

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

# **User Requirements Elicitation: Evaluating the Effectiveness of a Prompting Technique for a Human Resource Information System**

**A thesis presented in partial fulfilment of the requirements for the degree of**

**Master of Business Studies**

**in**

**Human Resource Management**

**at**

**Massey University, Turitea,  
Palmerston North,  
New Zealand.**

**Catherine Anne Snell-Siddle  
2002**

## **Abstract**

Eliciting user requirements is a vital part of the requirements determination phase of software development. The requirements determination process gathers, organises and documents the complete set of end user requirements. This process has been described as the most difficult activity of information systems development. This difficulty is further compounded by the problems encountered in communicating complex human resource information needs to systems analysts. There have been problems in the past where the implementation of a human resource information system (HRIS) has failed to meet an organisation's needs. The literature suggests that a lack of understanding between the information systems and human resource disciplines is one of the major impediments to HRIS reaching their full potential. Attempts to improve the communication between the human resource user and the system analyst will not only help to increase the effectiveness of the information system solution, but will ensure that the organisation's strategic objectives are matched with the human resource systems and applications that support them.

The purpose of this research was to compare the effectiveness of two prompting techniques when used in an interview setting to elicit user requirements for a HRIS. The task characteristics prompting technique used substantive and procedural prompts to overcome cognitive problems experienced by users. The syntactic prompting technique used the interrogatories questioning method which involved asking 'who', 'what', 'when', 'where', 'how', and 'why' questions. Prior to analysis, a set of generic requirements categories was used to code the user requirements elicited from each technique. The categories consisted of goal, process, task and information level requirements. The results showed that the task characteristics prompting technique was effective in eliciting a greater number of requirements than the syntactic technique, and particularly that the differences in requirements evoked were significant for the information level requirements. This research represents an effort to build on the empirical work completed by previous researchers and provides a basis for further research in prompting techniques for the elicitation of user requirements for information systems. Implications for practitioners are discussed and future research directions are recommended.

## **Acknowledgements**

This research has been made possible by the guidance and support provided by my academic supervisors: Barrie Humphreys and Mark Sullman. Thank you Barrie for your sustained encouragement and feedback over the past two years and also for the sound advice to write up each chapter as the research progressed. I would like to say thank you Mark, for your patience, and for giving so generously of your time.

The research could not have taken place were it not for the staff at UCOL agreeing to be part of the hypothetical study. My gratitude goes to Penny Hargreaves, the Human Resource Manager at UCOL for facilitating the process of gaining approval for the research to be conducted. I would also like to thank Nicky Gardner, Research Co-ordinator at UCOL for her support and encouragement throughout the research.

I am grateful for the academic dialogue and moral support provided by Helen Snell and for the assistance provided by Sarah Snell to master the intricacies and vagaries of Office XP. Also, Sarah, a big thank you for the help given with reliability testing.

Finally, my gratitude goes to my husband James who became a domestic God every weekend, to my children, Hannah and David for putting up with an absentee mother at times, and last but by no means least, to my mother, Anne, who has been a source of constant inspiration and motivation throughout my years of study.

# TABLE OF CONTENTS

Abstract.....	ii
Acknowledgements.....	iii
Table of Contents.....	iv
List of Tables .....	vii
 Chapter 1: Introduction.....	 1
1.1 Background.....	1
1.2 Research Design .....	2
1.3 Research Objectives.....	2
1.4 Hypotheses.....	3
1.5 Research Plan.....	4
1.6 Structure of the Research Report.....	4
 Chapter 2: Literature Review.....	 6
2.1 Introduction.....	6
2.2 Background.....	6
2.3 Definition of a Human Resource Information System .....	6
2.4 Historical Perspective - HRIS.....	7
2.5 Development of Human Resource Information Systems .....	9
2.6 Difficulties Encountered in Developing Information Systems.....	11
2.7 User Requirements Determination.....	12
2.8 Models for the Requirements Elicitation Task .....	14
2.9 Difficulties in Requirements Elicitation .....	14
2.10 Methods of Eliciting User Requirements.....	15
2.11 Prompting Techniques for the Elicitation of User Requirements.....	17
2.12 Summary.....	18
 Chapter 3: Methodology .....	 20
3.1 Introduction.....	20
3.2 Background to Case Study:.....	20
3.3 Sampling Method:.....	20
3.4 Experimental Groups:.....	21

3.5	Procedure .....	25
3.6	Methods of Analysis: .....	25
3.6.1	Coding Procedure .....	26
3.6.2	Measures .....	29
3.7	Ethical Considerations .....	30
3.7.1	Research Approval.....	30
3.7.2	Informed Consent .....	30
3.7.3	Anonymity and Confidentiality .....	30
3.8	Summary.....	30
Chapter 4: Results and Analysis .....		31
4.1	Introduction.....	31
4.2	Analysis of Prompts by Groups .....	31
4.3	Analysis of Quantity of Requirements Elicited .....	32
4.3.1	Breadth of Requirements Elicited.....	33
4.4	Analysis of Differing Category Usage.....	34
4.5	Summary.....	35
Chapter 5: Discussion .....		36
5.1	Introduction.....	36
5.2	Organisation and Coding of Requirements.....	36
5.3	Prompting Technique – Treatment Group .....	37
5.4	Prompting Technique – Control Group .....	40
5.5	Quantity of Requirements Elicited .....	41
5.6	Breadth of Requirements Elicited.....	43
5.7	Differing Category Usage.....	44
5.8	Limitations .....	45
5.9	Implications for Further Research .....	46
5.10	Implications for Practitioners.....	47
5.11	Summary.....	48
Chapter 6: Conclusions.....		49
6.1	Introduction.....	49
6.2	Summary of the Findings.....	49
6.2.1	Generic Requirement Categories .....	49

6.2.2	Prompting Technique – Treatment Group .....	49
6.2.3	Prompting Technique – Control Group .....	50
6.2.4	Quantity of Requirements Elicited .....	50
6.2.5	Breadth of Requirements Elicited.....	52
6.2.6	Differing Category Usage.....	52
6.3	Implications for Practice.....	53
6.4	Recommendations for Future Research Directions .....	55
References.....		57
Appendices.....		63
Appendix A: Requirements Elicitation Task Model.....		64
Appendix B: UCOL Application for Research Approval Form .....		65
Appendix C: Approval for UCOL to be used as a Hypothetical study.....		72
Appendix D: Email Invitation to Participate in Study.....		74
Appendix E: Information Sheet and Consent Form.....		75
Appendix F: Instructions for the Interview.....		77
Appendix G: Scenario for the Case Study.....		78
Appendix H: Parsed and Coded Responses.....		79

## List of Tables

<b>TABLE 1</b>	Treatment Group Questions .....	22
<b>TABLE 2</b>	Control Group Questions .....	24
<b>TABLE 3</b>	Sample Parsed and Coded Protocol .....	27
<b>TABLE 4</b>	Generic Requirements Categories .....	28
<b>TABLE 5</b>	Requirements Elicited From Prompts within the Treatment and Control Groups .....	31
<b>TABLE 6</b>	Quantity of Requirements Elicited .....	32
<b>TABLE 7</b>	Differences in the Number of Requirements Elicited From Each of the Categories .....	33
<b>TABLE 8</b>	Mean Number of Different Categories Utilised By Each Group .....	34
<b>TABLE 9</b>	Mann-Whitney U Test for Ranking Differences .....	34