CERTIFIED PUBLIC ACCOUNTANT

ADVANCED LEVEL 2 EXAMINATION

A2.2: STRATEGIC PERFORMANCE MANAGEMENT

DATE: THURSDAY 29, MAY 2025

MARKING GUIDE AND MODEL ANSWERS

SECTION A

MARKING GUIDE

QUESTION ONE

Q1	Sub Q	Mark per point	Total
	(a)	**Financial acceptability**	
		Award 1 Mark for well-calculated taxes – Acquisition of brand-new coasters	1
		Award 1 Mark for well-calculated working capital changes	1
		Award 1 Mark for well-calculated tax benefits on depreciation	1
		Award 1 Mark for well-calculated present values	1
		Award 1 Mark for a well-calculated NPV	1
		Award 1 Mark for well-calculated taxes - Acquisition of second-hand coasters	1
		Award 1 Mark for a well-calculated working capital change	1
		Award 1 Mark for well-calculated tax benefits on depreciation	1
		Award 1 Mark for well-calculated present values	1
		Award 1 Mark for a well-calculated NPV	1
		Award 0.5 Marks for each well-calculated EAC	1
		Award 1 Mark for a well-concluded point	1
		Maximum Marks	12
	(b)	**Transfer pricing**	
		Award 2 Marks for a well-illustrated transfer pricing	2
		Award 0.5 Marks on each special factor mentioned for consideration in comparing controlled and uncontrolled transactions to a maximum of 2	2
		Maximum Marks	4
	c.i)	**Profit maximization**	
		Award a Mark for a well-calculated price and tickets to be sold in Market 1	1
		Award a Mark for well-calculated price and tickets to be sold in Market 2	1
		Maximum Marks	2
	ii)	**Monthly profit**	
		Award 0.5 Marks for a well-illustrated revenue function in each market	1
		Award a Mark for a well-calculated total cost	1
		Award a Mark for a well-calculated maximum monthly profit	1
		Maximum Marks	3
	iii)	**Change in total profitability and prices**	
		Award a Mark for changes in total profits in Market 1	1
		Award a Mark for changes in total profits in Market 2	1

	Award a Mark for the newly calculated total profits/ loss	1	
	Award a Mark for an appropriate conclusion	1	
	Maximum Marks	4	
iv)	**Full cost-plus strategy**		
	Award 0.5 Marks on each mentioned predominance of full-cost strategy to a maximum of 2	2	
	Maximum Marks	2	
d.i)	**Pay-off table**		
	Award a Mark on each well-calculated figure in the pay-off table to a maximum of 5	5	
	Maximum Marks	5	
ii)	**Maximin**		
	Award 2 Marks for identifying and determining the level of service seats	2	
	Award a Mark for the choice based on Maximin	1	
	Maximum Marks	3	
iii)	**Risk and uncertainty**		
	Award 1 Mark for each identified and discussed method/approach used in incorporating risk and uncertainty into strategic planning	6	
	Maximum Marks	6	
e.i)	**BPR**		
	Award 1 Mark on each identified and discussed way RIC could use to implement BPR	5	
	Maximum Marks	5	
ii)	**Common Board Committees**		
	Award 1 Mark on each identified and discussed Board Committee	4	
	Maximum Marks	4	
	Total Marks	**50**	

a) Assess the financial acceptability of the two proposed investments and advise which investment to be undertaken by RIC Ltd.

The financial acceptability of these two investments will be analyzed by using both the Net Present Value and the Annual equivalent costs as they are mutually exclusive and they possess unequal lives.

Investment 1: Acquisition of brand-new coasters

Details	Notes	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5

		FRW'000'	FRW'000'	FRW'000'	FRW'000'	FRW'000'	FRW'000'
Revenues			40,000	32,000	28,000	24,000	29,000
Less: Maintenance costs			-400	-500	-600	-750	-1,000
salary to drivers			-1,250	-1,250	-1,250	-1,250	-1,250
Less: License fees			-1,000	-1,000	-500	-500	-1,000
Earning Before Tax			**37,350**	**29,250**	**25,650**	**21,500**	**25,750**
Less: Tax (30%)			-11,205	-8,775	-7,695	-6,450	-7,725
Earning after Tax			**26,145**	**20,475**	**17,955**	**15,050**	**18,025**
Acquisition Costs	1	-50,000					
Scrap Value	1						10,000
Working Capital	2	-4,000	800	400	400	-500	2,900
Tax Relief	3		2,400	2,400	2,400	2,400	2,400
Net Cashflow		**-54,000**	**29,345**	**23,275**	**20,755**	**16,950**	**33,325**
Discount Factor @12%		1	0.893	0.797	0.712	0.636	0.567
PV Cash flow		-54,000	26,201	18,555	14,773	10,772	18,909
NET PRESENT VALUE	**35,210**						

W1-Working Capital

Details	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
	FRW'000'	FRW'000'	FRW'000'	FRW'000'	FRW'000'	FRW'000'
Revenues		40,000	32,000	28,000	24,000	29,000
Working Capital 10%		4,000	3,200	2,800	2,400	2,900
Change in Working Capital	-4,000	800	400	400	-500	2,900

