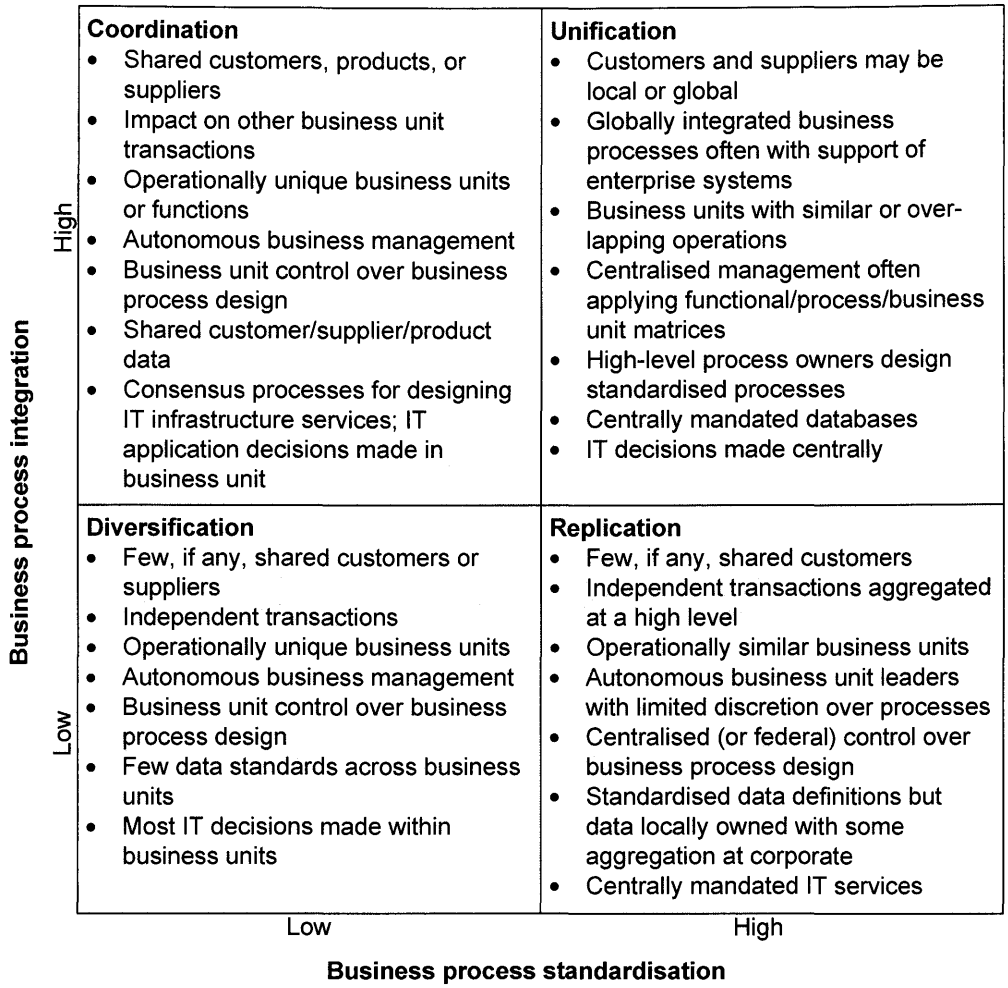


Figure 52: Characteristics of four operating models, based on Ross et al. (2006, p. 29) (duplicate of Figure 31)

