Questions and Answers

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Question 1: Decision Analysis

(a) Decision making demonstrate both prescriptive and descriptive business modelling approach with the intention to classify the degree of knowledge and understanding and also compares the expected outcomes because of the various courses of action. According to Triantaphyllou (2013), there are four criteria's of decision making such as certainty (full knowledge), risk, ignorance and uncertainty as shown in the figure below:

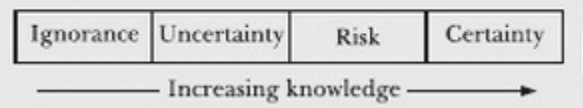

Figure 1: Zones of Decision-making

Decision making under certainty

In the context of decision making, the decision maker must complete the knowledge with perfect and clear information of result because of which each alternative of decision makes some course of action. In this particular state, an individual should select alternative decision that yields maximum return (payoff). This means that alternative decision must be under known state of nature. For instance, the decision to invest in provident fund and national saving certificates with complete information regarding the future return because of which the principal at maturity is known (Friedrich, 2015).

Decision under risk

In this specific decision criterion, decision maker does not have clear and perfect knowledge regarding the results of each alternative decision. This criterion is may be because of more than one states of nature. In such kind of cases, decision maker makes some probability assumptions of specific state of nature for occurrence (Yu, 2013).

Decision making under uncertainty

In this specific decision environment, decision maker does not have specific state of nature for occurrence. Conversely, this is really not the case of making decision under ignorance due to which the feasible state of nature is known. Therefore, decision under certainty with less information is taken rather than decisions under risk (Yalcin, Bayrakdaroglu and Kahraman, 2012).

(b) There are three types of investment A, B and C whereas conditional profits from each provided a Good Economy or a Poor Economy. Table below discusses the investment and conditional profits:

Conditional profits	**Investment**

	A	B	C
Good Economy	$80,000	$30,000	$23,000
Poor Economy	$20,000	$20,000	$23,000

(i) If Joe is optimist then he may select the alternative that could result in the maximum payoff. He could select type of investment A $80,000 with conditional profits of good economy.

(ii) If Joe is pessimistic then he could select type of investment A and B $20,000 with conditional profits of poor economy.

(iii) Joe should select poor economy with the type of investment A and B.

(iv) If Joe believes that there is a 60% chance of good economy then he should select good economy as the type of investment automatically go high.

(v) Based on expected monetary values, the minimum probability Harry would require for timely arrival of the imported PCs for the investment opportunity to be worthwhile is 0.05.

Question 2: Value of information

There are two production methods a1 and a2 for a new product.

The probability of demand for the product being poor (s1) = 0.7

The probability of demand for the product being good (s2) = 0.3

	S1	S2
A1	$6,000	$10,000
A2	-1,000	25,000

(i) The optimum action that manufacturer calculated through two production methods is $25,000.

(ii) The consultant has indicated that demand will be poor he has been right 80% of the time
When he has indicated that demand will be good he has been right 70% of the time
Probability = P (A) – P (B)
The expected value of perfect information is = 0.8-0.7 = 0.1

(iii) Yes, the manufacturer should pay for the consultant opinion. This is confirm by an example, such as if the consultant would give opinion for free he would charge the privilege of holding the license.

Question 3: Simulation

The sale of programs for the games adds to profitability. Each program costs $2 to make and sells for $5.

(a) The management accountant for the club to determine the profitability of program production. Particularly, the two strategies investigate the number of programs to be printed are either