W2-Tax benefits depreciation

Period	Net Book Value FRW'000'	Depreciation FRW'000'	Tax Relief FRW'000'
1	42,000	8,000	2,400
2	34,000	8,000	2,400
3	26,000	8,000	2,400
4	18,000	8,000	2,400

5	10,000	8,000	2,400

Investment 2: Acquisition of second-hand coasters

Details	Year 0	Year 1	Year 2	Year 3
	FRW'000'	FRW'000'	FRW'000'	FRW'000'
Revenues		30,000	30,000	30,000
Maintenance costs		-600	-700	-800
Salaries to drivers		-1,250	-1,250	-1,250
License fees		-1,000	-1,000	-500
Taxable cash flows		27,150	27,050	27,450
Taxation @30%		-8,145	-8,115	-8,235
Working capital changes-W3	-3,000	-	-	3,000
Tax benefits-Depreciation W2		5,000	5,000	5,000
(Initial investment)/Residual value	-50,000			
Net cash flows	-53,000	24,005	23,935	27,215
Discount Factors @12%	1	0.893	0.797	0.712
Present Values	-53,000	21,433	19,081	19,371
Net Present Value	**6,885**			

Working 3: W3-Working Capital

Details	Year 0	Year 1	Year 2	Year 3
	FRW'000'	FRW'000'	FRW'000'	FRW'000'
Revenues		30,000	30,000	30,000
Working Capital 10%		3,000	3,000	3,000
Change in Working Capital	-3,000	-	-	3,000

Working 4: W4-Tax benefits depreciation

	Year 0	Year 1	Year 2	Year 3
	FRW'000'	FRW'000'	FRW'000'	FRW'000'
Initial investment	50,000			
Annual depreciation		16,666.67	16,666.67	16,666.67
Tax rate		30%	30%	30%
Tax benefit on depreciation		5,000	5,000	5,000

As both projects are mutually exclusive and have unequal lives, they cannot be assessed using their real NPV, rather the Equivalent Annual cost should be calculated as follows:

Annual Equivalent Cost

Details	Investment 1	Investment 2
Net Present Value - FRW'000	**35,210**	6,885
Annuity factor @12%, 5yrs; 3 yrs	3.605	2.402
Annualized Equivalent Costs-FRW	9,767.63	2,866.35

Investment 1 offers an equivalent annual annuity of FRW 9,767,627 for the acquisition of brand-new coasters, which is higher than that offered by Investment 2, which is FRW 2,866,350. Therefore, investment 1 should be chosen.

b) Numerical example, showing how setting a transfer price could reduce tax liability between RIC Rwanda Ltd and RIC Uganda Ltd

Transfer pricing refers to the setting of prices at which transactions occur involving the transfer of property or services between associated enterprises, forming part of a multinational entity group. It normally involves the transfer of taxable profits in a low tax-paying jurisdiction from a higher tax-paying jurisdiction between multinational entities.

Below is a numerical example of how the transfer pricing system works:

	Uncontrolled entity	Controlled entity
	FRW	**FRW**
Sales price per unit	10,000	6,000
Variable cost per unit	-3,000	-3,000
Contribution	**7,000**	**3,000**
Fixed costs (OAR)	-2,000	-2,000
Taxable profit	**5,000**	**1,000**
Tax rate	0	0
Tax Liability	1,500	170
Profit after tax	**3,500**	**830**

Considering the above example, the company would pay tax amounting to FRW 1,500 per unit if it sells to unrelated (uncontrolled entity), while FRW 170 could be paid if the transfer price is set at FRW 6,000 per unit instead of FRW 10,000, having sold to a controlled entity.

When comparing the price of intangible assets between the controllable and uncontrollable entities, the following special factors may be considered:

- The expected benefits from the intangible property.
- The commercial alternatives otherwise available to the acquirer or licensee derived from the intangible property.
- Any geographic limitations on the exercise of rights to the intangible property.

- Whether the transferee has the right to participate in further developments of the intangible property by the transferor.
- The exclusive or non-exclusive character of the rights transferred.

c)

i) Calculate the price to charge in each market, and the quantity of tickets to be sold each month, to maximize profits

Market 1: $P1 = 80,000 - 7.5Q1$

Market 2: $P2 = 79,000 - 14.5Q2$

Variable cost per unit = Marginal cost per unit in both markets is equal to FRW 50,000

The current market price per ticket is FRW 65,000

Profit is maximized when Marginal Cost (MC) is equal to the Marginal Revenue (MR), therefore $MC = MR$

To maximise profits, we should take partial derivatives and set to 0, the marginal revenue in both markets would therefore be given by:

Market 1: $P1 = 80,000 - 7.5Q1$, $MR1 = 80,000 - 15Q1$

Market 2: $P2 = 79,000 - 14.5Q2$, $MR2 = 79,000 - 29Q2$

By applying the $MC = MR$,

Market 1

$80,000 - 15Q1 = 50,000$

Q1 = 2,000 tickets

And price P1 = 80,000 - 7.5*2,000 tickets, P1 = FRW 65,000, Hence the price in market 1 should be FRW 65,000 per unit and 2,000 tickets should be produced and sold.

Market 2

$79,000 - 29Q2 = 50,000$

Q2 = 1,000 tickets

And price P2 = 79,000 - 14.5*1,000 tickets, P2 = FRW 64,500, Hence the price in market 2 should be FRW 65,000 per unit, and 1,000 tickets should be produced and sold.

