

EXAMINATION QUESTION PAPER - Take-home examination

EXC 21221 Strategic Management Accounting

Department of Accounting, Auditing and Business Analytics

Start date:	16.12.2015	Time 12.00
Finish date:	18.12.2015	Time 12.00

Weight:	100% of EXC 2122
Total no. of pages:	7 incl. front page
No. of attachments files to question paper:	0
To be answered:	Individually

Answer paper size:	Up to 10 pages excl. attachments
Max no. answer of paper attachment files:	1
Allowed answer paper attachment file types:	pdf
Re-sit	Extraordinary re-sit

The exam paper must also include a table of contents, a summary at the beginning and a bibliography/reference list at the conclusion of the paper. These pages are counted separately from the main paper. You will find a thorough explanation of how to use quotes and references on the BI library webpage: www.bi.edu/library/training-and-support/citing-and-referencing. For information on formal requirements and template paper; see www.bi.edu/templatepaper

Part one (25%)

In the small country of Lumumbia the airport authorities are concerned about the efficiency at the main airport in the country's capital. A group of officials from LAA (Lumumbia Airport Authority) travelled recently to other countries to observe and to learn about how other airports handle various internal processes.

In the fall of 2015, LAA commenced on a project to simplify the process of handling departing passengers, inspired by other airports where elements of the *lean-philosophy* have proven to give good results.

The main airport has more than 10 million annual departing passengers on domestic and international flights, and LAA is currently studying the process that starts with one passenger arriving at the airport premises and ends with the same passenger being on board of a plane ready for take-off. Today the process consists of the following activities:

1. Upon entering the arrival hall, the passengers must find the appropriate check-in counter; the different airline companies have their own counters (in total around 40). Passengers are requested to show up at least two hours prior to flight departure.
2. When finding the check-in counter operated by the relevant airline company, passengers line up and tickets and passports and/or other identification cards are checked, luggage is dropped off and a boarding card is printed. The check-in officer enters passenger name, age and nationality into the airport's computer system. Several airport officers help to ensure that the waiting lines are straight because check-in space is limited.
3. Passengers then proceed to the security control where officers check the validity of their boarding passes. Passengers without such are of course rejected. The security control routines comply with international standards. The waiting lines for security control are often very long, also after two new surveillance bands were recently installed. On average, every third passenger is requested by the security personnel to put additional personal belongings such as mobile phones, jewelry, watches and belts on the bands because of security gate alarms being triggered in the security scanning process.
4. Around 40 minutes prior to scheduled departure, the check-in counter is closed and the officer make a print-out of the passenger list and runs over to the departure gate with this before boarding can take place.
5. After security control, passengers must find the appropriate departure gate and stand in line when the airplane is ready for boarding. Gate officers check the boarding passes to see that no passengers are entering the wrong flight. Half of the boarding pass is kept for control purposes; the other half is given back to the passengers for seating information. The officers also check that the hand luggage size and weight are within the acceptable limits. Passengers that have oversized hand luggage are instructed to go back to step two and check in this as ordinary luggage.
6. Around 20 minutes prior to scheduled departure, the passenger list is checked against boarding cards and missing persons are paged on the loudspeakers ("last call"). If a person fails to show up, the crew must check if this person has checked in any luggage and if so, remove this from the cargo area of the plane to avoid chances of a bomb being placed onboard. The plane is ready for take-off when all passengers on the check-in list is accounted for.

- a) Describe how elements of the lean-philosophy may increase process efficiency at the Lumumbian main airport.
- b) Comment on the current check-in process and suggest alternative solutions that may improve process efficiency without compromising airport security.

Two of the elements of classical lean-philosophy, as presented by Taiichi Ohno, once a production manager of Toyota, deal with the importance of leveling out the production workload ("heijunka" in Japanese) at the same time the company is using a "pull system" to avoid overproduction.

- c) Describe how these two operation concepts can be difficult to combine in a situation where the demand for a company's products is highly unstable.

Part two (25%)

In 1996, Robert S. Kaplan and David P. Norton wrote the book "The Balanced Scorecard: Translating Strategy into Action". Only a few years later, many private companies and entities in the public sector had implemented a model for measuring organizational performance on both financial and non-financial areas, inspired by this book.

