CERTIFIED PUBLIC ACCOUNTANT

ADVANCED LEVEL 2 EXAMINATIONS

A2.2: STRATEGIC PERFORMANCE MANAGEMENT

DATE: THURSDAY,02 DECEMBER 2021

MODEL ANSWER AND MARKING GUIDE

STRATEGIC PERFORMANCE MANAGEMENT (A2.2)

MARKING GUIDE

QUESTION ONE :	**Marks**
a) **Appraising CEO's recommendation to close BTC**	
Liquidity ratio	
Meaning of liquidity ratio	0.5
Calculation of the ratio at KTC	0.5
Calculation of the ratio at BTC	0.5
Conclusion	0.5
Marks	**2**
Cash ratio	
Meaning of cash ratio	0.5
Calculation of the ratio at KTC	0.5
Calculation of the ratio at BTC	0.5
Conclusion	0.5
Marks	**2**
Net Gearing ratio	
Meaning of Net Gearing ratio	0.5
Calculation of the ratio at KTC	0.5
Calculation of the ratio at BTC	0.5
Conclusion	0.5
Marks	**2**
Return on capital employed (ROCE)	
Meaning of ROCE	0.5
Calculation of ROCE at KTC	0.5
Calculation of ROCE at BTC	0.5
Conclusion	0.5
Marks	**2**
Dividend payout ratio	
Meaning of Dividend Payout	0.5
Calculation of the ratio at KTC	0.5
Calculation of the ratio at BTC	0.5
Conclusion	0.5
Marks	**2**

Non-financial performance measures

Deaths	1
Lost Courier	1
Staff turnover	1
Trip waiting time	1
Revenue per passenger	1
Fuel efficiency	1
Number of passengers	1
Profitability	1
Any other valid point	1
Maximum marks	**7**

Recommendation	
Unsubstantiated recommendation	1
Ground for BTC's discontinuation	1
Conclusion	1
Maximum marks	**3**

Total marks	***20***

b) **Appropriate Business process re-engineering (BPR) action**

Define BPR	1
Use of new marketing techniques	1
Adopt computerized ticketing	1
Train administrative staff	1
Train technical staff	1
Reduce luggage cycle time	1
Improve debt recovery process	1
On time maintenance of transport vehicles	1
Adopt ABC	1
Any other valid point (will earn a mark)	
Maximum marks	***8***

c) EVA

Definition of EVA	0.5
EVA Formulae	0.5
WACC	1
Calculated EVA	2
Maximum marks	**5**

Disagreement with Three Brothers

Not achieving desired profit	1

Increase in EVA over all	1
Maximum marks	**2**
Total marks	***7***

d) Evaluate TNT mission statement

Satisfying customer needs	1
Tell who customers are	1
Explain customer needs being satisfied	1
How to serve customers	1
Based on competitive advantage	1
Motivates and inspires employees	1
Nature of organisation's business	1
Values and culture	1
Any other valid point (to earn a mark)	
Maximum marks	***5***

e) Backflush Costing

Definition	1
Advantage	1
Disadvantage	1
Reference to BTC	1
Conclusion and recommendation	1
Any other valid point (to earn a mark)	
Maximum marks	***5***

f) i) **Target costing**

Definition	1
Calculation	1
Conclusion	1
Marks	**3**

ii) Service business characteristics

Intangibility	0.5
Inseparability	0.5
Variability	0.5
Perishability	0.5
Marks	**2**
Total marks	***5***
Total marks	**50**

a) Evaluation of the CEO's recommendation to close BTC by analyzing BOTH Companies performance using financial ratios recommended by the shareholders and the Non-financial performance indicators.

(i) Liquidity Ratio

Liquidity ratios indicate the ability to meet short-term obligations to creditors as they mature or come due.

	31.12.2020	31.12.2020
Description	**KTC**	**BTC**
	"000"	**"000"**
Current Assets /Current Liabilities	334,811/ 338,336 = **0.99**	675,537/ 56,910 = **11.9**

In terms of Liquidity ratio, BTC is performing way better than KTC. BTC is able to honor its short-term obligations. while KTC's ratio of less than 1 implies that the company is struggling to pay its short-term obligations.

(ii) Cash Ratio

The cash ratio is a liquidity measure that shows a company's ability to cover its short-term obligations using only cash and its cash equivalents.

	31.12.2020	31.12.2020
Description	**KTC**	**BTC**
	"000"	**"000"**
Cash and Cash Equivalent/Current Liabilities	260,000 / 338,336 = **0.77**	350,000 / 56,910 = **6.15**

A Company with a ratio of at least 0.5 to 1 is usually preferred, considering the above calculation, BTC can sustain in its short term with its available liquid cash. BTC is able to pay its short-term obligations without going for a bank overdraft. This is a good indicator of inappropriate recommendation of shutting down BTC and continue with KTC alone.

