

# Implementation of CPFR Model in the Food Manufacturing Industry

Thesis Report of MS Supply Chain Management

**Supervisor: Dr. TashfeenMahmoodAzhar**

**Co- Supervisor: Asher Ramish**

**2014**

**Submitted by: Muhammad Asif**

**ID #: 12006087011**

**Edited by: Arsala Khan**

**School of Business and Economics**

**University of Management and Technology (UMT)**

**Lahore**

## **Abstract**

**Purpose** This study examines the collaborations by downstream and upstream partners of food companies supply chains. This research covers the implementation of CPFR model in food manufacturing. The idea behind this process is to make collaborative actions on all members of the supply chain to come up with a shared vision and objective. Based on the core concept of this process partners along the supply chain share information based on customer trends and needs to create a single forecast that is visualized at all times by its members to act accordingly to sudden changes in demand. In the literature discussed of collaborative supply chains to enhance the efficiency of supply chain management and alignment of supply chain partner. The implementation of CPFR enables the food manufacturer to tie up with its supply chain existing partners and potential partners as an entity toward the same objectives, and brings maximum benefits to each participant.

## **Design/methodology/approach**

This is a case based research. For the deep understanding of this phenomenon qualitative research was conducted. The second approach was to contact the companies involved in the research and use semi structure questionnaire to identify the relationship and the problems involved in their supply chain structure. Primary data was collected through semi structured interviews with supply chain managers, documentations and also made through direct observations in the focal firm. Interviews are conducted from 9 supply chain managers. Further for data analysis Flow Model is used and validity and reliability of the data improve the quality of this research.

## **Findings**

The supply chain management researches indicate integration/collaboration in the business process. Yet, despite positive attitudes towards collaborative planning, forecasting and replenishment (CPFR) and several pilot implementations undertaken in the beginning of the millennium, significant implementations of collaborative forecasting are still scarce. In this paper shows the high contribution of collaborative planning, forecasting and replenishment (CPFR) model in the food manufacturing industry such as accurate forecasting, reduce bullwhip effect by the collaboration of partners, to achieve the better visibility within

the supply chain. This research is focused at the implementation of SC strategy yet in the food industry not implemented the CPFR in their process. Finding tells us focal firm working at the VMI strategy and used forecasting technique for their internal process. Focal firm used CCM for communication with internal and external business process.

### **Practical implications**

This model is based on collaboration among the partners and some modification for the food industry in order to achieve great benefits in the supply chain. We draw upon finding and literature from both successful and less successful implementations to illustrate which factors contribute less successful implementation of CPFR model in the companies.

### **Originality/value**

This study aims to not only discover the gaps present in the food manufacturing supply chain performance measurement but endeavors to fill up the knowledge gap to suggest which business strategy is facilitating the development of food manufacturing supply chains and enhance efficiency of supply chain partners.

**Keywords:** Collaborative planning, forecasting, Collaborative replenishment, Case study.

## **Acknowledgement**

I would like to express my special appreciation and thanks to my Supervisor Professor Dr. Tashfeen Mehmood Azher, who have been a great mentor. I would like to thank him for encouraging my research and for allowing me to grow as a research scientist.

I would like to express the deepest appreciation to my Co-Supervisor Assistant Professor Asher Ramish, who has the attitude and the substance of a genius: he continually and convincingly conveyed a spirit of adventure in regard to research and scholarship. Without his guidance and persistent help this dissertation would not have been possible.

Furthermore I would also like to acknowledge with much appreciation the crucial role of the staff of focal company Mr. Aftab Malhi, Mr. Waqar Paracha and Mr. Tayyab, who gave the permission to use all required equipment and the necessary materials to complete the task.

A special thanks to my family members. Words cannot express how grateful I am to my mother and brother for all of the sacrifices that they have made for me. I would also like to thank all of my friends who supported me in writing and incited me to strive towards my goal.

Muhammad Asif.