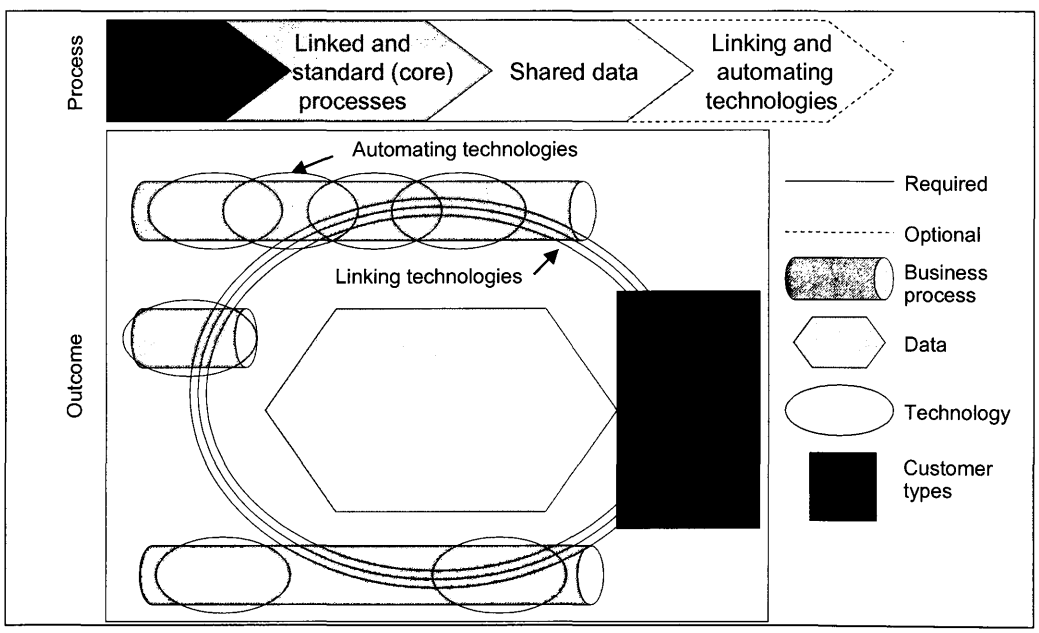


Figure 53: Core diagram process and template for a unification OM, based on Ross et al. (2006, p. 54) (duplicate of Figure 33)

Given the characteristics of four stereotypical OMs (depicted in Figure 52), every enterprise needs to "position itself in one of these quadrants to clarify how it *intends* to deliver goods and services to customers" Ross et al. (2006, p. 28). Upon selection of an appropriate OM, the enterprise should translate the selected OM into a core diagram. Ross et al. (2006) provide four core diagram templates, one for each type of OM. If, for example, management selected a unification OM as appropriate OM for the enterprise, they need to translate the OM into a core diagram according to the process and template given in Figure 53. Following the *process* part (top half) of Figure 53, they need to construct the core diagram according to the *outcome* template (bottom half) of Figure 53. The OM and core diagram should then direct the enterprise in elevating through four stages of architecture maturity:

1. *Business silos architecture*, where enterprises maximise individual business unit needs or functional needs.
2. *Standardised technology architecture*, i.e. gaining IT efficiencies through technology standardisation and increased centralisation of technology management.
3. *Optimised core architecture*, i.e. providing enterprise-wide data and process standardisation, appropriate for the OM.
4. *Business modularity architecture*, where enterprises manage and reuse loosely coupled IT-enabled business process components to preserve global standards while enabling local differences.

Given this background, the subsequent section presents a research process to answer two questions:

- How practical is it to define the current operating model (OM) for an enterprise?
- Once an appropriate OM is selected, and using the guidelines, examples and templates (e.g. Figure 53) of Ross et al. (2006), how practical is it to translate the OM into a core diagram?

6.3 THE RESEARCH PROCESS

In evaluating the practicality of defining the OM and derived core diagram, experimentation was used, collecting data via a questionnaire (discussed in section 2.6.2.1). According to Ross et al. (2006, p. 44), senior managers need to "debate their company's operating model". This study took the stance that EA practitioners will be primarily responsible (in consultation with the chief executive officer and business managers) to articulate a future OM and the derived core diagram, based on business architecture analyses. The reason is that EA practitioners are primarily responsible for business architecture analysis and are equipped to model and analyse the enterprise, using the modelling standards and tools of the enterprise. Questionnaires, based on experimentation, would thus be a suitable instrument to obtain feedback from EA practitioners on the practicality of defining the OM, based on guidelines, examples and templates provided by Ross et al. (2006).

6.3.1 The experimentation process

The experimentation process included several phases to ensure that participants were knowledgeable in the theoretical areas of concern:

1. *Training phase*: The study provided training to the research participants to ensure that they were knowledgeable on business-IT alignment, strategic decision-making, and the foundation for execution approach and associated artefacts as defined by Ross et al. (2006). Training consisted of live presentations, course notes, and literature references for further reading.
2. *Learning/formative assessment phase*: Participants had the opportunity to work individually or in pairs to select an enterprise to apply theory in practice. Participants had to submit an interim report for evaluation to assess their understanding of the theoretical content. Participants received feedback on the interim project report to provide participants with the opportunity to improve/update their final reports.
3. *Experimentation phase*: Participants submitted a complete report based on application of theory in practice. Participants received report instructions (see Appendix B) to apply theory in practice. As part of the report requirements, participants had to develop an operating model (OM) and core diagram. Based on their experience of applying theory in practice, participants completed a questionnaire.
4. *Evaluation phase*: Analysis of the qualitative feedback from the questionnaires gave new insight into the practicality of two key artefacts (OMs and core diagrams). The parameters/variables that were measured, and the questions related to the parameters, are discussed next.

6.3.2 The questionnaire

According to Rea & Parker (2005) a quantitative research requires a research hypothesis about the relationship(s) between variables/parameters. This study does not aim to defend a hypothesis about parameters and their relationships. Instead, parameters have been identified to provide sufficient context in evaluating the practicality of defining operating models and core diagrams. Figure 54 indicates that the participant profile (*Parameter 1*), enterprise profile (*Parameter 2*) and current architecture status (*Parameter 3*) could have an influence on the practicality of defining operating models and core diagrams (*Parameter 4*).