(iii)Net Gearing Ratio

Net gearing is a measure of a company's financial leverage. Net gearing ratio is defined as total borrowings divided by shareholders' funds.

	31.12.2020	31.12.2020
Description	**KTC**	**BTC**
	"000"	**"000"**
(Non current liability /equity +Net Current Liabilities	465,600/ 465,600+1050,059= 30.**71%**	600,860 /(600,860+ 1,896,000)/= 24.06**%**

- **A gearing ratio higher than 50%** is typically considered highly levered or geared. As a result, the company would be at greater financial risk, because during times of lower profits and higher interest rates, the company would be more susceptible to loan default and bankruptcy.
- **A gearing ratio lower than 25%** is typically considered lowrisk by both investors and lenders.
- **A gearing ratio between 25% and 50%** is typically considered optimal or normal for well-established companies.

The Net Gearing ratio indicates that BTC is not a company with a high risk, besides, it is better than KTC. Again, with this, we recommend that BTC may not necessarily be discontinued on such grounds.

(iv) Return on Capital Employed (ROCE)

The return on capital employed shows how much operating income is generated for each Franc of capital invested. A higher ROCE is always more favorable, as it indicates that more profits are generated per Franc of capital employed.

It can be calculated as follows: Earning Before Interest and Tax/Capital Employed (Total Assets – Current Liabilities)

	31.12.2020	**31.12.2020**
Description	**KTC**	**BTC**
	"000"	**"000"**
Earning before interest and Tax/(Total Assets – Current Liabilities)	150,059/(1,853,995 - 338,336) = **10%**	(4,000)/(2,553,770 - 56,910) = **0%**

On this ratio, BTC made a loss for the year as indicated by the ROCE of 0% while KTC' ROCE was 10%. This is basically due to a dividend paid and yet BTC was still a young company, with only one year in the transport services market, not mentioning the stiff competition within the sector.. Making a decision to discontinue BTC would therefore appear rushed.

(v) Dividend payout

The dividend payout ratio measures the percentage of net income that is distributed to shareholders in the form of dividends during the year. It is usually the opposite of the retention ratio which shows the percentage of net income retained by a company after dividend payments.

	31.12.2020	**31.12.2020**
Description	**KTC**	**BTC**

	"000"	"000"
Retained Earnings (Profit)/ Dividend paid	150,059/(30,000) = **5**	(4,000)/(15,000) = **(0.27)**

A small ratio is preferred as it shows that company's management is taking care and do think much about the shareholders' wealth.

For BTC however, in its first year managed to pay a dividend which pushed the company into a negative payout ratio. For BTC, that is a red flag indicating that it was not worthwhile to pay a dividend in its first year of operations coupled with unfriendly business environment due to the Covid-19 pandemic.

Non-financial performance evaluation

(i) Deaths

KTC recorded 5 people to have lost their lives while BTC recorded 20 people. While its not very clear on what exactly caused the death, since this is a transport business it appears the death can be attributed to transport vehicle accidents. Management should consider installing speed governors in both company's transport given that KTC also registers a wider kilometer coverage compared to BTC.

(ii) Lost Courier

KTC registered zero on lost courier while BTC lost 6 parcels. Still, this can be a function of the frequent accidents which normally may not just take away peoples' lives but also passengers' parcels getting lost too. This is quite poor customer service. BTC should consider taking enough time arranging passenger luggages whilst making sure that all the required internal control processes and procedures such as luggage tagging are in place .

(iii) Staff turn over

Staff turnover is higher in KTC compared to BTC with 10 and 2 staff respectively to have left the company. While there is no adequate information indicating what could be causing a high staff turnover mainly at KTC, it could be that staff are not motivated. Probably if the three brothers are intervening in the day to day running of the companies; then its high time they leave that to the executive management and concentrate on only strategic matters. Nonetheless, BTC appears to perform well on this aspect.

(iv)Trip waiting time

KTC clients wait for anhour to start the trip while BTC passengers only wait for 20 minutes., While it might appear that BTC is responding positively to its clients due to less waiting time, it is also important to note that starting a long trip requires adequate preparation to ensure that all passengers have their tickets, their luggage tagged, vehicles thoroughly checked for any mechanical issues among others . More investigation is required to ascertain whether the lost couriers are not

attributed to less preparation time. Usually, standards can be set to ensure that passengers arrive at the parking yard an hour before departure to allow sufficient time for control and safety purposes.