## Revisions

<b>S#</b>	<b>Descriptions</b>	<b>Additions/Deleted</b>	<b>Page No.</b>
	Abstract (Purpose, Methodology, Finding etc)	Added	<b>v, v</b>
1	Chapter One Context	Added	1
2	Chapter Two Context	Added	8
3	Chapter three Context	Added	36
4	Questionnaire detail	Added	42
5	Strength of Interviewee	Added	42
6	Sample Selection	Added	44
7	Summary	Added	49
8	Chapter four Context	Added	52
9	Summary	Added	83
10	Chapter Five Context	Added	86
11	Summary	Added	108
12	Chapter Six Context	Added	109
13	In Nineties	Deleted	11
14	Origin of ECR, Core Element of ECR	Deleted	12
15	Front Edge, Management Sciences, VMI	Deleted	8-9-33
16	On the other hand (Methodology)	Deleted	43
17	Brand A, New Packaging, Brand A Product A, Gang Adventure and Winning with brand and innovations	Deleted	54-56
18	Food Company Sustainable living plan, Corporate Purpose	Deleted	56,57
19	Resilience and Continuity Planning Procedure, Scope of Procedure, In Collaboration, the Compass, Not In Scope	Deleted	60,61,62
20	Execution	Deleted	109

## Contents

Abstract.....	ii
Acknowledgement .....	iv
Revisions .....	v
Similarity Report .....	<b>Error! Bookmark not defined.</b>
Abbreviations:.....	xi
Chapter 1.....	<b>Error! Bookmark not defined.</b>
1.0 Introduction .....	<b>Error! Bookmark not defined.</b>
1.1 Potential Challenges .....	<b>Error! Bookmark not defined.</b>
1.2 CPFR Implementations and Achievements .....	<b>Error! Bookmark not defined.</b>
1.3 Barriers.....	<b>Error! Bookmark not defined.</b>
1.4 Objective and Research Understanding.....	<b>Error! Bookmark not defined.</b>
1.5 Research Questions .....	<b>Error! Bookmark not defined.</b>
1.6 Disposition of This Study.....	<b>Error! Bookmark not defined.</b>
1.6.1 Chapter 2: Literature Review .....	<b>Error! Bookmark not defined.</b>
1.6.2 Chapter 3: Methodology.....	<b>Error! Bookmark not defined.</b>
1.6.3 Chapter 4: Empirical Findings .....	<b>Error! Bookmark not defined.</b>
1.6.4 Chapter 5: Analysis of Data .....	<b>Error! Bookmark not defined.</b>
1.6.5 Chapter 6: Conclusion .....	<b>Error! Bookmark not defined.</b>
Chapter 2.....	<b>Error! Bookmark not defined.</b>
2.0 Literature Review .....	<b>Error! Bookmark not defined.</b>
2.1 Supply Chain Management .....	<b>Error! Bookmark not defined.</b>
2.2 What is CPFR? .....	<b>Error! Bookmark not defined.</b>
2.2.1 Collaborative Planning, Forecasting and Replenishment (CPFR):.	<b>Error! Bookmark not defined.</b>
2.3 History of CPFR.....	<b>Error! Bookmark not defined.</b>
2.4 Electronic Data interchange.....	<b>Error! Bookmark not defined.</b>
2.5 Vendor Managed Inventory.....	<b>Error! Bookmark not defined.</b>
2.6 Continuous Replenishment Program.....	<b>Error! Bookmark not defined.</b>
2.7 Efficient Consumer Response .....	<b>Error! Bookmark not defined.</b>

