Mirror-Mirror Executive Summary

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Summary of Findings:

Below is a summary of the cost estimation and break-even analysis of the potential Mirror-Mirror store in Greenville using the sales projections of the market study and its dampened projections. We utilized the High-Low method and regression analysis to calculate the net income (after-tax) expected for each of the first five years for the Greenville store.

- Fixed costs using the High-Low method was nearly 1.8 times higher than using regression ($844,900.79 vs. 462,072.12).
- Variable cost per dollar of sales revenue is 15% ($0.15) higher using the regression analysis than the high-low method ($0.403 vs. $0.253).
- Using the High-Low method resulted in a negative net income (after-tax) in our cost estimation for all five years in both the market study and dampened sales projection.
- Using the High-Low method, the fifth year net income (after-tax) is -$129,116.80 for the market study projections, and -$167,393.08 for dampened projections.
- R-squared for regression analysis was 0.77, meaning the equation was moderately well fitting to the relationship between cost and revenue based off of 2019 Clemson sales.
- Using regression analysis and the sales projections from the dampened sales projection,the first two years resulted in a negative income (after-tax) of -$85,605.10, -$41,904.70, respectively. Starting the third year net income (after-tax) will become positive at $2,048.78, $23,645.90 in year 4, and $36,756.02 in year 5. It is still short of Mrs. Smith's goal of $60,000.00 by $23,243.98 for the fifth year.
- Using regression analysis and the sales projections from the market study, the first two years resulted in a negative net income (after-tax), -$63,754.90, -$20,054.50, respectively, and starting the third year net income (after-tax) became positive at $23,914, $45,496 in year 4, and $67,346 in year 5. By the fifth year it would meet Mrs. Smith's goal of $60,000.
- Break-even sales using the High-Low method is $1,131,021 each year. The 5th year market study projected sales is $915,000, and $850,950 for dampened projections, which both fall short of the break-even point.
- Break-even sales using the regression analysis is $773,463 each year. Both market study and dampened projected sales as stated above meet and exceed the break-even point in years 3-5.
- Total annual fixed costs found through both the regression formula and high-low method are very high ($462,072.12 and $844,900.79, respectively). If determined to open the new location in Greenville, it is recommended to reduce variable and fixed costs.
- Overall, we recommend that Mrs. Smith does not follow through with the opening of the new business in Greenville unless overall costs are lowered.

Discussion of Cost Predictions:

The first method of cost analysis used in analyzing Mirror-Mirror's data is called the High-Low method. Using this technique, we calculated your company's estimated monthly and yearly cost equations for the Greenville store using the data provided from the 2019 Income Statement from the Clemson store. Looking at the Statement, we found the months with the highest and lowest sales revenues, and used those two months' total costs to calculate the estimated variable cost per sales dollar, or the slope. The months with the highest and lowest sales revenues were December and February, respectively. For each month, total cost was found by adding the total cost of goods sold and the total selling and administrative expenses. To calculate the estimated variable cost per sales dollar, which was found to be $0.253 per sales dollar, we found the difference between total costs for the two months, and divided that value by the difference in total sales revenue. We then found the fixed costs by subtracting the February total variable cost from total cost, which was calculated to be $70,408.40 per month and $844,900.79 per year. Hence, the estimated monthly cost equation is $0.253x + $70,408.40 and the yearly cost equation is $0.253x + $844,900.79, where 'x' is yearly sales revenue. These equations are able to be used to examine each of the five years you expected.

The market study provided us with projections of the estimated sales revenue for the Greenville location, and was presented as a percentage of the Clemson location's 2019 sales revenue. It was found that sales for the Greenville store in year 1 will be 70% of the 2019 Clemson sales, year 2 Greenville sales will be 80% of the 2019 Clemson sales, year 3 Greenville sales will be 90% of the 2019 Clemson sales, year 4 Greenville sales will be 95% of the 2019 Clemson sales, and year 5 Greenville sales will be 100% of the 2019 Clemson sales. With these values, we found the estimated Greenville store total sales revenues for each year in terms of the market study projection by multiplying the 2019 Clemson sales revenue ($915,000.00) by the percentages. Year 1 Greenville total sales would be $640,500.00, year 2 Greenville total sales would be $732,000.00, year 3 Greenville total sales would be $823,500.00, year 4 Greenville total sales would be $869,250.00, and year 5 Greenville total sales would be $915,000.00. We then calculated total cost per year by using the yearly total sales revenues in the high-low method estimated yearly cost equation. Year 1 Greenville total cost would be $1,006,947.29, year 2 Greenville total cost would be $1,030,097.00, year 3 Greenville total cost would be $1,053,246.29, year 4 Greenville total cost would be $1,064,821.25, and year 5 Greenville total cost would be $1,076,396.00. Lastly, we calculated net income after tax by subtracting total sales revenue from total cost for each year and then making a 20% tax deduction. Net income after tax for the Greenville store using the high-low method and market study projections was shown to be -$293,157.83 for year 1, -$238,478.00 for year 2, -$183,797.03 for year 3, -$156,457.00 for year 4, and -$129,116.80 for year 5.