(v) Effectiveness on Revenue per passenger

	KTC	BTC
	FRW "000"	**FRW "000"**
Turnover	1,500,000	900,000
Passenger	1,111	923
Revenue per Passenger	1,350	975

Revenue per passenger is higher at KTC than in BTC and this may be attributed to a longer distance covered at KTC which eventually contributes to a high turnover. The longer distance at KTC is also supported by a higher fuel cost compared to BTC. **(vi) Efficiency on Fuel cost /KM**

	KTC	BTC
Total KM travelled	600,000	360,000
Fuel cost	900,000,000	338,400,000
Fuel cost /KM	1,500	940

KTC vehicles are consuming much more fuel than those at BTC. This may be a sign that vehicles at KTC need to be replaced with newer versions to help manage the fuel consumption which appears to be a bigger component in both company's cost structure. BTC appears to be using fuel cost effective vehicles which are newer than KTC's.

(vi)Number of passengers

	KTC	BTC
Passengers (000)	1,111	923

KTC brand image may have created a big market share compared to BTC which is still new on the market. BTC may also consider investing more into marketing and publicity of its company to gain a higher market share and with this it may consider reinvesting the proceeds instead of paying a dividend until a time when it feels comfortable and when profits have been realized.

(vii) Profitability

	KTC	BTC
Turn over	1,500,000,000	900,000,000
Fuel cost	900,000,000	338,400,000
Gross Profit	600,000,000	561,600,000
Gross Profit Margin	**40%**	**62.4%**

Assuming that fuel cost is one of the biggest expenses in regard to cost of sales in both companies; KTC would be making a Gross profit of 40% while BTC will be at 62.4%.

Recommendation.

The recommendation to shareholders provided by the CEO to discontinue Butare Transport Company (BTC) appears not to be well substantiated. This is due to different financial and non-financial performance measures that have been conducted and in most of the cases, BTC appeared to be performing better than KTC. Since, BTC is still new on market may contribute to its lesser market share but surprisingly performing way better than KTC even in terms of profitability With the available information, also considering fuel as the main expense, BTC has a gross profit of 62.4% where as KTN's gross profit is 40%. This indicates that a decision to discontinue BTC should be adjourned.

b) Suggested appropriate Business Process Re-engineering action that the CEO should put in place in BTC in order to revamp the company.

Business Process Re-engineering (BPR) is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance, such as cost, quality, service and speed.

a) Use new marketing techniques

First and foremost, The Brother Service Transport Limited" (TST Ltd) mission statement that focusses at creating and maximizing the brother's value, does not seem to resonate well to their current and potential customers. Again, this appears to be cascaded down to their branches including BTC. The company should therefore revisit BTC marketing strategy by incorporating an element of customer focus thereby appearing to be instilling company values on customer needs, a major component of business process re-engineering.

b) Adopt computerized ticketing

. Most transport businesses have an arrangement whereby passengers do visit the ticketing office for booking. This process in most cases is manual and requires ample time and this could be the reason as to why passengers have to wait for around 20 minutes before setting off. BTC should therefore use computerized ticketing where by tickets are issued well in advance and the departure time is not inconvenienced in any way.

c) Train administrative staff - Training staff can help employees understand how their work fits into their company's structure, mission, and goals. BTC should therefore invest in capacity building of their staff as this enhances employee motivation and productivity. The two staff

who left BTC could have been demotivated for some of such reasons as it is not clear on whether staff were being trained or not.

d) Technical staff training

While capacity building is fundamental for staff working directly with BTC in form supporting its core activities; training drivers is equally paramount on safe driving, road signs among others. This way, drivers may know better how to control their vehicles thereby contributing to reducing accidents and dealths.

e) Reduce luggage cycle time

BTC lost 6 passenger parcels, and this might be emanating from a poor internal control system. BTC should therefore develop a system that allows luggage tagging. This will not only reduce time spent on trying to identify what luggage belongs to who; but it will also mitigate chances of having to lose those luggages.

f) Improve debt recovery process.

BTC has FRW 264,343,000 as receivables, though it is for a period of one year, BTC should do whatever possible to recover this debt. Long outstanding debt may turn into doubtful debts and later alone bad debts eligible for write off, which is an expense to the company. BTC should consider allocating one staff to this important function to ensure that a receivables aging report is developed and shared to management in good time and ensure that action is taken on aged debtors.

g) Ontime maintenance of transport vehicles

While it is not very clear on what could have caused the 20 deaths, but since this is a transport business; then most likely this was due to road accidents or mechanical break-down related instances. BTC should therefore work on a timely vehicle maintenance, probably this could reduce on vehicle breakdowns and later on accidents.

h) Adopt Activity Based (ABC) Costing method

BTC spends over FRW 338 billion per annum on only fuel. This is a very big expense in terms of determining BTC's profitability and therefore requires maximum attention. Adopting ABC should therefore allocate the fuel cost and other costs such that, for each different activity, a different cost driver is applied which is best suited for that activity.

