Impact of Media channels on Sales

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Introduction

- This multiple regression model aims to evaluate the impact of different media and marketing channels on Sales performance for Company X

Definition of variables

- Sales ($) : Dependent variable or Target variable denoted Y
- TV Ad Budget ($) : Independent Variable denoted X1
- Radio Ad Budget ($): Independent Variable denoted X2
- Newspaper Ad Budget ($): Independent Variable denoted X3

Model results

- We have 200 observations
- Adjusted R square = 0,8956

→This means that All independent variables can explain 89,56% of total variations in Sales ($)

Regression Statistics	
Multiple R	0,947212034
R Square	0,897210638
Adjusted R Square	0,895637332
Standard Error	1,685510373
Observations	200

Model results

- H0 : All coefficient of the independent variables are not significant (no effect)

  H1 : at least 1 coefficient of an independent variable is significant (has effect on dependent variable)

- F statistic is very large and p-value for F-stat <<5%
- →This means that the Overall is significant

ANOVA					
	df	SS	MS	F	Significance F
Regression	3	4860,323487	1620,107829	570,2707037	1,57523E-96
Residual	196	556,8252629	2,840945219		
Total	199	5417,14875			

Model results

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2,938889369	0,311908236	9,42228844	1,26729E-17	2,323762279	3,55401646
TV Ad Budget ($)	0,045764645	0,001394897	32,80862443	1,50996E-81	0,043013712	0,048515579
Radio Ad Budget ($)	0,188530017	0,008611234	21,89349606	1,50534E-54	0,171547447	0,205512586
Newspaper Ad Budget ($)	-0,001037493	0,00587101	-0,176714587	0,85991505	-0,012615953	0,010540967

Regression equation

$$\hat{y} = \hat{a}_0 + \hat{a}_1 * X_1 + \hat{a}_2 * X_2 + \hat{a}_3 * X_3 + e$$

From the table we can write :

$$\hat{y} = 2{,}938889369 + 0{,}045764645 * X_1 + 0{,}188530017 * X_2 + (-0{,}001037493) * X_3 + e$$

