CHAPTER 2: RESEARCH METHODOLOGY

1. INTRODUCTION

The research methodology that was used in this thesis was founded on content analysis and the evaluation of the content validity and reliability of theoretical models by a panel of experts.

If a content validity approach is followed if it is necessary to quantify the degree of commonality of perceptual judgements regarding the applicability or validity of the use of certain messages, interventions, procedures, models, tests or formats for purposes of generalisation. Chadwick, Bahr & Albrecht (1984:248-259) propose that a content validity approach be followed when a communication source containing relatively clear and inference free messages, can be identified and defined operationally. Lawshe (1975:566) is of the opinion that researchers should rather opt for a construct validity approach whenever high levels of abstraction and insight are required in making judgements and when a magnitude of inferences exist in and around messages.

Lawshe also proposed that the following steps be followed to determine the content validity of tests, procedures, models or other researched outcomes and interventions:

1. Identify a content domain.
2. Select a panel of experts.
3. Develop an appropriate questionnaire.
4. Capture responses of panelists and determine the number of "essential" responses for each of the respective items.
5. Determine the content validity ratio (CVR) in order to quantify the consensus among panelists.

The research procedure that was followed in this thesis is founded on the proposals of Chadwick Bahr & Albrecht and the methodology proposed by Lawshe. Table 2-1 reflects the steps that were followed:

TABLE 2-1: RESEARCH METHODOLOGY

STEP	ACTIVITY
1	Define research objectives
2	Define the content domain and identify research material
3	Identify categories and analyse content of research material
4	Determine reliability of content analysis
5	Develop a draft model
6	Develop a questionnaire
7	Identify panellists and forward questionnaires
8	Capture data
9	Determine validity of the model
10	Identify themes in different training models
11	Discuss research findings
12	Propose and discuss the validated model/frameworks

2. STEPS IN RESEARCH PROCEDURE

2.1 STEP 1: Define the research objectives

2.1.1 Primary objective

The primary objective of this thesis is to develop a validated theoretical model that will represent and explain the most important components and processes typical of the current labour relations system in South Africa.

2.1.2 Secondary objectives

Due to the complex nature of the study and the multiple variables that have an effect on South African labour relations, secondary objectives were identified to ensure the systematic attainment of the primary objective. The secondary objectives were as follows:

i. Conduct a literature study on the nature of theoretical systems and models.

ii. Perform a content analysis of definitions and models in order to identify the common components and behavioural principles characteristic of the South African labour relations system.

iii. Identify specific components and principles that should be represented and explained in theoretical models of the South African labour relations system.

iv. Use a panel to determine the validity of theoretical models.

v. Represent the South African labour relations system as a valid theoretical model and explain the components and processes that are related to the model.

vi. Propose related valid theoretical models that represent labour relations practice at three different levels.

2.2 STEP 2: Definition of the content domain and identify research material

2.2.1 Defining a content domain

Content domains exist in a larger content universe. Content domains must firstly be identified before the steps to determine content or construct reliability and validity can be applied. This entails the definition of a content domain, such as a specific element of a definition or a homogenous category in a model as an identifiable segment of a domain universe about which judgements are to be made, eg. theoretical models or definitions (Lawshe, 1975: 566-568).

2.2.2 Identification of research material

Research material was selected in accordance with the following criteria:

- As many as possible definitions of labour relations were identified. These definitions are not limited to any time period.
- As many as possible theoretical models of the South African labour relations system were identified.
- Theoretical models should be widely used for purposes of training labour relations practitioners at tertiary institutions or reputable institutions of higher learning in South Africa.
- Selected research material should contain a diagram of a theoretical model and a discussion of the principles on which the model was founded.
- Theoretical models must have been published between January 1996 and January 2002. Only this time period is relevant because of the following:

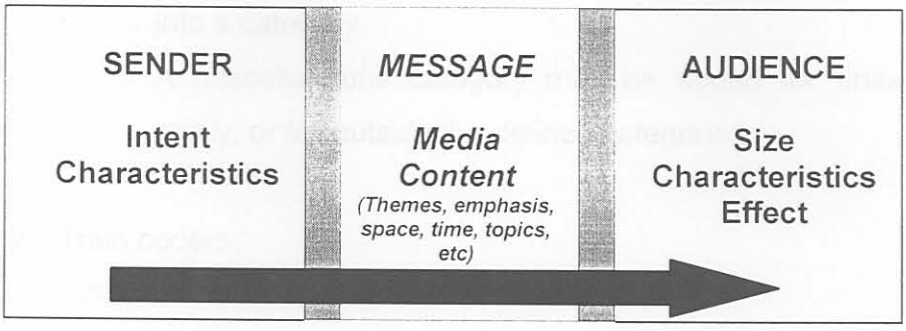
    - The newly elected ANC government commenced with the re-structuring of labour relations in SA during 1995 with the introduction of a new Labour Relations Act.

