

## CHAPTER 3

### RESEARCH PROBLEM AND METHODOLOGY

#### 3.1 INTRODUCTION

This chapter describes the research problem and provides details of the research methodology utilized in examining of the research question.

Section 3.2 describes the research problem when viewed against both the macro- and microperspectives, previously outlined in chapter 1. These perspectives provide a suitable focus for the identification of the specific research problem. Also included is the statement of the research question derived from this research problem.

The general research methodology is described in section 3.3 while the detailed research design, including the conceptual frameworks, is illustrated in section 3.4.

Section 3.5 defines the research population. Section 3.6 describes the data collection procedures and examines the implications of the measures taken to safeguard both the reliability and validity of the data. Finally, section 3.7 gives the chapter summary.

#### 3.2 RESEARCH PROBLEM

The research problem may be viewed against both the macro- and micro-perspectives which were previously described in chapter 1.

Viewed from a macroperspective (see section 1.1), the problem involves the expected increase in the demand for collective services, on the one

hand, and the provision of such services (together with the necessary physical facilities) with limited resources, on the other hand. Among the collective services related to the social needs of the population highlighted in this research are health, housing and education. The limited resources referred to above include money, materials and human labour.

Viewed from a microperspective (see section 1.2), the problem involves determining a suitable strategy to ensure the optimal provision of building accommodation by the responsible public sector work departments. It should be noted that optimal provision in this context refers to maximizing the output (the building accommodation) with the limited inputs (the resources).

Following on Kerzner's (1992:1) argument about the more appropriate nature of internal rather than external solutions, this study suggests that the implementation of formalized project management in public sector work departments could contribute significantly to a solution to ensure the optimal provision of building accommodation for the rendering of collective services.

The specific research problem entails empirically determining how formalized project management could both effectively and efficiently be implemented in public sector work departments.

The public sector work departments under consideration are limited to those responsible for and who further manage the construction activities by which the required building accommodation is provided for rendering the collective services.

The research question is formulated as follows:

***How can project management as formal policy be implemented effectively and efficiently in public sector work departments involved in the construction activities by which building accommodation is provided for the rendering of collective services?***

### 3.3 RESEARCH METHODOLOGY

Viewed from a broad classification of (1) experimental (2) quasi-experimental and (3) non-experimental scientific research methodologies, this research, following the two criteria suggested by Kerlinger (1986: 349), is classified as non-experimental. These principal criteria determine the extent of direct control that can be gained over the independent variables and involve experimental manipulation and random assignment.

With regard to the first criterion suggested by Kerlinger (1986: 348), the nature of the research does not permit experimental manipulation of the independent variables because in some cases their manifestations have already occurred and in others they are inherently or for practical reasons not manipulable.

As for the second criterion suggested by Kerlinger (1986: 349-350), the random assignment of subjects and treatments to groups is again not possible because self-selection has already occurred into (as will be defined later) the two different sets of comparison groups.

Based on a different classification, advanced by Emory (1985: 8) between pure scientific and applied research, this research is classified into the latter category because it is conducted in an actual field setting and is further directed to making practical decisions.

Another broad classification of the research purpose that is frequently made is that of research goals and the associated research strategies. Mouton and Marais (1985: 51) distinguish between three main types of research goals: exploratory, descriptive and explanatory research. An additional category, which is related to the latter type of research goal, is predictive research (Emory 1985: 9). As combinations of these research goals are possible (Cronje, Hammersma, Lucas & Smalley 1989: 45), it would not be appropriate to classify this research into a single category because the study includes both descriptive and explanatory research goals (see section 1.3).

With reference to the associated research strategy and given that, apart from a contextual interest (where a particular phenomenon is examined within the context of a specific field), this research also has a universal interest (interest would also extend to possibly applying the results of the research to other public sector departments involved in project-type work) (Cronje *et al* 1989: 46), the choice of the survey method emerges as an appropriate research strategy (Mouton & Marais 1985: 51).

### **3.4 RESEARCH DESIGN**

Based on the research objectives listed in chapter 1, the research design must accommodate the two main focus areas of the study. The first, where the focus is on the content-related issues of strategy implementation and the second, where the focus is the process-related issues of implementing a strategy for formalized project management in public sector work departments.

The conceptual framework or research design for the content of implementation is illustrated in figure 3.1.

