

Technology and Operations Management Department

## 2003/2004 Senior Project Abstracts



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## **About Technology and Operations Management**

The Technology and Operations Management Department strives to provide an education to its students that will enable them to become successful managers in the business world. The department helps students develop competencies in critical thinking, technical applications, business integration, and communications skills.

To prepare students for managerial positions in the 21<sup>st</sup> century, the department focuses on the role of technology, and scientific management methods. Heavy emphasis is placed on the study and use of computer applications to help managers plan, analyze data, make decisions, and communicate.

An operations manager is responsible for planning, coordinating, and supervising the production and distribution of the goods and services of an organization. The students in this department obtain the knowledge and skills needed to manage and improve the productivity of business operations, and to continuously improve the quality of the services provided and goods produced.

The department prepares its graduates for careers managing service and manufacturing operations in small and large companies, national and international businesses, not-for-profit institutions, and government. It also gives students the necessary foundation for opening and managing their own business. Recent graduates have obtained positions in production control, logistics and supply chain management, management consulting, planning and scheduling, information systems, inventory and materials management, and corporate planning, to name a few.

Students of Technology and Operations Management are provided a broad background to the field, after which they choose to specialize in production operations management, service operations management, or the management of technology.

In June, 2003, the E-Business concentration was housed within the Technology and Operations Management Department. This will further expand the range of projects listed in this booklet, now and in the years to come.



## Forward

For readers unfamiliar with the field of technology and operations management, this abstract booklet provides the best description of what we do. In brief, the Technology and Operations Management (TOM) Department aims to prepare its students to be creative problem solvers. Our graduates have achieved success in a wide range of organizations. We try to provide them with the educational background and experience to examine business systems in order to improve productivity and profitability, and to improve the quality of goods and services.

The TOM Department values the senior project requirement as an important educational experience for its students. We are the only department in the College of Business Administration that requires all of its TOM graduates to complete an individual senior project. We have published this booklet of abstracts because we are proud of the accomplishments of our students. Due to the inclusion of the E-Business (EBZ) program within the TOM department, we are also including the abstracts of the team senior projects completed by the students in the EBZ concentration.

This booklet presents abstracts of the projects that have been completed or undertaken during the 2003/2004 academic year. We think it provides an excellent illustration of the range of work our graduates are capable of doing, from improving the process of making house-hold furniture to assessing customer satisfaction to implementing websites. Other projects included design, implementation, and assessment of an inventory control system, benchmarking an academic program, facility layout and design, analysis of alternative forecasting techniques, the impact of marketing strategies on sales, procedures manuals, supply chain management, reduction of cycle time, and process improvement.

To assist students with their senior project experience, the department requires students to take the course in Senior Project Design and Development before beginning a senior project. In this course, students learn how to identify a problem, determine the scope of work, and prepare a project proposal. Once they begin their senior project, students must attend the Senior Project Seminar course. Here they present oral and written status reports every five weeks on the progress of their projects, and discuss ways of overcoming problems they are experiencing. In this way, students not only receive help from fellow students, but they also learn from the projects done by other students. In addition, each student has a faculty advisor who provides one-on-one support on all aspects of their project, and who ultimately assigns a grade to the endeavor.

We are pleased to present the following abstracts, and we congratulate all of our students for their senior project accomplishments this year. We also thank the companies who have provided the projects and the environments that have enabled our students to gain the practical experience described by the abstracts in this booklet.

Ralph H. Miller, Editor  
Technology and Operations Management Department  
May, 2004



# Table of Contents

<b>About Technology and Operations Management</b>	<b>3</b>
<b>Forward</b>	<b>5</b>
<b>2003/2004 Senior Project Clients</b>	<b>17</b>
<b>Senior Projects Completed During 2003/2004</b>	<b>21</b>

Comparing and Contrasting WebCT Method with the Traditional  
Lecture/Discussion Method of Teaching Courses at Cal Poly Pomona  
Alamir Fahd Alsakka

ABC Classification Inventory Control System at Evolutionary Concepts Inc.  
Aida Barrios

Implementing an Inventory Management System at Bronco Copy N' Mail  
Brandon Bashaw

Sales Forecasting for VIP Luggage & Gifts  
Ritika Bharadwaj

Implementing and Evaluating a New Computerized Inventory Control Process  
to Improve Operations at the Jeweler's Touch  
Lacie Boggs

Measuring Employee Knowledge and Needs through a Survey at Target  
Jason Cawley

Inventory Database Implementation  
Prakash Chandran

A Study of Dysmetabolic Syndrome in Asian vs. Non-Asian Heart Patients  
for HeartCare  
Mei Ping J. Cheng

Process Optimization for XYZ Company using Computer Simulation  
Tyler Cockrell

Improving Inventory Accuracy at Compaq  
Ryan Coombs

Forecasting Business and Leisure Travel Sales at the Travel Store  
Christina Diep

A Comparison of Forecasting Techniques for Aames Financial Corporation  
Hai Dinh

Meeting TOM Student Demand by Implementing an Online Survey System  
Diana Gunawan

Implementing an ABC Classification System at Machine Parts & Supply  
Doug Hardeman

Inventory Control for Auto Parts at A.Q.D. International Incorporated  
Chih Wei Huang

Designing, Implementing, and Evaluating a Website to Introduce E-Business  
for Dasan International Corporation  
Sumina Hwang

Process Improvement Through Implementation of a Customer Tracking Computer  
Database at Quality Computer Solutions  
David Jaranilla

Proposed Inventory Management System for EDRO Specialty Steels, Inc.  
Craig Johnson

Measuring and Evaluating the Cost-Effectiveness of Advertising Techniques  
for the Institute of International Business Science (IIBS)  
Pinaz Kolahi

Database System at Xerxes for Gents  
Keith Lang

Comparison of DOS-based and Windows- and Internet-based Freight  
Forwarding Systems in Two Freight Forwarding Companies  
Yong S. Lee

Process Management and Improvement at United Parcel Service  
Smalls Sort Operation  
Steve Liao

Designing and Implementing a New Warehouse Layout for Dazz Motorsports  
Dannies Lie

Development and Implementation of an Inventory Aging System  
and Analysis of a Base Stock Policy for Company XYZ  
Chyan Ling

Forecasting Demand and Implementing an Inventory Control System  
for Citgo Products at Lubricating Specialties Company  
David Little

Strategic Positioning of the Technology and Operations Management Curriculum  
through Structural Analysis  
Nathan Liu

Implementing an Inventory Management System at Las Encinas Hospital  
Adriana Molina

Process Improvement: Quality of Service Survey for United Parcel Service  
Steven Moser

Forecasting Weekly Sales for Trader Joe's #112  
Shaun Murphy

Parking Satisfaction Survey at Cal Poly Pomona  
Jamie Ngo

Improving Profitability and Implementing a Product Traceability System  
at MD Plastics & Manufacturing  
Yeska Nieves

Forecasting Customer-Pay vs. Warranty-Pay Repair Orders  
for Longo Lexus Service Department  
Sophannarin Nou

Evaluating Guest Satisfaction at The West Side Diner  
Rachel Ann Olaes

Forecasting Monthly Sales for Oriental Foodbank Inc. using Microsoft Excel  
Calvin On

The Marketing Assistant's Procedure Manual  
Veronica Ontiveros

Client Information Web-Base System at G & P Funding Solutions  
Earl Peralta

A Study of PETCO Company's Inventory Carrying Costs  
Sam Poli

Quality Improvement at Office Depot Cross-Dock 3061  
William Quinn

Assessing Customer Satisfaction at Enfuse Web Design  
Angelina Rico

Forecasting Tinel Demand at Aerofit Products, Inc.  
Andre Soares

Creating and Implementing a Management Support System at Nur Huda Corp.  
Ronny Supardi

Improving Performance and Productivity of a Seaweed Supplier Company  
Anthonius Taher

CMC Army ROTC Customer Satisfaction Survey  
Aaron Takahashi

Forecasting Sales for the Music Recital Hall at Cal Poly Pomona  
Vivian Tong

Evaluating Internal Customer Satisfaction at Sears Customer Care Network  
Karen Vendiola

Implementation and Evaluation of an Integrated User-Friendly Inventory Control  
System at South China Seafood Company  
Budi Wibisono-Kwan

Stopwatch Time Study to Estimate Standard Time in Production Workflow  
of a Small Garment Factory  
Chatherin Wiguna



## Senior Projects In-Process as of May 2004

43

Designing, Implementing, and Evaluating a Website to Increase Gross Sales  
for E&A Engineers

Carlo Acabado

Comparing and Contrasting the WebCT Method with the Conventional  
Lecture/Discussion Method of Teaching Courses at Cal Poly Pomona

Alamir Fahd Alsakka

Implementation and Analysis of an EOQ/ROP Inventory Control System  
at Arribas Brothers, Inc.

Roy Arribas

Forecasting the Usage Demand for Cal Poly Pomona General Access  
Computer Laboratories

Piyananta Arsakati

Improving Tutor Scheduling at J's Tutoring Center

Iris Ayala

Evaluating Customer Satisfaction of Quality One Engineering

Richard Bartholomew

The Evaluation of an Employee Performance Appraisal Process

Jourdanne Cadavona

Successful Scheduling

Anthony M. Castaneda Jr.

Implementing and Evaluating Forecasting Models at USMac Corporation

Allen Chao

Master Production Schedule Effects at Nordwins Corporation

Nathan Che

Reducing Cycle Time and Determining Material Cost

Stella Cheung

Implementing Inventory Control of Cookie/Beverage at Mandisa, Inc.

Chia-Ling Chin

Customer Satisfaction at Direct Courier

Kalayaporn Chunekamrai

- Managing Manpower  
Leo Cornejo
- Developing and Evaluating an EOQ/ROP System for the Richwood Furniture Company  
Daniel Ding
- Manpower Scheduling Using Linear Programming  
Thomas M. Eavenson
- Reducing Problems at a Technology Support Center  
Javier Escalante
- Design, Implementation, and Evaluation of a Database System at an Auto Repair Shop  
Ivan P. Granda
- Inventory Control for the CPF Company  
Jonathan D. Hartendorp
- Forecasting Monthly Sales for Ray's Trashbox Service  
Jeff Sung Hearn
- Evaluate and Determine Best Forecasting Model for Ready Pac Produce  
Alex Herrera
- Forecasting Monthly Gross Sales for Inpovita Dharma Industri  
Fenny Irawan
- Design and Implementation of a Database System for RHP Holdings, Inc.  
Murray Irvin
- Distribution and Material Handling Improvement at Trader Joe's., Inc.  
Zareh Kadkodazadeh
- Forecasting Sales for a Carl Karcher Franchise  
Kris Kohagura
- Evaluating the Idea of Computer-Mediated Communication Courses for the TOM Department at Cal Poly Pomona  
Ryan Kuang
- Evaluating Customer Satisfaction of On-Campus Activities  
Milton Kyu

Analyzing the Effectiveness of a Performance Evaluation Measurement System  
Mia Liezel Lao

Instructional Program Placement and English Acquisition Rates at El Rancho  
Unified School District  
Jesus Lara

Creating and Implementing an ABC Inventory Control System for Prieto Sports  
Brian Lau

Design, Development, Implementation, and Assessment of a Standard Operating  
Procedures Manual  
Christopher LeBreton

Database System Design and Implementation for a Construction Management Firm  
Nhut Le

Implementation and Analysis of Forecasting Techniques at Pizza Hut  
Anton Leonardi

Developing, Implementing and Evaluating a Database System  
to Improve Efficiency at ABC Company  
Kelly Leung

Process and Cost Improvements Through Analysis of Manufacturing Variances  
Armando E. Lopez

Reducing Inventory Cost for LVR Media  
Siu-Kei Lui

Analyzing and Benchmarking the Purchasing Strategy and Inventory  
Replenishment Program at Allstar Fire Equipment  
Lorena C. Martin

Creating, Implementing, and Evaluating an Electronic Database System  
at Delphi Connection Systems  
Nelson Ngamsuntikal

Improving Customer Service for Castle Carwash by Analyzing Waiting Time  
and Service Rate  
Nguyen Ngo

Forecasting Monthly Sales for Jade Inn  
Vay Ngo

Evaluating Retail Customer Satisfaction for Citiwear  
Lisa Uyen Nguyen

Mailing List Coupon Program at Yano's Automotive Repair Shop  
Tony Nguyen

Analyzing Data for an Empirical Study of Learning Styles Among Students  
Tracy Nguyen

Analyzing and Evaluating the Trend of Paper vs. Electronic Data Interchange  
for the Financial Aid Office at Citrus College  
Brandon Ong