Table 12 provides a summary of the relevant questions that were derived to evaluate the four parameters. Some of the questions were copied from the on-line survey used by the Institute for Enterprise Architecture Developments (IFEAD) (Schekkerman, 2006). The Oracle Magazine subscription form (Haunert, 2008) provided a list of business activities, which were also incorporated in the questionnaire. The original questionnaire consisted of twenty-eight questions (both closed-ended and open-ended (see Appendix A), but not all questions were used for the purpose of this study.

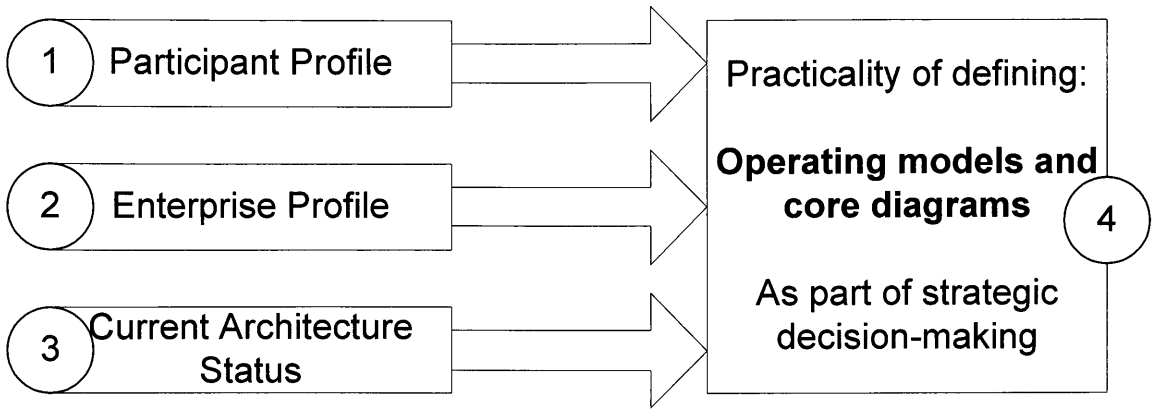


Figure 54: Parameters that influence the practicality of defining two key artefacts

Table 12: Questions related to the four parameters

Questionnaire questions related to the four parameters
Parameter 1: Participant profile
1.1. Please specify your tertiary qualification, e.g. BEng (Industrial).
1.2. What is your current position (e.g. Systems Analyst, Full-time student, etc.)?
1.3. Did you enrol for any course in Information Systems Design (or similar course) previously?
1.4. Did you have any work exposure to Information Systems (e.g. worked in the IT department as a Systems Analyst / worked on a SAP implementation project to implement new procedures, etc.)?
Parameter 2: Enterprise profile
2.1. Specify the number of employees of the entire enterprise.
2.2. What is the primary business activity(s) of your enterprise?
Parameter 3: Current architecture status
3.1. Classify the architecture maturity of your enterprise on a corporate level.
3.2. Is Enterprise Architecture, Business and / or IT Architecture, etc. established in your (corporate) enterprise? IF APPLICABLE, select the relevant options.
3.3. Have you already implemented enterprise architecture governance in your enterprise?
3.4. Define the primary drivers / reasons for implementing EA governance.
3.5. Have you implemented any architecture modelling technology that includes a repository?
Parameter 4: The perceived practicality of operating models and core diagrams
4.1. On what level did you analyse your enterprise architecture?
4.2. What is the current operating model applied to the selected level of analysis in the previous question?
4.3. What difficulties did you experience in defining the current operating model?
4.4. What difficulties did you experience in compiling a core diagram?

This section delineated the experimentation process to evaluate the practicality of defining operating models and core diagrams. As indicated, the intent of the questionnaire was to provide sufficient context in terms of three parameters (participant profile, enterprise profile and current architecture status), which could have an influence on the fourth parameter (practicality of defining operating models and core diagrams). The next section discusses the questionnaire results.

6.4 RESULTS

The study engaged thirty participants in the experimentation phase (see previous section 6.3, no 3, *Experimentation phase*). As participants had the option to work in pairs, there were *twenty-one* final projects with corresponding reports and completed questionnaires. The following sections convey the results of the questionnaire in terms of parameters, numbered from 1 to 4 in Figure 54.

Since some of the questions pertaining to Parameter 1 and Parameter 2 in this survey *were replicated* for a different sample during the evaluation of the PRIF *method, mechanisms and practices* (in Chapter 10), percentages are used for comparison purposes.