Total number of seats to be produced and sold is 3,000 tickets.

ii) Determine the revenue function for each market and the maximum monthly profit in total

Revenue is equal to the unit price multiplied by the total number of units sold

Market 1: $P1*Q1 = (80,000 - 7.5Q1)*Q1$ $TR\ 1 = 80,000Q1 - 7.5Q1^2$

Market 2: $P2*Q2 = (79,000 - 14.5Q2)*Q2$ $TR\ 2 = 79,000Q2 - 14.5Q2^2$

Maximum monthly profit will be calculated as follows:

Profit = TR - TC

Total costs = VC+FC

FC = FRW 30,000,000

Total variable costs = $50,000*(1,000 + 2,000) = $ FRW 150,000,000

Total cost = FRW 150,000,000 + FRW30,000,000 = FRW 180,000,000

Total Revenues = (FRW 65,000*2,000 seats) + (FRW 64,500*1,000 seats) = FRW 194,500,000

Therefore, the total monthly profit will be, FRW 14,500,000 which is found by (FRW 194,500,000 - FRW 180,000,000)

iii) Calculate and comment on the change in total profitability and prices

Tickets Demanded at FRW 65,000 (when no price discrimination)

(Rwanda market) $P1=80,000-7.5Q1$

P1=FRW 65,000 and Q1=2000 Tickets (Rwanda Market)

(Uganda market) $P2=79,000-14.5Q2$

P2=FRW 65,000 and number of tickets will be

$79,000-14.5Q2=65,000$

Q2=966 Tickets

The Total revenues for both markets: $(2,000×65,000)+(966×65,000)=$FRW 192,790,000

Total costs for both market (VC+FC): $[(2000+966)*50,000]+30,000,000=$ FRW 178,300,000

Profit at price of (FRW 65,000)= FRW 192,790,000- FRW 178,300,000

Profit=FRW 14,490,000

Details	No Price Discrimination	Price Discrimination	changes
Total Revenue	192,790,000	194,500,000	-1,710,000

Total Cost	-178,300,000	-180,000,000	1,700,000
Profit	**14,490,000**	**14,500,000**	-10,000
Rwanda Price	65,000	65,000	-
Uganda Price	65,000	64,500	500

Comments:

Total profit increases by only FRW 10,000, indicating a marginal gain. This is because the optimal discriminatory prices are very close to the current uniform price.

Change in price: In the Rwandan market, there is no change in price or quantity. However, in the Ugandan market, the price drops slightly to FRW 64,500, which increases sales from approximately 966 to 1,000 units. This results in an increase in revenue of approximately FRW 1.7 million and a corresponding increase in profit of FRW 10,000.

Discrimination pricing helps RIC Ltd to respond better to market-specific demand conditions and may improve competitiveness in Uganda by offering a slightly lower price.

iv) Support the predominance of a full cost-plus strategy over other pricing approaches
- Planning and use of scarce capital resources are easier.
- Assessment of divisional performance is easier.
- It emulates the practice of successful large companies.
- Cost-based pricing strategies based on internal data are easier to administer.
- Over time, cost-based pricing produces stability in pricing, production, and employment.

d)

i) A pay-off table to show all the possible outcomes

			Supply		
			FRW	FRW	FRW
Demand	State of the economy				
		Tickets	700	560	450
	Peak	700	3,500,000	2,800,000	2,250,000
	Expansion	560	2,170,000	2,800,000	2,250,000
	Trough	450	1,125,000	1,755,000	2,250,000

ii) Determination of the level of service (seats) the company should choose based on Maximin

The worst outcome for each level of supply and choose the highest of these worst outcomes

	700	560	450

	FRW	FRW	FRW
Trough	1,125,000	1,755,000	2,250,000

iii) **SIX methods and approaches one can use to incorporate risk and uncertainty into strategic planning**

The following are some of the ways of incorporating risk and uncertainty into strategic planning:

Monte Carlo Simulation
Incorporating risk and uncertainty in decision-making helps to identify the most significant variables and modeling outcomes using the most common financial modeling and risk forecasting techniques. By use of software to simulate thousands of outcomes based on probability distributions provides a range of possible results and their likelihood.

Strategic Risk Key Performance Indicators (KPIs)
Set key KPIs that are tied to risk such as risk-adjusted ROI, and debt ratios whilst monitoring them regularly to track exposure and adjust plans.

Sensitivity analysis
Using risk-adjusted discount rates and performing sensitivity analysis in investment decisions is fundamental in identifying which variables have the biggest impact on success or failure. This is mostly important in varying one or more variables to see how outcomes change.

Scenario Planning
Scenario planning is used while evaluating alternative views of what could happen and what would be the impact. Assessing how each strategy would perform under different conditions helps to anticipate how each strategy would perform under different conditions.

Risk assessment and Risk mapping
Apply appropriate decision rules depending on management's attitude towards risks by identifying risks and evaluating them based on likelihood and impact. This will facilitate in creation of a risk matrix that is fundamental in prioritizing responses.

Diversification
In both financial and operational strategies, spreading investments or activities across different areas reduces dependence on one risky area.

e)

i) FIVE ways RIC Ltd could use to implement Business Process Re-engineering and boost its performance

Business Process Re-engineering refers to 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.