2.7.1 Definition of ECR .....	<b>Error! Bookmark not defined.</b>
2.8 How CPFR Differs from ECR .....	<b>Error! Bookmark not defined.</b>
2.9 CPFR Implementing Companies Worldwide .....	<b>Error! Bookmark not defined.</b>
2.10 CPFR Targets the Challenges.....	<b>Error! Bookmark not defined.</b>
2.11 Benefits of CPFR .....	<b>Error! Bookmark not defined.</b>
2.12 Collaboration .....	<b>Error! Bookmark not defined.</b>
2.13 Collaborative Planning.....	<b>Error! Bookmark not defined.</b>
2.14 Forecasting.....	<b>Error! Bookmark not defined.</b>
2.15 CPFR Process Model.....	<b>Error! Bookmark not defined.</b>
2.16 Problems of Implementing CPFR .....	<b>Error! Bookmark not defined.</b>
2.17 Replenishment .....	<b>Error! Bookmark not defined.</b>
2.18 Problems solved by CPFR in Europe.....	<b>Error! Bookmark not defined.</b>
2.19 Barriers of CPFR at Global Level.....	<b>Error! Bookmark not defined.</b>
2.20 Innovation in CPFR .....	<b>Error! Bookmark not defined.</b>
2.20.1 CPFR Innovation.....	<b>Error! Bookmark not defined.</b>
2.20.2 Stages of Collaboration .....	<b>Error! Bookmark not defined.</b>
2.21 CPFR Success Components .....	<b>Error! Bookmark not defined.</b>
2.22 Global Benefits through Successful Implementation of CPFR.....	<b>Error! Bookmark not defined.</b>
Chapter 3.....	<b>Error! Bookmark not defined.</b>
3.0 Methodology.....	<b>Error! Bookmark not defined.</b>
3.1 What is Research?.....	<b>Error! Bookmark not defined.</b>
3.2 Approach towards the Research Problem .....	<b>Error! Bookmark not defined.</b>
3.3 Interpretive View .....	<b>Error! Bookmark not defined.</b>
3.4 Research Strategy .....	<b>Error! Bookmark not defined.</b>
3.4.1 Resource of Data Collection in Research .....	<b>Error! Bookmark not defined.</b>
3.4.2 Data Collection.....	<b>Error! Bookmark not defined.</b>
3.5 Sample Selection.....	<b>Error! Bookmark not defined.</b>
3.6 Data Analysis.....	<b>Error! Bookmark not defined.</b>
3.7 Quality Standards.....	<b>Error! Bookmark not defined.</b>
3.8 Validity .....	<b>Error! Bookmark not defined.</b>
3.9 Reliability.....	<b>Error! Bookmark not defined.</b>
3.10 Summary .....	<b>Error! Bookmark not defined.</b>

3.11 Pilot Study .....	<b>Error! Bookmark not defined.</b>
Chapter 4.....	<b>Error! Bookmark not defined.</b>
4.0 Food Company .....	<b>Error! Bookmark not defined.</b>
4.1 History of Food Company .....	<b>Error! Bookmark not defined.</b>
4.2 Vision.....	<b>Error! Bookmark not defined.</b>
4.3 Business Review:.....	<b>Error! Bookmark not defined.</b>
4.3.1 Key Financial Indicator .....	<b>Error! Bookmark not defined.</b>
4.4.2 Key Non-Financial Indicators .....	<b>Error! Bookmark not defined.</b>
4.5 Key Business Milestone of Food Company.....	<b>Error! Bookmark not defined.</b>
4.6 Man Power Planning and Operational Process.....	<b>Error! Bookmark not defined.</b>
4.7 Supply Chain Collaboration Initiative by Food Company.....	<b>Error! Bookmark not defined.</b>
4.7.1 Tool Used for Information Sharing.....	<b>Error! Bookmark not defined.</b>
4.8 Business barometer (working name).....	<b>Error! Bookmark not defined.</b>
4.10 Food Company Communication Policy .....	<b>Error! Bookmark not defined.</b>
4.10.1 Policy Overview.....	<b>Error! Bookmark not defined.</b>
4.11 Forecasting of Food Company .....	<b>Error! Bookmark not defined.</b>
4.13.3 Business benefit .....	<b>Error! Bookmark not defined.</b>
4.16 Mission Purpose and Ambitions .....	<b>Error! Bookmark not defined.</b>
4.16.1 Mission.....	<b>Error! Bookmark not defined.</b>
4.16.2 Purpose .....	<b>Error! Bookmark not defined.</b>
4.16.3 Ambition.....	<b>Error! Bookmark not defined.</b>
4.17 Fundamental Role of Food Company .....	<b>Error! Bookmark not defined.</b>
4.17.1 Supply Chain Strategies Overview .....	<b>Error! Bookmark not defined.</b>
4.17.2 Supply Chain Operating Principles.....	<b>Error! Bookmark not defined.</b>
4.18 Collaboration with a Partners .....	<b>Error! Bookmark not defined.</b>
4.19 Results.....	<b>Error! Bookmark not defined.</b>
4.19.1 CPFR Addressing in Results .....	<b>Error! Bookmark not defined.</b>
4.19.2 Establish a Front-End Agreement .....	<b>Error! Bookmark not defined.</b>
4.19.3 Measuring Initiative's Success through Agreement with Business Partners...	<b>Error! Bookmark not defined.</b>
4.19.4 Roles and Responsibilities for CPFR Initiative .....	<b>Error! Bookmark not defined.</b>
4.19.5 Develop a Joint Business Plans among Organizations .....	<b>Error! Bookmark not defined.</b>