For the remaining questions, actual numbers are used, which is more informative for a small sample such as this one.

6.4.1 Parameter 1: Participant profile

The *participant profile* parameter provides an indication of the knowledge and experience of the participant. The questionnaire therefore gathered data about the participant in terms of his/her tertiary qualification, current working position, prior knowledge about information systems in terms of work exposure and previous enrolments in information-system related courses.

Figure 55 indicates that fifty-two percent (52%) of the participants had previously obtained an engineering degree, thirty-two percent (32%) a technical diploma, twelve percent (12%) a Bachelor of Science (BSc) degree, and four percent (4%) a Bachelor of Commerce (BCom) degree. Tertiary qualifications also correlated with the working positions of the participants. Most of the participants (52%) held positions that were related to *business process planning and/or improvement* (see Figure 56: Process Analyst/Engineers, Quality Assurance Engineers, Business Analysts, Industrial Engineers and Planners). Questions regarding prior knowledge about information systems indicated that sixty-seven percent (67%) of the participants had previously enrolled for information system-related courses, while thirty-eight percent (38%) indicated work-exposure in the field of information systems.

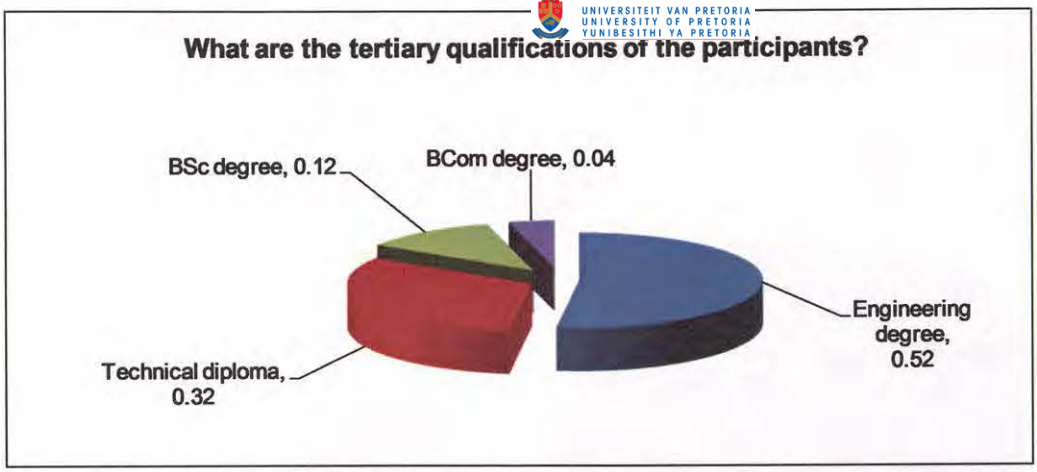


Figure 55: Tertiary qualifications of the participants

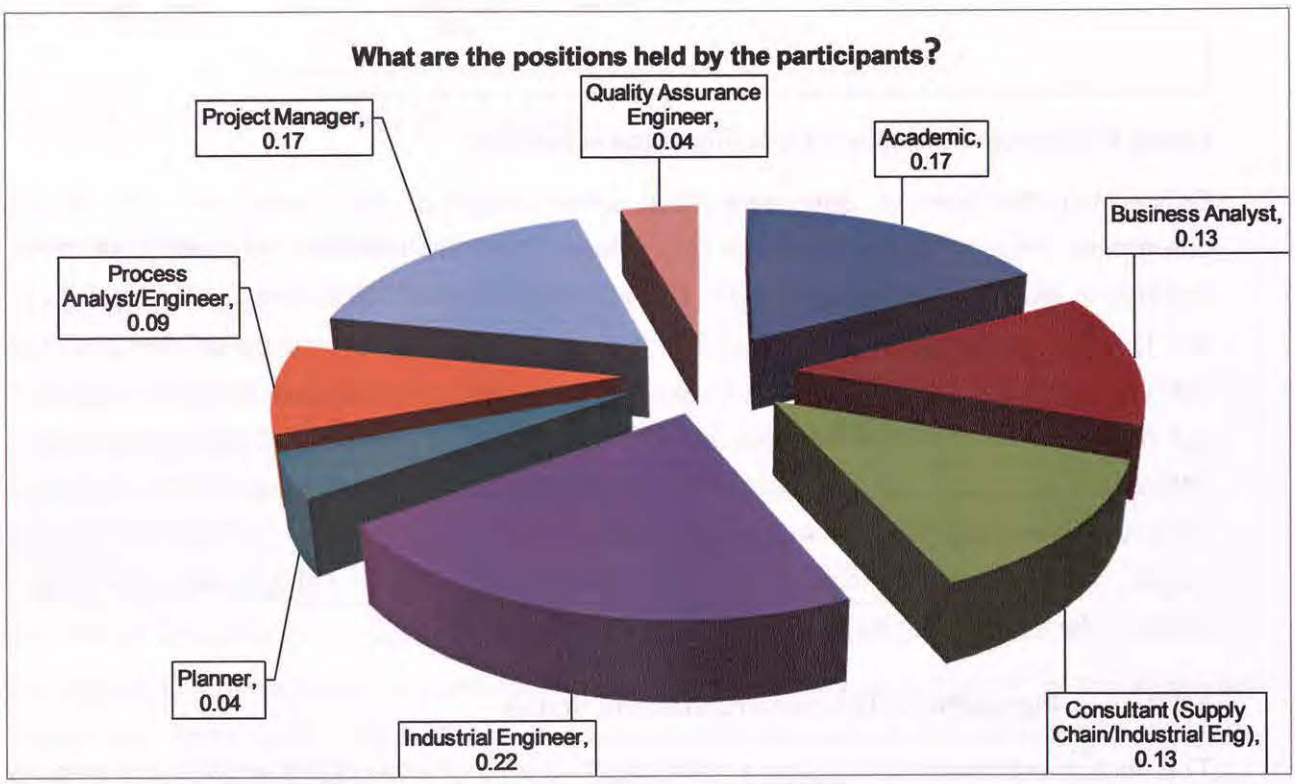


Figure 56: Positions held by the participants