The expression "beyond budgeting" were used already at the beginning of the millennium to describe an enterprise that no longer used budgets as their main control tool, but had adopted the thoughts and views of the Balanced Scorecard enthusiasts.

- a) In your opinion, what are the main reasons for the popularity of the Balanced Scorecard models?
- b) Now, some fifteen years after the expression "Beyond Budgeting" was used for the first time, what roles do budgets in private or public entities play today?

In the search of well-functioning Key Performance Indicators, many companies discover that many factors that are regarded as critical for achieving long-term overall financial success may be difficult to measure. The implementation of an efficient Balanced Scorecard model may therefore prove to be more difficult than initially expected.

- c) Give examples of critical success factors in a company that may be difficult to link to one or more KPIs with the sufficient validity and reliability and discuss why this may be a challenge to management.

Part three (30%)

The company PowerBox Inc. in the U.S. state Nebraska manufactures a pocket size charger for car batteries. Unlike other battery chargers that requires a power cord to function, the PowerBox is charged in advance and stores electrical power for many weeks, which comes in handy when a car owner needs to charge a battery away from home. Instead of calling a towing service, the car owner can jump-start his car using PowerBox, and is back on the road again within a minute or so.

The inventors of this technology expect many different uses for such storage of electrical power, but the owners of PowerBox Inc., who has licensed the technology for car battery chargers only, have limited sources of funding and have to concentrate on this small niche in the market, at least in the near future.

PowerBox Inc. expects the income statement for 2015 to look as follows:

Sales income (1)	\$ 2 600 000
Production costs (2)	\$ 910 000
Royalty paid to inventors of technology (3)	\$ 130 000
Sales and marketing costs (4)	\$ 720 000
Administration and other overheads (4)	\$ 680 000
Finance costs (4)	\$ 70 000

Forecasted profit 2015 before taxes	\$ 90 000

- (1) Expected sales and production 100 000 units
- (2) Of which 70% is considered variable costs
- (3) 5% of sales income, according to a five-year agreement from year 2012
- (4) Regarded as fixed costs

PowerBox Inc. expects the balance sheet per 31st December 2015 to look as follows:

Production machinery and tools (1)	\$ 290 000
Company cars (2)	\$ 100 000
Inventory	\$ 320 000
Accounts receivable (3)	\$ 440 000
Bank deposits	\$ 180 000

Total assets	\$ 1 330 000
Share capital	\$ 50 000
Retained earnings	\$ 130 000
Long-term liabilities (4)	\$ 440 000
Accounts payable (4)	\$ 450 000
Other short-term liabilities (4)	\$ 260 000

Total equity and liabilities	\$ 1 330 000

- (1) Annual depreciation \$ 30 000
- (2) Annual depreciation \$ 30 000
- (3) No provision for bad debts
- (4) No payback to creditors planned for 2016

- (5) All payable within the end of 2016, including corporation tax of \$ 30 000 for fiscal year 2015 (corporation tax for 2016 is paid in 2017)

So far, PowerBox Inc. has concentrated on the US domestic market, predominately the coldest states where winter temperatures challenge car batteries. According to the company's strategy plan for 2015-2018 the company has decided to enter the Canadian market and to have success there before the end of the planning horizon. Parallel to that, the growth in the US market shall continue steadily. The question is therefore if it is possible to do both in 2016.

When the activity plan for 2016 is discussed, three alternative scenarios are presented to the management:

Scenario	Sales US	Sales Canada	Sales price per unit	Variable costs (1)	Fixed costs	New investments (2)
Number 1	110 000 units	0 units	\$ 24.00	Production costs per unit unchanged	5% increase	None
Number 2	130 000 units	30 000 units	\$ 20.00	Production costs per unit decreases with 3%	10% increase	\$ 180 000
Number 3	150 000 units	60 000 units	\$ 17.00	Production costs per unit decreases with 6%	15% increase	\$ 330 000

- (1) Cost structure variable/fixed costs same as in 2015
(2) New investments depreciated linearly over three years

- a) What is the most profitable of the three scenarios? Present your conclusion with the necessary supporting calculations.

Let us assume that PowerBox Inc. chooses scenario 3 and that consequences of this highly expanding growth policy are that:

- Inventory balance increases with 30% during 2016
 - Accounts receivable balance increases with 40% during 2016
 - Accounts payable balance increases with 40% during 2016
 - Other short-term liabilities increase with 30% during 2016
- b) Use a cash flow forecasting model to present the expected balance of bank deposits at the end of 2016. Comment on your conclusions. If you conclude that cash reserves seem to be insufficient at the end of 2016, suggest alternative measures to improve the situation.

