

REAL TIME DATA VISUALIZATION AND DECISION MAKING IN ERP LOGISTICS GAME: PROJECT CASE STUDY

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ABSTRACT

Traditionally, the IS core course in the MBA curriculum often uses case analyses to provide students opportunities to apply conceptual materials to industrial practice or to teach them from the perspective of information literacy [1] [2] [6]. Lacking exposure, visualization, and hands-on practice on the actual business information systems, MBA students would hardly learn the analytical knowledge and skills for their career development. This paper presents a case study conducted in the Business Information Systems course in the MBA curriculum using SAP ERPsim and data visualization tools to provide students the opportunity to learn ERP technology, data integration and data analytical skills with hands-on experience in the simulated enterprise environment. Playing the game is not only an engaging experience for students to learn business processes and the transactions, but also a process for them to have access to data that is meaningful to them and to learn more on how to get the best out of it. The best part of the project case is that SAP Lumira, SAP's data discovery and visualization tool, which allows students to do data analytics in real time while the simulation game is running. More demonstration of project solutions and data visualization will be discussed during the conference presentation.

Keywords: ERP, SAP, Curriculum, Real Time Data, Data in Memory

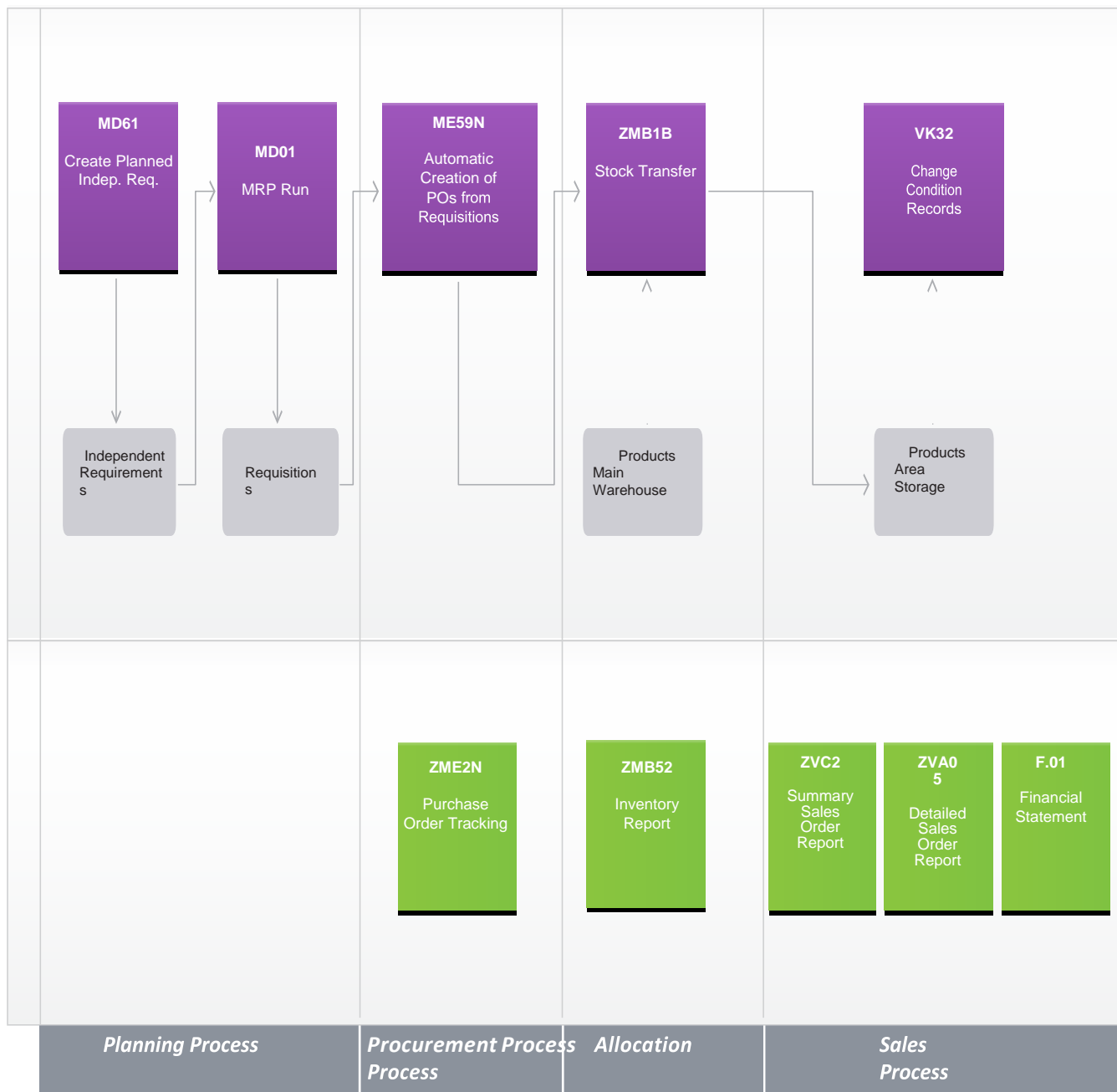
CASE PROJECT SUMMARY

ERPsim Logistics Dairy Game [5] simulates in the real enterprise logistics environment. Students are assigned into teams in the Business Information Systems course. Each team manages a dairy trading company. Each company has its own main warehouse in Germany. The companies need to send products in the regional warehouses in order to sell them in the three respective regions. They can only sell products that are held in their storage locations. Therefore, (1) they have to buy their products from their suppliers and (2) they need to distribute their products from their main