6.4.2 Parameter 2: Enterprise profile

The *enterprise profile* parameter provides an indication of the size and type of enterprises that were used by the participants during the experimentation process. Since the thirty participants had the option to work in pairs, there were *twenty-one* enterprises subjected to analysis. Each participant (or participant-pair) had to develop an operating model and core diagram for his/her chosen enterprise.

In terms of enterprise size, most of the analysed enterprises employed between 100 and 10,000 employees (see Figure 57, largest sector)

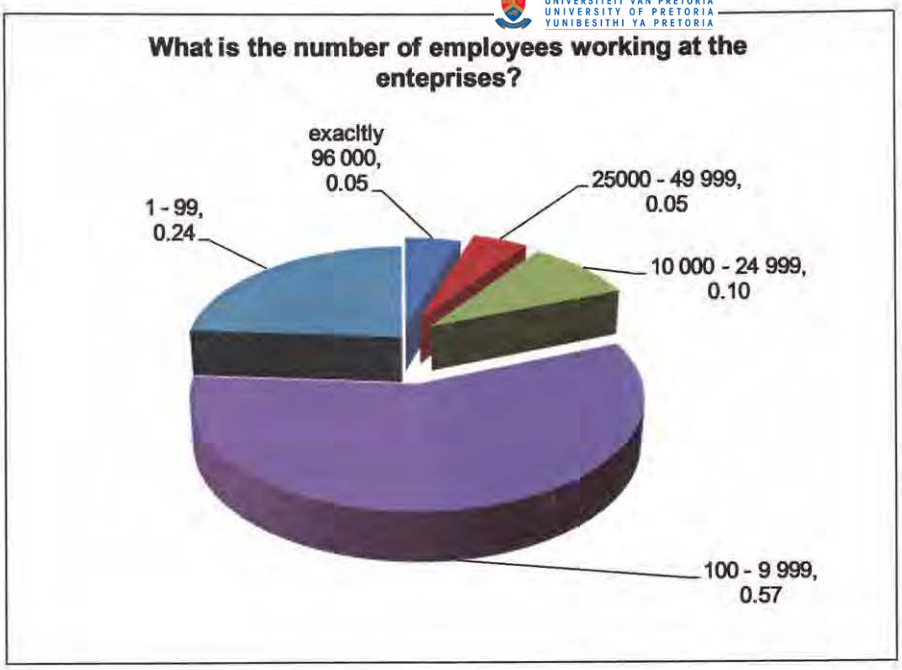


Figure 57: Number of employees working at the enterprises

Concerning the type of enterprises that were analysed, the *twenty-one* (21) analysed enterprises were involved in *nineteen* (19) different business activities - an enterprise could be involved in *multiple business activities*. The activities included automotive manufacturing (5 out of 21), the consumer sector (4 out of 21), high-technology original equipment manufacturer (3 out of 21), industrial manufacturing (3 out of 21), professional services (3 out of 21), research (3 out of 21), other business services (5 out of 21) and 12 remaining business activities (17 enterprises out of 21). Business activities that were excluded include media and entertainment, construction/engineering, financial services/insurance, health care, independent software vendor, life sciences (biotech, pharmaceuticals), oil and gas, travel and transportation, and utilities (electric, gas, sanitation, water).

