BPR FOR TOTAL
WARRANTY RETURN MANAGEMENT:
FRAZIER (M) SDN. BHD.

A Master Project submitted to the Graduate School in partial
Fulfillment of the requirements for the degree
Master of Science (Information Technology)
Universiti Utara Malaysia

By
Ng Beng Hiang

© Ng Beng Hiang, 2001. All rights reserved
Sekolah Siswazah  
(Graduate School)  
Universiti Utara Malaysia  

PERAKUAN KERJA KERTAS PROJEK  
(Certification of Project Paper)  

Saya, yang bertandatangan, memperakukan bahawa  
(I, the undersigned, certify that)  

NG BENG HIANG  
calon untuk Ijazah  
(candidate for the degree of)  
Sarjana Sains (Teknologi Maklumat)  

telah mengemukakan kertas projek yang bertajuk  
(has presented his/her project paper of the following title)  

BPR OF TOTAL WARRANTY RETURN MANAGEMENT  

= FRAZIER (M) SDN. BHD.  

seperti yang tercatat di muka surat tajuk dan kulit kertas projek  
(as it appears on the title page and front cover of project paper)  

bahawa kertas projek tersebut boleh diterima dari segi bentuk serta kandungan,  
dan meliputi bidang ilmu dengan memuaskan.  
(that the project paper acceptable in form and content, and that a satisfactory  
knowledge of the field is covered by the project paper).  

Nama Penyelia  
(Name of Supervisor) : Prof. Madya Shahrum Hashim  

Tandatangan  
(Signature) :  

Tarikh  
(Date) : 8 - 10 - 2001
PERMISSION TO USE

In presenting this thesis in partial fulfillment of the requirements for a post graduate degree from the Universiti Utara Malaysia, I agree that the University Library may make it freely available for inspection. I further agree that permission for copying of this thesis in any manner, in whole or in part, for scholarly purposes may be granted by my supervisor or, in their absence, by the Dean of the Graduate School. It is understood that any copying or publication or use of this thesis or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my thesis.

Requests for permission to copy or to make other use of materials in this thesis, in whole or in part, should be addressed to:

Dean of Graduate School
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman
ABSTRAK

ABSTRACT

This is a case study project on the BPR for the Total Warranty Return Management at Frazier (M) Sdn Bhd. The BPR in this project is to reengineer the current process with the usage of information technology, and the Japanese Management system, 5S and Kanban. Information technology involved developing a database for data tracking. Yourdon’s Structured Methodology (YSM) has been used as main model structure of system analysis and design. Several system development tools are involved in the process of database development. An Inventory Control database has been created, to link all information together, that provide the date of receiving, RMA number (which is the lot number), AWB, HAWB, total cartons and the status for the whole RMA. The database can be use for receiving and planning area. The database did improve the efficiency and effectiveness of data and information handling. Through automation at certain area, it increased the productivity and fulfill customer requirements. While 5S and Kanban has given a good storage method and safety workplace. BPR is not just using the latest information technology to work on the old business systems. IT only plays the key role in reducing paper work, generating efficiency and accuracy. The support of top management is a key success factor of BPR.
ACKNOWLEDGEMENTS

This is specially dedicated to Prof Madya Shahrum Hashim, my supervisor for this project. Thanks for the help, advice, and guidance.

With this opportunity, I would like to thank Frazier (M) Sdn Bhd that allows this project to be carried out on at the plant. Sincere thanks dedicated to all staff of Frazier (M) Sdn Bhd. Thanks for providing the information.