Customer Satisfaction at Apple Wireless  
Allen Roman

Assessing the Level of Customer Satisfaction for Coffeerocket.com  
Sean Shan

Evaluating Customer Satisfaction Levels at Sears Product Repair Services  
Brian Stegner

Surveying Consumers to Help Design and Implement a Website,  
and Evaluating the Customer Satisfaction Generated for EZ DVD  
Emmanuel Sunarjadi

Customer Satisfaction at Crafts By Jean  
Joseph Tablante

Evaluating Customer Satisfaction for the RMA Department at Avus Systems  
Dennis Tang

Customer Satisfaction of a Photocopy Center at Norris Medical Library  
Wayne Tang

Inventory Database Implementation  
Liem Tong

Implementing and Evaluating Forecasting Techniques  
for the United Business Student Senate  
Wanly Tran

<p>Patient Satisfaction Survey at the Diabetes Education Program of Citrus Valley Health Partners Thomas Vago</p> <p>Measuring Employee Satisfaction at the Blue Bayou Restaurant Renzo Vergara</p> <p>Benchmarking the TOM Curriculum at Cal Poly Pomona Kevin Yanagi</p>	
<b>E-Business Team Projects</b>	<b>67</b>
<p>CEIS Online Advisement Survey Ching King Cheung Wing Shan Sin Shu Ying Chang Hung Ma</p> <p>Job Activity Management Information Network (JAMIN) for Southern California Edison Company Dinh Ly Vu Vo Agnes Chen Jace Phommasack Triharini Sugiarto</p> <p>Southern California Water Company Customer Service Site Project Carl Chang Jimmy Wu Bill Nguyen Ann Chantakasem</p>	
<b>TOM Department Industry Advisory Board Members</b>	<b>69</b>
<b>TOM Department Faculty Members</b>	<b>71</b>
<b>E-Business Department Faculty Members</b>	<b>73</b>
<b>TOM Department Adjunct Faculty Members</b>	<b>75</b>

## 2003/2004 Senior Project Clients

The following companies are the clients of the senior projects described in this abstract booklet. These companies have graciously provided a laboratory for students of the Technology and Operations Management Department. Staff at these companies have given considerable time and advice in helping our students complete their projects. The cooperation provided by these companies and their staffs has greatly enhanced the education of our students. The Technology and Operations Management Department at California State Polytechnic University, Pomona, thanks each of them for their support of our senior project program.

Aames Financial Corporation

Aerofit Products Inc.

Allstar Fire Equipment, Inc.

Apple Wireless

A.Q.D. International Incorporated

Arribas Brothers, Inc.

Avus Systems

Bank of America

Blue Bayou Restaurant

CPF Company

Castle Carwash

Center For Advanced Computer  
Technology, Cal Poly Pomona

Crafts By Jean

Citiwear

Citrus Valley Health Partners

Coffeerocket.com

College of Business Administration,  
Cal Poly Pomona

Connor Manufacturing Services

Compaq Computer Corporation

Dasan International Corporation

Delphi Connection Systems

Delcon Line, Incorporated

Direct Courier

Douglas Autobody

Dazz Motorsports

E & A Engineers

EDRO Specialty Steels

Edwards Cinemas Corporation

El Rancho Unified School District

Enfuse Web Design

Evolutionary Concepts, Inc.

EZ DVD

EZ Gain Company	Lubricating Specialties Company
F and M Repair Shop	LVR Media
Fer Collection	Machine Parts and Supply, Inc.
Financial Aid Office, Citrus College	Mandisa, Inc.
G & P Funding Solutions	Mathematics Department, Cal Poly Pomona
General Access Computer Laboratories, Cal Poly Pomona	MD Plastics & Manufacturing
H & R Block Company	Mindrum Precision, Inc.
HeartCare, Inc.	Modernization Furniture Direct
Hirsch Electronics	Nordwins Corporation
Hot Topic, Inc.	Norris Medical Library
Inpovita Dharma Industri	Nur Huda Corporation
Institute of International Business Science	Office Depot
In-Dan-Out Water and Ice Company	Oriental Foodbank Inc.
Instructional & Informational Technology - WebCT Program, Cal Poly Pomona	Parking and Transportation Services, Cal Poly Pomona
Jade Inn	Petco
JGM Systems	Pioneer Electronics
Jeweler's Touch	Pizza Hut
J's Tutoring Center	Prieto Sports
Las Encinas Hospital	Quality Computer Solutions, Inc.
Longo Lexus	Quality One Engineering Inc.
Lowe's Home Improvement Warehouse	Racerwheel Corporation

Ray's Trashbox Service	Trader Joe's, Inc.
Ready-Pac Produce Corporation	Travel Store, Inc.
Regal Entertainment Group	USMac Corporation
RHP Holdings, Inc.	United Business Student Senate, Cal Poly Pomona
Richwood Furniture Company	United Parcel Service
Sears Customer Care Network	United States Army
Sears Product Repair Services	University Housing Services, Cal Poly Pomona
South China Seafood Company	VIP Luggage & Gifts
Sumber Rejeki	V. N. A. I. S.
Target Stores	West Coast Escrow
TDC International Express	West Side Diner
Technology and Operations Management Department, Cal Poly Pomona	Xerxes for Gents
Tokyo Educational Institute	Yano's Automotive Repair Shop

## E-Business Team Project Clients

College of Education and Integrative Studies

Southern California Edison Company

Southern California Water Company



## **Senior Projects Completed During 2003/2004**

*Comparing and Contrasting WebCT Method with the Traditional Lecture/Discussion Method of Teaching Courses at Cal Poly Pomona*

by

**Alamir Fahd Alsakka**

Advisor: Dr. Henry Co

WebCT as an educational tool is increasingly being implemented world-wide. Research was necessary to understand if WebCT was perceived as helpful and a benefit to the ultimate user, the student. This study tested whether WebCT facilitated interaction between faculty and students, and among students themselves. The study also sought to find if WebCT was perceived to enhance the learning experience, with learning becoming easier and quicker when compared to the traditional courses. A survey tested this, and was available online during December 2003 for student feedback. The survey received responses from 306 individuals; however only 296 were used for the purpose of this study. The survey consisted of open-ended questions, and closed-ended questions that had answers on a 6-point Likert scale. Through close-ended questions, WebCT was perceived and valued as an additional communication medium; however, the students did not perceive WebCT as a tool that enhanced the learning experience to learn course work and material faster and easier. In open-ended questions, WebCT was revealed as a tool that made the student's life easier, and made homework submission and lectures more convenient due to the borderless locations and long time frames to complete assignments online. The researcher recommended that WebCT be used as a supplemental tool rather than a replacement for class instruction. The professor needs to obtain the necessary skills to fully utilize the system's resources, and to encourage the students to use the system's resources as well. WebCT should also be updated more often in order to improve system performance; however, future investigation is needed to test if the perceptions of WebCT presented here are accurate.

*ABC Classification Inventory Control System at Evolutionary Concepts Inc.*  
**by**

**Aida Barrios**

Advisor: Dr. Kazem Darbandi

The purpose of this project was to reduce inventory costs by implementing an ABC Classification System at Evolutionary Concepts, Inc. (E.C.I.). The company has been struggling with ever-increasing inventory costs and inventory depletions. The researcher classified all components according to the three different categories as prescribed by the ABC System. This was accomplished by acquiring information from E.C.I. history archives, and with the use of the Microsoft Excel software. Spreadsheets were created that allowed the researcher to gather critical information so as to produce the three categories. Once the categories were formed, each category was evaluated with consideration for all critical aspects including, but not limited to, cost, lead-time, obsolescence, availability, and substitutability, while retaining the principle of simplicity. The creation and implementation of the ABC System had overall positive results. E.C.I. had found that in the first three months of its implementation there was a decreasing trend per category in inventory costs and inventory levels, showing a 30% to 45% decrease in inventory cost even with 30% to 45% increase in sales. By keeping a close watch on inventories and using EOQ, the levels of inventory as well as cost will keep decreasing until they reach a desired level.

*Implementing an Inventory Management System at Bronco Copy N' Mail*  
**by**

**Brandon Bashaw**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to prevent overstocking and stock-outs at Bronco Copy N' Mail by implementing an inventory control and monitoring system for the inventory levels of the 60+ different types of paper. Bronco Copy N' Mail is the copy center for the Cal Poly Pomona University campus. The first step was to develop a method by which sales data of these types of paper can be gathered, organized, and analyzed. The next step was to develop and implement an inventory classification system to differentiate, classify, and prioritize the types of paper sold in groups of weight, type, and color. Then, the inventory levels were monitored to check the effectiveness of the implemented system. Significant reductions in overstocking levels and in the number of stockouts per month were achieved. The process of creating and implementing this system is the first step in the direction of a more professionally and efficiently run business. This project is important because it will help the copy center improve service to its customers.

*Forecasting Sales for VIP Luggage & Gifts*  
**by**  
**Ritika Bharadwaj**

Advisor: Dr. Henry Co

The purpose of this project is to determine the most accurate sales forecasting system for VIP Luggage & Gifts by implementing and evaluating four forecasting techniques. This was done by collecting historical information and applying the forecasting methods. The techniques of Level Model, Trend Model, Seasonal Model and Trend-Seasonal Model were performed. The MSE, MAD and Mean Error measurements were used to indicate which forecasting method is most accurate. Based on the results, the researcher made recommendations to the company, which should help provide better customer service, increase profits, and reduce waste on inventory.

*Implementing and Evaluating a New Computerized Inventory Control Process to Improve Operations at the Jeweler's Touch*  
**by**  
**Lacie Boggs**

Advisor: Dr. Rhonda Rhodes

The purpose of this project is to measure inventory records processing rate and sales records processing rate at the Jeweler's Touch by implementing and evaluating a new computerized inventory control process. Previously, the inventory records and sales records were computerized and processed manually. The data for this project were collected from company records before and after the implementation of the Abbott Jewelry System from October 2003 through April 2004. The data collected were inventory records processing rate, and sales records processing rate. These data were input into Excel spreadsheets and analyzed. The data were then compared using a two-sample t-test, which determined that implementing the new computerized inventory control process was successful.

*Measuring Employee Knowledge and Needs through a Survey at Target*

by  
**Jason Cawley**

Advisor: Dr. Ralph H. Miller

The purpose of this research is to determine the strengths and developmental needs in employees' knowledge by conducting an employee knowledge survey at the Chino Hills, California, Target store. The results indicated what portion of the employees understand the different functions within the store. Also, the analysis revealed how satisfied the employees are with working at Target. Based on the results, recommendations were made to Target's management about how knowledgeable the employees at Target are about their store. Additional training may be needed to address the areas where the employees seem to be having problems. Finally, employee dissatisfaction was investigated so that improvements can be made. Given the recommendations for improvement, Target management should be able to move the store closer to its goal of making sure that their employees have a complete knowledge of the store, and that working for Target is satisfying.

*Inventory Database Implementation*

by  
**Prakash Chandran**

Advisor: Dr. Rhonda Rhodes

The purpose of this project was to reduce the amount of time and money spent on inventory management between the UPS stores in Century City & Playa Del Rey by creating, implementing, and evaluating an inventory database system using MySQL that is accessible through a web browser using PHP as the scripting language. To determine if in fact the database implementation significantly reduced the amount of time & money being spent in the UPS store, the researcher gathered a month's worth of data from before and after the database was implemented. A two-sample t-test was then used to compare the before/after averages for both time and cost. After analysis of the data, the researcher concluded that the database has in fact reduced the amount of time and money spent on inventory management in both UPS stores.

*Comparing Asians and Non-Asians with Dysmetabolic Syndrome for HeartCare, Inc.*

by  
**Mei Ping J. Cheng**

Advisor: Dr. Kazem Darbandi

The purpose of this study is to determine whether Asians who have dysmetabolic syndrome are less obese than non-Asians who have dysmetabolic syndrome. Asians are known to be leaner than the people in western countries. As a result, Asians with dysmetabolic syndrome are less likely to be diagnosed. The study compared two ethnic groups, 73 Asian and 157 non-Asian patients, who have been diagnosed with dysmetabolic syndrome using a static group comparison design and a two-sample t-test. The data were collected from *Berkeley Heart Lab* and *Alteer Office* for HeartCare. The results showed indeed that Asians with dysmetabolic syndrome are less obese than non-Asians.

*Process Optimization for XYZ Company using Computer Simulation*

by  
**Tyler Cockrell**

Advisor: Dr. Rhonda Rhodes

The purpose of this project was to optimize the process cycle time at XYZ company by creating and evaluating processing alternatives using Arena software. XYZ Company is a relatively small company that has a grinding process, which includes three parts: preparation, queue, and grinding. These processes were observed and timed. A computer model was created using Arena Software. After the model was validated, three alternatives were tested in an attempt to optimize the process cycle time. The results found that the best way to optimize process cycle time was to maintain sharper blades. This is accomplished by increasing the sharpening schedule of the blades to every week. This allows for the ability to grind up more units per month, in turn increasing the facility's output.