C) **By using EVA analysis, agree or disagree with Three Brothers on the worries of the economic value of TST Ltd for the Financial Year ended 31st December 2020.**

Economic Value Added is a performance metric technique that is used to measure value creation.

Economic Value Added = NOPAT − WACC × Capital Employed

NOPAT = EBIT × (1 − Tax Rate) = 50,130,00× (1 − 30%) = 35,091,000

WACC = 0.6 × 3% + 0.4 × 7% = 5%

Economic Value Added = 35,091,000 − (5% × 41,320,000) = 33,190,280

Disagreement with Three Brothers

Although the Three Brothers did not achieve the desired profit of FRW 350,750,000 from both KTC and BTC,, this should not make them get too much worried about the company performance. Their Economic value, through TST Ltd has increased by FRW 33,190,280. In addition to that, both companies managed to pay dividends, though BTC should not have, as it ended up with a negative payout ratio . Coming up with a better strategy will help TST to earn profits and even increase its EVA much higher.

d) evaluation of the Mission statement of TST Ltd and the required improvement

(i) The Mission Statement Focuses on Satisfying Customer Needs.

A mission statement should have focused on satisfying customer needs rather than being focused on the product. This is not the same at TST. It talks about only shareholder's wealth which does not portray a good picture to customersTNT should consider revising its Mission statement to include other stakeholders to whom the organization exists.

(ii) The Mission Statement Tells "Who" Our Customers are.

Who is being satisfied? TST Ltd should define the type of customers it wishes to serve. Which customer groups it is targeting, and the geographical spread of its operations. TNT Mission statement does not seem to specify that.

(iii) The Mission Statement Explains "What" Customer Needs Our Company is Trying to Satisfy.

TST Ltd should have defined the particular needs of those customer's groups it wishes to satisfy. A product or service becomes a business when it satisfies a need or a want. TNT's Mission statement is very silent on what customer needs are they trying to satisfy.

(iv) The Mission Statement Explains "How" Our Company will Serve its customers.

How customers' needs shall be satisfied? TST Ltd should have defined the means or techniques by which it will serve the target market and satisfy its customer's needs. Again, this is not very clear at TNT.

(v) The Mission Statement is Based on Competitive Advantage.

TST Ltd should have indicated the competitive advantage it has compared to other . Competitors. As part of TST strategic plan, its competencies and competitive advantage on how it hopes to prosper should be detailed out. This is also missing in TST's current mission statement and should be addressed to indicate how TST intends to compete.

(vi) The Mission Statement Motivates and Inspires Employee Commitment.

TST Ltd Mission statements should be motivating to all employees including drivers. And this should be able to be converted into everyday performance. With the staff turnover rate at TST, the motivation and inspiration element appear missing.

(vii) The Mission Statement is Specific (for transport)

TST Ltd mission statements should be specific that it is offering transport services being the nature of its business services For now, it requires further explanation on what TNT does, yet strategically it should have appeared in its Mission statement.

(viii) Values and culture – Values are basic unstated beliefs of the people who work in TST. Since TST's Mission statement is placing an emphasis on maximizing shareholders wealth, again nothing shows that the staff are well catered for. Besides, the high staff turnover complements this judgement.

e) Discussion of whether Backflush Costing can solve costing issues at BTC Ltd.

Backflush costing is a product costing system generally used in a Just-In-Time (JIT) inventory system. Costs are attached to output only, thereby simplifying the costing system.

Backflush Costing method is most useful to companies with complex products or where the production process involves several stages. With such companies, each stage of production would require several journal entries to track the cost accurately resulting into hundreds of entries for one product, which makes an accountant's job very cumbersome. Adopting backflush accounting therefore greatly reduces the number of accounting entries and other supporting vouchers and documents that should have been produced.

Another important advantage of Backflush costing mainly for organisations that are trying to keep inventories to the very minimum, is that it simplifies the process to such companies, as there is no separate accounting for Work in Progress (WIP).

However, Backflush costing is only appropriate for JIT operations where production and sales volumes are approximately equal.

If BTC Ltd uses backflush costing, the accounts department will not have to post journal entries throughout the production process. Thus, we can say that this system simplifies the costing operation and accounting tasks without compromising too much on the information.

However, BTC may not benefit much from Backflush Costing like a complex production industry, and it does not apply a JIT inventory system as it operates in a service industry We therefore recommend that BTC adopts a more appropriate costing method such as service costing which is normally applied where standardized services are rendered such as transport.

f) i Define target costing and calculate the number of tickets to be sold in order to earn a targeted profit at KTC Ltd.

Target costing is a costing method that determines a product's life-cycle cost which should be sufficient to develop specified functionality and quality, whilst ensuring its desired profit.
Target costing involves setting a target cost by subtracting a desired profit margin from a competitive market price.