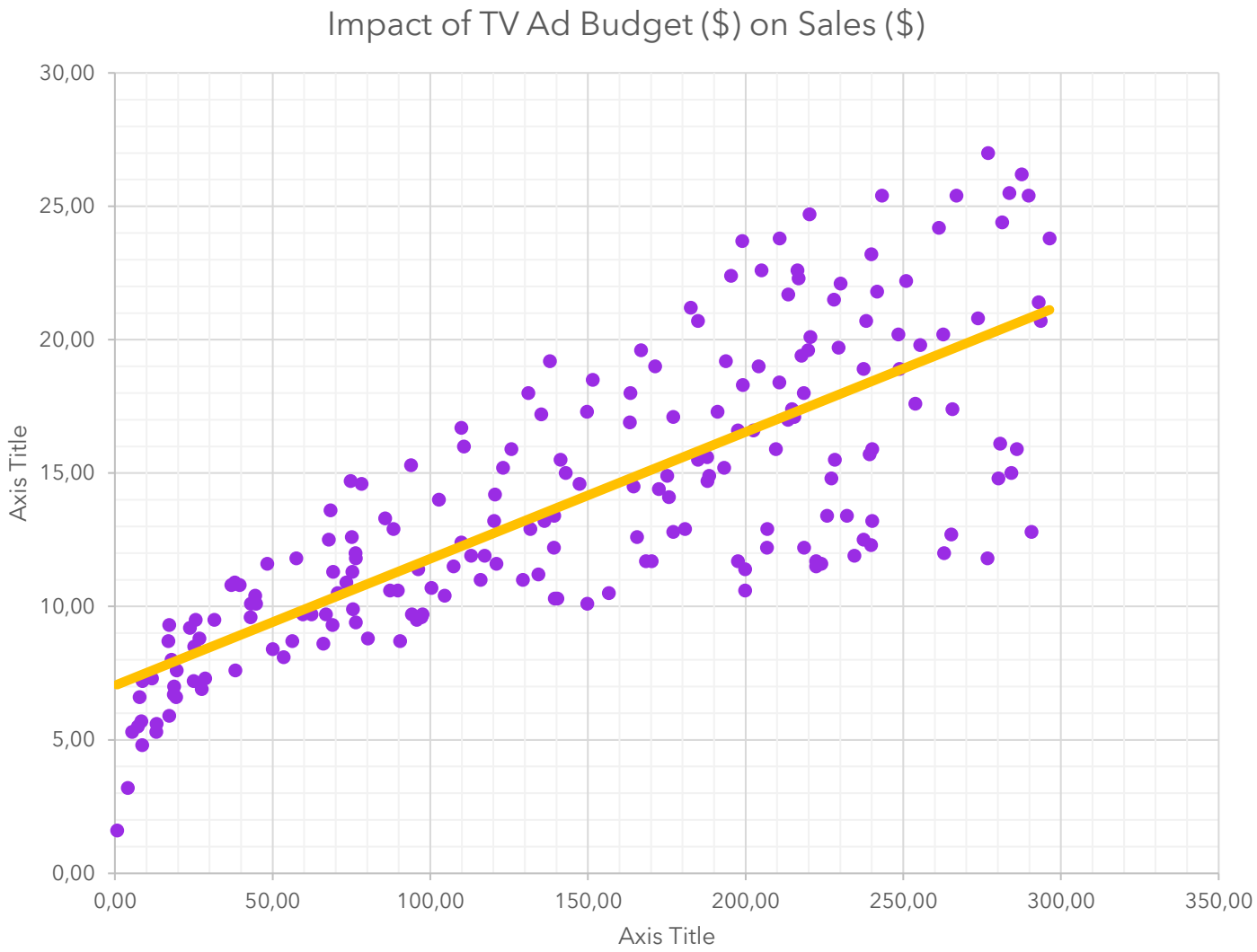
Significance study of TV Ad Budget ($)

- H0 : $a_1 = 0$

  H1 : a_1 != 0
- 1,50996E-81 << 5%
- We reject H0

→ TV Ad Budget has a significant impact on Sales ($)

→ If TV Ad Budget increases by 1 $ than Sales raises by 0,045764645 $ with other variables being held constant