(i) The number demanded the previous match

= 0.10+0.20+0.30+0.25+0.15/5

= 0.2

(ii) 2500 every month

= 2500*0.2

= 500

Games	total profit	average profit	Sales unit	Sales revenue	production cost	Profit
free kick league	0.496719469	0.350810498	0.027207475	0.854323337	0.729680822	0.440729
speed back	0.637447726	0.363599603	0.21542529	0.929929559	0.395191706	0.451447
soccer balls	0.975442059	0.639129949	0.555856736	0.429602724	0.324127868	0.176772
axis football league	0.122880913	0.207398019	0.844835974	0.968689041	0.183353464	0.24217
goal in one	0.019410536	0.1379988	0.204047766	0.930424654	0.531306448	0.980392
king of defenders	0.943441341	0.542101589	0.824424554	0.575925687	0.066283172	0.261705
baggio magic kicks	0.655273963	0.282517475	0.909079654	0.785838241	0.762310361	0.788326
warfare squad	0.252945889	0.277531497	0.110621522	0.708880038	0.258035283	0.685535
galaxy siege 3	0.727082564	0.235953946	0.185396319	0.400777116	0.730395369	0.196869
Minecraft mega parking	0.953541623	0.335065542	0.202398884	0.15359469	0.863557627	0.919936
SUM	0.578418608	0.337210692	0.407929417	0.673798509	0.484424212	0.514388

(b)

Marginal cost = change in total cost / change in quantity of output

Marginal cost = 0.57/0.514

Marginal cost = 1.108

Marginal revenue would be when production of the games increases by one unit to 11 units and the price remains the same and then the total revenue is equal to $55. Therefore, the revenue change would be $55 which represents marginal revenue.

For marginal product, we calculated the change in total product. For instance, assuming that adding two additional games increases the production by 25 units. Therefore, the total change in the products is 25 units in this study.

(c) Several strategies have been adopted by Wallabies football clubs. They are positive, since the Wallabies football clubs used strategy of partnerships with private companies or investor groups, usually from abroad. But these usually partnerships show positive results only in the short term, as with a group of investors who financed the construction of a great team that in the year next won the title of the championship last year but they

managed to keep the trajectory of achievements and has become virtually non-existent in addition to not invest in the club structure or development of new athletes (McCall, Carling, Davison, Nedelec, Le Gall, Berthoin and Dupont, 2015).

According to the results, marketing strategies are also widely used by football clubs which has sponsored one of its biggest sources of income but the club football should base their marketing strategies on any sports entity: its brand, its stadium and the Media. The commercial exploitation of its brand is a very important income for Wallabies clubs football, as the mark of entity is what unites its millions of fans and their sponsors. Thus, clubs must develop strategic projects their sponsors and commercial partners to addition to the expansion of visibility of the brands of companies interested in media coverage entity also an effective commercial return, and of course large networking opportunities. One of the largest revenues in football clubs is their stadium, the epic enter of business, as games and any character business tied to brand must be aligned with home games club and Global Market Finder (Del Giacco, Scorcu, Argiolas, Firinu and Del Giacco, 2014).

Question 4: Regression Analysis and Cost Estimation

(a) A simple technique to compute the total amount of fixed costs and variable cost rate that are a part of mixed costs is basically known as high-low method.
The high-low method defines variable cost per unit (b) which is calculated by the following formula:
Variable cost per unit = y2-y1/x2-x1
The selling price function based on square metres of floor space. The estimated selling price for a house with floor space would be 285.83/275
Hence, the estimated selling price for a house with m2 of floor space is $1.039

(b) In this part, the Excel has been employed to conduct the regression test for three variables. The research under study relates to the identification and recognition of the factors and elements which impacts the selling price of houses against the square metres and then number of bedrooms. On the basis of gathered responses, two factors have been provided; which are square metres (m2) and number of bedrooms. In order to understand the impact and its relationship with the dependent variable; that is selling price, regression test has been applied and below mentioned data is obtained.

Regression analysis between selling price and square metres (m2)

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.955342
R Square	0.912679
Adjusted R Square	0.903947
Standard Error	39659.12
Observations	12

In the present relationship, the R square value is calculated as 0.912. Therefore it can be said that independent variable strongly impacts the dependent variable; which is selling price.

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.64E+11	1.64E+11	104.5202	1.3E-06
Residual	10	1.57E+10	1.57E+09		
Total	11	1.8E+11			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-65449.5	51828.73	-1.2628	0.235311	-180931	50032.07	-180931	50032.07
Square Metres (m2)	1807.987	176.8459	10.22351	1.30E-06	1413.949	2202.024	1413.949	2202.024

Therefore based on this, mentioned above table depicts that alternate hypothesis; which means that square metres (m2) does not impact the selling price. This is confirmed by the non-significant value which is 1.30.