The following are the FIVE ways RIC Ltd could use to implement the BPR and boost its performance

Combining several jobs and departments into one
Currently, RIC Ltd has nine departments namely: planning & budgeting, accounting, reporting, procurement, purchasing, human resource management, production, talent detection & development, sales &marketing department. These departments could be combined to ensure efficiency and better service delivery. For example, procurement and purchasing could be combined, HR and talent detection could also be combined into one department, and planning & budgeting, accounting, and reporting could also be combined.

Decentralizing the decision-making processes
Currently, all decisions in the company are made by the Chief Executive Officer, which delays the production process mostly in purchasing and procurement of raw materials when she is not present as other staff cannot make any decision in the company. Decentralizing some processes may improve service delivery and efficiency hence boosting productivity.

Checks and controls may be reduced, and quality 'built-in'
Currently, the company has established more than five quality control processes to ensure that the quality and specifications of the produced product meet the ones in the customer's order. These processes could be reduced to avoid unnecessary delays in production processes.

The advantages of centralized and decentralized operations are combined
Currently, RIC Ltd uses a functional organizational structure where the managers and normal workers are completely different in terms of pay and responsibilities. An appropriate organizational structure should be introduced to have all jobs and related responsibilities aligned.

Work units change from functional departments to process teams, which replace the old functional structure
Currently, RIC Ltd uses a functional organizational structure where the managers and normal workers are completely different in terms of both pay and responsibilities. This should therefore be adjusted to process teams whilst aligning both pay and employee responsibilities.

ii) FOUR common board committees that RIC Ltd will need to introduce to ensure a good corporate governance structure

The following are the five common board committees that RIC Ltd will need to introduce to ensure a good corporate governance structure

Remuneration Committee
Corporate governance codes and legal regulations have reacted to the controversy surrounding directors' pay. National codes reflect the Organization for Economic Co-operation and Development (OECD) principles which recommend that large companies should have a Remuneration Committee. This committee is to deal with remuneration policy and contracts for board members and key executives. It is comprised of wholly independent directors or with a majority of independent directors but excludes executives who serve on each other's remuneration committee (as this could lead to a conflict of interest).

Nomination Committee
This committee leads the processes for board appointments and makes recommendations to the boards. This committee is considered to be the detriment of maximizing shareholder's wealth.

Risk Committee
According to OECD principles, the board should be responsible for overseeing risk management. However, depending on the company's size and risk profile, it may be appropriate to set up a committee to deal with risks.

Audit Committee
The primary role of the Audit Committee is to oversee the financial reporting systems to ensure that the financial statements show a true and fair view. It is a good practice that the internal auditors report to the Audit Committee of the board. Many codes require all listed companies to have Audit Committees to provide oversight and serve as a check and balance on the financial reporting system.

SECTION B

QUESTION TWO

MARKING GUIDE

Q2	Description	Marks
(a)	**Nyabugogo Limited project appraisal**	
	Award 1 Mark for the correct sales – 4 years	1
	Award 1 Mark for the correct variable costs – 4 years	1
	Tax allowable depreciation	1
	NPV at 4 years	1
	Award a Mark for the correct sales – 6 years	1
	Award 1 Mark for the correct variable costs – 6 years	1
	NPV – at 6 years	1
	Award 0.5 Marks on each correct calculation of Annualized Equivalent Costs	1
	Maximum Marks	*8*
(b)	**Yield and Mix variances**	
	Award 1 Mark on each Material Mix of KK and MW	2
	Award 1 Mark on each Material Yield of KK and MW	2
	Maximum Marks	*4*
(c)	**Other variances**	
	Award 0.5 on each of the other calculated variances to a maximum of 4	4
	Maximum Marks	*4*
(d)	**The usefulness of calculating mix and yield variance**	
	Award 1 Mark on each identified and explained the usefulness of mix and yield variance to a maximum of 4 points	4
	Maximum Marks	*4*
(e)	**Using time series statistical techniques to make predictions**	
	Award a Mark on a well-defined time-series statistical technique	1
	Award 0.5 Marks on each advantage to a maximum of 2 Marks	2
	Award 0.5 Marks on each disadvantage to a maximum of 2 Marks	2
	Maximum Marks	*5*
	Total Marks	**25**

Model answer to question 2

(a) Four Year evaluation

Four-year period evaluation - Year	1	2	3	4
Amounts in	FRW "000"	FRW "000"	FRW "000"	FRW "000"
Sales revenues	8,400,000	6,750,000	5,200,000	4,800,000
Variable cost	-3,600,000	-3,000,000	-2,400,000	-2,400,000
Fixed cost	-600,000	-600,000	-600,000	-600,000
Advertising cost	-650,000	-100,000	-	-
Operating cash flow before tax	3,550,000	3,050,000	2,200,000	1,800,000
Tax at 30%	-1,065,000	-915,000	-660,000	-540,000
Net cash after tax	2,485,000	2,135,000	1,540,000	1,260,000
Tax Allowable Depreciation	562,500	562,500	562,500	562,500
Net cash flow	3,047,500	2,697,500	2,102,500	1,822,500
PVIF at 10%	0.909	0.826	0.751	0.683
PV	2,770,178	2,228,135	1,578,978	1,244,768
Total PV	7,822,058			
Less initial cost	-7,500,000			
NPV	322,058			
AEV factor	3.169			
AEV	**101,627**			