Figure 3.1: Conceptual framework: content of implementation

GROUP I: DEPARTMENT/ADMINISTRATION WHERE FORMALIZED PROJECT MANAGEMENT IS APPLIED				
LEVEL OF MANAGEMENT	IDENTIFY FACTORS	CLASSIFY FACTORS	EVALUATE AND PRIORITIZE FACTORS	EVALUATE AND PRIORITIZE FACTORS
TOP-LEVEL	SUCCESS DRIVING FORCES - very important/strong (1) - important/strong (2) - desirable/weak (3) - not important/no force (4)	PHILOSOPHICAL SITUATIONAL ORGANIZATIONAL JOB-DIMENSIONAL HUMAN	WITHIN MANAGERIAL LEVELS GROUP DIFFERENCES	BETWEEN APPLICATION EXTENT GROUP DIFFERENCES
	SUCCESS RESTRAINING FORCES - very restraining/strong (1) - restraining/strong (2) - undesirable/weak (3) - not important/no force (4)			
MIDDLE	AS FOR TOP-LEVEL MANAGEMENT			
LOWER	AS FOR TOP-LEVEL MANAGEMENT			

  

GROUP II: DEPARTMENT/ADMINISTRATION WHERE INFORMAL PROJECT MANAGEMENT IS APPLIED
--

  

GROUP III: DEPARTMENT/ADMINISTRATION WHERE NO PROJECT MANAGEMENT IS APPLIED
---

In summary the design entails:

- Identifying the success driving and the success restraining forces (factors) which will either positively or negatively contribute towards the implementation of formalized project management in public sector work departments.
- Classifying the factors into the categories of (1) philosophical (factors that relate to the principal requirements for implementation) (2) situational (factors that relate to the practical situations in which the departments operate) (3) organizational (factors that relate to the internal characteristics of the departments) (4) job-dimensional (factors that relate to the different roles/responsibilities of personnel within the departments) and (5) human-oriented (factors that relate to the characteristics of individuals or groups who work in the departments).
- Evaluating and prioritizing these factors according to their relative strength and importance within and between the three levels of the management hierarchy (Group A: top-level; Group B: middle; and Group C: lower or functional management) and also the three groups of public sector work departments found in the study (Group I: where formal project management is applied; Group II: where project management is informally applied; and Group III: where project management is not applied either formally or informally).

The conceptual framework or research design for the process of implementing is illustrated in figure 3.2. In summary the design entails:

- Determining the sources of change and the general orientation of the public sector work departments to change.

**Figure 3.2: Conceptual framework: process of implementing**

GROUP I: DEPARTMENT/ADMINISTRATION WHERE FORMALIZED PROJECT MANAGEMENT IS APPLIED							
LEVEL OF MANAGEMENT	INITIATION OF CHANGE	EVALUATE SUITABILITY OF SOLUTION	FORMULATE CHANGE	IMPLEMENT CHANGE	INSTITUTIONALIZE CHANGE	WITHIN MANAGERIAL GROUP DIFFERENCES	BETWEEN APPLICATION GROUP DIFFERENCES
TOP-LEVEL	SOURCES OF CHANGE - Internal - External	CHANGE OBJECTS: - Task behaviour - Organizational processes - Strategic direction - Organizational culture	SELECTION CRITERIA: - Time - Extensiveness - Favourableness	CHANGE POLICIES	ORGANIZATIONAL ELEMENTS OF: - Structure - Leadership - Culture		
	GENERAL ORIENTATION	CHANGE METHODS: - Technological - Structural - Managerial - Human-oriented	CHANGE STRATEGIES: - Facilitative - Informational - Attitudinal - Political	TRANSITIONAL MANAGEMENT			
		PARTICIPATION: - Change managers - Change agents - Change targets					
MIDDLE	AS FOR TOP-LEVEL MANAGEMENT						
LOWER	AS FOR TOP-LEVEL MANAGEMENT						
GROUP II: DEPARTMENT/ADMINISTRATION WHERE INFORMAL PROJECT MANAGEMENT IS APPLIED							
GROUP III: DEPARTMENT/ADMINISTRATION WHERE NO PROJECT MANAGEMENT IS APPLIED							

- Evaluating the proposed solution of implementing formalized project management with regard to the objects and methods of change as well as the participants in the change process.
- Formulating a change strategy based on the specific selection criteria.
- Implementing the change by means of a change policy and transitional management.
- Institutionalizing the change through the organizational elements of structure, leadership and culture.
- Evaluating the process elements of implementation within and between the three managerial groups in the research (Groups A, B and C as defined before) and also the three groups of public sector work departments (Groups I, II and III as defined before).
- Assessing the theoretical probability of whether an implementation strategy developed in accordance with the results gained from the respondents could contribute significantly to the effective and efficient implementation of formalized project management in public sector work departments responsible for the construction activities by which building accommodation is provided for the rendering of collective services.

