



FACULTY/COLLEGE	College of Business and Economics
SCHOOL	Johannesburg Business School
DEPARTMENT	Transport and Supply Chain Management
CAMPUS(ES)	APK
MODULE NAME	Demand Planning
MODULE CODE	LMA8X11
SEMESTER	Second
ASSESSMENT OPPORTUNITY	Final Summative Assessment Opportunity
MONTH AND YEAR	November 2019

ASSESSMENT DATE	2019	SESSION	08:30 – 11:30
ASSESSOR(S)	Dr S Carstens		
MODERATOR(S)	Dr KR Lambert		
DURATION	3 hours (180 min)	TOTAL MARKS	180

NUMBER OF PAGES OF QUESTION PAPER (Including cover page)	4
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INFORMATION/INSTRUCTIONS:

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- This is a closed-book assessment.
 - There are 4 questions.
 - Answer each question in a separate book.
 - Read the questions carefully and answer only what is required.
 - Number your answers clearly and correctly as per the question paper.
 - Write neatly and legibly on both sides of the paper in the answer book, starting on the first page.
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The South African Widget Company (SAWC) manufactures widgets in Johannesburg and distributes these products to markets in Gauteng, Western Cape and KwaZulu-Natal. The components are supplied by various suppliers in South Africa. Subsequent to reasonable growth in sales the company has experienced pressure on sales recently. This was mainly due to the stagnant economy, but also the entrance of an international manufacturer in the local widget market.

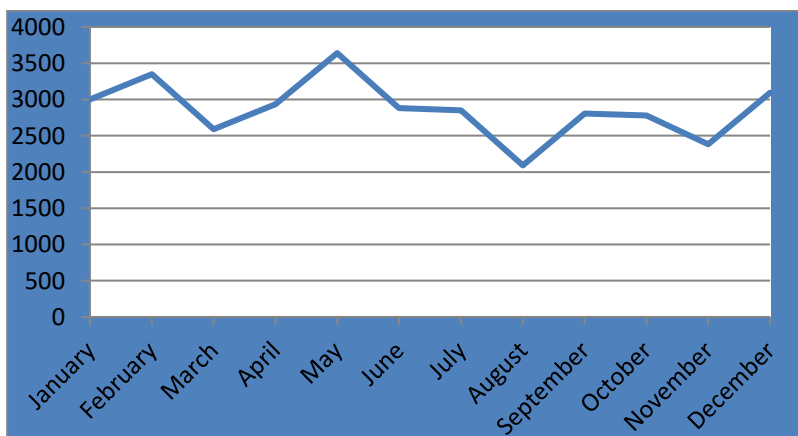
As a result SAWC has initiated various cost saving projects. The increasing level of competitiveness in the widget market has also led to higher levels of demand variability. SAWC has implemented an inventory control system that is integrated with their enterprise resource planning (ERP) system. Information is shared nationally since the regional offices are linked with head office through the ERP system.

With increased levels of demand variability and the focus on inventory levels, production is under increased pressure to operate efficiently, but also be more flexible. The company has contracted the services of a consultant to evaluate all the production and related operational processes in terms of throughput (flow rate, flow time, inventories) and variability (demand and lead time).

Thandi Blair, the supply chain manager, was requested to develop a production plan for the following year. To this end she obtained the monthly sales figures (nationally) for the past year as shown in the table below.

	Sales (units)
January	3000
February	3350
March	2590
April	2934
May	3640
June	2883
July	2850
August	2090
September	2807
October	2780
November	2383
December	3095

A graphical representation of the sales data for this period clearly illustrates the influence of the market and the economy on sales during the past year.



In order to develop a production plan that takes the production capacity constraints, inventory objectives and marketing plans into account, Thandi held meetings with the production, sales and marketing managers. In addition, she embarked on a collaborative forecasting process with the company's key customers. The meetings and the collaborative process resulted in the following additional information that may impact on sales forecasts for the next year:

- In order to increase the awareness of SAWCs widgets in the market a national advertising campaign is planned for the first half of the following year. It is believed that monthly sales will increase by 16% for the first six months.
- A major customer in Gauteng plans to revamp three stores in June which will result in the closing of these stores for the month. This will reduce SAWCs outlets nationally to 12.
- A customer in the Western Cape is planning to open 5 new stores in October.
- SAWC intends to run a special promotion in June and July to increase the mid-year widget sales and it is expected to increase monthly sales by 20%.

Further discussions with the production manager in Johannesburg allowed Thandi to obtain the following additional information:

- | | |
|--------------------------------------|--------------------|
| • Opening inventory | 200 widgets |
| • Workforce available | 10 workers |
| • Production productivity per worker | 300 widgets/month |
| • Regular production cost/unit | R60/widget |
| • Overtime production cost/unit | R68/widget |
| • Hiring cost | R1 500/worker |
| • Layoff | R3 000/worker |
| • Inventory holding cost/unit | R2.00/widget/month |

QUESTION 1 [32 MARKS]

- 1.1 Highlight the most important fundamentals of forecasting that Thandi should take into account to improve their demand planning. (20)
- 1.2 Describe a process that Thandi could follow to obtain consensus forecasts that will increase forecast accuracy. (12)

QUESTION 2 [54 MARKS]

- 2.1 Describe the impacts on supply chain performance that the company may expect as a result of the lack of coordination. (16)
- 2.2 What practical advice would you give the company to achieve coordination in the supply chain? (14)
- 2.3 Describe the collaborative planning, forecasting and replenishment (CPFR) process model to illustrate how it may contribute to higher levels of forecast accuracy. (24)

QUESTION 3 [54 MARKS]

- 3.1 Use the available information to demonstrate the benefits of a collaborative forecasting process on the forecasts for the first six months of the following year. (14)
- 3.2 Briefly describe a level production plan and develop a level aggregate production plan for the first six months of the following year. (24)

- 3.3 How would you suggest that the company implement aggregate planning in practice? (16)

QUESTION 4

[40 MARKS]

- 4.1 Discuss the following elements that need to be managed as part of the effort to manage demand effectively and profitably:
- Product portfolio
 - New product introduction
 - Demand planning performance (16)
- 4.2 Explain how POS data could assist the company to achieve its demand planning objectives. (24)

TOTAL [180 MARKS]