Evaluation for 6 years

ITEMS	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	FRW'000'	FRW'000'	FRW'000'	FRW'000'	FRW'000'	FRW'000'	FRW'000'
Sales Revenue		8,400,000	6,750,000	5,200,000	4,800,000	3,400,000	3,400,000
Variable costs		-3,600,000	-3,000,000	-2,400,000	-2,400,000	-2,040,000	-2,040,000
Advertising Costs		-650,000	-100,000	-	-	-200,000	-200,000
Initial investment	-6,500,000						
Maintenance costs						-1,400,000	-600,000

ITEMS	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	FRW'000 00'	FRW'000 0'	FRW'000 0'	FRW'000 0'	FRW'000 0'	FRW'000 0'	FRW'000 0'
Fixed costs		-600,000	-600,000	-600,000	-600,000	-600,000	-600,000
cashflow before Tax		3,550,000	3,050,000	2,200,000	1,800,000	-840,000	-40,000
Tax		-1,065,000	-915,000	-660,000	-540,000	-	-
cash flow after Tax		**2,485,000**	**2,135,000**	**1,540,000**	**1,260,000**	**-840,000**	**-40,000**
Tax Relief		25,000	25,000	25,000	25,000	25,000	325,000
Net Cashflows	-6,500,000	2,810,000	2,460,000	1,865,000	1,585,000	-515,000	285,000
PVIF@10%	1	0.909	0.826	0.751	0.683	0.621	0.564
PV cashflows	-6,500,000	2,554,290	2,031,960	1,400,615	1,082,555	-319,815	160,740
NPV	410,345						
EAV	94,246						

Advice: undertake for 4 years as the Annualized Equivalent Value of FRW 101,627 are higher than FRW 94,246 under 6 years.

b) i) **Mix and Yield variances**

Material KK mix variance   FRW 24,750A

Material MW mix variance   FRW 19,250 F

Material KK Yield variance   FRW 3,063,150 F

Material MW yield variance   FRW 1,429,470 F

(b) (ii) Other operation and planning variances

Sales Price planning variance   FRW 780,000 A
Sales price operational variance   FRW 4,392,000 A
Sales volume planning variance   FRW 62,700 A
Sales volume operational variance   FRW 5,155,700 F
Material KK Price   FRW 7,600 F
Material MW price   FRW 3,290 A
Labour rate planning variance   FRW 56,800 A

Labour rate operational variance   FRW 12,900 A

(iii) Usefulness of calculating mix and yield variances

Calculating yield and mix variances is very useful in cost and performance analysis within manufacturing or production settings and below is an explanation of how they are useful:

Pinpoint causes of cost variances
Yield variance tells you whether you got more or less out than expected from the used inputs while the mix variance shows if the proportion of inputs used was different from the standard.

Helps in operational control
They do help in identifying problems like waste, spoilage, or incorrect input proportions, thereby allowing managers to take corrective action early enough.

Improves budgeting and forecasting
They provide insights into actual performance vs expected standards, which facilitates more accurate variance tracking that eventually leads to better future planning and cost control.

Aid in decision-making
If yield is consistently low, managers might consider process changes, supplier adjustments, or equipment upgrades, whilst the mix variance analysis helps to inform alternative input combinations that are more cost-effective.

Enhance accountability
Helps to assign responsibility for deviations to the right departments, thereby encouraging performance improvement.

(c), Advantages and disadvantages of using time series as a forecasting technique

Time series forecasting is a forecasting process whereby a series of figures or values recorded over time are used to predict future variables. Time series has the following components: Trends; Seasonal variations or fluctuations; Cycles, or cyclical variations; and Non-recurring, random variations.

The following are the advantages of forecasting using time series

(i) Time Series analysis helps to identify patterns, which helps in planning and other model developments like sales-advertisement models, among others.
(ii) Time series involves predicting future patterns using previous periods' data which can be reliable.
(iii) Time Series forecasting can predict the future.
(iv) Time series are also helpful in identifying unusual behaviors such as sudden drops in demand or unexpected spikes in usage.

(v) Time series support real-time updating as new data becomes available to reflect trends and improve forecasting accuracy.

The following are some of the disadvantages of forecasting using time series

(i) All forecasts are subject to error, but the likely errors vary from case to case.

(ii) The further into the future the forecast is for, the more unreliable it is likely to be.

(iii) The less data available on which to base the forecast, the less reliable the forecast is.

(iv) The historic pattern of trend and seasonal variations may not continue, hence the unreliability of future forecasts.

(v) Random variations may upset the pattern of trend and seasonal variation.

(vi) Extrapolation of the trend line is done by judgment and can introduce errors.

(vii)   Several changes also may make it difficult to forecast future events.

(viii) Forecasting using time series does not consider environmental changes, technological advances, legal changes, or social changes that may occur between the periods.