Finally, thanks to my family member, especially my husband, who always support with a helping hand.
## TABLE OF CONTENT

Permission to Use .................................................. i  
Abstrak ....................................................................... ii  
Abstract ....................................................................... iii  
Acknowledgements ......................................................... iv  
Table of Content ........................................................... v  
List of Table ................................................................... viii  
List of Figures ............................................................... xi  
List short form .............................................................. xiii  

Chapter 1: Introduction .................................................. 1  
1.1 Company Profile ....................................................... 2  
1.1.1 Business and Operations ........................................... 3  
1.2 Current Process at Total Warranty Return Management ... 4  
1.2.1 Parts receiving and Verification Process ....................... 4  
1.2.2 RMA Key-in Process ............................................... 7  
1.2.3 Functional Test ..................................................... 9  
1.2.4 OEM RMA Request / In and Out of warranty Segregation 11  
1.3 Problem Statement ..................................................... 12  
1.4 Objective ............................................................... 15  
1.5 Scope of the Project ................................................... 16  
1.6 Significant of Output ................................................ 16  

Chapter 2: Literature Review ......................................... 17  
2.1 BPR ................................................................. 17
2.1.1 Case study for Wizdom Polska 18
2.1.2 Case study for Ford Motor Company 20
2.1.3 Case study for Mutual Benefit Life 20
2.1.4 Case study for Texas Instruments 21

2.2 5S 21

2.3 Kanban 22

Chapter 3: Methodology 24

3.1 Database 24
3.2 System Development 24
  3.2.1 YSM 25
  3.2.2 Normalization 25
  3.2.3 Entity Relationship Diagram (ERD) 27
  3.2.4 Data Flow Diagram (DFD) 28
  3.2.5 Frame Specification 29
  3.2.6 Microsoft Access 29

3.3 5S 30

3.4 Kanban 31

3.5 System Requirement 32

Chapter 4: FINDING 33

4.1 Data Flow Diagram (DFD) 33
  4.1.1 DFD for Existing System 33
  4.1.2 DFD for Inventory Control System 36

4.2 Entity Relationship Diagram (ERD) 38

4.3 Normalization 39
  4.3.1 Unnormalized form (UNF) 39
  4.3.2 First Normal Form (1NF) 40
  4.3.3 Second Normal Form (2NF) 41
  4.3.4 Third Normal Form (3NF) 42