- Several other laws regulating basic employment conditions, training and employment equity was introduced in this period.
- All workers in South Africa were granted protection of their Constitutional labour rights.
- Dramatic efforts to implement rapid affirmative action and to redress past inequities were made.
- A government that was more tolerant and even sympathetic toward trade unions was in power during this period.
- South Africa re-entered the international labour fold.
- Diversity in the workplace was catapulted into the primary focal area of labour relations management in this period.
- The economic situation in South Africa deteriorated, causing renewed focus on co-operation between labour relations partners to improve social conditions through job creation.
- The CCMA and Labour Courts were introduced and a new approach to dispute resolution was subsequently taken by all participants.

2.3 STEP 3: Identify specific categories and analyse the content of research material in the domain universe

Holsti (1969:14) describes content analysis as any technique used for the purposes of making inferences by objectively and systematically identifying specific characteristics of messages. A message is the central component in communications. The way in which a message is conveyed and received will have an effect on the effectiveness of the communication process. The following components of the communication process are important for the purposes of content analysis:

FIGURE 2-2: COMPONENTS OF THE COMMUNICATION PROCESS



Content analysis requires the systematical grouping of the content or information in communicated messages. Messages are then arranged in pre-identified categories, to enable their quantitative analysis (Mouton & Marais, 1992:67-69). Chadwick et al (1984:248-259) proposed that the following steps be followed in a content analysis procedure:

i. A specific proposal of the problem in the form of a systematic statement needs to be made.

ii. Sources of communications relevant to the research question need to be identified and located. The perimeter of the population or limits of a sample needs to be clearly defined, before selecting these sources.

iii. Selection of a unit, or units of analysis that are to be identified from the sources. A unit is a specified component of a message, that will be coded in the respective categories (eg: any reference to unions).

iv. Selection of the specific categories into which the units of analysis need to be coded (eg. input, output, transformation).

- Categories may take on the form of single words, sentences, paragraphs, scenes, ideas, concepts, themes or entire messages.
- Preliminary examinations will suggest appropriate units. Categories must be described in sufficient detail to ensure consistency.

- To avoid ambiguity categories must not have the same meaning.
- Categories must be exhaustive so that all units can be clustered into a category.
- A miscellaneous category may be added for units that occur rarely, or fall outside the defined categories.

v. Train coders.

vi. Evaluate reliability, where needed.

vii. Analysis of data and writing of report.

2.4 STEP 4: Determine the reliability coefficient for content domains

All tabulations and calculations related to this section were performed manually. The number of references per category can be used to determine a reliability coefficient (CR) for each individual category (CRC) and for the finalised procedure, model, test or format (CRM). Chadwick et al, (1984:250) are of the opinion that reliability will be acceptable at a level of 0.6 or above, with absolute reliability at a level of 1.0. They propose that the reliability of a content analysis can be simply computed by applying the following formula:

CRM = the mean of all RCs (or CRCs)

CR (Reliability Coefficient) = $\frac{\text{Number of units in category}}{\text{Total Number of units coded}}$

2.5 STEP 5: Develop a draft model

This involves the structuring of the categories with the highest content reliability into components that can be structured as a logical theoretical model. The model should meet the following requirements:

- Include all the most important components of the labour relations system that was identified in step 3.
- Represent a logical flow of interaction.
- Must be logically clustered into input , transformation and output sections.
- Illustrate through symbols when components are linked and interact.

2.6 STEP 6: Develop a questionnaire

The questionnaires used in this thesis have been included as Annexure A.

2.6.1 Guidelines on the development of questionnaires

Leedy and Ormrod (2001:202-204) proposed twelve guidelines for developing a questionnaire. These guidelines will improve the likelihood of co-operation and will ensure effective responses:

i. Keep it short. Questionnaires should be as brief as possible and solicit only information essential to the research project. Every item should be tested by two criteria:
   - What does the researcher intend to do with the requested information?
   - Is it absolutely essential to have the information to solve part of the research problem?

iii. Use clear, simple, unambiguous language. Write questions that communicate exactly what is expected. Avoid terms that the respondents may not understand, such as obscure words or technical jargon and words that do not have precise meanings, such as several and usually.

ii. Check for unwarranted assumptions that are implicit in questions.

iv. Word questions in ways that do not give clues about preferred or more desirable responses.

v. Check for consistency.

vi. Determine in advance how you will code the responses.

vii. Keep the respondent's task simple.

viii. Provide clear instructions.

ix. Give a rationale for any items with an ambiguous purpose.

x. Make the questionnaire attractive and professional looking.

xi. Conduct a pilot test.

xii. Scrutinize the almost-final product carefully to make sure it addresses the research needs.