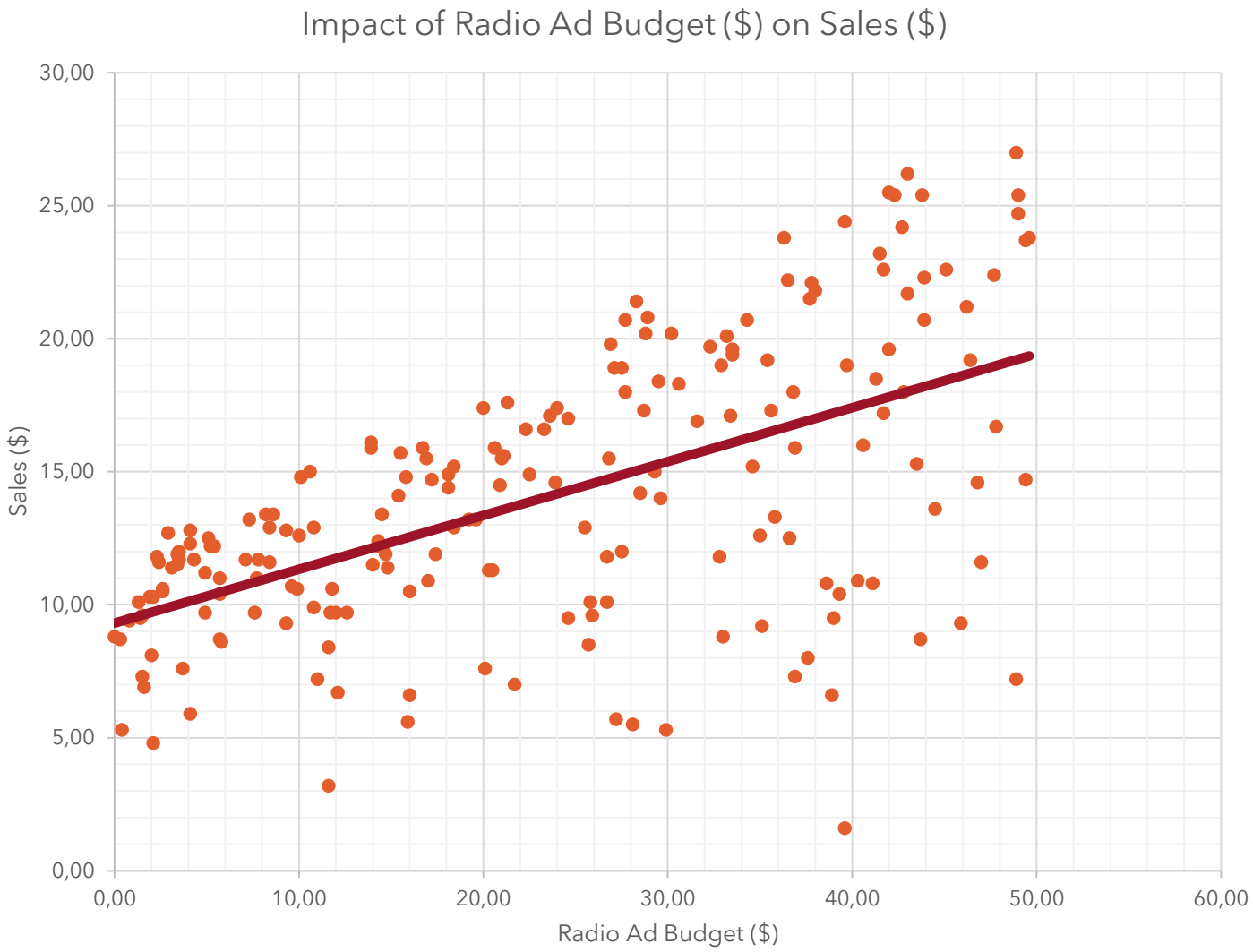
Significance study of Radio Ad Budget ($)

- H0 : $a_2 = 0$

  H1 : a_2 != 0
- 1,50534E-54 << 5%
- We reject H0

→ Radio Ad Budget ($) has a significant impact on Sales ($)

→ If Radio Ad Budget ($) increases by 1 $ than Sales raises by 0,188530017 $ with other variables being held constant