4.19.6 Generate a Sales Forecast Initiative.....	<b>Error! Bookmark not defined.</b>
4.19.7 Exception Item Generations and its Solutions.....	<b>Error! Bookmark not defined.</b>
4.19.8 Order Forecast Generation.....	<b>Error! Bookmark not defined.</b>
4.19.9 Generate Exception for Order Forecast and its Solutions.....	<b>Error! Bookmark not defined.</b>
4.19.10 Joint Order Replenishment Generations.....	<b>Error! Bookmark not defined.</b>
4.20HBM Oil and Ghee Mills.....	<b>Error! Bookmark not defined.</b>
4.20.1 Company Profile.....	<b>Error! Bookmark not defined.</b>
4.20.2 Company Vision.....	<b>Error! Bookmark not defined.</b>
4.20.3 Product and Packing.....	<b>Error! Bookmark not defined.</b>
4.20.4 Results.....	<b>Error! Bookmark not defined.</b>
4.21 Agrotech Limited.....	<b>Error! Bookmark not defined.</b>
4.21.1 Performance of Agrotech.....	<b>Error! Bookmark not defined.</b>
4.21.2 Performance.....	<b>Error! Bookmark not defined.</b>
4.21.3Results.....	<b>Error! Bookmark not defined.</b>
4.22 Perfect Foods Industries.....	<b>Error! Bookmark not defined.</b>
4.22.1 Company Profile.....	<b>Error! Bookmark not defined.</b>
4.22.2 Financial Report.....	<b>Error! Bookmark not defined.</b>
4.22.3 Results.....	<b>Error! Bookmark not defined.</b>
4.23 Summary.....	<b>Error! Bookmark not defined.</b>
Chapter 5.....	<b>Error! Bookmark not defined.</b>
5.0 Analysis of Empirical Findings.....	<b>Error! Bookmark not defined.</b>
5.1 Analysis.....	<b>Error! Bookmark not defined.</b>
5.1.1 Finding of Factors.....	<b>Error! Bookmark not defined.</b>
5.1.2 By Finding Collaboration with Customer.....	<b>Error! Bookmark not defined.</b>
5.2 Requirements of Implementation of CPFR.....	<b>Error! Bookmark not defined.</b>
5.2.1 Training and Education.....	<b>Error! Bookmark not defined.</b>
5.2.2 Preparing the Joint Business Plan.....	<b>Error! Bookmark not defined.</b>
5.2.3 Sales and Order Forecast Generation.....	<b>Error! Bookmark not defined.</b>
5.2.4 Execution of Shipments.....	<b>Error! Bookmark not defined.</b>
5.3 How to Take Initiative of CPFR.....	<b>Error! Bookmark not defined.</b>
5.4 Collaborative Tasks in Supply Chain Partners.....	<b>Error! Bookmark not defined.</b>
5.4.1 Strategy and Planning.....	<b>Error! Bookmark not defined.</b>