6.4.3 Parameter 3: Current architecture status

The *current architecture status* parameter provides an indication of the architecture maturity of the analysed enterprises. The questionnaire therefore gathered data about the architecture maturity of the analysed enterprises, established architecture levels, implementation of EA governance, the primary drivers/reasons for implementing EA governance, and the use of architecture modelling technology.

The architecture maturity was measured according to the four architecture maturity stages defined by Ross et al. (2006): (1) business silos architecture, (2) standardised technology architecture, (3) optimised core architecture, and (4) business modularity architecture.

Figure 58 indicates that a large number of enterprises (9 out of 21) managed their divisions in silos. A significant number had progressed to the level of standardised technology (7 out of 21) and optimised core (5 out of 21). None of the enterprises operated according to a modular business design. According to Table 13, business architecture was well-established at 11 out of

21 enterprises. The perceived level of [illegible]cture activity may also be explained by the high process inclination of the participants.

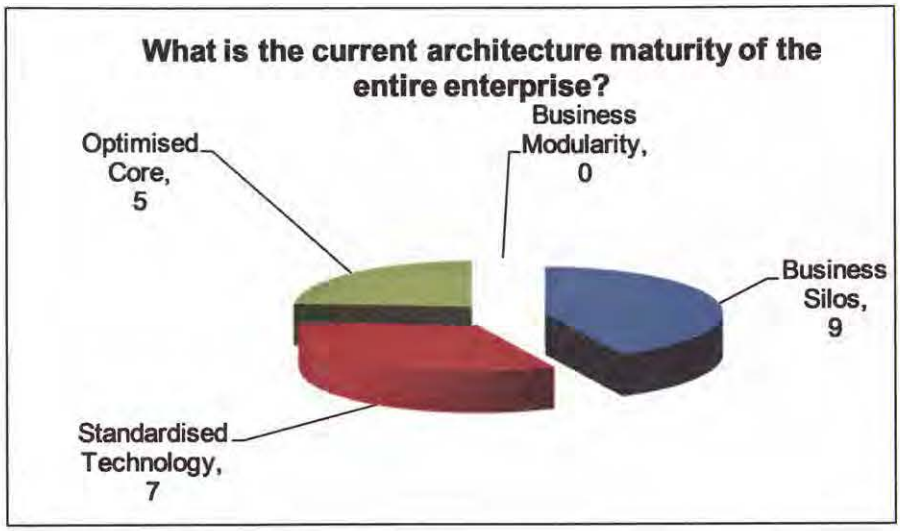


Figure 58: Architecture maturity of enterprises

Table 13: Established architecture levels

Architecture Levels	Number of enterprises
Business Architecture	11
Information-System Architecture (Applications Architecture)	7
Enterprise Architecture	6
Security Architecture	6
Information Architecture	5
Technology Infrastructure Architecture	5
Governance Architecture	3
Software Architecture	3

EA governance activities were performed at thirty-eight percent (8 out of 21) of the analysed enterprises. Participants indicated that an enterprise should invest in EA governance owing to its decision-making support (7 out of 21), system development support (6 out of 21), and delivery of insight and overview of business & IT (5 out of 21).

Only four participants indicated the use of any architecture modelling technology that includes a repository. Tools include ARIS, Casewise, and Systems Architect. According to Figure 59, thirty-eight percent (8 out of 21) did not use an EA framework.