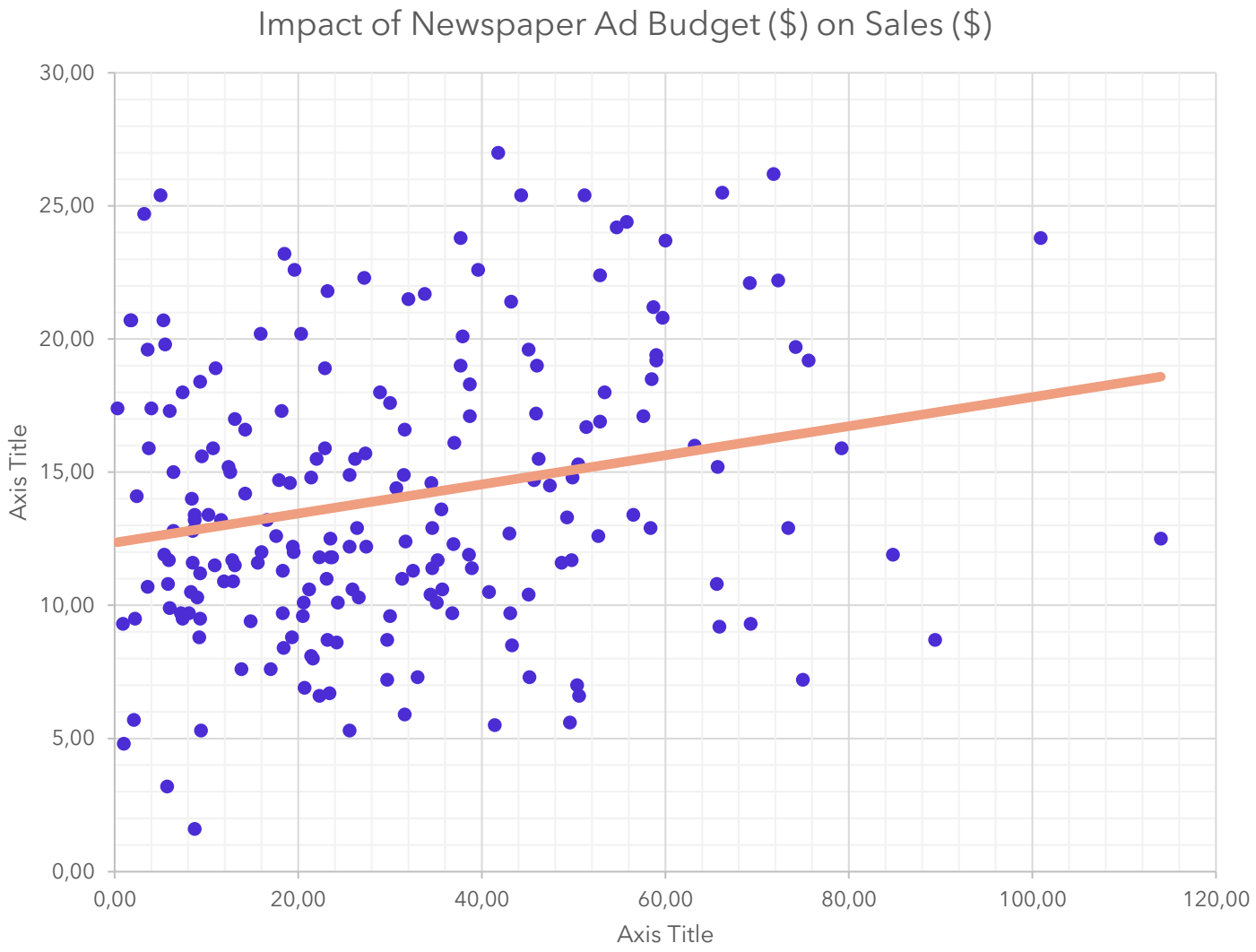
Significance study of Newspaper Ad Budget ($)

- H0 : $a_3 = 0$

  H1 : a_3 != 0
- 0,85991505 > 5%
- We fail to reject

→Newspaper Ad Budget ($) doesn't have a significant impact on Sales ($)

→ If TV Ad Budget increases by 1 $ than Sales decreases by 0,001037493 $ with other variables being held constant



Rcommendations

We should cut the Newspaper Ad Budget since any dollars put or invested into it leads to a decrease in Sales ($)

Even though, TV Ad Budget has a significant impact on Sales ($), this influence is very low which means we should lower our budget invested in TV Ad and allocate that money to a channle with better ROI contribution to Sales

Itt’s advisable to invest most of the budget in Radio Ad. It seems that the company’s target audience is more motivated to spend and buy from the company if they listen to its Radio Ad campaign

Conclusion

- The multiple linear regression model allows us to study the impact of TV Ad Budget ($), Radio Ad Budget ($) and Newspaper Ad Budget ($) on Sales ($)
- This model enabled us to evaluate the impact of these 3 media/marketing channels on Sales performance
- The Results help us identify which channels to cut, reduce budget from and allocate more budget to in order to optimize ROI and conversions for Company X

Q&A

THANK YOU FOR YOUR ATTENTION

FEEL FREE TO GIVE FEEDBACK AND ASK QUESTIONS