Cost equation for selling price and square metres (m2):

Y (selling price) = -65449.5+ 1807.987*(square metres)

Regression analysis between selling price and the number of bedrooms

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.863842
R Square	0.746223
Adjusted R Square	0.720846
Standard Error	67609.84
Observations	12

In the present relationship, the R square value is calculated as 0.746. Therefore it can be said that independent variable strongly impacts the dependent variable; which is selling price.

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.34E+11	1.34E+11	29.40475	0.000292
Residual	10	4.57E+10	4.57E+09		
Total	11	1.8E+11			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	72213.74	72587.65	0.994849	0.343272	-89521.6	233949.0958

Number of bedrooms	110961.8	20462.79	5.422615	0.000292	65367.89	156555.7713

Therefore based on this, mentioned above table depicts that alternate hypothesis; which means that number of bedrooms do impact the selling price. This is can be confirmed by the sig value which is 0.0002.

Cost equation for selling price and number of bedrooms: y = a + bx

Y (selling price) = 72213.74+ 110961.8*(number of bedrooms)

Regression between selling price and square metres (m2) and number of bedrooms

Regression Statistics	
Multiple R	0.955699
R Square	0.913361
Adjusted R Square	0.894107
Standard Error	41640.97
Observations	12

In the present relationship, the R square value is calculated as 0.913. Therefore it can be said that independent variable strongly impacts the dependent variable; which is selling price.

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	1.65E+11	8.23E+10	47.43937	1.66E-05
Residual	9	1.56E+10	1.73E+09		
Total	11	1.8E+11			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-62935.2	55233.35	-1.13944	0.283937	-187882	62011.36	-187882	62011.36
X Variable 1	1710.58	410.5289	4.166771	1.30E-06	781.8993	2639.261	781.8993	2639.261

X Variable 2	7412.969	27864.21	0.266039	0.000292	-55620.3	70446.19	-55620.3	70446.19

According to the table above, it can be said that square metres (m2) influence the selling price while number of bedrooms does not impact the selling price. This is confirmed by the significant value 0.002.

Cost equation: y = a + bx

Y (selling price) = -62935.2+ 1710.58*(square metre) + 7412.969* (number of bedrooms)

(c) Estimating the predicted value

Y (selling price) = -62935.2+ 1710.58*(300) + 7412.969* (3)

Y (selling price) = -62935.2+513174+22238.907

Y (selling price) = 472477.707

Question 5: CVP Analysis

(a)

(i) Breakeven point in Pizza Costs = Annual Fixed Costs + Contribution Margin per Pizza

Break-even point in Pizza Costs = $40,000+$5

Break-even point in Pizza Costs = $45,000

(ii) Contribution margin ratio = Sales – Variable / Sales

($10-$40,000)/ $40,000 = 99.7%

(iii) $60,000/$10 = $6000

6000 pizzas must be sold to earn $60,000 profit per annum before tax

(b) There are two products X and Y. The sales mix is 1 unit of X to 2 units of Y. Fixed costs per period are $11,000.

	X	**Y**
Unit selling price	$19	$15
Unit variable cost	$10	$9

(i) Almost, 1 unit from each product must be sold in a period which makes the profit of $10,000.

(ii) Net profit = Total revenue – Total expenses

Net profit = $12000 – $11000

Net profit = $1000

By using the formula of net profit, the net profit of $1000 would be earned in the period.

(c) The Alpha company makes a single product and has the following unit selling price and costs:

Selling price per unit	$4,000
Variable costs per unit	$3,500
Fixed costs per annum	$2,000,000

(i) Expected net profits = expected gross profit – cost

Expected net profits = 72000 – 3500

Expected net profit = 68,500

(ii) Standard deviation of expected profit = $\sqrt{(12000)}2 * (4000)2$

Standard deviation of expected profit = 480.00

(iii)

X	-1	3	5
P (X)	0.3	0.2	0.5

E(X) = (-1).P (-1) + 3.P (3) + 5.P (5)

E(X) = (-1). (0.3) + 3 (0.2) + 5 (0.5)

$E(X) = -0.3+0.6+2.5$

$E(X) = 2.8$

References

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