4.4 Inventory Control Database 43
  4.4.1 Query Source code 45
4.4.2 GUI and navigation of Database

4.5 5S Implementation

4.6 Kanban

Chapter 5: CONCLUSION

5.1 Verification and segregation

5.2 Recommendation

Reference

Appendix

7.1 Frame specification for Entity

7.2 Frame specification for Attribute
LIST OF TABLE

Table 1.1 Business and Operations of Frazier (M) Sdn. Bhd. 3

Table 7.1 Frame specification for entity: Item_Attribute 72
Table 7.2 Frame specification for entity: Item_Event 72
Table 7.3 Frame specification for entity: Part_Attribute 73
Table 7.4 Frame specification for entity: OEM 73
Table 7.5 Frame specification for entity: Receiving 74
Table 7.6 Frame specification for entity: Incoming_DeliveryOrder 74
Table 7.7 Frame specification for entity: Outgoing_Shipment 75
Table 7.8 Frame specification for attribute: Item_ID 75
Table 7.9 Frame specification for attribute: IncomingRMA_Num 76
Table 7.10 Frame specification for attribute: Return_To 76
Table 7.11 Frame specification for attribute: ServiceOrder_Num 76
Table 7.12 Frame specification for attribute: ServiceTag_Num 77
Table 7.13 Frame specification for attribute: Serial_Num 77
Table 7.14 Frame specification for attribute: Part_Num 77
Table 7.15 Frame specification for attribute: ReplacementPart_Num 78
Table 7.16 Frame specification for attribute: LocalCurrPrice 78
Table 7.17 Frame specification for attribute: FailureReason 78
Table 7.18 Frame specification for attribute: ExtraInfo 79
Table 7.19 Frame specification for attribute: Verify 79
Table 7.20 Frame specification for attribute: Confirmation 79
Table 7.21 Frame specification for attribute: OEM_Name 80
Table 7.22 Frame specification for attribute: TestResult
Table 7.23 Frame specification for attribute: OutgoingRMA_Num
Table 7.24 Frame specification for attribute: Operation
Table 7.25 Frame specification for attribute: ProcessDate
Table 7.26 Frame specification for attribute: Item_ID
Table 7.27 Frame specification for attribute: Part_Num
Table 7.28 Frame specification for attribute: Commodity
Table 7.29 Frame specification for attribute: Description
Table 7.30 Frame specification for attribute: OEM_Name
Table 7.31 Frame specification for attribute: SR_ShipToAddress1
Table 7.32 Frame specification for attribute: SR_ShipToAddress2
Table 7.33 Frame specification for attribute: SR_ShipToAddress3
Table 7.34 Frame specification for attribute: SR_ShipToAddress4
Table 7.35 Frame specification for attribute: SR_ShipToAddress5
Table 7.36 Frame specification for attribute: SR_ContactPerson
Table 7.37 Frame specification for attribute: SR_Tel_Num
Table 7.38 Frame specification for attribute: SR_DeliveryTerm
Table 7.39 Frame specification for attribute: SR_GST
Table 7.40 Frame specification for attribute: SR_ShipVia
Table 7.41 Frame specification for attribute: SR_Requestor
Table 7.42 Frame specification for attribute: DeliveryOrder_Num
Table 7.43 Frame specification for attribute: DO_Issue_Date
Table 7.44 Frame specification for attribute: Received_Date
Table 7.45 Frame specification for attribute: DSP_MAWB_Num
Table 7.46 Frame specification for attribute: TotalReceived_Carton
<table>
<thead>
<tr>
<th>Table 7.47 Frame specification for attribute: TotalReceived_Qty</th>
<th>88</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 7.48 Frame specification for attribute: DSP_Name</td>
<td>89</td>
</tr>
<tr>
<td>Table 7.49 Frame specification for attribute: IncomingAmount</td>
<td>89</td>
</tr>
<tr>
<td>Table 7.50 Frame specification for attribute: IncomingForwarder_Name</td>
<td>89</td>
</tr>
<tr>
<td>Table 7.51 Frame specification for attribute: IncomingRMA_Num</td>
<td>90</td>
</tr>
<tr>
<td>Table 7.52 Frame specification for attribute: DeliveryOrder_Num</td>
<td>90</td>
</tr>
<tr>
<td>Table 7.53 Frame specification for attribute: Verification_Date</td>
<td>90</td>
</tr>
<tr>
<td>Table 7.54 Frame specification for attribute: Confirmation_Date</td>
<td>91</td>
</tr>
<tr>
<td>Table 7.55 Frame specification for attribute: OutgoingRMA_Num</td>
<td>91</td>
</tr>
<tr>
<td>Table 7.56 Frame specification for attribute: SR_Prepare_Date</td>
<td>91</td>
</tr>
<tr>
<td>Table 7.57 Frame specification for attribute: SR_OEMForwarder_Name</td>
<td>92</td>
</tr>
<tr>
<td>Table 7.58 Frame specification for attribute: SR_PurposeOfReturn</td>
<td>92</td>
</tr>
<tr>
<td>Table 7.59 Frame specification for attribute: OEM_MAWB_Num</td>
<td>92</td>
</tr>
<tr>
<td>Table 7.60 Frame specification for attribute: PerformaInvoice_Num</td>
<td>93</td>
</tr>
<tr>
<td>Table 7.61 Frame specification for attribute: TotalShipmentCarton</td>
<td>93</td>
</tr>
<tr>
<td>Table 7.62 Frame specification for attribute: OEM_HAWB_Num</td>
<td>93</td>
</tr>
<tr>
<td>Table 7.63 Frame specification for attribute: OEMFreightDetail</td>
<td>94</td>
</tr>
<tr>
<td>Table 7.64 Frame specification for attribute: Ex-PEN</td>
<td>94</td>
</tr>
<tr>
<td>Table 7.65 Frame specification for attribute: ShipmentTracking_Num</td>
<td>94</td>
</tr>
<tr>
<td>Table 7.66 Frame specification for attribute: Shipment_Date</td>
<td>95</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure 1.1 Current Process for Parts Receiving 4
Figure 1.2 Current Process for Verification Process 6
Figure 1.3 Current Process for Daily Received Confirmation Report generation 7
Figure 1.4 Current Process for functional test 9
Figure 1.5 OEM RMA Request and Warranty Segregation 11
Figure 3.1 Entity Relationship Diagrams (Smartdraw,2001) 28
Figure 4-1 DFD for existing system 34
Figure 4-2 Minispec for 4.0 Test and RMA Request Processing 35
Figure 4.3 DFD at the develop system 37
Figure 4.4 ERD for Total Warranty Return Management 38
Figure 4.5 Screen for the created table in the database. 44
Figure 4.6 Main switchboard 53
Figure 4.7 Menu of Item Event 54
Figure 4.8 Menu of Receiving 55
Figure 4.9 Menu of Verification 56
Figure 4.10 Menu of Test 57
Figure 4.11 Menu of Confirmation 58
Figure 4.12 Menu for RFM 59
Figure 4.13 Menu for RMA 60
Figure 4.14 Menu for SR 60
Figure 4.15 Menu for Outgoing Shipment 61
Figure 4.16 Menu for Item History 62
Figure 4.17 Menu for Item Attribute
Figure 4.18 Menu for Update OEM
Figure 4.19 Menu for Update Part
# LIST SHORT FORM