Henerson et al (1987:57-82) described the following eight steps that should be followed in the development of an effective questionnaire:

i) Formulate specific objectives and determine which information must be gathered.

ii) Determine the format of the questionnaire. It must be decided whether open or closed questions will be used or a combination of the two. Multiple choice questions can also be used.

iii) Determine the frame of reference of the target group in terms of vocabulary they will understand, how well they are informed about the subject and specific prejudice they act on.

iv) Formulate the questions by identifying important areas and consider the solvency of each question thoroughly.

v) Develop a system upon which the data can be summarised so that the result can be considered in a meaningful perspective.

vi) Analyse each question individually to determine whether it is unambiguous and whether it measures what it is supposed to measure. The questions must be tested and reviewed if necessary.

vii) The final questionnaire can now be compiled. The questionnaire must be logic and easily comprehensible so that vagueness will not impair the outcome.

viii) The questionnaires are finally handed to the research group. It can either be distributed by their supervisors, or posted. The researcher must make sure that sufficient control measures exist.

2.6.2 Steps in the development of a questionnaire used to determine the content validity of a model

The questionnaire was developed and structured to guide and allow panelists to clearly indicate their judgements on the essentiality of the inclusion of different items in a model. Panelists were provided with a diagram of the model and brief information on the principles underlying the model. They were then instructed to consider each of a number of listed components of the proposed model and to select only one of three different responses which, in their opinion, best represents their own judgement regarding each of the respective components. They were then requested to write the corresponding code in the spaces provided next to each item under the "Judgement" block (Lawshe,1975:566-568). The different responses and codes were:

E - Essential
U - Useful but not essential
N - Not necessary

For example: How important is the inclusion of each of the following components in a labour relations policy?

COMPONENT	JUDGEMENT
1. Collective bargaining	E or U or N
2. Discipline	E or U or N
3. Industrial action	E or U or N

2.6.3 Development of questionnaires to determine the relevance and validity of model components for general levels of labour relations practice

The determination of the relevance and validity of the different components of a labour relations model at three general levels of labour relations practice, is deemed important, since it will assist in the establishment of reliable foundations for developing and facilitating aligned skills development interventions in compliance with training legislation. The following procedure was applied in developing questionnaires for this purpose:

The initial content analysis of definitions and models provided clarity on common components deemed representative of current structures and practice in the South African labour relations system. These components were subsequently listed in four separate tables. The headings were "input", "output", "individual transformation process" and "collective transformation process". Panelists were allowed to add additional themes or components they believed should have been included in the model. This could be done by writing the name of the new component in the spaces provided. Panelists were asked to indicate the essence of the additions in the same manner that was prescribed for the other components.

Panelists were then requested to consider the essence of each labour relations theme as listed in the respective tables and to decide if knowledge and skills of the respective theme or components were absolutely essential, essential, necessary but not essential or unnecessary at three general levels of labour relations practice in South Africa. The Lawshe scale was again used to represent the respective judgments, although a fourth category representing "absolutely essential" was added to allow panelists to indicate their judgments on the nature of the essentiality of the respective components. The categories were:

3 - Absolutely essential (specialist knowledge, insight and/or skills related to the component is an absolute requirement).

2 - Essential (thorough knowledge, insight and/or skills related to the component is an important requirement).

1 - Necessary but not essential (background information on the component will be adequate).

0 - Unnecessary (knowledge, insight and/or skills related to the component will normally not be required at this level).

Panelists were requested to make judgements regarding the inclusion of the listed themes for the following three levels of labour relations practice:

1. Introductory: Introductory practice can be defined as the activities that are typically performed by shop stewards, supervisors and junior labour relations officers.

2. Advanced: Advanced practice can be defined as the activities that are typically performed by union organisers, labour relations officers and line managers.

3. Specialist: Specialist practice can be defined as the activities that are typically performed by senior union officials, labour relations managers, influential leaders and decision-makers in industry and the union movement, labour consultants and senior and government officials.