### **3.5 RESEARCH POPULATION**

The research population encompasses all individuals who (1) work in a public sector work department, administration or division, where (2) projects are undertaken that (3) involve construction activities (4) to provide building accommodation for rendering collective services and (5) hold



either a top-level, middle or lower managerial position.

The individuals defined above were located (before 27 April 1994) in nineteen different public sector work departments in the Republic of South Africa, its independent states and self-governing territories. They included a central Department of Public Works and Land Affairs, the Department of Education and Training, the three own affairs administrations (House of Assembly, House of Delegates and House of Representatives), the four regional administrations of the Transvaal, the Orange Free State, Natal and the Cape Province, the independent TBVC states (Transkei, Bophuthatswana, Venda and Ciskei), and finally, the self-governing territories of KaNgwane, KwaNdebele, Gazankulu, Lebowa, Qwaqwa and KwaZulu.

In gathering the data for the empirical part of this research, the original aim was to first, include a representative sample of the individuals employed by only some of these departments who complied with the above research population requirements or criteria. After further investigation, the number of individuals who were expected to comply with the requirements were found to be relatively small and estimated to vary from between 10 and 30 individuals per department. This implied an average potential number of 380 individual respondents.

Given the relatively small number of potential individuals, it was then decided to contact all nineteen work departments and request that all their employees who complied with the research population criteria consider participation in the research project. Details of the actual number who eventually participated are provided in subsection 4.2.1.

### 3.6 DATA COLLECTION PROCEDURES

Based on the review on the related literature, seventy-five (75) research propositions were formulated and they cover both the content- and process-related issues of implementing formalized project management in public sector work departments.

As noted previously, the research strategy selected is the survey method. The research propositions were incorporated into a questionnaire which was first subjected to a pretest. The individuals selected for the pretest came from two different public sector work departments and also represented the different managerial levels indicated in the research design. The purpose of the pretest was to improve on the eventual accuracy of responses (or reliability of the questionnaire) (Kerlinger 1986: 405, 415) and on the construct validity of the measuring instrument, the questionnaire itself (Kerlinger 1986: 420), (Cook & Campbell 1976: 238-245).

On the basis of the responses of the pretest, the original questionnaire was then revised and included changes to the structure, wording and general appearance of the questionnaire. Further changes were also made after consultation with an experienced research statistician in order to improve on the "user-friendliness" of the questionnaire as well as to facilitate the analysis of the data later. The final questionnaire despatched to the respondents is attached as Annexure A. The same questionnaire, with all the research propositions indicated, is attached as Annexure B.

To gain maximum responses, it was decided to follow a two-step procedure for the despatch of the questionnaires. The first step was to direct a letter to the Director-Generals (heads) of all the work departments previously identified, in which they were informed about the research

project and their participation requested. In the event of their agreeing, they were also to ask to assist in identifying a contact person within their department, who could provide assistance to the researcher. The importance of the selection of the contact person was stressed by emphasizing the role such a person would be expected to perform. This role primarily involved the distribution and collection of the questionnaires to the selected individuals who complied with the research population criteria. The South African Department of Foreign Affairs provided valuable assistance in establishing contact with the work departments of the TBVC states.

The second step was the actual collection of the data. This entailed forwarding the questionnaires, either by post or personal delivery, to the respective work departments. A covering letter, addressed to the identified contact person, was included with detailed instructions regarding the distribution and collection of the questionnaires. After consultation with the identified contact person, the number of questionnaires sent out to each department was based on the estimated number of potential individuals who would comply with the above criteria.