*Improving Inventory Accuracy at Compaq*

by  
**Ryan Coombs**

Advisor: Dr. Ralph H. Miller

The purpose of this project was to determine the inventory accuracy level and determine the main causes of inventory inaccuracies at a Compaq Distribution Center. This was accomplished through purposive sampling of items over a period of eight weeks. Any inaccuracies were recorded and the likely causes of these inaccuracies were determined through a root cause analysis using a modified FMEA approach. The results were used to make suggestions for process improvements that will increase inventory accuracy levels, which will in turn lead to increased efficiency.

*Forecasting Business and Leisure Travel Sales at the Travel Store*

**by  
Christina Diep**

Advisor: Dr. Henry Co

The purpose of this project was to determine the most accurate forecasting method by collecting historical data and forecasting the monthly corporate and leisure travel sales at Travel Store, Inc. with the use of Winter's Model. The results were compared and conclusions were reached. Travel Store, Inc. is a full service travel agency that makes travel arrangements for corporate and leisure travelers. During the year, Travel Store experiences fluctuating changes between the two markets. Being able to forecast sales for both markets has improved the way they conduct business by understanding what areas to focus on at different times of the year.

*A Comparison of Forecasting Techniques for Aames Financial Corporation*

**by  
Hai Dinh**

Advisor: Dr. Henry Co

The purpose of this project was to determine the most accurate forecasting method of the monthly sales at Aames Financial Corporation by implementing and evaluating two forecasting methods: Winter's and XL-Forecast. In order to do the implementation, historical data were gathered and analyzed. The MSE was compared to determine which forecasting method is the most accurate. Based on the results, the researcher reached conclusions and made recommendations for the finance manager to better predict future sales. The forecast will allow the manager to provide better customer service, reduce waste, and increase profit.

*Meeting TOM Student Demand by Implementing An Online Survey System*

**by  
Diana Gunawan**

Advisor: Dr. Henry Co.

The purpose of this project was to meet student demand for TOM courses by implementing and evaluating an online survey system for the TOM department. The survey was implemented on a website so that it could be accessed by the student anytime and anywhere. The survey was implemented every quarter to gather what the student demand for the next 2 quarters would be. The accuracy of this survey system was improved through limiting students to take the survey only once to prevent repeated login. After the student took the survey, the researcher retrieved the data into a spreadsheet for analysis. The researcher wrote a report based on the analysis, including recommendations and conclusions. Although not purely accurate, the survey system will help the TOM department to offer TOM courses that meet student demand.

*Implementing an ABC Classification System at Machine Parts & Supply*

by

**Doug Hardeman**

Advisor: Dr. Ralph H. Miller

The purpose of this project was to control inventory more effectively at Machine Parts and Supply by creating, implementing, and evaluating an ABC classification system. Machine Parts and Supply is a worldwide distributor of hardware items. Once the ABC classifications were created and implemented in March of 2002, data were collected and measured accordingly from April until November of 2002. Month-to-month data were pulled from the company's database, and a query was used to import the data into Microsoft Excel for evaluation. Implementation of the new ABC classification was conducted in order to reduce the number of stockouts per month, decrease fill-rate costs per month at the store level, increase product usage value per month, and to reduce monthly finished goods inventory costs. The implementation to date has shown measurable improvements for all factors listed above. The project's success in satisfying the factors above has affirmed the importance of this project. Upper management agreed to a further implementation of products receiving a revised ABC classification. The project has provided a stepping-stone for an improved inventory control system at Machine Parts and Supply.

*Inventory Control for Auto Parts at A.Q.D. International Incorporated*

by

**Chih Wei Huang**

Advisor: Dr. Rhonda Rhodes

The purpose of this project was to reduce stockroom inventory costs by implementing and evaluating an ABC Inventory Control System at A.Q.D. International Incorporated. A.Q.D. International Incorporated has a big warehouse, located in Walnut, California. The data for this project were collected before the implementation of the ABC Inventory Control System from the company inventory records for a period of three months (from April to June, 2003). The data collected were stockroom inventory cost, inventory turnover ratio, annual cost of goods sold, average inventory investment, profits, holding cost, shortage cost, and excess cost. These data were input into Microsoft Excel Spreadsheets. Then, data for this project were collected after the implementation of the ABC Inventory Control System from the company inventory records for the following three months (from July to September 2003). These data were input into Microsoft Excel Spreadsheets. Stockroom inventory cost, inventory turnover ratio, annual cost of goods sold, average inventory investment (before vs. after), profits, holding cost, shortage cost, and excess cost were compared using two-sample t-tests. The result of the project showed that controlling Class A items reduced the stockroom inventory costs.

*Designing, Implementing, and Evaluating a Website to Introduce E-business  
for DASAN International Corporation*

**by  
Sumina Hwang**

Advisor: Dr. Jeffery L. Guyse

The purpose of this project is to introduce E-business by designing a website, implementing a web ordering system, and evaluating the results of the outcome for Dasan International Corporation. A one-group, pre-test and post-test design was used. First, an interview was conducted to gather performance specifications for the website from the client. Next, the website was designed and implemented with the help of a website consultant, Acro System company. Then, a second interview was held to evaluate the implementation of the website by comparing performance specifications to system performance. Additional interviews focussed on the outcome relative to the client's expectations of the website. After examining these results, the company and researcher discussed further developments and improvements for the website. The implemented website should help customers to communicate with the company.

*Process Improvement Through Implementation of a Customer Tracking Computer  
Database at Quality Computer Solutions*

**by  
David Jaranilla**

Advisor: Dr. Behrouz Aslani

The purpose of this project is to reduce the hard-copy paper costs and cycle time associated with the customer tracking process at Quality Computer Solutions in San Diego, California, by gathering and analyzing data on the current process and by creating, implementing, and evaluating a computer database using Microsoft Access. The researcher has observed the current customer tracking process and evaluated its efficiency through cycle time and cost analysis. From these data, the researcher has created a new computer-based customer tracking database which has been successfully implemented. A comparative analysis will need to be done on results prior to and after implementation of the new customer tracking database. It is expected that the cycle time and hard-copy paper costs associated with the customer tracking process will decrease after implementation of the new database.

*Proposed Inventory Management System for EDRO Specialty Steels, Inc.*

**by  
Craig Johnson**

Advisor: Dr. James Salvate

The purpose of this project to reduce Total Inventory Costs and increase Return on Investment in Inventory on the round bar product line at EDRO Specialty Steels by implementing an inventory control system which utilizes EOQ and ROP mechanisms. The research design was a one-group pretest-posttest. The researcher first gathered historical data from the previous year to show Monthly Inventory Carrying Cost, Monthly Inventory Ordering Cost, Monthly Inventory Purchase Cost, and Monthly Return on Investment in Inventory. The researcher also gathered two years of past quarterly sales data to develop a forecast, and then applied this forecast to the EOQ and ROP models to develop an inventory control system. This system was implemented and monitored by the researcher. The researcher gathered three months of new data showing Monthly Inventory Carrying Cost, Monthly Inventory Ordering Cost, Monthly Inventory Purchase Cost, and Monthly Return on Investment in Inventory. These data were compared to data from the previous year by using a two-sample t-test to determine the difference in Total Inventory Costs and Return on Investment in Inventory.

*Measuring and Evaluating the Cost-Effectiveness of Advertising Techniques for the Institute of International Business Science (IIBS)*

**by  
Pinaz Kolahi**

Advisor: Dr. Jeffery L. Guyse

The purpose of this project is to determine the cost effectiveness of three advertising techniques (direct mail, networking, and radio) used at the Institute of International Business Science (IIBS) by monitoring, comparing and contrasting their response rates over a period of two months. The company had no formal way of collecting data and keeping track of which advertising technique was most cost-effective. The researcher analyzed the data utilizing Excel spreadsheets. The data were presented graphically, and statistical applications were used to determine the cost effectiveness of direct mail, networking, and radio advertising mediums. Recommendations were made regarding which medium to use in the future to produce the best advertising plan for IIBS.

*Database System at Xerxes for Gents*  
**by**  
**Keith Lang**

Advisor: Dr. Rhonda Rhodes

The purpose of this project was to reduce customer information access time by creating, implementing, and evaluating a Microsoft Access database system at Xerxes for Gents. The methodology used to find the access time for the system was to use a stopwatch in order to time each one. The system that was created reduced the data access time from an average of 273 seconds down to fewer than 8 seconds. This has enabled the sales staff at Xerxes for Gents to spend their time helping customers instead of spending time looking up information on the customers. The expectation is that the new system will improve quality service substantially over the old system.

*Comparison of DOS-based and Windows- and Internet-based Freight Forwarding Systems in Two Freight Forwarding Companies*  
**by**  
**Yong S. Lee**

Advisor: Dr. Henry Co

The purpose of this project was to compare the current DOS-based freight forwarding system at TDC International Express to the Windows- and Internet-based freight forwarding system at Delcon Line, Incorporated. The researcher listed and evaluated the advantages and disadvantages of these two systems. The research is based on the researcher's hands-on experiences, and the outcomes of interviews with his supervisors at TDC International Express, and interviews at Delcon Line, Incorporated. Based on the findings, the researcher presented the benefits that Windows- and Internet-based freight forwarding systems offer. The researcher proposed recommendations to TDC International Express to up-date their system to a Windows- and Internet-based system.

*Process Management and Improvement at United Parcel Service Smalls Sort Operation*  
**by**  
**Steve Liao**

Advisor: Dr. Jeffery L. Guyse

The purpose of this project is to improve the productivity and the percentage of smalls containerized rate by implementing process management and improvement techniques for the smalls sort operation at UPS' Main St. Hub. An improvement of workflow process determines if significant improvements take place by comparing pretest/posttest data. Statistical analysis was used to compare the before and after data collected on Pieces Per Hour (PPH) and the percentage of smalls containerized. Summary findings indicated significant improvements on both metrics.

*Designing and Implementing a New Warehouse Layout for Dazz Motorsports*

by  
**Dannies Lie**

Advisor: Dr. Ralph H. Miller

The purpose of this project was to reduce inventory access time and product delivery time by designing a new warehouse layout for Dazz motorsports located in Glendale, California, according to an ABC inventory classification system. The researcher gathered all inventory cost data and products sold for the past two years (2001 and 2002) from Dazz's database. After baseline data collection, the researcher designed and implemented the ABC system for two aisles of racks which differentiated, classified, and prioritized products into groups of A, B, C as a trial test of the system. The researcher measured inventory access time and product delivery time of the A, B, and C product classes. Based on the findings, a new warehouse layout was designed. Data from before and after implementation were analyzed using Statistix software. Inventory access time decreased significantly for all three classes of items: Class A, 21.5 seconds (55% decrease); Class B, 9.3 seconds (21% decrease); Class C, 24.5 seconds (51% decrease). Product delivery time also decreased significantly for all three classes of items; Class A, 35.3 seconds (51% decrease); Class B, 11.7 seconds (19% decrease); Class C, 25.8 seconds (60% decrease). It was recommended that the ABC classification system be implemented throughout the warehouse to effect significant manpower cost savings through more efficient use of personnel and warehouse space.

*Development and Implementation of an Inventory Aging System  
and Analysis of a Base Stock Policy for Company XYZ*

by  
**Chyan Ling**

Advisor: Dr. Henry Co.

The purpose of this project was to reduce overstocking and stock-outs at Company XYZ by developing a system for the aging reports of over 100 items in inventory. Company XYZ is a distributor of vegetarian food in the United States. The first subproblem was to gather inventory aging data for the past 2 years from company files. The second subproblem is to develop and implement a system for tracking and measuring the velocity of slow moving items. The third subproblem is to sort out the most popular items in inventory and analyze the base stock policy for these items. The results indicated that 3 of the slowest moving items are product#20006(Black Pepper Ham) with an average time-in-shelf of 8.33, #20014 (New Nap Smoked Ham) with an average time-in-shelf of 5.33, and #20112 (Tuna Fish) with an average time-in-shelf of 5.00. The Base Stock of item #W97325 (Grillers) are 1082.90; this number represents the optimal base stock for product #W97325.