2.7 STEP 7: Identify experts willing to act as panelists to validate the model and practice frameworks.

A content evaluation panel will normally comprise of experts in the field of the identified domains, or a domain universe in which the judgements are to be made. The panel was therefore selected in accordance with objective criteria dictated by the nature of and required outcomes of the research. Although the Lawshe Method of content validation only requires a minimum of four panelists, it was decided to include as many experts in the panel as practically possible. This further enhanced the value of the model by ensuring that it will be difficult to find many other researchers and practitioners with the credentials or authority to challenge the purported content validity of the model (Lawshe,1975: 566-568).

The specialist nature of the research necessitated that experts dedicate at least one hour to consider the model and complete the questionnaire. Due to practical difficulties in involving a large number of experts in a study of this nature, it was

decided that a minimum of ten, and a maximum of twenty expert panelists will be required to participate in the judging process.

A relatively small group of ten expert panelists needs to display a relatively high consensus on the validity of the model and their consensus needs to reflected in a CVR value higher than 0.62. This value could also be loosely related to the opinion of Chadwick et al (1984:250), who proposed that a reliability coefficient of 0.6 or above for a content analysis would be regarded as acceptable. The maximum of twenty panelists were decided on by doubling the minimum number of panelists, with a view to making provision for an eventuality where a number of panelists fail to complete or return questionnaires. The validity of the model could also be judged more effectively if more than ten panelists were to return questionnaires.

A total of twenty-five experts who represented management, trade unions, state departments, labour lawyers and the academic world were subsequently identified and telephonically invited to participate. Panelists were deemed to be experts for purposes of this research if they possessed at least a Masters degree, or equivalent, in Labour Relations or a closely related field. Prior learning was also recognised for purposes of determining the value of a qualification. An expert must have been been actively involved in labour relations related work in the period between 1993 and 2001 and preferably for longer than ten years in total. All panelists must also have been willing to dedicate approximately one hour of their free time to consider the model and complete the questionnaire. Of the twenty-five experts who were initially approached, twenty-one agreed to participate in the research. Fourteen experts returned a correctly completed questionnaire. This amounted to a return rate of sixty six percent. The panel had the following characteristics:

TABLE 2-3: COMPOSITION OF PANEL OF EXPERTS

CATEGORY	NUMBER	DOCTORATES	MASTERS OR EQUIVALENT	AVE YEARS EXPERIENCE
Academic	Four	Three	One	Fifteen
Labour Relations Management	Four	Nil	Four	Eighteen
Trade Unionists	Four	Nil	Four	Fourteen
Labour Law Specialists	Two	One	One	Fourteen
TOTAL	**Fourteen**	**Four**	**Ten**	**Ave =Fifteen**

2.8 STEP 8: Capture data and perform mathematical and statistical analysis.

The judgements of the respective panelists were captured on a personal computer. Microsoft Access and Microsoft Excel were used for this purpose. Statistical and mathematical calculations were performed on a personal computer using Microsoft Excel.

2.9 STEP 9: Determine content validity of model

2.9.1 Quantifying of consensus among panelists

The consensus among panelists on the necessity to include a specific component, can be quantified by determining the content validity ratio (CVR) (Lawshe,1975: 566-568). The following formula is used for this purpose:

$$CVR = \frac{n_e - n/2}{n/2}$$

n_e is the number of panelists indicating "essential".
(This variable may be replaced by another eg. "n_n = the number of panelists indicating unnecessary" or other variables under investigation.)

$n/2$ is the total number of panelists divided by two.

CVR is a direct linear transformation from the panelists saying "essential".

The utility of the CVR can be derived from the following characteristics:

- When fewer than half say "essential", the CVR is negative.
- When half say "essential" and half do not, The CVR is zero.
- When all say "essential", the CVR is computed to be 1.00. (It is adjusted to .99 for ease of manipulation.)
- When the number saying "essential" is more than half, but less than all, the CVR is somewhere between zero and 0.99.

