COURSE OVERVIEW LM0103
Big Data Analytics for Supply Chain Optimization

Course Title
Big Data Analytics for Supply Chain Optimization

Course Date/Venue
April 06-10, 2025/Meeting Plus TBA, City Centre Rotana Doha Hotel, Doha, Qatar

3.0 CEUs (30 PDHs) AWARD

Course Reference
LM0103

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description

This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

This course is designed to provide delegates with a detailed and up-to-date overview of Big Data Analytics for Supply Chain Optimization. It covers the key characteristics and importance of big data in modern supply chain management; the role of data-driven decision-making and challenges and opportunities in big data analytics; the big data sources in supply chain, logistics and methods for big data analysis and forecasting; the data storage and processing technologies; the importance of data accuracy, consistency and completeness; and ensuring data security and compliance.

Further, the course will also discuss the supply chain data through visualization; identifying hidden patterns in logistics and inventory and using Python and R for basic data exploration; the advanced forecasting techniques with big data; predicting stock levels and demand fluctuations and reducing stockouts and excess inventory costs; identifying and mitigating risks using data analytics; and the scenario analysis and risk prediction models, supplier risk assessment and early warning systems and real-time monitoring of disruptions.

During this interactive course, participants will learn how social media impacts supply chain decisions; the sentiment analysis tools and techniques; the digital twins and virtual supply chain models; optimizing supply chain networks using big data; the profit maximization and cost reduction, predictive maintenance and asset management in supply chain; the importance of real-time analytics in logistics and manufacturing; the AI and machine learning for supply chain decision-making; how blockchain ensures traceability and trust and the challenges and adoption barriers; the new market opportunities using analytics, designing effective supply chain KPIs, using dashboards for real-time monitoring and integrating data sources for holistic insights; the emerging technologies in supply chain analytics; and implementing big data analytics in the organization.

Course Objectives

Upon the successful completion of this course, each participant will be able to: -

- Apply and gain an in-depth knowledge on big data analytics for supply chain optimization
- Discuss the key characteristics and importance of big data in modern supply chain management as well as explain the role of data-driven decision-making and challenges and opportunities in big data analytics
- Identify the big data sources in supply chain and logistics and methods for big data analysis and forecasting
- Apply data storage and processing technologies, discuss the importance of data accuracy, consistency and completeness and ensure data security and compliance
- Carryout supply chain data through visualization, identify hidden patterns in logistics and inventory and use Python and R for basic data exploration
- Employ advanced forecasting techniques with big data, predicting stock levels and demand fluctuations and reducing stockouts and excess inventory costs
- Identify and mitigate risks using data analytics, scenario analysis and risk prediction models, supplier risk assessment and early warning systems and real-time monitoring of disruptions
- Recognize how social media impacts supply chain decisions and apply sentiment analysis tools and techniques
- Illustrate digital twins and virtual supply chain models and optimize supply chain networks using big data
- Differentiate profit maximization and cost reduction and apply predictive maintenance and asset management in supply chain
- Explain the importance of real-time analytics in logistics and manufacturing and implement AI and machine learning for supply chain decision-making
- Analyze how blockchain ensures traceability and trust and evaluate the challenges and adoption barriers

- Identify new market opportunities using analytics, design effective supply chain KPIs, use dashboards for real-time monitoring and integrate data sources for holistic insights
- Discuss the emerging technologies in supply chain analytics and implement big data analytics in your organization

Exclusive Smart Training Kit - H-STK®

*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of big data analytics for supply chain optimization for supply chain managers and analysts, operations and logistics managers, procurement and purchasing specialists, data analysts and data scientists, inventory and demand planners, manufacturing and production managers and those who are responsible for supply chain efficiency, data-driven decision-making and operational improvements.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Fee

US$ 6,000 per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

- The International Accreditors for Continuing Education and Training (IACET - USA)