*Forecasting Demand and Implementing an Inventory Control System for Citgo Products at Lubricating Specialties Company*

**by  
David Little**

Advisor: Dr. Rhonda Rhodes

The purpose of this project was to forecast monthly demand, and reduce total monthly inventory cost, for Citgo products produced at Lubricating Specialties Company in Pico Rivera, California, by implementing three forecasting models (Moving Average, Exponential Smoothing, & Seasonal Smoothing) and evaluating them with MSE, MAD and MAPE. The most accurate forecast of the models tested was used to implement an EOQ/ROP inventory control system. Total monthly inventory cost was measured before and after the implementation of the inventory control system, and then compared using a two-sample t-test analysis to determine if any significant changes occurred. The data were determined to have a seasonal trend, with the period from April to November being the peak season. The Winter's Model forecast, which accounts for trends and seasonality was determined to be the most accurate forecast method and thus was used to predict demand for the coming year. EOQ and ROP points were developed and implemented, and total inventory cost calculated before and after; however, no significant change occurred as indicated by t-test statistical analysis.

*Strategic Positioning of the Technology and Operations Management Curriculum through Structural Analysis*

**by  
Nathan Liu**

Advisor: Dr. John Knox

The purpose of this project was to strategically position California State Polytechnic University, Pomona's Technology and Operations Management program through a structural analysis of its own program, and a comparison against other California State Universities' Operations Management programs. The project was largely divided into two parts; first, the researcher gathered information and developed blueprints of competing CSU schools. Second, using the blueprints, the researcher plotted the results on a Shostack model, showing the divergence and complexity of each school's operations management program. The researcher found that Cal Poly, Pomona offers a very divergent operations management program relative to other universities in the California State University system. The researcher recommended new curriculum structures to reduce complexity and increase divergence.

*Implementing an Inventory Management System at Las Encinas Hospital*

**by  
Adriana Molina**

Advisor: Dr. Kazem Darbandi

The purpose of this project was to implement an inventory classification and tracking system using Microsoft Access in order to increase efficiency in the purchasing department at Las Encinas Hospital's general store. The general store is responsible for purchasing all hospital supplies excluding food and medication. Such items include toners, copy paper, needles, tissue, and books. The general store was using a manual system to keep track of inventory. Supplies were ordered in fixed order intervals without consideration for the current inventory levels. The sample size consisted of 12 monthly data points obtained from inventory records dating September 2001 to September 2002 for 198 items. Data included item numbers, descriptions, vendor information, unit price, units on hand, units used, vendor information and lead times. Two classification methods were used to classify inventory: ABC by total dollar usage and ABC by importance to the hospital's daily activities. A database was implemented to track all inventory records including product details, vendor information, on-hand quantities, and purchase orders. The implementation of the inventory management system has been successful. Management has better control over its inventory. On-hand quantities are now taken into account prior to placing orders and reports are accurate and reliable. The accuracy of information has also eliminated the need to do spot checks. With the new system, the general store was able to reduce the number of in-stock items to 128 from the original 198 items.

*Process Improvement: Quality of Service Survey for United Parcel Service*

**by  
Steven Moser**

Advisor: Dr. Ralph H. Miller

The purpose of this project was to measure the perception of quality of service for the package car drivers and preloaders at United Parcel Service by conducting a survey. The analysis measured the perception of the quality of service provided by the preload personnel compared to the quality of service the package car drivers perceived they were receiving. Anonymous surveys were administered to both package car drivers and preloaders to measure the perceived level of quality of service between the two employee groups. The results of the survey found that the preloaders rated the quality of service that they were providing to the package car drivers as "high." To the contrary, the package car drivers rated the quality of service provided by the preloaders as "average." The recommendations based on the results of the quality of service survey were to increase the level of communication between the preloaders and the drivers. An effective means of daily feedback by the drivers to the preloaders would allow the preloaders to realize the quality of service expectations of their drivers. This would increase the quality of service provided to the package car drivers by the preload personnel.

*Forecasting Weekly Sales for Trader Joe's #112*

**by  
Shaun Murphy**

Advisor: Dr. Ralph H. Miller

The purpose of this project was to determine the most accurate weekly sales forecasting method for a specific section in a retail grocery store by implementing and evaluating three forecasting techniques. These techniques were moving average, single exponential, and seasonal smoothing. To determine the forecasting technique with the most accurate forecast, MAPE, MAD and MSE were compared across the techniques. The company had not used any formal forecasting methods. Inventory was evaluated, and management tried to anticipate future sales. This project determined if implementing forecasting methods would accurately anticipate future sales. After the completion of the project, the researcher recommended that store management use Exponential Smoothing to forecast future sales numbers. Exponential Smoothing produced the lowest MSE and MAPE when compared across the three techniques.

*Parking Satisfaction Survey at Cal Poly Pomona*

**by  
Jamie Ngo**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to determine and evaluate the satisfaction level of Cal Poly Pomona students with the parking situation at school by creating, distributing, retrieving and analyzing satisfaction surveys. The objective of this project is to provide information regarding the quality of the parking lots at Cal Poly Pomona. Data were collected by using a survey questionnaire and analyzed to find the satisfaction level of students at Cal Poly Pomona. Students, more females than males, were dissatisfied with the lighting provided on the way to parking lots, as well as in the parking lots. Females didn't feel safe walking to their cars at night, and they also worried about leaving their cars in the parking lots. Overall, the project assisted in providing meaningful recommendations to the Director of Parking at Cal Poly Pomona on ways to provide students with better parking lots.

*Improving Profitability and Implementing a Product Traceability System  
at MD Plastics & Manufacturing*

**by  
Yeska Nieves**

Advisor: Dr. Kazem Darbandi

The purpose of this project was to improve product quality, and to analyze costs, revise product selling price, and create a working budget by creating a database system, including a documented system of product traceability to aid in quality investigations, and an inventory cost system to determine product pricing. The client, MD Plastics & Manufacturing (MDPM) is a small family operated manufacturing company that produces PVA film bags for an exclusive contract with one customer. Their customer requested the company implement a system for tracing the production of a bag back to its raw material so that defectives may be investigated. A method for documenting the necessary information was devised, test implemented, and then reworked and simplified, so that the system could be easily maintained while providing the required information. MDPM has been in business only four years, but they have been operating under a large amount of debt, mainly start up capital, that was not decreasing. An analysis of costs found an important element in the original pricing calculations to be missing: recovering the capital that was used to start the business. This evaluation, along with a cost-volume analysis, provided the basis for a recommendation on a pricing strategy. The result should be a budget that will improve the financial status of the company.

*Forecasting Customer-Pay vs. Warranty-Pay Repair Orders for Longo Lexus Service  
Department*

**by  
Sophannarin Nou**

Advisor: Dr. Jeffery L. Guyse

The purpose of this project was to forecast customer-pay repair orders and warranty-pay repair orders at Longo Lexus by implementing and evaluating a regression analysis forecasting technique. Longo Lexus is one of the largest Lexus dealerships in the country, selling and servicing Lexus cars. If Longo Lexus knows the trend in the number of customer-pay repair orders and warranty-pay repair orders, they will have a better idea of the number of different types of repair orders that come through the dealership. To discover the trends, five years of historical data on monthly repair orders were collected from Longo Lexus. A regression analysis technique was used for this particular project. This technique was evaluated with a t-test, Chi-Square Test for Normality, and the Durbin-Watson Test for accuracy. These tests were necessary to establish that the regression model will “work” correctly. The regression analysis technique has been recommended for the company to use in predicting the number of customer-pay and warranty-pay repair orders for the next year. The forecast has allowed Longo Lexus to get an estimate of the expected number of orders and expected dollar amounts in percentages coming through the dealership with customer-pay and warranty-pay repair orders.

*Evaluating Guest Satisfaction at The West Side Diner*

by  
**Rachel Ann Olaes**

Advisor: Dr. Ralph H. Miller

The purpose of this project was to determine and evaluate the level of guest satisfaction at the West Side Diner by conducting a guest satisfaction survey. Previously, there was no rating of guest service for the diner. A one-shot case study using a survey was conducted on-site at the West Side Diner. Dimensions rated on a Likert scale included: Continuity, Wait Time, Friendliness, Appealing Menu, Reasonable Prices, Available Seating, Satisfaction with Food, Cleanliness, and Overall Satisfaction. Surveys were distributed and retrieved from 190 guests, and the responses were analyzed statistically using one-way and two-way Chi Square. The frequency distributions for Wait Time, Friendliness, Available Seating and Cleanliness show that the majority of observations were in the “good” category, with an average percentage of 49.075%. On the other hand, frequency distributions for Appealing Menu, Reasonable Prices, Satisfaction with Food, and Overall Satisfaction show that most of the observations were in the “poor” category, with an average percentage of 44.475%. Relationships were discovered between Time of Day and Cleanliness, Day of the Week and Appealing Menu, Continuity and Appealing Menu, and Continuity and Reasonable Prices. Recommendations were made to improve guest satisfaction at the West Side Diner by addressing cleanliness, re-evaluating the menu, improving the quality of the food, and changing the current prices.

*Forecasting Monthly Sales for Oriental Foodbank Inc. Using Microsoft Excel*

by  
**Calvin On**

Advisor: Dr. Jeffery L. Guyse

The purpose of this project was to forecast monthly sales for the top three products at Oriental Foodbank Inc. by implementing and evaluating four forecasting techniques. Oriental Foodbank Inc. is a wholesaler in the food product industry. The three products evaluated were OF Starch, OF Coconut Juice, and OF Rice. With an accurate forecast available, no excess inventory will be carried. To accomplish this, the researcher implemented four forecasting techniques using Microsoft Excel: Linear Regression, Classical Decomposition, Exponential Smoothing, and Straight Averages. These techniques were implemented where applicable, and the “best” model discovered for each product. With the use of Microsoft Excel, the researcher conducted various tests and comparisons to determine whether or not a “best” approach was found. To investigate forecast accuracy, all three products were measured using the MSE (Mean Squared Error) error analysis technique. The researcher discovered that for the first two products, using straight averages was much more accurate than using the other forecasting approaches. The last product, which had a more complex time series, was also evaluated with two different forecasting techniques to determine which was more accurate. Classical Decomposition proved to be more accurate.

*The Marketing Assistant's Procedure Manual*  
**by**  
**Veronica Ontiveros**

Advisor: Dr. Henry Co

The purpose of this project was to write a procedures manual for the Marketing Assistant position at H&R Block, detailing the maintenance of various client databases, financial advisor assistance, supervisory management, projects that may arise, and the hiring/dismissal of interns.

*Client Information Web-Base System at G & P Funding Solutions*  
**by**  
**Earl Peralta**

Advisor: Dr. Behrouz A. Aslani

The purpose of this project was to reduce hard copy documents, cycle time, and number of errors by creating, implementing, and evaluating a client information web-base for G & P Funding Solutions. The business had no form of an electronic database. The research design used for this project was the one-group pretest-posttest design. Data before and after the implementation of the web-base system was used to determine the impact on the operation of G&P Funding Solutions. The implementation of the Client Information Web-base reduced the cycle time for client information searches (95.65%), the average number of errors per page (92.11%), and the cost of hard copy materials per month (98.90%). The implementation of the Web-base system should give G&P Funding Solutions faster and more effective client service.

*A Study of PETCO Company's Inventory Carrying Costs*  
**by**  
**Sam Poli**

Advisor: Dr. Jeffery L. Guyse

The purpose of this project was to validate PETCO Company's use of a single global number to represent inventory carrying costs by researching the actual costs associated with carrying product at PETCO's distribution center in Mira Loma, California. PETCO uses a computer based inventory management system (E3TRIM) to suggest optimal ordering cycles for product that will be shipped to, stored in, and shipped from the distribution center (DC). The optimization model within E3TRIM balances acquisition costs against carrying costs when calculating the most profitable ordering cycles. The carrying cost for an individual item is represented in the optimization model by a single global number. The global number is a default setting programmed into the model by the software package designer, and has not been tested for its validity. The researcher concluded after investigation that the relevant data needed to calculate the actual carrying cost for any item in inventory were not obtainable, and therefore the researcher was unable to test and verify whether the global number was an accurate approximation of the true carrying cost.

*Quality Improvement at Office Depot Cross-Dock 3061*

**by  
William Quinn**

Advisor: Dr. Ralph H. Miller

The purpose of this project was to reduce the number of common errors in the Secondary Sort department at Office Depot Cross-Dock 3061. To track the frequency and types of common errors, a spreadsheet was used to identify four categories of errors. Due to time and resource constraints, one category of error was targeted for the purposes of this project. After identifying the root cause, it was determined that a new numbering system would reduce or eliminate the occurrence of this type of error. Data were collected for a period of time before and afterwards in order to document any changes from the implementation of the new numbering system. A standard measurement was developed to relate the number of errors to the volume of freight processed at the cross-dock. Ultimately, the new system resulted in the elimination of the targeted error while the total level of quality was unchanged.