1,500Q = 500Q + 21,500,000 + 50,000,000

1,500Q - 500Q = 71,500,000

1000Q = 71,500,000

Q = 71,500

Number of tickets to be sold in order to earn a Targeted profit of FRW 50,000,000 is 71,500.

ii) The four characteristics of a service business are:

Intangibility,

Inseparability,

Variability,

and Perishability.

MARKING GUIDE

QUESTION TWO :Bakame Construction Industry (BCI) Ltd	**Marks**
a) Calculation of variances	
Budgeted Sales Margin Formulae	1
Calculation	1
Sales Margin Price Variance	1
Calculation	1
Material mix – Cement	1
Material mix – Sand	1
Total Standard Usage	1
Material yield – Cement	1
Material yield – Sand	1
Direct Material Yield Variance	1
Maximum marks	**10**
b) Advice to BCI	
Calculation of total per Unit	1
Calculation of total cost	1
Calculation of saved cost	1
Conclusion	2
Maximum marks	**5**
c) Non-financial factors that can demotivate BCI	
Own equipment	2
Easy integration	2
Control	2
Customer confidence	2
Confidentiality	2
Enhanced efficiency	2
Economies of scale	2
Source of income	2
Any other valid point (earns 2 marks)	
Maximum marks	**10**
Total marks	**25**

Detailed Answer

a)

i) **Budgeted Sales Margin = Budgeted margin per unit x Budgeted sales quantity**

= (70 - 30) *300 = 12,000

ii) **Sales Margin Price Variance = Actual Sales quantity x (Standard Margin - Actual Margin) =** (40 - 42) *840 = (1,680) F

iii) **Direct Material Mix Variance = standard unit cost x (standard mix – actual mix)**

	Cement	**Sand**
Standard unit cost (FRW)	**40**	**20**
Standard mix (Kg)	**2**	**3**
Actual mix	**15000/5000= 3**	**9000/5000=1.8**

Direct Material Mix Variance for Cement = 40 * (2-3) =-40 A

The variance is FRW -40. This means that the actual amount of cement used exceeded the budgeted amount in the mix. This led to an adverse cost variance of FRW 25 for cement.

Direct Material Mix Variance for sand =20*(3-1.8)=24F

The variance is FRW 24. This means that the actual amount of sand budgeted in mix exceed the amount used in the mix. This led to an favorable cost variance of FRW 24 for sand.

Cement = 40(24,000 X 2/5 -24,000 X15000/24000)

= 40(9,600 -15,000)

= 216,000(A)

Sand = 20(24,000 X 3/5 - 24,000 X9,000/24000)

= 20(14,400 - 9,000

= 108,000 (F)

Therefore, Direct Material Mix Variance = 216,000(A)+108,000(F) =108,000(A)

Total Standard Usage = (5,000 x2) + (5,000x3) = 25,000

iv) **Direct Material Yield Variance = Standard price (Total Standard Material usage*Standard Mix - Total Actual Material Usage*Standard Mix)**

Cement = 40 (25,000 X 2/5 - 24,000x 2/5)

= 40(10,000 - 9,600)

=16,000(F)

Sand = 20(25,000 X 3/5 - 24,000 x3/5)

= 20(15,000 -14,400)

=12,000(F)

Therefore, Direct Material Yield Variance =16,000(F)+12,000(F) = 28,000(F)

D) **Advise whether BCI can accept the offer from KIC.**

Description	**Cost/M/FRW**
Flat metal	2,500
Paint	2,000
Labor	300
Electricity	300
Other cost	356
Total per Unit	**5,456**
Total cost (Unit 6,500)	**35,464,000**
KIC offer	35,000,000
Saved cost	**464,000**

Based only on financial analysis, BCI can gain from buying instead of making iron sheet internally.

- **Discuss other non-financial factors that can demotivate BCI to buy and continue to make iron sheets internally .**

  - BCI has already bought equipment for making Iron sheets, if BCI decides to buy from KIC this will make the already bought equipment idle and probably they also get deteriorated.
  - Desire to integrate plant operations - BCI is already involved in the construction business of iron sheets and it appears they will need them anytime for business operations, considering constructing an iron sheet plant can be a point of integrating those two businesses to further ease operations
  - Need to exert direct control over production and/or quality: This can make BCI being able to control direct cost related to iron sheets thereby contributing towards the improvement of the entire business
  - Better quality control - BCI will be able to assure the quality of the iron sheets by manufactuting them internally and this further provides confidence and guaranteed quality of the iron sheets to their customers

- Design secrecy is required to protect proprietary technology BCI will be able to guide its business secrecy. Confidentiality in business is a key success factor that may also provide a competitive advantage to BCI.
- Unreliable suppliers Manufacturing iron sheets internally may enhance efficiency in terms of just in time delivery better than when such a service is outsourced. Customers may not deliver on time as agreed, and this may in turn cause delays in delivering the house on the dates agreed, thereby further hampering business relationships
- Desire to maintain a stable workforce emanating from economies of scale once BCI becomes a large conglomerate (in periods of declining sales)
- Provision of a second source of income - By manufacturing these iron sheets internally, it is a form of BCI to diversify its business .At some point when the real estate business is not performing well, BCI may devote to iron sheet selling to other businesses.