Part four (20%)

PowerBox Inc. is currently implementing an Activity Based Costing model to increase the understanding of the fixed production costs, the sales and marketing costs and the administration and other overhead costs. The company has not yet quite succeeded using ABC though, due to discussions in the administration regarding the split of the above costs to activity costs and defining relevant cost drivers.

- a) Discuss why finding and defining relevant cost drivers will determine the quality of an Activity Based Costing model.

The forecasted production costs of \$ 910 000 is split as follows:

Material and components for 100 000 finished units	\$ 250 000
Production labor costs, 10 000 hours	\$ 350 000
Packaging	\$ 37 000
Salaries and personnel costs Production Supervisor	\$ 70 000
Salaries and personnel costs Procurement Officer	\$ 55 000
Salaries and personnel costs Maintenance Officer	\$ 55 000
Portion of rent costs for the company's premises	\$ 43 000
Depreciation	\$ 30 000
Miscellaneous costs	\$ 20 000

It seems to be possible to link most of the fixed part of the above costs (\$ 273 000), to three activities:

Activity	Activity costs	Cost driver	Activity frequency (2)	Available capacity (3)
Quality assurance (1)	\$ 30 000	No. of quality tests	120 tests	150 tests
Procurement	\$ 66 000	No. of purchase orders	140 purchases	250 purchases
Maintenance	\$ 72 000	No. of service jobs	160 jobs	240 jobs
Unassignable costs	\$ 105 000	---	---	---

- (1) The Production Supervisor carries out the quality assurance tasks.
(2) The activity frequency refers to how many times the activity is carried out during 2015
(3) The available capacity refers to how many times the activity ideally could be carried out
- b) Analyze the current cost of excess capacity in the Production Department, based on the 2015 figures. What are the strategies that PowerBox Inc. may implement to reduce the costs of excess capacity in the future? What do you think are the most relevant options?

Another activity area that PowerBox Inc. wants to analyze further is sales and marketing costs, especially those that relate to follow up the company's customers.

The company sells car battery chargers through three U.S. chains of retailers:

- CarMart – a chain of 600 outlets in 46 American states, specializing in parts, tools and accessories for a broad range of cars and trucks
- Honest Pete's – a chain of 40 outlets in 10 American states, specializing in parts, tools and accessories for trucks, pick-ups and vans
- McGill – a large chain of supermarkets, about 500 of them has hardware departments that also sell car tools.

The forecasted sales and marketing costs of \$ 720 000 is split as follows:

Salaries and personnel costs Marketing Manager	\$ 120 000
Salaries and personnel costs three sales representatives	\$ 260 000
Company cars	\$ 40 000
Travel costs and exhibitions	\$ 70 000
Advertising and sponsoring	\$ 100 000
Presentation material	\$ 30 000
Depreciation	\$ 20 000
Portion of rent costs for company's premises	\$ 40 000
Miscellaneous costs	\$ 40 000

It seems to be possible to link some of these costs to some activity groups:

Activity	Cost driver	Activity costs	Activity frequency
Meetings with retailers (1)	No. of meetings	\$ 160 000	125 meetings
Other contact with retailers (2)	No. of hours	\$ 144 000	2 400 hours
Handling customers' complaints (3)	No. of complaints	\$ 48 000	3 200 complaints
Marketing activities new customers	---	\$ 200 000	---
Unassignable costs	---	\$ 168 000	---

- (1) Meetings with retail management or with managers at various outlets of the three retailers
- (2) Communication on phone, e-mail or other correspondence
- (3) Handling of warranty issues and customer support on behalf of the three retailers

The sales three activities seems to be distributed between the three retailers as follows:

Activity	CarMart	Honest Pete's	McGill
Sales in units	66 000	14 000	20 000
Meetings with retailers	70	20	35
Other contact with retailers	800 hours	200 hours	1 400 hours
Handling customers' complaints	1 600 complaints	50 complaints	1 550 complaints

The sales price per unit is the same for all three retailers and the average production costs per unit equals \$ 9.10.

- c) Make a profit analysis of the three customer groups using the available data above.