*Assessing Customer Satisfaction at Enfuse Web Design*

**by  
Angelina Rico**

Advisor: Dr. Rhonda Rhodes

The purpose of this project was to determine and evaluate customer satisfaction levels at Enfuse Web Design after service had been rendered by creating, distributing, retrieving and analyzing satisfaction surveys. The objective of this project was to provide appropriate information to management regarding the quality of service that is being provided to Enfuse Web Design customers. A combination of mail and telephone surveys were used. Data from these surveys were recorded, and analyzed through cross-tabulating customer satisfaction levels and demographics. Overall, 96% of customers were satisfied. 85% were very satisfied with the ease-of-use, 55% were very satisfied with quality of service, and 45% were very satisfied with length-of-wait for service. These results showed areas where Enfuse Web Design exceeds expectations and areas for improvement. 66% of the customers used two products/services from Enfuse Web Design.

*Forecasting Tinel Demand at Aerofit Products, Inc.*

**by**

**Andre Soares**

Advisor: Dr. Kazem Darbandi

The purpose of this project was to forecast demand for tinell, a raw material alloy used in the manufacturing of couplings and unions, for the Purchasing Department of Aerofit Products Inc. by implementing and evaluating eight different forecasting techniques. All forecasts were based on time series data utilizing averaging techniques. Four of the eight techniques did not include seasonal elements: Single Moving average, Double Moving Average, Single Exponential Smoothing, Double Exponential Smoothing. The other four techniques considered whether the data show any type of seasonal elements: Seasonal Additive, Holt-Winters' Additive, Seasonal Multiplicative, and Holt-Winters' Multiplicative. To accomplish this, the researcher gathered historical usage information from Aerofit's Enterprise Resource Planning system for the years 2000, 2001, and 2002, entered this information in Microsoft Excel spreadsheets, and utilized a forecasting add-in program called CB Predictor© to generate the forecast for year 2003. These worksheets and the program performed the necessary calculations for each technique. CB Predictor© forecasted the values using each of the methods and ranked them according to how well they fit the historical data. It calculated and analyzed the MAD to indicate which of the eight methods' forecasts more closely resembles actual usage data. Based on the results and the researcher's conclusions, a recommendation to implement a specific forecasting procedure (for one or more part numbers) on an ongoing basis were made to the Purchasing Manager at Aerofit Products Inc. The researcher believes that the findings from the study will assist Aerofit Products Inc. better manage their tinell inventory and stocking levels. It will help the company reduce waste, minimize costs by purchasing the appropriate amount of tinell at the right time, and shorten manufacturing throughput time, providing better service to customers.

*Creating and Implementing a Management Support System at Nur Huda Corp.*

**by**

**Ronny Supardi**

Advisor: Dr. Ralph H. Miller

The purpose of this project was to reduce paperwork, paperwork errors, data inconsistency and data redundancy, and to improve data access cycle time and information flow efficiency, at Nur Huda Corp. by creating, implementing, and evaluating a computerized database system using Microsoft Access. This project used the pre-test post-test design as the basis for comparison. Data on the cycle time was collected before and after the implementation of the new system. The researcher used the matched-pairs t-test to analyze the data. The new computerized database system was proven to reduce data access time from the average of 4.34 minutes to .74 minutes. The researcher concluded that the new database system helped the company to improve their data access time and information flow.

*Improving Performance and Productivity of a Seaweed Supplier Company*  
**by**  
**Anthonius Taher**

Advisor: Dr. Ralph H. Miller

The purpose of this project was to improve the performance of the workers in the cleaning area of a small seaweed supplier company, Sumber Rejeki, by identifying and re-training the unproductive workers in the cleaning area. There were several steps conducted in this project to improve the performance, such as determining the output size required of every worker in the cleaning area to meet production quotas, identifying the unproductive workers using Statistical Process Control, and re-training the affected workers. The research design used for this project was a one-group pretest-posttest approach. Based on the results of a two-sample t-test for a difference between production means, and an F-test on production variability, the project was successful: the average productivity increased by 0.662 baskets per worker per day, and the production process was more stable.

*CMC Army ROTC Customer Satisfaction Survey*  
**by**  
**Aaron Takahashi**

Advisor: Dr. Kazem Darbandi

The purpose of this project is to provide data analysis that will help aid in decisions affecting retention of current cadets and the recruitment of new cadets for the Claremont McKenna College (CMC) Army ROTC program by assessing customer satisfaction levels of all cadets in the program. ROTC programs are the largest source from which Army officers are commissioned, and are an important part of military leadership development. In the past, CMC Army ROTC had a much larger program with extensions at schools such as Cal Poly Pomona, which had the equivalent number of cadets to what the CMC program currently has. The project evaluated leading factors in the retention and recruitment of cadets of the CMC Army ROTC program. Through the use of customer satisfaction surveys and the results of data analysis, suggestions were made to the cadre at CMC Army ROTC on what specific aspects weigh most heavily on a cadet's decision to join and stay in the program.

*Forecasting Sales for the Music Recital Hall at Cal Poly Pomona*  
by  
**Vivian Tong**

Advisor: Dr. Rhonda Rhodes

The purpose of this project is to determine the most accurate forecasting technique for ticket sales at the Cal Poly Pomona Recital Hall by analyzing ticket sales for the last two years using three forecasting techniques. Historical data were gathered and forecasts were generated using the three techniques. The three different forecasting methods were performed for each type of event, and MSE and MAD measurements indicated which forecasting method was the most accurate. Based on the result, the researcher made recommendations to the Music Department, which should help reduce waste on the events.

*Evaluating Internal Customer Satisfaction at Sears Customer Care Network*  
by  
**Karen Vendiola**

Advisor: Dr. Ralph H. Miller

The purpose of this project was to evaluate the level of customer satisfaction of Sears' internal customers by conducting a customer satisfaction survey. Sears Customer Care Network is the main call center for inquiries in Sears Home Deliveries. For this project, only internal customer satisfaction for home delivery inquiries was considered. A study to determine what areas needed to be improved was necessary to reach the desired customer satisfaction level. An internal customer satisfaction survey was conducted by visiting different locations of Sears stores. After the retrieval of the survey, these data were keyed into a data collection spreadsheet. The Statistix 7 software program was then employed to generate the descriptive and inferential statistics. Two-way Chi-Square analysis was used to determine if there were any existing relationships between variables. Results show that there is room for improvement. After generating descriptive statistics, results indicate that internal customer satisfaction is not at the desired level. The agents received negative feedback, especially, on the "following up on solutions" variable. This indicates that customer service agents are not following up on solutions discussed with their internal customers. For the "overall satisfaction" question, internal customers gave a rating of "somewhat dissatisfied." Chi-Square analysis results showed only one significant relationship. A relationship exists between the internal customers' department and the rating of the length of time to answer phones. The Appliances department and the Sporting Goods department indicated dissatisfaction. These results indicate that management should take steps to improve customer service. It appears that more customer service agents are needed on the floor on each shift if inbound calls are to be answered in a reasonable amount of time. It was recommended that extended training be provided to new hires, and also current employees, to improve customer service.

*Implementation and Evaluation of An Integrated User Friendly Inventory Control System at South China Seafood Company*

**by**

**Budi Wibisono-Kwan**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to determine Economic Order Quantities (EOQ) and Reorder Points (ROP), and reduce stock-outs and overstocking, for selected items by implementing an Integrated User Friendly Inventory Control System at SCSC Company. The company was using an outdated inventory control system, which lead to intense fluctuations in inventory levels and inefficient business operation. The research design of the project was a one-group pretest-posttest design. Eight weeks of data were collected prior to the implementation of the inventory control system. From the evaluation of the old inventory level data, reorder points (ROP) and economic order quantities (EOQ) were determined. After the implementation of the inventory control system, new inventory level data were collected and evaluated to determine if the implementation of the new inventory control system was effective in minimizing and reducing stock-outs and overstocking. Significant reductions in both stock-outs and overstocking were achieved.

*Stopwatch Time Study to Estimate Standard Time in the Production Workflow of a Small Garment Factory*

**by**

**Chatherin Wiguna**

Advisor: Dr. Henry Co

The purpose of this project is to measure the time it takes for a typical worker to accomplish producing one unit of finished cloth. The client is Fer Collection, located in Jakarta, Indonesia. Fer Collection produces children's clothing for the Middle East Asia market. This study used the stopwatch time study method. The observed times are first converted to normal time using a subjectively determined performance rating factor. The standard time is then determined by introducing a standard allowance factor. The result was used to write the report, concluding that the stopwatch time study method was useful in measuring the production time.

## Senior Projects In-Process as of May 2004

*Designing, Implementing, and Evaluating a Website to Increase Gross Sales for E & A Engineers*

by

**Carlo Acabado**

Advisor: Dr. Henry Co

The purpose of this project is to increase the number of contracts by designing and implementing a web site, and evaluating the results for E&A Engineers. A one-group pretest-posttest design will be used to analyze the data. First, historical data of contacts and contracts made within the past three years will be downloaded onto Excel and graphed to analyze trends in contacts and contracts. Next, the web site will be designed, implemented, and hosted with Verizon DSL service. Then the difference between the previous three years and the three months new data collected from the implementation will be compared and analyzed using regression analysis and a two-sample t-test. The implemented web site should increase the number of contracts made. After examining these results, the company and researcher will discuss further improvements for the web site.

*Implementation and Analysis of an EOQ/ROP Inventory Control System at Arribas Brothers, Inc.*

by

**Roy Arribas**

Advisor: Dr. James Salvate

The purpose of this project is to reduce total inventory costs and reduce stockouts on the “*Arribas Collection*” line at Arribas Brothers, Inc. California Division by implementing and evaluating an inventory control system that utilizes EOQ and ROP mechanisms. The researcher will first gather historical data from the previous two years regarding ordering costs, purchasing costs, unit costs, stockouts, and demand trends. After the collection of these data, the researcher will calculate the EOQ, ROP and safety stock, and then implement the inventory control system. The researcher will gather three months of new data showing monthly inventory costs, and monthly stockouts. The new data will be compared with the old data by using a 2-sample t-test to determine the difference in total inventory costs.

*Forecasting the Usage Demand for Cal Poly Pomona General Access Computer Laboratories*

**by**

**Piyananta Arsakati**

Advisor: Dr. Jeffery L. Guyse

The purpose of this project is to determine and forecast an optimal quantity of computer stations based on demand of students at Cal Poly Pomona General Access Computer Laboratories: Campus Center 97-121 and Computing Commons 98-C5-12-14. The researcher will use historical data that have been gathered from the Campus System Database; all data will be entered into an Excel Spreadsheet. Statistical software applications and techniques will be used to create the forecasts. The researcher will analyze the data and determine results for each individual lab, and also compare and contrast the results of both labs. The outcome of this project should produce appropriate recommendations to improve customer satisfaction by having a sufficient number of computer stations to meet the demand of students. Consequently, the conduct of this study will enhance the overall performance of Cal Poly Pomona General Access Computer Laboratories.

*Improving Tutor Scheduling at J's Tutoring Center*

**by**

**Iris Ayala**

Advisor: Dr. Henry Co

The purpose of the project is to develop and evaluate an employee schedule for J's tutoring Center that complies with a low-cost budget by utilizing Linear Programming. J's Tutoring Center is a math and reading center which provides students with tutoring based on the subject that the student needs improvement in. Each student is initially given a placement test so that they can be individually evaluated to see the areas in which they need academic improvement. As the different available tutors may vary weekly or daily, it is very important that the appropriate tutor be available for all of the students. The researcher will use Linear Programming, which is a computer program that will optimize the resources of the available tutors while maintaining consideration of constraints. The schedule will result with the least possible overage hours in available tutors to lower the costs of payroll, while fulfilling all of the requirements of the scheduled tutees.

*Evaluating Customer Satisfaction of Quality One Engineering*

by

**Richard Bartholomew**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to determine and evaluate the customer satisfaction level of Quality One Engineering Inc., by creating, distributing, retrieving and analyzing customer satisfaction surveys. The objective of this project is to provide information regarding the quality of service and manufacturing at Quality One Engineering. Data will be collected by using a survey questionnaire and analyzed using descriptive statistics and one-way and two-way chi-square analyses. The outcome of the project will assist in making recommendations to top management for areas that are in need of improvement to increase the overall level of customer satisfaction at Quality One Engineering.