QUESTION THREE

MARKING GUIDE

Qn 3	Description	Marks
(a)	**Profit maximization**	
	Award a Mark for establishing by calculation	1
	Award a Mark for a linear demand curve function: $P = a - 0.0004Q$	1
	Award a mark for the correct calculation of the Total Variable cost	1
	Award a Mark for the correct calculation of P	1
	Award a Mark for the correct calculation of Q based on P above	1
	Award a Mark for correct calculation of the Optimal price	1
	Award a Mark for correct calculation of Profit per unit	1
	Award a Mark for correct calculation of total profits	1
	Maximum Marks	*8*
(b)	**Pricing options**	
	Award 1.5 Marks for a well-explained Market penetration Option	1.5
	Award 1.5 Marks for a well-explained Market Skimming Option	1.5
	Award a Mark for valid advice to Uwamariya	1
	Maximum Marks	*4*
(c)	**Sensitivity of variable costs and sales volumes**	
	Award a Mark for a correct calculation of the free cash flows	1
	Award a Mark for the correct WACC calculation	1
	Awards 2 Marks for Annuity factor calculation	2
	Award a Mark for sensitivity calculation on variable costs and another mark for a valid conclusion	2

Qn 3	Description	Marks
	Award a Mark for sensitivity calculation on sales volume and another mark for a valid conclusion	2
	Maximum Marks	*8*
(d)	**Performance measurement**	
	Award 1 mark to any well-explained performance measure that incorporates both numerical and narrative descriptions (i.e., ROCE, Profit margin, Net profit margin, gearing, liquidity, etc) up to a maximum of 5 points.	5
	Maximum Marks	5
	Total Marks	25

MODEL ANSWER

a) The sales price at which profits are maximized

Profit is maximum when MR=MC

Change in Price/change in Quantity (b)= 4,000/10,000= 0.4

Maximum demand =4,000,000 units

y=a-bQ

where: y demand function

0=a-0.4(4000,000)

a=1,600,000 Thus Demand Function **(P):** 1,600,000-0.4Q

Total Revenue (TR) Function= P*Q

TR=(1,600,000-0.4Q)*Q

TR=1,600,000Q-0.4Q^2

MR=1,600,000-0.8Q

The Marginal cost=VC

Details	Amount (FRW)
Material cost	280
Labor cost	360
Other variables cost	90
Opportunity Cost	90
Total Variable Costs (MC)	**820**

MR=MC

1,600,000-0.8Q=820

Q=1,998,875

P=1,600,000-0.4(1,998,875)

P=800,450

The selling price at which profit is maximized is FRW 800,450 per unit.

(b) Discussion on the two pricing options Uwamaliya should consider

Market penetration and Market skimming are two contrasting pricing strategies used when launching a new product.

Market penetration strategy is described by low entry prices. This will ensure the company enjoys a large market share as its products would be affordable to a large number of customers having had higher sales leading to higher revenues, assuming profitability is enjoyed with such a market share.

Market Skimming, on the other hand, can be used when a company wants to deter others from entering the market since they cannot afford to sell at such a low price unless they achieve economies of scale. It is mostly applied when a company has an innovative or luxurious product on the market, there is limited competition and the brand is strong enough. Charging higher entry prices also known as market skimming helps the company to recoup development costs early enough during the product's life cycle.

Given that the new product is price-sensitive, Uwamaliya should, therefore, consider applying a market penetration strategy.

(c) Sensitivity of the project to variable costs and sales volume

Workings: All amounts in FRW
Computing Base Case Cash Flows: Revenue per year: Revenue = 300 * 205,000 = 61,500,000
Variable cost per year: Variable cost = 300 * 87,000 = 26,100,000
Operaing profit before depreciation and tax: EBITDA = Revenue – Variable Cost – Fixed cost: 61,500,000 – 26,100,000 – 10,000,000 = 25,400,000   Assumed that depreciation is included in fixed costs. Therefore free cash flow per year – 25,400,000
Initial Investment = 70,000,000 (Outflow at time 0)

Compute WACC, where Debt (D) /Equity (E) ratio = 0.4
So, D/V = 0.4/ (1+0.4) = 0.2857; where as E/V = 1/ (1+0.4) = 0.7143
WACC = E/V * Re + D/V * Rd = 0.7143 * 14% + 0.2857 * 9% = 12.57%

Annuity Factor = $1-(1+r)-n / r$

Where:

- r is the interest rate per period (in decimal, so 12.57% becomes 0.1257)
- n is the number of periods = 4

Plug in the numbers:

PVFA (12.57%,4)= 3.001

Calculate NPV using the present value of the annuity factor for 4-year cash flow which is 3.001:
25,400,000 * 3.001 = 76,225,400
NPV = 76,225,400– 70,000,000 = 6,225,400

Sensitivity Analysis:
Increase say Variable cost to 100,000 per unit
New variable cost =300*100,000 = 30,000,000
EBITDA = 61,500,000 – 30,000,000 – 10,000,000 = 21,500,000
PV = 21,500,000 * 3.001 = 64,521,500
NPV = 64,521,500 – 70,000,000 = (5,478,500) Loss.
Conclusion: With just an increase of FRW 13,000 per unit, the variable costs erode all the profits. Uwamaliya would be incurring a loss of 5,478,500 instead. (15% increase in variable costs erode all the profit and cause a loss of Frw 5,478,500)

Reduce Sales Volume to 270 units
Revenue = 270 * 205 = 55,350,000
Variable cost = 270 * 87 = 23,490,000
EBITDA = 55,350,000 – 23,490,000 – 10,000,000 = 21,860,000
PV = 21,860,000 *3.001 = 65,601,860
NPV = 65,601,860– 70,000,000 = (4,398,140) (Loss)
Conclusion: A 10% drop in sales volume also wipes out the NPV.