You also wished for us to project your after-tax income using the dampened market study projections. Similar to the data from the market study, we were provided with the estimated sales revenue for the Greenville location as a percentage of the Clemson location's 2019 sales revenue.

In this case of the dampened projections, sales for the Greenville store in year 1 will be 65% of the 2019 Clemson sales, year 2 Greenville sales will be 75% of the 2019 Clemson, year 3 Greenville sales will be 85% of the 2019 Clemson sales, year 4 Greenville sales will be 90% of the 2019 Clemson sales, and year 5 Greenville sales will be 93% of the 2019 Clemson sales. Knowing this, we found the estimated Greenville store total sales revenues for each year in terms of the dampened projections by using the same technique, multiplying the 2019 Clemson sales revenue ($915,000.00) by the percentages. The Greenville total sales revenue was found to be $594,750.00 in year 1, $686,250.00 in year 2, $777,750.00 in year 3, $823,500.00 in year 4, and $850,950.00 in year 5. With this information, we calculated the total cost per year by using the yearly total sales revenues in the high-low method estimated yearly cost equation. We found that the Greenville store's total cost would be $995,372.75 in year 1, $1,018,522.04 in year 2, $1,041,671.54 in year 3, $1,053,246.50 in year 4, and $1,060,191.35 in year 5. We then calculated net income after tax by also subtracting total sales revenue from total cost for each year, then making a 20% tax deduction. Net income after tax for the Greenville store using the high-low method and dampened market study projections was calculated to be -$320,498.20 for year 1, -$256,817.63 for year 2, -$211,137.23 for year 3, -$183,797.20 for year 4, and -$167,393.08 for year 5.

Additionally, using the data from the High-Low method, we found the total sales revenue required to break-even with total cost. This was found by dividing total fixed costs by (1 - the estimated variable cost per sales dollar). With total fixed costs equaling $844,900.79 and (1 - the estimated variable cost per sales dollar) equaling $0.747, we found that the required sales revenue to breakeven each year is $1,131,020.84.

The second method of cost analysis used is called regression analysis. Just like the high-low method, we calculated your company's estimated monthly and yearly cost equations for the Greenville store using the data provided from the 2019 Income Statement from the Clemson store. With the data provided in the Statement, we found the total costs for each month by adding the total cost of goods sold and the total selling and administrative expenses. Total costs were found to be $53,767.00 for January, $84,256.00 for February, $57,629.00 for March, $63,640.00 for April, $64,412.00 for May, $61,859.00 for June, $62,156.00 for July, $69,066.00 for August, $58,999.00 for September, $58,200.00 for October, $79,255.00 for November, and $117,206.00 for December. Using these values and the sales revenues provided for each month in the 2019 Clemson Income Statement, we used the Regression Analysis function in Microsoft Excel to find the estimated monthly and yearly cost equations. The monthly cost equation is $0.403x + $38,506.01 and the yearly cost equation is $0.403x + $462,072.12, where 'x' is yearly sales revenue. Given that the R-squared value given when using regression analysis was 0.77, we know that the equations given fit the cost and revenue data moderately well and, therefore, are moderately reliable in its projections given that an R-squared value of 1 fits the data perfectly. Furthermore, regression analysis uses all provided data (data from all 12 months) to calculate these equations while the high-low method only uses data from 2 months. Therefore, regression analysis is more accurate in predicting total costs and sales revenue than the high-low method.