*The Evaluation of an Employee Performance Appraisal Process*

by

**Jourdanne Cadavona**

Advisor: Dr. Behrouz Aslani

The purpose of this project is to evaluate the effectiveness of a performance appraisal process by measuring employee performance before and after a monthly performance appraisal. The study is part of an improvement to the operations process in the customer relations department that will be used to implement programs such as developing a customer relations training program and manual, a customer relations recognition program and a customer relations vital book that contains important information that is needed for each customer relations representative. The performance appraisal will measure the customer relations representatives individually in the following three performance measurements: process times, spending allowances, and attendance. As a department, the performance appraisal will measure the departments' results in percentages of complaints from National Customer Relations, located in Chicago, IL, and inquiries from customers regarding issues such as their service times and parts delivery. The researcher will gather data from company records such as human resources, internal management reports, and phone logs. The research design for this project will be a one- group pretest-posttest approach. Change in performance will be evaluated using a matched-pairs t-test.

*Successful Scheduling*  
by  
**Anthony M. Castaneda Jr.**

Advisor: Dr. William Cosgrove

The purpose of this project is to examine the effects of changing a manpower schedule at the Hot Topic, Inc. Distribution Center in Industry, CA. Hot Topic, Inc. is a mall-based specialty retailer of music-related apparel, and operator of the Torrid concept. A new manpower schedule will be developed and implemented by the researcher, and the results will be compared and contrasted to the previous scheduling method. Comparison and analysis will be by a one-group pretest-posttest design. Improvements in customer service to internal customers, payroll costs, and turn rates will be evaluated.

*Implementing and Evaluating Forecasting Models at USMac Corporation*  
by  
**Allen Chao**

Advisor: Dr. Jeffery L. Guyse

The purpose of this project is to accurately forecast the monthly sales revenues of USMac Corporation, China's distributor of Union 76 lubricants, by implementing and evaluating three different forecasting methods. Current problems include overstocking. Implementing an accurate forecasting method should reduce the overstocking problem and the costs associated with it. Data used in this forecasting project will be primary data from the client's past sales revenue records. Forecasting methods based on time series, such as moving average, exponential smoothing, and seasonal smoothing, will be used to analyze sales records to find trend, seasonality, cycles, irregular variation, and random variations.

*Master Production Schedule Effects at Nordwins Corporation*  
by  
**Nathan Che**

Advisor: Dr. P. Rama Ramalingam

The purpose of this project is to reduce the number of stockouts and amount of inventory on hand, and determine inventory reorder points (ROP), by implementing a master production schedule (MPS). Currently, Nordwins has no type of inventory system for raw materials in place. With no inventory system, the company experiences stockouts on certain materials and excess amount on hand for other materials each month. The implementation of the master production schedule is expected to reduce the number of stockouts and the amount of raw materials on hand per month. Data will be collected at the warehouse and recorded by the researcher. Copies of the company records on inventory will be retrieved, and a comparison between before and after implementation of the master production schedule will be done. The data will be analyzed using Excel spreadsheets that will graphically display the results with respect to the measured variables.

*Reducing Cycle Time and Determining Material Cost*

**by  
Stella Cheung**

Advisor: Dr. Henry Co

The purpose of this project is to reduce cycle time and determine material cost by restructuring the production process at VintageRoad.com. The client business is an online company selling vintage-style T-shirts, and is located in Brea, California. The study will focus on reducing cycle time of production to increase productivity. In addition, the study will determine the material cost by analyzing the discount price, carrying cost, and ordering cost. This study uses a one-group pretest-posttest design, and will first measure the existing cycle time and gather information of current material use. The next step will be to calculate time use per step. Based on the result, the researcher will create a new production process. To evaluate this project, the researcher will compare the new production process cycle time with the old production process cycle time by using a two-sample t-test. The results will be used to write a report concluding whether the cycle time of the production process has been reduced, and the material cost determined.

*Implementing Inventory Control of Cookie/Beverage at Mandisa, Inc.*

**by  
Chia-Ling Chin**

Advisor: Dr. Rhonda Rhodes

The purpose of this project is to determine reorder points, reduce inventory costs, and reduce stock-outs and overstocking for selected items by implementing and evaluating the SBT Inventory Control/Accounting System at Mandisa, Inc. This inventory control system is a computerized system to reduce inventory cost and monitor monthly sales, stocks-outs, and overstocking for Mandisa, Inc. using the Microsoft Excel spreadsheet program. The project data will be gathered from the company inventory records a quarter before implementing the SBT Inventory Control/Accounting System, and input into Microsoft Excel. After implementation, the project data will be gathered from the company inventory records in the following quarter, and input into Microsoft Excel. Inventory cost, stock-outs, overstocking, inventory turnover ratio, profits, and excess cost will be compared using two-sample t-tests.

*Customer Satisfaction at Direct Courier*  
**by**  
**Kalayaporn Chunekamrai**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to determine and evaluate the customer satisfaction level of Direct Courier by conducting a customer satisfaction survey. Customer satisfaction will be evaluated by the use of mailed surveys. Once a participant completes the survey, he/she will return the survey by mail. Results will be gathered and analyzed by using Chi Square. Results will be presented in the form of fact-findings and recommendations. Courier (messenger) service is an essential part of daily operations of many businesses. It is imperative that a courier service provider do a great job by delivering the right document to the right place at the right time because the competition in the industry is so intense. Clients will not hesitate to switch courier service if they find another provider who is doing a better job. By having better knowledge of the customer's experience with their service, Direct Courier will be able to provide its clients with better service. It is the better service that clients receive that will ensure Direct Courier's position in the market.

*Managing Manpower*  
**by**  
**Leo Cornejo**

Advisor: Dr. James Salvate

The purpose of this project is to develop, implement and evaluate a new manpower schedule for Lowe's Home Improvement Warehouse of Norwalk, California, store #56. The creation of a new manpower schedule can increase customer service, reduce stock-outs, and reduce payroll cost by effectively using the available resources. The implementation of the proposed manpower schedule changes should produce an increase in customer service by having the right employees at the right time in the area of their expertise. Stock-outs will be reduced by having enough coverage in a department to be able to do the stock-work duties and tend to customers. It will also result in reduced payroll costs by not having excess manpower at times when it is not needed for the amount of workload and foot traffic present. This study will compare and contrast outcomes of the new manpower schedule with the old manpower schedule to determine the effectiveness of the schedule changes in regards to customer service, stock-outs and payroll costs.

*Developing and Evaluating an EOQ/ROP System for the Richwood Furniture Company*

**by  
Daniel Ding**

Advisor: Dr. Rhonda Rhodes

The purpose of this study is to reduce total inventory costs by developing and evaluating an Economic Order Quantity/Reorder Point System for the Richwood Furniture Company located in Chino, California. The researcher will collect all data regarding ordering and carrying/holding costs for the past two quarters (Fall 2002, Winter 2003) from Richwood's database, and copy it to the researcher's computer, as well as hand-written documentation. After collecting the necessary data, the researcher will implement the EOQ/ROP ordering process, which will give the optimal order time and size to minimize inventory costs. After two quarters with the newly implemented EOQ/ROP System, the researcher will collect the data regarding ordering and carrying/holding costs again, and compare the data without the EOQ/ROP System to the data with the implemented EOQ/ROP System using a two-sample t-test. The EOQ/ROP System is expected to reduce the inventory carrying/holding costs, and ordering costs, for the Richwood Furnishing Company.

*Manpower Scheduling Using Linear Programming*

**by  
Thomas M. Eavenson**

Advisor: Dr. Jeffery L. Guyse

The purpose of this project is to develop, implement, and evaluate a manpower schedule for Edwards West Covina 18 that complies with a given budget by utilizing Linear Programming techniques. Edwards West Covina 18 is a part of Regal Entertainment Group, the largest movie theater chain in the United States. Even though Regal is already the largest movie theater chain in the U.S. they are still constantly growing larger and larger. Because of this, it is important to be as cost-minded as possible. Thus, it is important for a company to find a way to keep costs down and still be able to function as a business. Through the application of Linear Programming techniques, these tasks can be accomplished, resulting in reduction in payroll costs, and in time-to-implementation of the manpower schedule. Linear Programming is an optimization formula to come up with a specific manpower schedule to accomplish the reductions that are desired and still have enough staff to keep the company going.

*Reducing Problems at a Technology Support Center*

**by**

**Javier Escalante**

Advisor: Dr. Henry Co

The purpose of this project is to evaluate the number of problem logs and work orders resolved each month at the Ontario TSC in relation to the total departmental logs dispatched to an internal field technician for a specific system code of NT WORKSTATION before, during and after a Windows 2000 training workshop has been implemented. Quality of a technical support center (TSC) is imperative for every corporation that deals in technology. Resolving problem calls that enter a help desk internally guarantees its existence. The system code of NT WORKSTATION had the highest amount of problem logs/work orders dispatched to field technicians. Management believed that implementing a Windows 2000 workshop would reduce the number of logs dispatched. The researcher will gather the data by creating a database to get only this specific data. Data will be analyzed, plotted, and then graphed to the current date to determine if the results could be attributed to the training workshop or to other factors.

*Design, Implementation, and Evaluation of a Database System*

*at an Auto Repair Shop*

**by**

**Ivan P. Granda**

Advisor: Dr. Kazem Darbandi

The purpose of this project is to improve the management of information, including customer information, services provided, and vendor information, at an Auto Repair Shop by implementing and evaluating a database. The effectiveness of this project will be measured by conducting surveys of employees before and after implementation. Data gathered will be analyzed using a one-group pretest/posttest design. Business records and specifications obtained from the client during an initial interview will be used to design and develop the database. Once implemented, the database will facilitate the management of information and will provide easy access to accurate historical data to aid in decision-making.

*Inventory Control for the CPF Company*  
**by**  
**Jonathan D. Hartendorp**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to reduce the level (or cost) of inventory by implementing and evaluating an ABC inventory control system at the CPF company. The CPF Company is located in Pomona, California. The company purchases its inventory on a basis of what is needed at the time instead of using a regular inventory tracking/management system. The data for this project will be gathered before the implementation of the ABC inventory system from the store's inventory and sales records for the last three months. The data collected will include total inventory cost, holding costs, and ordering costs. These data will be input into Microsoft Excel. Then, data following the implementation of the ABC inventory system will be collected and input into Microsoft Excel. Total inventory cost, holding cost, and ordering cost will be compared using two-sample t-tests.

*Forecasting Monthly Sales for Ray's Trashbox Service*  
**by**  
**Jeff Sung Hearn**

Advisor: Dr. Jeffery L. Guyse

The purpose of this project is to find the most accurate forecasting method of the number of dumpsters rented per month at Ray's Trashbox Service by utilizing and analyzing three forecasting methods: Moving Average, Single Exponential, and Seasonal Smoothing. To apply these methods, historical data will be gathered and analyzed on the number of trashboxes rented and dumping costs. There are four types of trashboxes that the client provides to its customers, which are categorized as 4-yard, 16-yard, 40-yard, and lowboy. Most of the trash collected from the trashboxes is dumped on a dock. The accumulated trash is then packed in a 40-yard trashbox and hauled to the dump. The monthly data will be keyed into Microsoft Excel for storage and calculations. Once the forecasts are calculated, each forecasting technique will be evaluated to find the error measurement. The MSE and MAD will be compared to determine which forecasting method is the most accurate. By utilizing the best forecasting method, the results of the forecast should allow the company to provide better service, maximize profits, and reduce costs.

*Evaluate and Determine Best Forecasting Model for Ready Pac Produce*

**by  
Alex Herrera**

Advisor: Dr. Henry Co

The purpose of this project is to determine the most accurate forecasting method for sales items produced at Ready Pac Produce in Irwindale, California. To achieve this task, the researcher will gather the historical data from the Company. The selected forecasting models ( Moving Average, Exponential Smoothing, and Seasonal Smoothing) will be performed. The best forecasting model will be determined by evaluating the MSE, MAD, and MAPE of the selected forecasting models. Based on the results of this analysis, the researcher will make a recommendation to aide management in a procurement process. The results will also help in the reduction of scrap material, maintain lean inventory levels, and optimize profits.

*Forecasting Monthly Gross Sales for Inpovita Dharma Industri*

**by  
Fenny Irawan**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to determine the most accurate forecasting technique for the monthly gross sales at Inpovita Dharma Industri by implementing and evaluating three different forecasting techniques: Centered Moving Average, Exponential Smoothing, and Linear Trend. The researcher will use historical data that have been gathered from the company data base and key them into Microsoft Excel spreadsheets. The researcher will analyze and evaluate the data using the techniques implemented. The most accurate forecasting technique will be determined after comparing the three forecasting techniques using MAD, MSE, and MAPE. Based on the result, a report, along with recommendations to Inpovita Dharma Industri, will be produced.