QUESTION THREE: Groupe Scolaire Officiel de Huye (GOH)

a) Payoff table (1 Mark per each state of nature max,3)	3
Regret table (Minmax (1 Mark per each state of nature max,3)	3
Minmax (Decision and interpretation)	2
Maximax (Decision and interpretation)	2
Maximin (Decision and interpretation)	2
Maximum marks	**12**
b) Expected Value for 7,000	1
Expected Value for 6,000	1
Expected Value for 4,500	1
Conclusion	2
Maximum marks	**5**
C) Cost of uniform up to 6,000 uniforms	2
Total cost for 6,000 uniforms	2
Cost for the 6000^{th} Uniform	2
Total cost for 7,000	2
Maximum marks	**8**
Total marks	**25**

Detailed Answer

c) Minmax, Maximax and Maximin Working

Profit per student 90,000 - 40,000 = FRW 50,000

Loss per student due to fixed cost = FRW 4,500

Workings 2

Good condition (Predicted Students 7,000)

1. (7,000*50,000) = FRW 350,000,000
2. (6,000*50,000) - (1,000*4,500) = FRW 295,500,000
3. (4,500*50,000) - (2,500*4,500) = FRW 213,750,000

Average Condition (Predicted Students 6,000)

4. 7,000*50,000 = FRW 350,000,000
5. 6,000*50,000 = FRW 300,000,000
6. (4500*50,000) - (1500*4,500) = FRW 218,250,000

Bad Condition (Predicted Students 4,500

1. 7,000*50,000= FRW 350,000,000
2. 6,000*50,000= FRW 300,000,000
3. 4,500*50,000= FRW 22,500,000

Payoff table

Economic Condition	**Probability**	**Number of Students**		
		7,000	**6,000**	**4,500**
Good	0.40	350,000,000	295,500,000	213,750,000
Average	0.35	350,000,000	300,000,000	218,250,000
Bad	0.25	350,000,000	300,000,000	225,000,000

Min MAX (Regret criteria)

Regret Table

Economic Condition	**Probability**	**Number of Students**		
		7,000	**6,000**	**4,500**
Good	0.40	-	54,500,000	136,250,000
Average	0.35	-	50,000,000	131,750,000
Bad	0.25	-	50,000,000	125,000,000

MINIMAX

Economic Condition	Probability	Number of Students		
		7,000	**6,000**	**4,500**
Good	0.40	-	54,500,000	136,250,000
Average	0.35	-	50,000,000	131,750,000
Bad	0.25	-	50,000,000	125,000,000
MAXIMUM		-	50,000,000	136,250,000

Comment: GOH to minimize the maximum loss at 7000 students where possible loss is FRW 0

Max Max criteria

Economic Condition	Probability	Number of Students		
		7,000	**6,000**	**4,500**
Good	0.40	350,000,000	295,500,000	213,750,000
Average	0.35	350,000,000	300,000,000	218,250,000
Bad	0.25	350,000,000	300,000,000	225,000,000
MAXIMUM		**350,000,000**	300,000,000	225,000,000

Comment: GOH to maximize the maximum possible profit he can choose 7,000 students with a profit of FRW 350,000,000.

Maximin

Economic Condition	Probability	Number of Students		
		7,000	**6,000**	**4,500**
Good	0.40	350,000,000	295,500,000	213,750,000
Average	0.35	350,000,000	300,000,000	218,250,000
Bad	0.25	350,000,000	300,000,000	225,000,000
Minimum		**350,000,000**	295,500,000	213,750,000

Comment: Again or GOH will maximize profit at 7000 students with estimated profit of FRW 350,000,000.

d) Expected Value

For 7000 = (0.40*350,000,000) +(0.35*350,000,000) +(0.25*350,000,000) = FRW 350,000,000

For 6000 = (0.40*295,500,000) +(0.35*300,000,000) +(0.25*300,000,000) =FRW 298,200,000

Bad = (0.40*213,750,000) +(0.35*218,250,000) +(0.25*22,500,000) =FRW 218,137,500

Comment: Expected value of enrolling 7,000 students in is better compared to the rest with FRW 350,000,000

c)