5.4.2 Demand and Supply Management Sales Forecasting.....	<b>Error! Bookmark not defined.</b>
5.4.3 Execution.....	<b>Error! Bookmark not defined.</b>
5.5 Discussion on CPFR Implementation .....	<b>Error! Bookmark not defined.</b>
5.5.1 Key Observations for CPFR Implementation.....	<b>Error! Bookmark not defined.</b>
5.6 Control on Barriers and Factors of Successful Implementation of CPFR.....	<b>Error! Bookmark not defined.</b>
<b>defined.</b>	
5.6.1 Trust between supply chain partners .....	<b>Error! Bookmark not defined.</b>
5.7 Theoretical Support of Implementation of CPFR.....	<b>Error! Bookmark not defined.</b>
5.8 Summary .....	<b>Error! Bookmark not defined.</b>
Chapter 6.....	<b>Error! Bookmark not defined.</b>
6.0 Conclusion.....	<b>Error! Bookmark not defined.</b>
6.1 Limitation and Future Research.....	<b>Error! Bookmark not defined.</b>
Chapter 7.....	<b>Error! Bookmark not defined.</b>
7.0 References .....	<b>Error! Bookmark not defined.</b>
Chapter 8.....	<b>Error! Bookmark not defined.</b>
8.0 Annex .....	<b>Error! Bookmark not defined.</b>
8.1 Interview questionnaire.....	<b>Error! Bookmark not defined.</b>
Chapter 9.....	<b>Error! Bookmark not defined.</b>
9.0 Appendix .....	<b>Error! Bookmark not defined.</b>
Appendix NO.1 Mission, Purpose and ambition.....	<b>Error! Bookmark not defined.</b>
Appendix NO. 2 Fundamental roles.....	<b>Error! Bookmark not defined.</b>
Appendix NO. 3 Supply Chain Strategies Overview.....	<b>Error! Bookmark not defined.</b>
Appendix NO. 4 SC strategies operating principles.....	<b>Error! Bookmark not defined.</b>
Appendix NO.5Supply chain collaboration initiative by Food Company....	<b>Error! Bookmark not defined.</b>
Appendix NO.6Tool used for information sharing .....	<b>Error! Bookmark not defined.</b>
Appendix NO.7 Forecasting.....	<b>Error! Bookmark not defined.</b>
Appendix NO.8 First interview of Food Company .....	<b>Error! Bookmark not defined.</b>
Appendix NO.9 2nd interview of Food Company.....	<b>Error! Bookmark not defined.</b>
Appendix NO.10. Third interview of Food Company.....	<b>Error! Bookmark not defined.</b>
Appendix NO 11. Interview description of Company 2 .....	<b>Error! Bookmark not defined.</b>
Appendix NO.12 Interview description of Company 2 .....	<b>Error! Bookmark not defined.</b>
Appendix NO.13 Interview description of company 3 .....	<b>Error! Bookmark not defined.</b>

Appendix NO.14 Interview description of company 3 .....	<b>Error! Bookmark not defined.</b>
Appendix NO.15 Interview description of company four.....	<b>Error! Bookmark not defined.</b>
Appendix no. 16 .....	<b>Error! Bookmark not defined.</b>
Appendix no.17 .....	<b>Error! Bookmark not defined.</b>

## **Abbreviations:**

ABC: Activity based costing  
 BPM: Business Process Management  
 CCM: Communication Channel Management  
 CEO: Chief Executive Officer  
 CFAR: Collaborative, Forecasting and replenishment  
 CPFR: Collaborative, Planning, forecasting and replenishment  
 CRM: Consumer relationship management  
 CRP: Continuous replenishment program  
 CSD: Customer Services Department  
 CL: Cost leadership  
 DC: Distribution Center  
 ECR: Efficient consumer response  
 EDI: Electronic data integration  
 ERP: Enterprise resource planning  
 FIFO: First in First out  
 FMCG: Fast moving consumer goods  
 HACCP: Hazard Analysis Critical Control Points  
 HR: Human resource  
 IBM: International Business Machines  
 IFS: International Foods Standard  
 ISO: International organization standard  
 IT: Information Technology  
 JIT: Just in Time  
 KPI: key performance indicator  
 MI: Management Information  
 MOQ: Minimum order quantity  
 MPPT: Manpower planning tool  
 MPS: Master production schedule  
 MRP: Material requirement planning  
 P&L: Profit and Loss  
 POS: Point of sale  
 PFI: Perfect Food Industry

PD: Product Development

ROI: Return on Investment

SAP: Systems Applications and Products in Data  
Processing

SC: Supply Chain

SKU: Stock Keeping Unit

SEDEX: Suppliers Ethical Data Exchange

SOA: Service Oriented Architecture

USA: United State of America

VICS: Voluntary inter-industry commerce standard

VMI: Vendor managed inventory

XML: extensible Markup language