  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

  Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

  Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Dr. Faysal Eliyan, PhD, MSc, BSc, is a **Senior Engineer** with extensive years of experience within the **Oil & Gas**, **Petroleum** and **Refinery** industries. His expertise widely covers in the areas of **Concrete Structural Design**, **Concrete Maintenance & Reliability Analysis**, **Civil Engineering** Drawings, Standards & Codes, **Civil Engineering** Design, Petrochemical Plant Structure Design & Remediation, Elements of **Applied Civil Engineering**, **Dynamic Analysis of Rotating Equipment** Foundations **& Structural Steel Piperacks**, **Concrete & Structural Steel Design**, **Steel Structure Design**, Advanced **Building Construction Technology**, **Structural Engineering** Techniques, **Structural Renovation of Buildings**, **Earthwork & Structural Maintenance**, **Surface Drainage**, **Drainage System**, **Building Envelopes & Finishes**, **Landscaping & Roofing** System, **Seismic Design** for Buildings, **AutoCAD**, Advanced **Seismic & Wind Design of Reinforced Concrete**, **Structural** Systems & Components, Design of **Concrete Columns & Beam Frames**, Design of **Foundations & Equipment Footings**, **Maintenance of Concrete Structure**s, **Structural Reliability Assessment**, **Codes & Structural Reliability**, Probabilistic Evaluation of Existing Structures, **Structural Steel**, **Precast Concrete** and **Reinforced Polymer Layered Steel**. Further, he is also well-versed in **Gas Turbines**, **Steam Turbines, Heat Exchangers** Inspection, Testing & Overhaul Cleaning, Heating, Ventilation & Air Conditioning (**HVAC**), **Fans & Blowers**, **Heaters** & **Boilers**, **Compressors**, **Maintenance Planning & Scheduling**, **Pumps & Compressors** Operation & Maintenance, **Valves Technology** Selection, Installation & Troubleshooting, **Cooling Towers**, **Rotating Equipment**, **Turbomachinery**, **Condition Monitoring** & **Diagnostics**, **Hydraulic** & **Pneumatic Systems** Maintenance & Troubleshooting, **Piping Systems**, **Corrosion Control** & **Materials Selection** in Oil and Gas and Water Systems, **Machinery Alignment** & **Balancing**, **Maintenance Management**, **Operational Problems & Failure Analysis**, **Energy Performance Assessment** of **Powerplants**, **Plant Operations**, **Project Management**, **Six Sigma** and **Health**, **Safety** & **Environment**.

During his career life, Dr. Faysal has gained his practical and field experience through his various significant positions and dedication as the **Assistant Professor**, **Senior Consultant**, **Laboratory Instructor**, **Lecturer**, **Tutor**, **Mentor**, **Advisor**, **Trainer**, **Engineering Manager**, **Senior Engineer**, **Senior Project Engineer**, **Engineer** and **Adjudicator** from various institutions and universities such as the Community College of Qatar, American University of the Middle East, McMaster University, The University of British Columbia, The University of British Columbia, Qatar University and General Electric, just to name a few.

Dr. Faysal has **PhD**, **Master's** and **Bachelor's** degree in **Engineering** from the **University of British Columbia** (**Canada**). He is a **Certified Instructor/Trainer**, a member of the **Chamber of Civil Engineers**, **Structural Stability Research Council**, **American Institute of Steel Construction** and **American Society of Civil Engineers** (**ASCE**), **USA**. He also **published numerous books**, **researches** and **scientific papers** and received several awards and recognitions for **Journal of Materials Engineering and Performance** and has further delivered numerous trainings, courses, seminars, workshops and conferences internationally.

Training Methodology

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Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: ***Sunday, 06th of April 2025***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Introduction to Big Data in Supply Chain*** *Definition and Key Characteristics of Big Data • Importance of Big Data in Modern Supply Chain Management • The Role of Data-Driven Decision-Making • Challenges and Opportunities in Big Data Analytics*
0930 – 0945	*Break*
0945 – 1030	***Big Data Sources in Supply Chain & Logistics*** *Internal Data Sources (ERP, WMS, TMS, IoT, RFID) • External Data Sources (Social Media, Weather, Market Trends, Sensors) • Structured versus Unstructured Data in Supply Chain • Data Collection and Integration Strategies*
1030 – 1130	***Methods for Big Data Analysis & Forecasting*** *Descriptive, Diagnostic, Predictive and Prescriptive Analytics • Machine Learning and AI Techniques for Data Processing • Statistical Modeling and Pattern Recognition • Importance of Real-Time Analytics in Supply Chain*
1130 - 1230	***Data Storage & Processing Technologies*** *Cloud-Based versus On-Premises Data Storage Solutions • Hadoop, Spark and Other Distributed Computing Technologies • Database Management Systems (SQL, NoSQL, Graph Databases) • Data Lakes versus Data Warehouses for Supply Chain*
1230 – 1245	*Break*
1245 – 1330	***Data Quality & Governance in Supply Chain*** *Importance of Data Accuracy, Consistency and Completeness • Master Data Management (MDM) Principles • Ensuring Data Security and Compliance (GDPR, ISO 27001) • Ethical Considerations in Data Usage*

1330 – 1420	***Case Study: How Leading Companies Use Big Data in Supply Chain*** *Real-World Examples from Amazon, Walmart and Maersk • Lessons Learned and Best Practices • Interactive Discussion on Challenges and Solutions • Group Exercise: Identifying Key Data Sources in an Example Supply Chain*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2: ***Monday, 07th of April 2025***