*Design and Implementation of a Database System for RHP Holdings, Inc.*

**by  
Murray Irvin**

Advisor: Dr. Henry Co

The purpose of this project is to design, create, implement, test and evaluate a database system for RHP Holdings, Inc., using Microsoft Access. RHP Holdings, Inc. is a small company that is involved in buying and selling real estate. The company frequently approaches homeowners that are in default on their mortgages with the prospect of selling their homes. Finding such prospective customers is currently done by downloading information on prospective customers from a Web site, printing the information and then reading and evaluating the information to determine suitable customers. The new database system will evaluate customer information for the client based on the client's criteria for prospective customers and provide the client with a list of suitable customers. The database system will help the client to run his business more effectively by eliminating the need to physically read and evaluate information on every prospective client. It will also reduce the amount of paper used by the client.

*Distribution and Material Handling Improvement at Trader Joe's., Inc.*

**by  
Zareh Kadkodazadeh**

Advisor: Dr. Behrouz Aslani

The purpose of this project is to reduce the cost of returned inventory, improve inventory accuracy, on- time delivery percentage, and delivery accuracy percentage by determining root causes and implementing and evaluating the needed changes. A one-group pre-test post-test design will be used for the purpose of comparison. Auditing and flow diagramming will help the researcher locate and streamline all areas of the operation. Store number, order number, ship date, and purchase orders, will also be documented for their discrepancies. Once problems are pin-pointed, through the use of inventory management techniques, facilities planning, and warehousing systems, solutions will be recommended to improve the system. The researcher will then collect and compare the inventory records before and after the implementation to see the results of this project. The researcher will use the two-sample t-test to analyze the changes in the inventory after the implementation. The researcher believes that the success of this project will help the company in managing a better, cost-effective distribution and inventory systems.

*Forecasting Sales for a Carl Karcher Franchise*

**by  
Kris Kohagura**

Advisor: Dr. Kazem Darbandi

The purpose of this project is to determine the most accurate sales forecast procedure for a Carl Karcher Franchise at Cal Poly Pomona by implementing and evaluating three forecasting techniques. The forecasting techniques being implemented and evaluated will be Moving Average, Exponential Smoothing, and Single Exponential Smoothing. The researcher will collect historical sales information and apply the different forecast techniques. The forecast error equations of Mean Squared Error (MSE) and Mean Absolute Deviation (MAD) will be used to measure and indicate which forecast method is the most accurate. Based on the findings of the results, the researcher will make recommendations to the company on how to optimize profit earnings, while decreasing inventory waste.

*Evaluating the Idea of Computer-Mediated Communication Courses for the TOM Department at Cal Poly Pomona*

**by  
Ryan Kuang**

Advisor: Dr. Rhonda Rhodes

The purpose of this project is to determine student attitudes and opinions about TOM computer mediated courses (CMC) by conducting surveys and analyzing responses of TOM students at Cal Poly Pomona. The process will give the TOM department a view of what students' attitudes and opinions are. Both choices of face-to-face communication or computer-mediated communication have advantages and disadvantages. With this study, the TOM department will learn what preferences students have for alternatives to the standard face-to-face classroom setting. There are many different types of lifestyles students choose, whether a full-time or part time student, and these may determine interest in a CMC class. Conducting this research will help determine the TOM department's choices of classes they wish to offer in CMC format, times that students prefer, and which students choose CMC classes over face-to-face.

*Evaluating Customer Satisfaction of On-Campus Activities*

by  
**Milton Kyu**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to determine and evaluate customer satisfaction of on-campus activities at Cal Poly Pomona. Residents of on-campus housing will be surveyed on how satisfied they are with the activities being provided on campus. Customer responses to the survey will be analyzed using descriptive statistics, one- and two-way chi-square, and analysis of variance. Based on the data, results can be shown to Associated Students Inc. and the Office of Student Housing, and recommendations can be made on what improvements and new amenities can be provided in the future.

*Analyzing the Effectiveness of a Performance Evaluation Measurement System*

by  
**Mia Liezel Lao**

Advisor: Dr. Henry Co

The purpose of this project is to evaluate the effectiveness of the performance evaluation scorecard for the call center phone associates of Bank of America by comparing the results of each associate's overall performance before and after the implementation of the new performance standards and relating it to the results of the customer satisfaction survey. The data analysis for this study will be a t-test, comparing before and after scores on the performance metrics. This will measure the improvement on the Customer Satisfaction survey for each question as well as the overall performance of each phone associate. Performance appraisals are a very important part of management, not only to ensure that the customers are provided a quality service, but also to be able to control the department. An effective scorecard is vital to the success of a company. The quality of the associates' performance must be measured, and the measurement must be directly related to the company's goals. Bank of America believes in Total Quality Management, and this is displayed by the department's detailed process of its performance evaluation of each associate. With the changes in 2004, the department anticipates its Customer Satisfaction survey "delight score" will improve.

*Instructional Program Placement and English Acquisition Rates  
at El Rancho Unified School District*

**by  
Jesus Lara**

Advisor: Dr. Jeffery Guyse

The purpose of this project is to determine the relationships among instructional program placement, English Acquisition Rates, and background demographic factors by analyzing and evaluating student data. The objective of this study is to provide information regarding the effectiveness of programs offered and variables that are linked to student achievement. Data will be collected by exporting data from the Student Information Database at El Rancho Unified School District. Overall, the study will assist in providing relevant information to District Administrators at El Rancho Unified School District to provide a better curriculum that will best meet the needs of their students.

*Creating and Implementing an ABC Inventory Control System for Prieto Sports*

**by  
Brian Lau**

Advisor: Dr. Jeffery L. Guyse

The purpose of this project is to reduce inventory cost, labor, and paperwork by designing, implementing, and evaluating an ABC inventory system for Prieto Sports. Archived data will be collected and analyzed by finding the standard deviation, mean, and/or range. A one-group pretest-posttest design will be used to determine the success of the project. An ABC Inventory System will be created to order inventory when necessary, and keep track of when the inventory is used. It is important to save money in every part of manufacturing where it is possible so that the money can be reinvested. Eliminating unused material sitting in inventory is an excellent way of reducing costs.

*Design, Development, Implementation, and Assessment  
of a Standard Operating Procedures Manual*

**by  
Christopher LeBreton**

Advisor: Dr. Rhonda Rhodes

The purpose of this project is to increase employee knowledge and decrease training time at West Coast Escrow by developing, implementing and evaluating a standard operating procedures (SOP) manual. Surveys will be given and interviews will be conducted with employees, management, and trainers in order to obtain the information necessary to develop the procedures manual. After completion of the manual, it will be evaluated by management to make sure that every process is correct. Employee knowledge of their job responsibilities should increase, and training duration times should decrease after implementation of the SOP manual. Surveys and interviews will be given to test this hypothesis.

*Database System Design and Implementation  
for a Construction Management Firm*

**by  
Nhut Le**

Advisor: Dr. Henry Co

The purpose of this project is to determine the requirements for the implementation of a centralized Data Management System by interviewing management, and determining project success by surveying employees. Currently JGM Systems is designing support tools for administration of Construction Projects. In order to reduce paper work or documents in paper form, JGM Systems will implement and configure systems to follow processes which are required by management, and are in a contract. Creating an electronic-based system will help users view and organize data more quickly and effectively. In order to measure results on the effectiveness of the system, a questionnaire will be used to see if the defined requirements are met.

*Implementation and Analysis of Forecasting Techniques at Pizza Hut*

**by  
Anton Leonardi**

Advisor: Dr. Jeffery L. Guyse

The purpose of this project is to determine the most accurate forecasting method for Pizza Hut San Gabriel by implementing and evaluating three different forecasting methods. Three years of historical sales data will be collected from the computer database at the Pizza Hut San Gabriel store. Moving average, single exponential, and seasonal smoothing will be used, and the most accurate forecasting method will be chosen by comparing MAD, MSE, and MAPE. Based on the result, conclusions will be drawn and recommendations will be made to the store manager to better predict future sales. The forecast will allow the manager to provide better customer service, reduce waste, and increase profit.

*Developing, Implementing and Evaluating a Database System  
to Improve Efficiency at ABC Company*

**by  
Kelly Leung**

Advisor: Dr. Henry Co

The purpose of this project is to improve efficiency of monthly paperwork processing time and reduce the monthly amount of paper used at ABC Company by designing, creating, implementing, testing, and evaluating a database system using Microsoft Access. The client at ABC is currently using a manual filing system. This manual filing system takes the client too long to process the paperwork and is using too much paper in the process. By developing a database system, it will help the client to reduce the amount of time required to process the paperwork. The purpose of the database is to have data arranged for ease and speed of search and retrieval. The database system will help the company improve in overall efficiency and reduce the time needed for processing if a past reference needs to be looked up.

*Process and Cost Improvements Through Analysis of Manufacturing Variances*

**by  
Armando E. Lopez**

Advisor: Dr. James Salvate

The purpose of this project is to determine cost and process improvements by analyzing manufacturing variances in a precision metal forming manufacturing company, Connor Manufacturing Services. Manufacturing variances represent the failure to meet budgeted costs of manufacturing in a job-cost environment. The failure to meet budgeted cost can be either a positive or negative variance. Negative variances steal profit; positive variances affect the ability to price competitively. Connor Manufacturing Services experiences high manufacturing variances that consume approximately 4 % of the operating profit, monthly. Manufacturing variance data will be collected from the company's accounting database, and categorized as Labor, Material, Sub-Contract or Tooling. The data will be ranked from high to low in order to prioritize actions directed to determine the root cause of the variance. The root cause of the variance will be analyzed in a cause and effect model to identify corrective actions. The corrective actions will be evaluated using a break-even analysis to determine actual contribution to improve operating profit. The actions determined to be a positive contribution will be evaluated by the company's Management, Engineering, and Quality personnel to prioritize the implementation of cost and process improvements. These improvements will correct job estimating inaccuracies and operational inefficiencies, and should result in a minimum increase of 4 % in operating profit.

*Reducing Inventory Cost for LVR Media*

**by  
Siu-Kei Lui**

Advisor: Dr. Henry Co

The purpose of this project is to reduce inventory cost, stockouts, and overstocking for LVR Media by implementing an Economic Order Quantities and Re-Order Points inventory management system. The research design of the project will be a one-group pretest-posttest design. Three months of data will be collected prior to the implementation of the inventory planning system. After the implementation of the inventory control system, data for new inventory levels will be collected to determine the effectiveness of the new inventory control system.

*Analyzing and Benchmarking the Purchasing Strategy and Inventory Replenishment Program at Allstar Fire Equipment*

**by  
Lorena C. Martin**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to evaluate and benchmark the current inventory replenishment program for personal protective equipment at Allstar Fire Equipment, Inc., by developing an ABC inventory classification system and comparing the past four years sales demand versus the inventory volume held at Allstar's main warehouse in Arcadia, California. Currently, there is no inventory control system being utilized. This will be a pilot project that will only encompass one of five major categories of products warehoused at Allstar. If this project is successful, Allstar will conduct similar quantitative studies for the remaining four product categories. The goal of this study will be to implement economic order quantities (EOQ) and reorder points (ROP) for those items that have perpetual demand. Using historical sales records, for those items that have volatile demand, linear regression will be used to forecast future demand and recommend optimum inventory levels that should be kept to meet these demands.

*Creating, Implementing, and Evaluating an Electronic Database System  
at Delphi Connection Systems*

**by**

**Nelson Ngamsuntikal**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to reduce lead-time in the Engineering Change Request/Drawing Revision Request (ECR/DRR) process at Delphi Connection Systems by creating and implementing an electronic-based system so that ECD/DRR reports are easily generated, tracked, obtained and edited. Currently, the ECR/DRR process is maintained through departmental logbooks (paper), which records customer information, product number and the amount of time it takes to fulfill the customer's demands. With the new electronic-based system in place, retrieving and editing ECR/DRR reports will become simplified and less time consuming, and will free up resources within document control.

*Improving Customer Service for Castle Carwash by Analyzing Waiting Time and Service Rate*

**by**

**Nguyen Ngo**

Advisor: Dr. Jeffery L. Guyse

The purpose of this project is to improve customer service at Castle carwash by performing a queueing analysis. Castle carwash is a small business in Orange County. Because of a good location, this carwash has many customers. There is one waiting line and ten service stations. Services include wash, super wash, hand wax, detail, internal shampoo, and complete service. Weekends are busy business days; the waiting line is very long. That makes customers feel unhappy, and many of them leave without getting a carwash. To improve customer service, the waiting line and service rate will be analyzed at the carwash. This project will support the Castle carwash business to improve, and increase profit.

*Forecasting Monthly Sales for Jade Inn*

**by**

**Vay Ngo**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to forecast the monthly sales for Jade Inn by using past data (4 years) and different forecasting techniques to produce the most accurate forecast. Forecasting methods such as moving average, single exponential, and seasonal smoothing will be used to predict monthly sales. To determine which forecasting technique has the most accurate forecast, MAPE, MAD, and MSE will be compared for each of the techniques. The forecast will provide management with information for the future so they can adjust monthly operations according to forecasted demand.