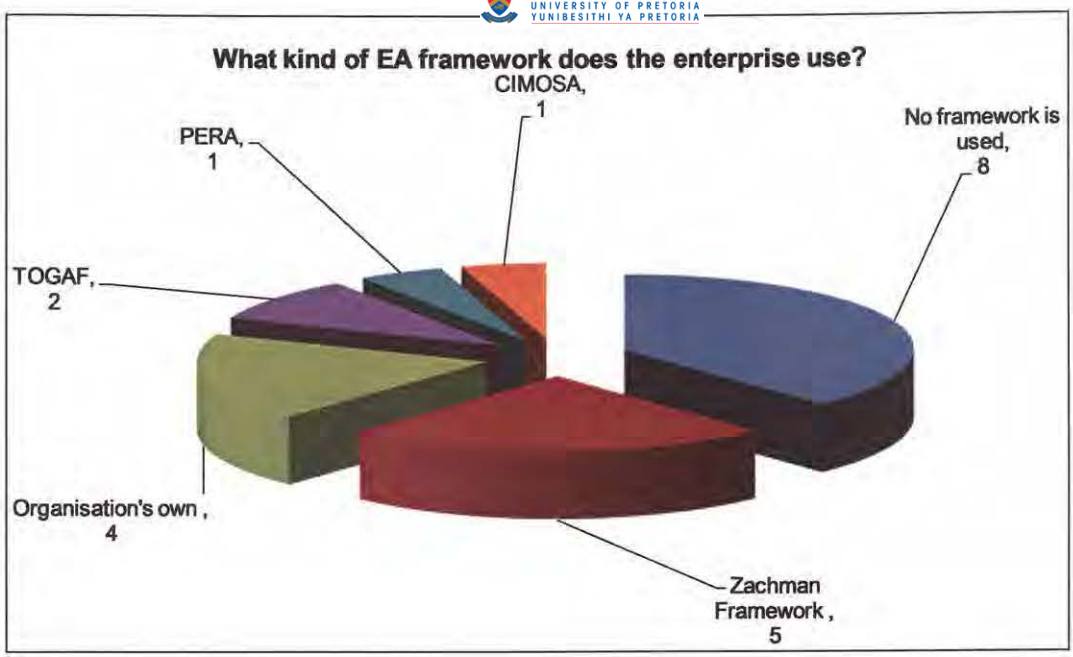


Figure 59: Enterprise architecture framework in use

6.4.4 Parameter 4: The perceived practicality of operating models and core diagrams

Two parameters that could have an effect on the perceived practicality of the OMs and core diagrams include the *level of analysis* (e.g. entire enterprise or a sub-division of the enterprise) and the *OM classification* of the analysed enterprise/sub-division itself.

In respect of the *level of analysis*, participants preferred to apply analysis on a business unit level (17 out of 21) rather than a corporate level (4 out of 21).

Regarding the *OM classification*, the four stereotypical OMs were well represented: diversification (7 out of 21), unification (6 out of 21), replication (5 out of 21), and coordination (3 out of 21). Although the EA practitioner could either define a current or future-state (appropriate) OM for an enterprise, additional consultation (with the chief executive officer and business managers) would be required to define a future OM. Consequently, this study only reports on defining the current-state OM for an enterprise/business unit.

Table 14 provides the results pertaining to the perceived practicality of OMs and core diagrams, answering the two questions identified in the previous section (section 6.2), which are:

- How practical is it to define a current *operating model* (OM) for an enterprise?
- Once an appropriate OM is selected, and using the guidelines, examples and templates of Ross et al. (2006), how practical is it to translate the OM into a *core diagram*?

According to the results in Table 14, participants experienced difficulties in *defining the current OM* for the analysed enterprise or business unit due to several reasons. The main reason being that it is diffucult to select a single operating model (one out of four stereotypical OMs) for an enterprise or business unit. Participants also experienced difficulties in *compiling a core diagram*

for the analysed enterprise or business unit due to several reasons. The main reason being that it is difficult to select the main components of the core diagram.

Table 14: Perceived practicality of OMs and core diagrams

Difficulties in defining the current OM	Difficulties in compiling a core diagram
Nineteen (19 out of 21) participants had difficulty in defining the current OM. Participants indicated their difficulty in deciding on one specific operating model (14 out of 19). A few participants (4 out of 19) indicated minimal difficulty in identifying the operating model. The following themes emerged from the qualitative feedback: • Participants had trouble in *deciding on a single operating model* (8 out of 14 who had trouble). They had difficulty in establishing the degree of process standardisation / integration that would be required to classify an enterprise according to a specific model. Enterprises (especially on a corporate analysis level) exhibited behaviours of multiple OMs. • Participants (5 out of 14 who had trouble) conveyed their difficulty in *finding the correct information* to perform a classification. This was also attributed to the limited knowledge and awareness of EA in the enterprise. • Some difficulty (1 out of 14 who had trouble) occurred in defining an operating model on a *business unit level* due to fuzzy boundaries between the corporate level and business unit level.	Twenty (20 out of 21) participants had difficulty in compiling a core diagram. The following themes emerged from qualitative feedback: • Half the participants who indicated difficulties regarding core diagram construction (10 out of 20) had trouble in *selecting the main components* of the core diagram. Of these that experienced difficulty, participants had trouble in identifying the shared technologies (4 out of 10 who had trouble), shared data (3 out of 10), shared processes (3 out of 10), and the key customers (1 out of 10). The problematic identification of shared technologies may be attributed to the participant profile or limited exposure to technology infrastructure. • Participants (6 out of 20) had difficulty in *understanding the generic core diagram templates* provided by Ross et al. (2006) or relating the diagram components to their company. They also questioned the validity of their own core diagram designs. • Another concern was the *availability and/or the consolidation of available information* (4 out of 20 participants).

6.5 INTERPRETATION AND SUMMARY OF RESULTS

Based on the results of the previous section (section 6.4), this section provides a summary and interpretation of the results obtained, referring to the four parameters (Figure 54) that influence the practicality of defining the two key artefacts (the OM and core diagram).

In terms of the *participant profile (parameter 1)*, most of the participants had an engineering background and held positions related to business process planning and improvement. Participants also had sufficient knowledge of information systems.