0730 – 0830	***Exploratory Data Analysis (EDA) for Supply Chain*** *Understanding Supply Chain Data Through Visualization • Identifying Hidden Patterns in Logistics and Inventory • Using Python and R for Basic Data Exploration • Hands-On Activity: Analyzing Sample Supply Chain Data*
0830 – 0930	***Advanced Forecasting Techniques with Big Data*** *Time Series Analysis (ARIMA, Exponential Smoothing, Prophet) • Machine Learning Models (Regression, Neural Networks) • Demand Forecasting and Seasonality Analysis • Real-World Examples of Predictive Analytics in SCM*
0930 – 0945	*Break*
0945 – 1100	***Big Data & Inventory Optimization*** *Predicting Stock Levels and Demand Fluctuations • Just-In-Time (JIT) and Real-Time Inventory Management • Reducing Stockouts and Excess Inventory Costs • Case Study: Using Big Data to Optimize Warehouse Operations*
1100 – 1230	***Supply Chain Risk Management with Big Data*** *Identifying and Mitigating Risks Using Data Analytics • Scenario Analysis and Risk Prediction Models • Supplier Risk Assessment and Early Warning Systems • Real-Time Monitoring of Disruptions (Weather, Market Shifts)*
1230 – 1245	*Break*
1245 – 1330	***Sentiment Analysis & Social Media Monitoring for Demand Forecasting*** *How Social Media Impacts Supply Chain Decisions • Sentiment Analysis Tools and Techniques • Case Study: How Brands Like Nike and Zara Use Social Insights • Hands-On Activity: Analyzing Twitter Data for Supply Chain Insights*
1330 – 1420	***Case Study & Hands-on Exercise*** *Group Discussion on Forecasting Failures and Success Stories • Hands-On Session Using Power BI/Tableau for Supply Chain Analytics • Exploring Predictive Models Using Python or Excel • Q&A Session and Discussion on Industry Trends*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3:	Tuesday, 08th of April 2025
0730 – 0830	***Digital Twins & Virtual Supply Chain Models*** *What are Digital Twins in Supply Chain? • Benefits of Real-Time Virtual Modeling • Technologies Enabling Digital Twins (IoT, AI, Simulation) • Case Studies of Digital Twins in Logistics and Manufacturing*
0830 – 0930	***Using Big Data Analysis for Dynamic Simulations*** *Role of Simulation in Supply Chain Decision-Making • Discrete Event Simulation and Agent-Based Modeling • Monte Carlo Simulation for Risk Assessment • Hands-On Session: Creating a Simple Supply Chain Simulation*
0930 – 0945	*Break*
0945 – 1100	***Optimizing Supply Chain Networks Using Big Data*** *Data-Driven Network Design and Transportation Optimization • Route Optimization and Last-Mile Delivery Efficiency • AI-Driven Decision Support Systems • Real-World Applications in Logistics and Distribution*
1100 – 1230	***Profit Maximization versus Cost Reduction: A Balanced Approach*** *Identifying Cost Drivers in Supply Chain Operations • Using Analytics for Cost-Benefit Trade-Off Analysis • Balancing Service Levels with Financial Performance • Practical Example: Optimization in E-Commerce Supply Chains*
1230 – 1245	*Break*
1245 – 1330	***Predictive Maintenance & Asset Management in Supply Chain*** *Role of IoT and Machine Learning in Predictive Maintenance • Reducing Downtime Through Condition-Based Monitoring • Asset Lifecycle Optimization Using Data Analytics • Case Study: Predictive Maintenance in Manufacturing and Logistics*
1330 – 1420	***Workshop: Creating a Virtual Supply Chain Model*** *Group Activity: Designing a Virtual Supply Chain Scenario • Implementing Analytics to Improve Performance • Presenting Solutions and Discussing Improvement Strategies • Q&A Session on Real-World Implementation Challenges*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4:	Wednesday, 09th of April 2025
0730 – 0830	***Real-Time Big Data Processing in Supply Chain*** *Importance of Real-Time Analytics in Logistics and Manufacturing • Event-Driven Architecture for Decision-Making • Tools for Real-Time Streaming Analytics (Kafka, Flink, Spark Streaming) • Case Study: Real-Time Tracking and Monitoring in Supply Chains*
0830 – 0930	***AI & Machine Learning for Supply Chain Decision-Making*** *AI-Driven Decision Support Systems • Reinforcement Learning for Dynamic Optimization • Chatbots and AI Assistants in Procurement and Logistics • Predicting Supplier Performance Using AI*
0930 – 0945	*Break*
0945 – 1100	***Blockchain for Supply Chain Transparency & Security*** *How Blockchain Ensures Traceability and Trust • Smart Contracts for Automated Transactions • Blockchain Use Cases in Food Safety and Pharmaceuticals • Challenges and Adoption Barriers*