(d) Performance measurement

Uwamaliya's overall performance indicated poor(Weak) performance, with profitability and asset utilization falling significantly. While liquidity has improved, the large investment in Kalome Limited has not yet produced returns, and the rising gearing indicates a red flag of warning. Management should focus on optimizing new asset use and controlling costs to restore profitability.

Ratio	Comment
Return on Capital Employed	The Return on Capital Employed (ROCE) declined from 31.9% to 20.6%, indicating a significant drop of 11.3% in group profitability. This is attributable to fall in operating profit margin by 5.6% from 22.8% to 17.2%, signifying an increase in costs or reduced operational efficiency.
Gross Profit Margin	Gross margin also declined from 45% to 39.8%, implying increasing production or procurement costs, or possibly pricing pressures. However, Baby Wears Ltd maintains a strong gross margin (48%), suggesting it remains a high value contributor.
Net Asset Turnover	Net Asset Turnover dropped from 1.4 to 1.2, indicating that assets are generating less revenue. The acquisition of FRW 104 billion in new assets by Kalome Ltd may have caused this, as asset additions outpaced revenue generation. Kalome Ltd shows the lowest asset turnover (0.7), confirming the underutilization of the recent investments.
Current Ratio	The current Ratio improved from 0.89 to 1.8, means stronger liquidity and working capital position. MoTTo Ltd's very high current ratio (7.5) might reflect excess idle current assets or poor cash flow management known as overcapitalization or undertrading respectively.
Gearing Ratio	Gearing increased from 15.8% to 19.2%, reflecting greater reliance on debt financing, likely tied to the asset acquisition. While still within safe limits, this upward trend could increase financial risk if profits continue to fall.

QUESTION FOUR

MARKING GUIDE

Q4	Description	Marks
(a)	**Economic Value Added (EVA) of SUN Sports Ltd for 2023 and 2024**	
	Award a Mark for starting with after-tax profits in both years	1
	Award a Mark for the correct calculation of and adding back interest expenses in both years	1
	Award a Mark for correct calculation of capital employed	1
	Award a Mark for correct calculation and adjustment on WACC	1
	Award a Mark for correct EVA in 2023	1
	Award a Mark for correct EVA in 2024	1
	Maximum Marks	6
(b)	**EVA as both an organizational and a divisional performance measure**	

Q4	Description	Marks
	Award 0.5 Marks on each organizational measure to a maximum of 4 measures	2
	Award 1 Mark on each discussed divisional performance measure up to 2 measures	2
	Maximum Marks	*4*
(c)	**FOUR challenges the CEO would face**	
	Award a Mark on a well-defined balance scorecard terminology including mentioning the 4 perspectives	1
	Award a Mark on each identified and explained challenge up to 4 challenges	4
	Maximum Marks	*5*
(d)	**Evaluate the Return on Investment (ROI) with and without this new investment**	
	Award 1 Mark for the ROI calculation with the new investment	1
	Award 1 Mark for the ROI calculation without the new investment	1
	Award 1 Mark for a valid conclusion	1
	Maximum Marks	*3*
(e)	**The annual average Residual Income (RI) with and without the investment**	
	Award 1 Mark for the RI calculation with the new investment	1
	Award 1 Mark for the RI calculation without the new investment	1
	Award 1 Mark for a valid conclusion	1
	Maximum Marks	*3*
(f)	**FOUR challenges that may be encountered while comparing divisional performance**	
	Award a Mark on each explained point up to a maximum of 4 challenges	4
	Maximum Marks	*4*
	Total Marks	25

QUESTION FOUR

(a) Economic Value Added-EVA

Estimate the Economic Value Added (EVA) of the SUN Sports Ltd for 2023 and 2024

Economic Value Added (EVA)

Details	2023 FRW'000	2024 FRW'000
Profit after tax	134,000	164,000
Impairment of goodwill	10,000	10,000
Other non-cash expenses	24,000	24,000
After tax interest expense (12,000*(1-0.3)	8,400	8,400
Net operating profit after tax (NOPAT)	**176,400**	**206,400**
Less: capital charge		
(FRW 648,000*11.5%)	(74,520)	

Details	2023	2024
	FRW'000	FRW'000
(FRW 804,000*12.5%)		(100,500)
Economic Value Added (EVA)	**101,880**	**105,900**

Comment: EVA is positive in both 2023 and 2024. This shows that the amount of economic profit generated exceeds the cost of financing the capital required to produce that profit. This means that SUN Sports Ltd has generated a return in excess of that required by the providers of finance). This also shows that the wealth of the company has increased which is an indicator of a good performance.

Workings

1. Adjusted Capital Employed at the start of the year

Details	2023	2024
	FRW'000'	FRW'000'
As per financial statements	558,000	680,000
Goodwill	90,000	100,000
Add non-cash expenses incurred in the previous year	-	24,000
Adjusted Capital employed	**648,000**	**804,000**

2. Weighted Average Cost of Capital for the year 2023

Details	Weight	Cost of capital-%	Total-%
Equity	0.50	16	8.0
Debts	0.50	7	3.5
		WACC	**11.5**

Weighted Average Cost of Capital for the year 2024

Details	Weight	Cost of capital-%	Total-%
Equity	0.50	18	9.0
Debts	0.50	7	3.5
		WACC	**12.5**

(b) Economic Value Added (EVA) as both an organizational and a divisional performance measure.