Minimum total cost of uniform to be charged to student's parents

First 6,000 hundred uniforms

$Y = ax^b$

$15{,}000 \times 6{,}000^{-0.3219}$

$=911.81$

Total cost for 6,000 uniforms is FRW 5,470,860.25

For 5,999 uniforms = $15{,}000 \times 5{,}999^{-.3219}$= FRW 911.858

Total cost for 5,999 uniforms is = FRW 5,470,241.94

Cost for the 6000th Uniform is 5,470,860.25 - 5,470,241.94= FRW 618.318

Total cost for 7,000 uniforms is = 5,470,860.25+(618.318*1000) = FRW 6,089,178.25

Comments

The minimum total cost for the uniform that the headmaster of GOH must charge to the parents in relation to the new students enrolled (7,000) are FRW 6,089,178.25

The learning curve is an important modern concept according to which cumulative experience in the production of a product over time increases efficiency in the use of inputs such as **labour and raw materials** and **thereby lowering cost per unit of output.**

As a tailor produces successive lots of output (uniforms) over various periods of time, he or she learns to produce more with a given quantity of resources or he or she is capable of producing a given output by using lesser quantities of inputs or resources than before.

Thus, either with the increase in efficiency of resources or with saving in resources such as labor and raw materials, the cost per unit of output declines. This learning curve effect mostly occurs in the reduction of labor requirements per unit of output.

Question 4: HWC ltd

a) Porter five forces model for HWC ltd

Bargaining power of customers

Definition	1
Open market	1
Other services provided by HWC	1
Any other valid point (earns a mark)	
Maximum marks	**3**

Bargaining power of suppliers

Definition	1
Part time staff and water engineers	1
Specialized materials	1
Any other valid point (earns a mark)	
Maximum marks	**3**

Threat of substitutes

Definition	1
Substitutes for water	1
Water from RWC	1
Any other valid point (earns a mark)	
Maximum marks	**3**

Rivalry in the market

Definition	1
Free water	1
Unique offering	1
Any other valid point (earns a mark)	
Maximum marks	**3**

Threat of new entrants

Definition	1
Economies of scale	1
Government policy	1
Capital requirements	1
Cost disadvantages independent of size	1
Any other valid point (earns a mark)	
Maximum marks	**3**

b) Strategic advice to HWC

Compete on quality service	1
Compete on audience	1

Concentrate on the unique offering	1
Value addition	1
Compete on location	1
Any other valid point (earns a mark)	
Maximum marks	**5**

c) Lean information system at HWC

Definition	1
Value addition	1
Waste minimization	1
Relevant persons	1
Any other valid point (earns a mark)	
Conclusion	1
Maximum marks	**5**

Total marks	**25**

Detailed Answer

A. using Porter's five force model to assess whether HWC Ltd can go on with its project to enter into this new market.

Porter's Five Forces model is a framework for analyzing an organization's competitive environment The collective strength of these forces determines the ultimate profit potential of an industry.

(i) Bargaining power of customers

The bargaining power of customers is designated as the market of outputs which includes the ability of customers to put the firm under pressure, which also affects the customer's sensitivity to price changes.

While there is an open market for water and its related accessories, HWC will likely struggle to get customers selling water at a fixed price. Besides, the presence of several NGOs that provide water free of charge accelerates this threat. In this case, the bargaining power of customers is very high due to many available alternatives.

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HWC does also offer other services including selling water pipes , drilling and flushing bore holes. Customers for those services are most likely to be the Government, big production companies who need their own water line and a group of citizens who may come together in collaboration with other partners to have water access near them.

The bargaining power for such customers is most likely to be high since a contract can only be awarded after a competitive bidding process.

(ii) Bargaining power of Suppliers

The bargaining power of suppliers is also termed as the market of inputs. Suppliers of raw materials, components, labor, and services to the firm can be a source of power over the firm when there are few substitutes.

One of the key suppliers to HWC are the engineers to be used in all HWC services and operations. These being part-time staff from competitor companies and the water engineers operating as freelancers can be hard to manage. Without any other staff, they may form a solidarity and refuse to work for HWC without being paid a particular amount. In this case, the supplier bargaining power would be perceived as high.

Similarly,. the materials to be used in all those services/operations are not made in Rwanda and are specialized and need enough fund to acquire them. Since the materials are specialized, it makes the supplier possess a high bargaining power.

(iii)Threat of substitutes.

The existence of products outside of the normal product boundaries increases the propensity of customers to switch to alternatives.

In normal life, water does not have substitutes. And water can be used for several purposes including washing, drinking, cooking, among many others.

However, if water was meant for drinking then close substitutes would avail, such as juice, beers, and many other soft drinks.

Nonetheless, the substitute in this scenario can come from substituting the HWC water by buying the same water from Robin Water Company (RWC) which is likely to be cheaper due to economies of scale and a bigger market share or decide to use free water provided by several NGOs. In this case, the threat of substitution is very high to HWC.

(iv)Rivalry amongst current industry competitors.