*Evaluating Retail Customer Satisfaction for Citiwear*  
**by**  
**Lisa Uyen Nguyen**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to determine and evaluate customers' needs and retail preferences by conducting and analyzing a customer satisfaction survey for Citiwear of Redlands. This survey questionnaire will ask questions relating to the shopping experience provided to the customer. Basically, we would like to find out the customers' preferences so that we can adjust to their needs, create customer satisfaction, and keep them coming back. The store has been in business for less than five years. A study to determine the customers' satisfaction now can be taken into consideration for future interests of the business in years to come. The project will implement a one-shot case study. The data retrieved will then be analyzed and a report will be written to communicate the areas of customer need that should be addressed by Citiwear management and staff.

*Mailing List Coupon Program at Yano's Automotive Repair Shop*  
**by**  
**Tony Nguyen**

Advisor: Dr. Jeffery L. Guyse

The purpose of this project is to increase repeat customer revenues and generate new customer revenue at Yano's Automotive Repair Shop by mailing discount coupons to current and potential customers, and evaluating coupon redemptions. The effectiveness of this project will be measured by the number of coupon redemptions and monthly revenues of the business prior to implementation and after implementation. Data will be gathered by using a one-group pretest/posttest design. Customer invoices will be gathered during the beginning of the project to formulate a mailing list for returning customers and a geographical collection of addresses will formulate the new potential customers' mailing list. Once implemented, the Mailing List Coupon Program will increase the client's revenues and provide a measure of effectiveness in several areas.

*Analyzing Data for an Empirical Study of Learning Styles Among Students*  
**by**  
**Tracy Nguyen**

Advisor: Dr. Jeffery L. Guyse

The purpose of this project is to analyze data for an empirical study about the preferences of learning styles among students based on status, age, gender and major. Understanding learning styles will help students to become more aware and responsive to their learning environments and activities, and faculty can create positive teaching and learning experiences for both themselves and their students. The data used in this study are collected from Cal Poly Pomona's undergraduate and MBA students who participated in an online survey. The researcher, first, will determine if students' age, gender, and majors influence their styles. Then, the learning style patterns of the two groups of undergraduate and MBA students will be compared. General linear model will be used to identify the causal relationships between the students' status, age, gender, and major and their preferred learning styles.

*Analyzing and Evaluating the Trend of Paper vs. Electronic Data Interchange for the Financial Aid Office at Citrus College*  
**by**  
**Brandon Ong**

Advisor: Dr. Jeffery L. Guyse

The purpose of this study is to compare process measures for students who file for Financial Aid using the traditional paper form vs. filing the application electronically for the Financial Aid Office at Citrus College. The objective of this project is to provide pertinent information regarding the processing of applicants who apply by paper-form vs. web-online. The Financial Aid database records will be analyzed using statistical techniques such as Chi-Square, simple and multiple linear regression, and analysis of variance. The result will better prepare the Financial Aid Office to make the necessary adjustments to better serve the students in the future.

*Customer Satisfaction at Apple Wireless*  
**by**  
**Allen Roman**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to construct a baseline measurement of the customer satisfaction level at Apple Wireless in Los Angeles, CA, by creating, distributing, retrieving, and analyzing customer satisfaction surveys. Customers from Apple Wireless will be surveyed using a customer satisfaction survey to determine the level of satisfaction received. Responses to the survey will be collected and analyzed. Once the data have been analyzed, suggestions for improvements can be determined.

*Assessing the Level of Customer Satisfaction for Coffeerocket.com*

**by  
Sean Shan**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to determine and evaluate customer satisfaction at Coffeerocket.com in San Bernardino, California by conducting a customer satisfaction survey. The survey will be distributed and collected from the customers of Coffeerocket.com. Once the data are entered and analyzed, the results will indicate how satisfied the customers are. Customer dissatisfaction will be examined so that improvements can be made. Based on the results, recommendations will be made to the management of Coffeerocket.com about problem areas that need to be addressed. The results from this survey will give the management at Coffeerocket.com a better understanding of the customers' needs, and the recommendations will help improve customer satisfaction.

*Evaluating Customer Satisfaction Levels at Sears Product Repair Services*

**by  
Brian Stegner**

Advisor: Dr. Abolhassan Halati

The purpose of this project is to determine and evaluate customer satisfaction levels at Sears Product Repair Services by creating, conducting, and analyzing a customer satisfaction telephone survey. Customer satisfaction is crucial for Sears Product Repair Services to remain the number one in-home appliance repair provider. By analyzing the results of the survey, using One-Way and Two-Way Chi-Square, Sears will be provided with a detailed report including recommendations to improve customer satisfaction. The results will provide a baseline for management to continuously improve the satisfaction level.

*Surveying Consumers to Help Design and Implement a Website, and Evaluating the Customer Satisfaction Generated for EZ DVD*

**by  
Emmanuel Sunarjadi**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to create a survey to help design and implement a website which meets the needs and preferences of consumers, and then evaluate the customer satisfaction generated from the website. Over the last decade, the E-market has made a big impact on how businesses run today. The Internet has allowed consumers to order anything they desire while in the comfort of their own homes. More and more businesses today have created websites to market and offer their products and/or services to consumers over the Internet. EZ DVD has decided to implement a website to keep up with the growing trend in internet buying. The best way to implement a website which best meets the needs of the consumer is by directly asking the consumers. The method chosen to fulfill this will be by creating a survey questionnaire. By completing this project, the company hopes that a fully functional website will be created and its customers will be satisfied with the service that it will provide.

*Customer Satisfaction at Crafts By Jean*

**by  
Joseph Tablante**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to construct a baseline measurement of the customer satisfaction level at Crafts By Jean by developing, distributing, gathering, and analyzing customer satisfaction surveys. The objective of this project is to provide information regarding the level of satisfaction received. Customers from Crafts By Jean will be surveyed using a customer satisfaction survey. Data will be collected by using a survey questionnaire and will be analyzed through statistical techniques such as the One-Way Chi-Square and Two-Way Chi-Square Tests. Once the data have been analyzed, results will be used to identify areas of strengths and improvements for Crafts By Jean. Overall, the project will assist in providing recommendations to the owner of Crafts By Jean.

*Evaluating Customer Satisfaction for the RMA Department at Avus Systems*

**by  
Dennis Tang**

Advisor: Dr. Abolhassan Halati

The purpose of this project is to evaluate customer satisfaction of the RMA Department at Avus Systems. The Return Merchandise Authorization (RMA) Department is the department that handles returns and exchanges of defective merchandise that is covered under warranty. Customer satisfaction will be evaluated by the use of surveys of customers that return defective merchandise for repair or exchange. Surveys will be available to hand out to customers on-site during the return process. Once the customer satisfaction levels are known, the researcher will make recommendations for improvement. Upon completion of this study, Avus will have a better understanding about their customers' satisfaction, and the changes needed to better assist them in the future.

*Inventory Database Implementation*

**by  
Liem Tong**

Advisor: Dr. Ralph H. Miller

The purpose of this study is to reduce the amount of time spent accessing or modifying a record by creating, implementing and evaluating an inventory database system accessible via a web browser, using PERL and MySQL as the back-end. This will help the client move away from keeping track of computer equipment by paper. The advantage of such a system is it can be accessed anywhere on the network. It will also be able to generate reports based on queries performed on the data. In addition, the database can easily be modified.

*Implementing and Evaluating Forecasting Techniques  
for the United Business Student Senate*

**by  
Wanly Tran**

Advisor: Dr. Jeffery L. Guyse

The purpose of this study is to determine the most accurate forecasting method of available dollars for the United Business Student Senate. In an attempt to make sure that there will be enough funding, three years of historical data based on transactional amounts per month will be collected from the database of UBSS. Forecasting techniques such as Moving Average, Exponential Smoothing and Trend with a Seasonality influence will be used for this project. The most accurate method will be determined through the comparison of MAD, MSE, and MAPE. The most accurate technique will be recommended for the council to use for the following school year. The forecast allows UBSS to prepare early when creating a budget and check how much money will be available for funding to student clubs.

*Patient Satisfaction Survey At The Diabetes Education Program  
of Citrus Valley Health Partners*

**by  
Thomas Vago**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to evaluate customer satisfaction and determine customer needs for the Diabetes Education Program of Citrus Valley Health Partners in Glendora by conducting a customer satisfaction survey. The objective of this project is to provide information regarding the quality of service afforded to customers of the Diabetes Education Program. Collection of the data will be accomplished by surveying patients of the Diabetes Education Program via questionnaire. By and large, this project will assist in presenting significant recommendations to the directors of the Diabetes Education Program so that it may serve its patients more effectively.

*Measuring Employee Satisfaction at the Blue Bayou Restaurant*

**by  
Renzo Vergara**

Advisor: Dr. Ralph H. Miller

The purpose of this project is to determine and evaluate the current level of employee satisfaction at the Blue Bayou by conducting a satisfaction survey. The survey will be executed in the form of a questionnaire, once retrieved it will be analyzed using chi-square. Employees play an important role in the restaurant industry, it is the employees that deal directly with the customers and as a result it is especially important that employees be satisfied with their place of work. This study will depict the feelings that employees have toward several key issues; areas of concern will be presented to the current management in an attempt to rectify any problem areas. Attaining information of how satisfied employees are currently will help pave the way for corrections in the future.

*Benchmarking the TOM Curriculum at Cal Poly Pomona*

**by  
Kevin Yanagi**

Advisor: Dr. Abolhassan Halati

The purpose of this project is to create a benchmark for the TOM curriculum at Cal Poly Pomona by surveying a selected nation-wide sample of universities offering undergraduate degrees in the field of Operations Management, and comparing the results to the curriculum of the TOM department at Cal Poly Pomona. Survey results will be entered into a spreadsheet for comparison. Cross-tables showing the curricula and career-track options will be created for easy readability. It is expected that the findings and comparisons from the study will provide meaningful input to the faculty of the department regarding curriculum development.

## **E-Business Team Projects**

*CEIS Online Advisement Survey*

**by**

**Ching King Cheung**

**Wing Shan Sin**

**Shu Ying Chang**

**Hung Ma**

Advisor: Professor Mimi Thai-Chen

The scope of this project will be focussed on how to let CEIS students fill out the CEIS advisement survey, and update their information afterwards, on the CEIS website by creating and developing a secure, user-friendly online advisement survey form for all CEIS students. Options need to be created for students who have filled out the survey form before and want to update their contact information, or change their comment or academic information can do so. This will require the upload of the advisement survey database from the past to the system so that students who have filled out the hard copy of the survey form now can also change their information on the web.

*Job Activity Management Information Network (JAMIN) for Southern California*

*Edison Company*

**by**

**Dinh Ly**

**Vu Vo**

**Agnes Chen**

**Jace Phommasack**

**Triharini Sugiarto**

Advisor: Professor Mimi Thai-Chen

The scope of the project is to move the business functions and processes automated in JAMIN to an SCE standard technology. JAMIN provides workgroup level project/work management and services estimation automation in two areas of SCE Corporate Real Estate. JAMIN has been in production since 1994 and is developed using Claris Filemaker Pro. This software development tool is not a recognized SCE technology standard and has been identified for decommissioning. Thereby migrating current systems to SCE standard technology would greatly improve project/work management and support services.

*Southern California Water Company Customer Service Site Project*

**by**

**Carl Chang**

**Jimmy Wu**

**Bill Nguyen**

**Ann Chantakasem**

Advisor: Professor Mimi Thai-Chen

The scope of this project is to improve the existing customer service site, including reorganizing accessibility of information for the customer, providing an online bill payment option for the customer, and providing a real time billing statement for the customer, by analyzing SCWC needs in term of content deliveries, analyzing customer content needs, incorporating readily available information for FAQs, and developing the web site.

## **TOM Department Industry Advisory Board**

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- Management of technology, manufacturing, e-business

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- Inventory control, strategic decision making

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- Technology and operations management, resource planning

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- Supply chain management, web-based applications

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- Transportation simulation, service operations

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- Statistical applications, total quality management

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- Operations management, demand and capacity management, service operations

***Ralph H. Miller, Ph.D., Claremont Graduate University***

- Program evaluation, research design/methodology, statistics

***P. Rama Ramalingam, Ph.D., Oregon State University***

- Materials management, productivity improvement

***Rhonda L. Rhodes, Ph.D., Arizona State University***

- Managerial computing, telecommunications

***Leonard E. Ross, Ph.D., University of California, Berkeley***

- Decision support systems, forecasting, simulation

***James M. Salvate, Ph.D., Columbia University***

- Productivity improvement, production planning



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