The overall representativeness (number of valid responses acquired in relation to the true or real number of individuals of the defined research population) was expected to be high because of this indicated two-step procedure. However there was a probability that, due to the possibility of absenteeism because of sickness or leave, a number of individuals of the true research population might not complete a questionnaire. Furthermore, some individuals might be excluded because they would be incorrectly deemed not to comply with the research population criteria (this by their own doing or because of incorrect distribution), while they might in fact, actually have qualified. Applying some terminology used for statistical process control in acceptance sampling for attributes (Laufer 1984: 585-

586), the  $\alpha$  error (rejection or excluding individuals deemed not to comply with criteria who ought to be included in the research population) was nevertheless expected to be small. However, because of this potential threat to the overall representativeness, clear guidelines were given to the contact person on applying the research population criteria correctly.

On the other hand, there was also a probability that a number of individuals who did not qualify to complete the research questionnaire, might eventually incorrectly have done so. To a certain extent, this error could later be controlled by examining the completed questionnaires and discarding those that obviously did not comply with the research population criteria.

There is further the chance that individuals could deliberately or by genuine mistake include themselves in the research population by providing false or misleading information. However, it is almost impossible to control or detect such occurrences. But the  $\beta$  error (acceptance or including individuals deemed to comply with the criteria who ought to be excluded from the research population) was however, also expected to be small.

These small judgmental values for the  $\alpha$  and  $\beta$  measures described above will, to a large extent, contribute to the overall representativeness or content validity (Kerlinger 1986: 417-418) of the research.

While the purpose of the pretest was to improve on the eventual accuracy of responses (or reliability of data) and the construct validity of the measuring instrument (the questionnaire itself), the all-inclusive approach envisioned would attempt to secure the overall representativeness or content validity of the research. These measures will also later enhance the statistical conclusion validity (validity of conclusions drawn on the basis of the statistical evidence about presumed relationships) of the results for the

research (Cook *et al* 1976: 230-234). It should be noted that the three kinds of validity described, namely construct, content and statistical conclusion validity, are sometimes collectively referred to as internal validity (Cronje *et al* 1989: 46-47). Only two kinds of validity are then distinguished, the other being external validity (Emory 1985: 115).

External validity (validity of generalizing the results of the research across persons, groups, settings and to similar cases) (Cook *et al* 1976: 234-238); (Cronje *et al* 1989: 47) was not of leading concern for this research. While generalizing the findings of the research to other public sector departments involved in project-type work is not a specific objective of the research, it could and should be investigated in further follow-on studies.

### **3.7 CHAPTER SUMMARY**

Viewing the research from both macro- and microperspectives provides a suitable focus for the identification of the specific research problem.

The specific research problem leads to the research question which entails determining how project management as formal policy can be implemented effectively and efficiently in public sector work departments involved in construction activities by which building accommodation is provided for the rendering of collective services.

The nature of the research is classified as non-experimental and is conducted in a practical field setting which is then further designated as applied research. The research goals include those associated with both descriptive and explanatory research. An appropriate research strategy followed is the survey method.

The research design consists of two main areas of focus in order to

accommodate both the content of implementation and the process of implementing formalized project management in public sector work departments. The conceptual frameworks or research designs for both were illustrated together with a brief description of the different aspects covered in each design.

The research population was then defined. It is limited to individuals who work in a public sector work department, where construction projects are undertaken by which building accommodation is provided for rendering collective services, and where such individuals either hold a top-level, middle or lower managerial position.

With regard to the data collection procedures used, all work departments in the Republic of South Africa, the self-governing territories and the TBVC states, are included in the research population. Furthermore, all individuals, who complied with the research population criteria, were requested to complete a research questionnaire. This questionnaire was finalized after a pretest in two public sector work departments and consultation with a research statistician. The purpose of the pretest was to improve on the reliability of the responses and the construct validity of the measuring instrument, the questionnaire itself.

The data was gathered through a two-step procedure, first by gaining the participation and cooperation of all the public sector work departments and, secondly, despatching and collecting the questionnaires from the individuals selected to participate in the research. This two-step procedure should ensure a high response rate, which will ultimately contribute to the overall representativeness or content validity of the research.

Finally, it was argued that the measures taken to safeguard the construct and content validity of the research would further also enhance the

statistical conclusion validity of the eventual results. It was noted that these three kinds of validity, collectively referred to as internal validity, were of prime concern, rather than the ability to generalize the results to other similar cases or the external validity of the findings.