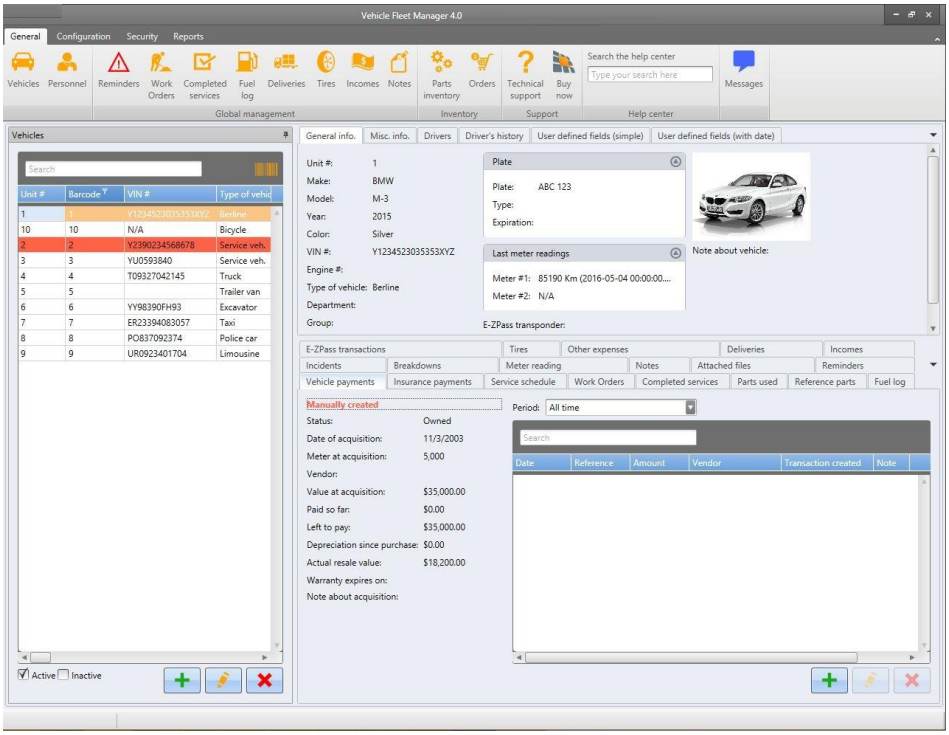
1100 – 1230	***Data-Driven Market Expansion Strategies*** *Identifying New Market Opportunities Using Analytics • Competitive Intelligence Through Big Data • Dynamic Pricing Models and Customer Segmentation • Case Study: Using Data to Expand into Emerging Markets*
1230 – 1245	*Break*
1245 – 1330	***KPI Monitoring & Performance Dashboards*** *Designing Effective Supply Chain KPIs • Using Dashboards for Real-Time Monitoring • Integration of Data Sources for Holistic Insights • Hands-On: Creating a Power BI Dashboard for Supply Chain Data*
1330 – 1420	***Interactive Workshop: AI-Powered Real-Time Decision-Making*** *Analyzing Live Supply Chain Data • Predicting Disruptions and Optimizing Decisions • Group Discussions on Best Practices • Final Presentation of Group Findings*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Four*

Day 5: ***Thursday, 10th of April 2025***

0730 – 0930	***Emerging Technologies in Supply Chain Analytics*** *AI and Machine Learning Trends in Supply Chain Optimization • The Potential of Quantum Computing in Logistics • 5G and IoT for Real-Time Supply Chain Management • Autonomous Vehicles and Drones in Supply Chain Operations*
0930 – 0945	*Break*
0945 – 1100	***Implementing Big Data Analytics in Your Organization*** *Best Practices for Integrating Big Data Tools in Supply Chains • Overcoming Organizational and Technological Barriers • Change Management Strategies to Ensure Successful Implementation • Tools and Techniques for Measuring ROI On Big Data Projects*
1100 – 1230	***Capstone Project: Solving a Real-World Supply Chain Problem*** *Problem Identification and Solution Development Process • Data Collection and Analysis for the Project • Developing Predictive Models and Optimization Strategies • Presenting Findings, Recommendations and Potential Outcomes*
1230 – 1245	*Break*
1245 – 1345	***Hands-On Workshop: Implementing a Data-Driven Solution*** *Building a Practical, Data-Driven Solution for a Supply Chain Problem • Real-Time Data Collection and Analysis Using Available Tools • Optimizing the Solution Using Predictive and Prescriptive Analytics*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulator (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using our state-of-the-art simulators “Vehicle Fleet Manager 4.0” software.



Vehicle Fleet Manager 4.0

Course Coordinator

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