<table>
<thead>
<tr>
<th>Short from</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPR</td>
<td>Business Process Reengineering</td>
</tr>
<tr>
<td>TPR</td>
<td>Third Party Repairing</td>
</tr>
<tr>
<td>TPM</td>
<td>Third Party Maintenance</td>
</tr>
<tr>
<td>DellAP</td>
<td>Dell Asia Pacific Sdn.</td>
</tr>
<tr>
<td>Frazier(M)</td>
<td>Frazier (M) Sdn. Bhd.</td>
</tr>
<tr>
<td>DSP</td>
<td>Dell Service Provider</td>
</tr>
<tr>
<td>DRCR</td>
<td>Daily Received Conformation Report</td>
</tr>
<tr>
<td>RMA</td>
<td>Return Material Authorization</td>
</tr>
<tr>
<td>DO</td>
<td>Delivery Order</td>
</tr>
<tr>
<td>NFF</td>
<td>Non Fault Found</td>
</tr>
<tr>
<td>OEM</td>
<td>Original Equipment Manufacturer</td>
</tr>
<tr>
<td>SR</td>
<td>Shipment Requisition</td>
</tr>
<tr>
<td>ETA</td>
<td>Estimate Time Arrival</td>
</tr>
<tr>
<td>AWB</td>
<td>Air Way Bill</td>
</tr>
<tr>
<td>HAWB</td>
<td>House Air Way Bill</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION

Since the early 1960s, computers and information technology have changed the way firms do business and the way they compete strategically. Due to the nature of new business environment and advance in technology, the role of information technology in business process reengineering has been changed from passive tools to active and leading components. However, some operations at certain organization still use the traditional methods.

Those methods may be manual, time consuming, and low productivity, less efficiency and effective. Due to that, business process reengineering or redesign (BPR) is needed. Business process reengineering is not just for large organizations, but be applicable also to department and functional units using team-brainstorming techniques.

It is not just an assistant but a part of the process. In leading edge practice, information technology and BPR have a recursive relationship, in which they depend on and support each other. (Shrike, 2001).

A database is a collection of non-redundant data which can be shared by different application systems. It stresses the importance of multiple applications, data sharing and the spatial database has become a common resource for an agency (White, 2000).
The contents of the thesis is for internal user only
REFERENCE