Concerning the *enterprise profile (parameter 2)*, most of the enterprises that were analysed employed between 100 and 10,000 employees, i.e. medium to large enterprises, rather than small enterprises. The enterprises were involved in a large number of business activities, including automotive manufacturing, the consumer sector, high-technology original equipment

manufacturer, industrial manufacturing, professional services, research, other business services and 12 less-represented activities. Business activities that were excluded are media and entertainment, construction/engineering, financial services/insurance, health care, independent software vendor, life sciences (biotech, pharmaceuticals), oil and gas, travel and transportation, and utilities (electric, gas, sanitation, water).

In terms of *architecture status (parameter 3)*, results indicated a relatively low level of architecture maturity; most of the analysed enterprises displayed business silo behaviour, while none of the enterprises operated according to a modular business design. Although the analysed enterprises had established business architecture as an architecture domain, architecture representation (using models) was limited.

The study could only report on the *perceived practicality of the OM and core diagram (parameter 4)* on a business unit level, since most of the participants defined operating models at a business unit level, rather than on a corporate level.

The interpretation of the various difficulties experienced follows:

- The difficulty of selecting a *single OM* relates to the difficulty of identifying the *degree of process standardisation / integration* for the analysed enterprise / business unit. Evaluation of the OM characteristics requires extensive implicit/explicit knowledge to define the degree of process standardisation / integration.
- Participants had difficulty in *finding the correct information* to perform an OM classification or select core diagram components. Identification of OM characteristics and core diagram components require knowledge about the strategic choices (markets, products/services), operating/organising logic, business processes, and main databases and technologies of the enterprise. Some baseline architectures are thus required, and this knowledge is not necessarily available or in an explicit format.
- Participants had *difficulty in selecting the main components* of the core diagram and understanding the core diagram templates. The limited set of examples provided in the textbook may also attribute to the limited understanding.

The results indicate problems in terms of practicality, when defining the *current-state OM and core diagram* for an enterprise/business unit. In the following section, the scope of analysis is narrowed, by focusing on the deficiencies of the OM that lead to practicality problems.

6.6 PROBLEM-AWARENESS AND SUGGESTION

The interpreted results of the previous section (section 6.5) highlighted several difficulties when identifying/constructing an OM and core diagram. Although the construction of both artefacts are problematic, the core diagram is dependent on the OM and translates the process standardisation / integration requirements of the OM into the core diagram components. Since the core diagram is a derivative of the OM, the remainder of the study focused on the OM alone. The following section provides the rationale for *enhancing the OM concept*.

If senior managers are to use the OM as a key *artefact* in guiding them during the strategic decision-making processes, it could be argued that the *method* used to obtain the artefact outputs should be more rigorous. Ross et al. (2006) based their book 'Enterprise Architecture as Strategy' on the insights from a series of research projects that explored more than 200 companies and another 256 companies where their focus was on IT governance (Ross et al., 2006). Although the OM alone was applied to 1500 companies during a MIT CISR study in 2008 (Weill & Ross, 2008), an inquiry was made about the *method* applied to classify a company according to a specific OM. In correspondence with one of the authors of the book 'Enterprise Architecture as Strategy', Jeanne Ross, on 21 June 2010, it was confirmed that a theoretical gap did exist in terms an *OM-classification method*. Jeanne Ross commented as follows: "We have never written an academic paper on the topic of the operating model. We intended to, but we've never gotten around to it. The model is based on 40 case studies and qualitative analysis of those cases" (Ross, 2010). Although proven qualitatively in 40 case studies, the method-knowledge to derive an OM was not explained.

Although a powerful decision-making tool in guiding ICT developments, a *method deficiency* exist, i.e. the *method used to obtain OM outputs*, has not been elucidated. The *awareness* of method deficiencies of the OM thus led to a *suggestion.* The suggestion is that the OM is enhanced to address the *method* deficiency, by developing a *method*-artefact. Initiation of the *development* process however triggered *circumscription,* i.e. awareness of another problem due to the act of developing the *method*.

Chapter 7 provides detail on another problem initiated due to circumscription. The other problem relates to the requirements-gathering process for developing the new *method*-artefact.

6.7 CONCLUSION

This chapter presented the first two steps of the main design research cycle, namely *awareness of problem* and *suggestion*. A survey and critical analysis were used to identify deficiencies in terms of the practical use of the operating model (OM) and core diagram that led to the *awareness of a problem* pertaining to the OM, and a *suggestion* to enhance the OM by addressing the *method* deficiency.

The *suggestion* initiated the *development* of the *method*, but led to the awareness of another problem namely that requirements gathering for developing the method, required additional context. The next chapter (Chapter 7) elaborates on the requirements-gathering problem.