warehouse to their three regional storage locations to be able to sell them. Teams must decide on and implement product transfer strategies. Success in the game depends on the team's ability to forecast the demand in each region for each product and plan procurement and product delivery accordingly. In order to help students learn the actual use of the ERP system to facilitate logistical processes, purchase order process and sales order process are used as example exercises. Most of the transactions involved in these processes are operational in nature, such as to purchase materials or to deliver finished products [3].

The focus of the logistics game is on the full integration of all its business processes. In the game, participants must manage the procurement process as well as the pricing and material transfers. Figure 1 illustrate four main integrated business processes in the ERPsim Logistics Game [3]. The four business processes are the planning process, procurement process, allocation process, and sales process. The four roles to play in each team are Planning Manager, and Materials Management Manager, Sales Manager and CEO.

The first business process is the planning process managed by the Planning manager. His/Her responsibility is to forecast sales, calculate requirements (Run MRP) and create purchase requisitions. The second process is the procurement process managed by the material manager. His/her responsibility is to generate purchase orders and track them. The next process is the allocation process also managed by the Material Management Manager. The main responsibility of the Material Manager is to determine a push or pull strategy to make sure the inventory in all of the storage locations is stocked. The Material Manager can also generate an inventory report to see the levels of inventory. The last process is the sales process, managed by the sales manager. The sales manager is responsible for the pricing of the goods and generating summary and detailed sales reports. CEO reads reports and makes important decisions for the company. Figure 1 illustrates the four integrated business processes in the ERPsim Logistics Game [4].