Intensity of rivalry refers to the extent to which firms within an industry put pressure on one another and limit each other's profit potential.

Competitors are many in this industry and some of them have experience of over 20 years in water business. Some competitors are Government, private business companies and NGO's. The rivalry on supplying water is not a big issue here as the government set a fixed price. The fact that NGOs provide similar services to the citizenry free of charge intensifies the rivalry.

However, HWC may have a competitive advantage over its unique offering of digging water wells and pumping water to water tanks and taps. HWC should therefore strategize and concentrate on that unique offering instead of investing into water service provision which appears unprofitable.

(v) Threats of new entrants.

Economies of scale

HWC is new in water business and entering this market is likely to cost them handsomely due to an apparent economy of scale from the already established companies such as Robin Water Company (RWC) ltd that has been in the market for over 20 years with over 50% of market share.

Government policy

The government can limit or even foreclose entry to industries with such controls as license requirements and limits on access to raw materials. For HWC this may not appear as a threat since all business are required to register with Rwanda Development Board and must possess a Taxpayer Identification Number (TIN)

Capital requirements

There is a barrier to entry into this market caused by a huge amount of money that must be invested in purchasing specialized materials that shall be needed for use in services or operations in the water service business. This appears to be an unrecoverable expenditure that must be incurred up-front which is not so easy for HWC at the moment.

Cost disadvantages independent of size

Well established companies may have cost advantages not available to potential rivals, no matter what their size and reasonable economies of scale. While HWC may benefit from a tax relief provided by the government to all organizations that support the citizenry in form of water access, this may not appeal HWC to enter the new market since it is available to all organizations. This indicates that it is not easy to start a new business in this sector with a new brand name against the already well-established big brands.

Again, due to insufficient funds, the company is planning to hire part-time staff from competitors in the same business and freelancer water engineers. This is a disadvantage to HWC as it may not be possible to get staff while they are busy in their main assignments with competitors/primary employers. Competitors may even refuse to give permission to their staff for giving support to a rival company.

b) **Provide strategic advice to HWC Ltd on how it can outperform its competitors.**
Compete on quality service

The water industry's competition is stiff and therefore not easy for HWC to compete on price as competitors already have a bigger market share and a renowned brand coupled with economies of scale. That means their selling price are likely to be lower and to some extent, water is availed free of charge. This leaves HWC with no choice other than ensuring that its water can be delivered to point of destination whilst investing more in publicity and advertising.

Compete on audience
HWC may also consider the current market concentration with an aim of determining which distribution areas are not covered. With this it will require HWC establishing their and start its water selling business to that new market segment.

Concentrate on the unique offering
Since HWC already possesses a unique product of digging water wells and pumping water to water tanks and taps; we recommend that HWC concentrates on that as it will provide more revenues to the company than wasting a lot of resources on water which can even be accessed free of charge.

Value addition
The other way to compete in this industry is by letting HWC add value to the drinking water to make it more appealing to the customers. In this case, HWC can invest in different types of water such as mineral water, spring water, sparkling water, distilled water, purified water, and alkaline water. This product differentiation will provide a competitive advantage to HWC as the rest of the other competitors are only providing normal water.

Compete on location
HWC should identify competitor's business location to determine which areas might need huge amounts of water such as bid industries, hotels, manufacturing plants, construction sites among others. With its unique service of digging water wells and flushing bore holes, it can easily dig a borehole or a set up a tap in such a unique location, targeting such big clients.

c) Discuss the lean information system at HWC Ltd

Lean Management Information System:

Management information system is a system of disseminating information that will enable managers to do their job. It should provide managers with data that they can use for benchmarking and control purposes.

Lean Management Information System is a concept of designing an information system that could provide instantly, right information to the right people, at the right time .. Lean information

management in the information system is the efficient use of information, reducing waste time, and producing the relevant information

In order for the CEO of HWC to collect more information on the market regarding the new market they wish to enter to, should consider putting up an information system that adds value to the management system. It appears information being received is non-value adding and quite disturbing.

The system should focus on waste minimization without having to duplicate it. In that case receiving so many emails may confuse the CEO and some of those emails could be duplicated. The system should therefore be able to receive the information needed only and in real time.

Since HWC will still need flexible and customized information going forward, then its high time the company invests in robust information system that produces reports and information in real-time.

By receiving a lot of emails, sometimes, it is quite difficult to figure out which one is important, and which one is not. Therefore, HWC should equally consider developing a system that sends reports or emails – which they are currently using – to only relevant persons.

In general, when we consider developing the system by Lean Management Information system, we normally refer to Japanese 5S: Structure, Systemize, Standardize, Self- Discipline, and Sanitize.

The CEO should put in place an information system that can provide the right information to the right people, at the right time whilst ensuring that they focus on waste minimization and continuous improvement is sought as well