EVA can be considered as an organizational performance measure because it can motivate directors of SUN Sports Ltd to improve its EVA and thereby maximize shareholders' wealth in one of the following four ways:

(i) Investing in divisions whose returns exceed the cost of capital;

(ii) Increasing the operating performance of existing divisions. This increases the Net Operating Profit after Tax (NOPAT) without increasing the finance charges;

(iii) Harvesting assets by closing down underperforming divisions and either re-investing the proceeds in other divisions or returning cash to shareholders in the form of dividends.

(iv) Increasing the debt-to-equity ratio to reduce the Weighted Average Cost of Capital (WACC). Though clearly, the company should not become over-geared.

EVA can also be used as a divisional performance evaluation tool for divisional managers. In a decentralized organization, divisions are effectively companies in their own rights, with the head office acting as a parent. EVA therefore encourages divisional managers to maximize the wealth of their divisions.

Although divisional managers may not have sufficient autonomy to make decisions about financing or gearing (so will not be able to change the WACC), using EVA should ensure that divisional managers only invest in projects whose return exceeds the company's cost of capital.

The divisional managers should do whatever benefits their respective divisions keeping in mind the goal congruence-related issues.

(c) FOUR challenges that the CEO would face while implementing the Balance Scorecard as a non-financial performance measurement system

The balance scorecard is a non-financial performance evaluation tool that was developed in the 1980s by Kaplan and Norton to address some problems during that time like some organizations used to ignore financial performance indicators entirely and managers found that they were given too many targets, many of which conflicted.

To resolve these issues, the balance scorecard was developed with the objective of providing top management with an integrated set of performance measures. It looks at performance from the following four perspectives: customer, internal business process, learning and growth, and financial perspective.

The following are the FOUR challenges that the CEO would face while implementing the Balance Scorecard as a non-financial performance measurement system:

Selecting appropriate metrics
The key performance indicators (KPIs) chosen should measure how the organization is performing concerning its strategy. This may require SUN Sports Ltd to translate high level objectives into operating KPIs. SUN Sports Ltd should also avoid information overload by selecting too many KPIs. A small number of carefully selected KPIs are likely to be more effective than a large number of less relevant indicators.

Conflict resolution

Some metrics may conflict with each other. Increasing the quality of products will increase customer satisfaction, but this may reduce profits in the short term. It will be necessary for decisions to be taken at a senior level to resolve such conflicts.

Change in culture

A change in management culture may be required, particularly if SUN Sports Ltd had previously used mainly financial-based performance management systems. The balance scorecard may be met with skepticism by some managers, so it is important to train managers and staff to understand the purpose and benefits of the scorecard. Managers may require training in setting KPIs and interpreting the non-financial KPI results.

Target setting

Having identified the KPIs, it will be necessary to set targets so that managers know what is expected of them. The challenge would also be to know whether the managers should be involved in setting their targets and if so, the risk that they will negotiate the lowest targets.

(e) **Residual Income and Return on Investment**

(i) **Evaluate the Return on Investment (ROI) with and without this new investment (Base your calculations on opening book values). Would the investment centre manager wish to undertake the investment if performance is judged on ROI?**

Details	Without the investment	With the Investment
	FRW'Million	FRW'Million
Profit	160	175
Capital employed	800	900
Return on Investment (ROI)	**20%**	**19%**

The Return On Investment (ROI) would be lower, therefore the centre manager will not want to make the investment since their performance will be judged as having deteriorated. However, this results in dysfunctional behavior since the company's target is only 10%.

i) **Calculate the annual average Residual Income (RI) with and without the investment (Base your calculations on opening book values). Would the investment centre manager wish to undertake the investment if performance is judged on RI?**

Details	Without the investment	With the Investment
	FRW'Million	FRW'Million
Profit	160	175
Notional interests (800 and 900 million*10%)	(80)	(90)
Residual Income	**80**	**85**

The investment centre manager will want to undertake the investment because it will increase the Residual Income (RI) from 80 million to 85 million. This is the correct decision for the company since Residual Income increased by FRW 5 million as a result of this new investment.

ii) Briefly discuss any FOUR challenges that may be encountered while comparing divisional performance

Comparison of divisional performance has the following challenges:

- Divisions may operate in different environments. A division earning a ROI of 13% when the industry average is 10% may be considered to be performing better than a division earning a ROI of 12% when the industry average is 14%;

- The transfer pricing policy may distort divisional performance;

- Divisions may have assets of different ages. A division earning a high ROI may do so because assets are old and fully depreciated. This may give a poor indication of future potential performance;

- There may be difficulties comparing divisions with different accounting policies and therefore applying different parameters such as depreciation;

- Evaluating performance on the basis of a few indicators may lead to data manipulation. A wider range of indicators may be preferable which include non-financial measures. It may be difficult to find non-financial indicators that can easily be compared if divisions operate in different environments.

End of Model Answer And Marking Guide