2.9.2 Interpretation of the CVR value of judgements on components.

TABLE 2-4: MINIMUM VALUES OF CVR AND CVRt FOR DIFFERENT NUMBERS OF PANELISTS: ONE TAILED TEST, P = 0.05 (Lawshe,1975:568)

NUMBER OF PANELISTS	MINIMUM ACCEPTABLE CVR VALUE
5	0.99
6	0.99
7	0.99
8	0.75
9	0.78
10	0.62
11	0.59
12	0.56
13	0.54
14	0.51
15	0.49
20	0.42
25	0.37
30	0.33
35	0.31
40	0.29

The following assumptions can be made when interpreting the CVR according to Lawshe (1975:566-568):

i. When all panelists disagree on the essentiality of an item, it can be deducted that the item is not truly essential.

ii. When all panelists fully agree that an item is essential, they could either be all wrong or all right. Since they are viewed as experts, it must be concluded that all of them cannot be wrong and the item can be considered essential.

iii. In doubtful cases the following two assumptions, which are consistent with established psychophysical principles, can be made:

- Any item or performance which is perceived to be "essential" by more than half of the panelists, has some degree of content validity.

- The more panelists (beyond 50%) who perceive the item as "essential", the greater the extent or degree of its content validity.

iv. It might sometimes be necessary to weight the CVR computed for different items. Lawshe (1975:574) cautions that the rating concept, or weighting, is not compatible with the content validity analysis method as described above, since the rationale in the content validity method rests on both logical considerations and empirical evidence. Authors have identified several criteria that may be used to establish assigned to CVRs. Some of these criteria are: relevance, importance, usefulness and time spent.

2.9.3 Quantifying and interpretation of the content validity of the model

The Content validity index (CVI) is simply a mean of the CVR values of items retained in the validated procedure, model, test or format. It represents the commonality of judgements regarding the validity, or applicability, of the final procedure, model, test or format being researched. The overall content validity will be higher if the value of the CVI is closer to 0.99 and vice versa.

2.10 STEP 10: Review and discuss research findings on the validity of the model

For purposes of computing the mean for each model component or link, the following conversion was done for the values reflected in the questionnaire:

E - (representing essential) was replaced by 2
N - (representing necessary but not essential) was replaced by 1
U - (representing unnecessary) was replaced by 0

Only those components and links with CVR values and means meeting the minimum values were retained in the final model. In exceptional cases, other traditional item analysis methods could have been used to further select those rejected items that may be retained in the final format. A thorough motivation was provided whenever this occurred. The following criteria was applied in selecting components and links of the validated model of labour relations:

1. Accept unconditionally if CVR is equal to or larger than 0.51. This value applies to 14 panelists in accordance with Lawshe's table of CVR values reflected on page 35.

2. Accept if CVR is between 0 and 0.5 and the mean of judgments is higher than 1.5. A value of higher than 1.5 would indicate that the mean of judgements is closer to the value of "essential" judgements than to the value of "necessary" judgements. A CVR value of 0 indicates that the panel was undecided and that not less than fifty percent of the panel believed that the component or link is essential.

3. Reject if CVR is less than 0 and the mean is lower than 1.5. This means that it will be impossible to include any component that was not judged to be essential by at least half of the panel, or any component possessing a mean of judgements that is closer to "unnecessary" than to "essential."

2.11 STEP 11: Discuss research findings on the relevance and validity of model components at three general practice levels

The means and CVR values of the respective judgements were calculated and considered for each of the three general levels of labour relations practice. To ensure consistency and compliance with the Lawshe method for determining the CVR , it was decided to use the sum of "essential" judgements and "absolutely essential" judgements to represent the number of "essential" judgements for each respective component. The following criteria was applied in selecting the final components of each of the respective learning frameworks:

1. Accept theme unconditionally if CVR is equal to or larger than 0.51. This value applies to 14 panelists according to Lawshe's table.

2. Accept theme if CVR is between 0 and 0.51, and the mean of judgments is higher than 2. A value of 2 or higher would indicate that the mean of judgments is higher than 66 % of the maximum value of 3, and is therefor equal to or higher than the minimum value assigned to "essential" .

3. Reject theme if CVR is less than 0 and the mean is lower than 2. This ensures that components not judged as essential by at least half of the panelists, and components with mean values below 66%, will be excluded from a framework. The 66% value was chosen to correspond with the 60% level that was proposed as a minimum level for acceptable content reliability (Chadwick et al, 1984:250).

In exceptional cases, other traditional item analysis methods could have been used to further select those rejected items that may be retained in the final format. A thorough motivation was provided whenever this occurred.

2.12 STEP 12: Draw final conclusions and make recommendations.

Conclusions and recommendations were made in Chapter eight.

3. SUMMARY

This Chapter provided an overview of the steps applied in the conducting of research related to this thesis. The various theoretical foundations of the research procedure were described. The various statistical and mathematical formulas applied, were explained. More detailed discussions of findings and conclusions were included in later Chapters of this thesis.