Figure 1. Integrated Business Processes in ERPsim Logistics Game



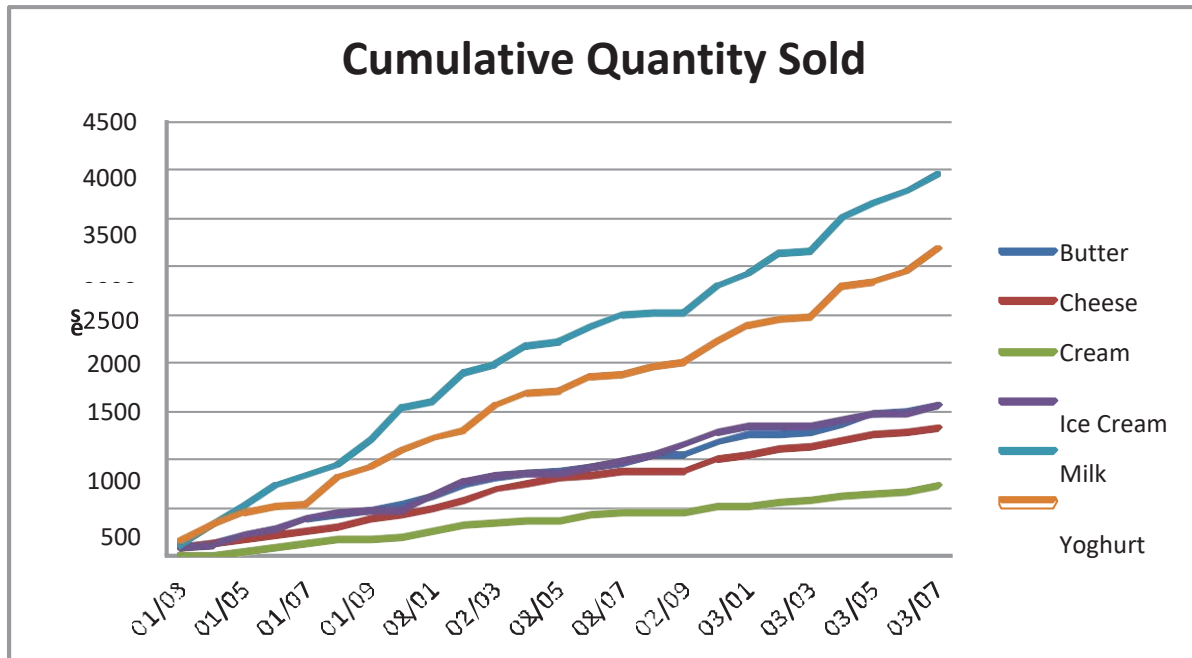
Case Phase 1. Students play the game in their roles while visualizing data changes in real time using SAP Lumira. The game simulator connected to SAP HANA on cloud will generate real time data from SAP HANA - a big data in memory platform. Figure 2 illustrates data visualization in different perspectives in real time from seven views on Hana [5, p.16].

Figure 2. Data Visualization in Real Time from Seven Views on Hana

Perspective	To visualize data in different views	FINANCIALS_BALANCES	FINANCIALS_POSTINGS	GOODS_MOVEMENTS	INVENTORY	INVENTORY_KPI	MARKET	SALES
Financials	... daily cumulative amounts for a given G/L account	<input type="checkbox"/>						
	... to use time series to analyse the balance of G/L	<input type="checkbox"/>						
	... to see financial statements that updates in real time		<input type="checkbox"/>					
	... a detailed view of my accounting transactions		<input type="checkbox"/>					
Materials	... to analyze goods movements (internally and			<input type="checkbox"/>				
	... to analyse the flow of goods over time			<input type="checkbox"/>				
	... to identify past or potential future stock outs				<input type="checkbox"/>	<input type="checkbox"/>		
	... to identify past or potential future overstocks				<input type="checkbox"/>	<input type="checkbox"/>		
	... to visualize my production runs over time							
	... to compare my company to my competitors and the						<input type="checkbox"/>	
	... to understand customer demand						<input type="checkbox"/>	<input type="checkbox"/>
	... a detailed breakdown of my sales							<input type="checkbox"/>
	... to calculate the margins made on my sales							<input type="checkbox"/>
	... to visualize price elasticity							<input type="checkbox"/>
	... to segment my sales by distribution channel and area							<input type="checkbox"/>

Case Phase 2. Each student team will download data from SAP HANA directly, analyze the data and create their executive data analytical report. Figure 3 displays the total cumulative number of boxes sold over time for six products using the Dairy Sales cube. The cube contains the quantity sold by dates and products. Display the sum of quantity sold by date (in row labels) and by product description (in column labels). Figure 3 shows the sum of quantity, change the value setting and show the value as a running total [7].

Figure 3 Sum of Cumulative Quantity Dairy Sales for Six Products



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