Using the data provided from the market study projections, which are listed above, we found the estimated Greenville store total sales revenues for each year by multiplying the 2019 Clemson sales revenue ($915,000.00) by the given percentages. Year 1 Greenville total sales would be $640,500.00, year 2 Greenville total sales would be $732,000.00, year 3 Greenville total sales would be $823,500.00, year 4 Greenville total sales would be $869,250.00, and year 5 Greenville total sales would be $915,000.00. We then calculated total cost per year by using the yearly total sales revenues in the estimated yearly cost equation found by using regression analysis. For the Greenville location, year 1 total cost would be $720,193.62, year 2 total cost would be $757,068.12, year 3 total cost would be $793,607.67, year 4 total cost would be $812,379.87, and year 5 total cost would be $830,817.12. We then found net income after tax by subtracting total sales revenue from total cost for each year and then making a 20% tax deduction. Net income after tax for the Greenville store using regression analysis and market study projections was calculated to be -$63,754.90 for year 1, -$20,054.50 for year 2, $23,913.86 for year 3, $45,496.10 for year 4, and $67,346.30 for year 5.

We also projected after-tax net income using the dampened market study projections and regression analysis. Using the dampened projections and given percentages, which are listed above, we found the estimated Greenville store total sales revenues for each year by multiplying the 2019 Clemson sales revenue ($915,000.00) by the percentages. The Greenville total sales revenue was found to be $594,750.00 in year 1, $686,250.00 in year 2, $777,750.00 in year 3, $823,500.00 in year 4, and $850,950.00 in year 5. Knowing this, we calculated the total cost per year by using the yearly total sales revenues in the estimated yearly cost equation found with regression analysis. It was found that the Greenville store's total cost would be $701,756.37 in year 1, $738,630.87 in year 2, $775,189.03 in year 3, $793,942.62 in year 4, and $805,004.97 in year 5. Lastly, we calculated net income after tax by also subtracting total sales revenue from total cost for each year, then making a 20% tax deduction. Net income after tax for the Greenville store using regression analysis and dampened market study projections was calculated to be -$85,605.10 in year 1, -$41,904.70 in year 2, $2,048.78 in year 3, $23,645.90 in year 4, and $36,756.02 in year 5.

With the data from using regression analysis, we found the total sales revenue required to break-even with total cost. This was found by dividing total fixed costs by (1 - the estimated variable cost per sales dollar). In the regression analysis estimated yearly cost equation, the estimated variable cost per sales dollar is $0.403. With total fixed costs equaling $462,072.12 and (1 - the estimated variable cost per sales dollar) equaling $0.597, we found that the required sales revenue to breakeven is $773,463.19.

Year 1 Market Projections:

High-Low Method (Market Study)			
Slope =	0.252975048		
Fixed Cost = Total Cost - Total Var. Cost =	$844,900.79	$70,408.40	
Monthly Cost Equation =	**$0.253x+70408.40**		
	X = Sales Revenue		Breakeven sales
Yearly Cost Equation =	**$0.253x + $844900.79**		$1,131,020.84
Total Sales Revenue =	$640,500.00		
Total Cost for the Year =	$1,006,947.29		
Net Income (before tax) =	-$366,447.29		
Taxes (20%) =	-$73,289.46		
Net Income (after tax) =	-$293,157.83		

Regression Analysis (Market Study)									
Regression Statistics									
Multiple R	0.87978696								
R Square	0.77402509								
Adjusted R Square	0.7514276								
Standard Error	8748.39257								
Observations	12								
ANOVA									
	df	*SS*	*MS*	*F*	*Significance F*				
Regression	1	2621508950	2621508950	34.2527006	0.00016105				
Residual	10	765343726	76534372.6						
Total	11	3386852676							
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*	
Intercept	38506.0136	5821.47692	6.614475	5.97E-05	25534.9546	51477.0725	25534.9546	51477.0725	
Total Sales	0.40259326	0.06878902	5.85258068	0.00016105	0.24932179	0.55586474	0.24932179	0.55586474	
y=38506.01+0.403x		monthly							
y=462072.12+0.403x		yearly							
Total Sales Revenue =	$640,500.00		Breakeven Sales						
Total Cost for the Year =	$720,193.62		$773,463.19						
Net Income (before tax) =	-$79,693.62								
Taxes (20%) =	-$15,938.72								
Net Income (after tax) =	-$63,754.90								

Year 1 Dampened Projections:

High-Low Method (Dampened)			
Slope =	0.252975048		
Fixed Cost = Total Cost - Total Var. Cost =	$844,900.79	$70,408.40	
Monthly Cost Equation =	**$0.253x+70408.40**		
	X = Sales Revenue		
Yearly Cost Equation =	**$0.253x + $844900.79**		Breakeven sales
Total Sales Revenue =	$594,750.00		$1,131,020.84
Total Cost for the Year =	$995,372.75		
Net Income (before tax) =	-$400,622.75		
Taxes (20%) =	-$80,124.55		
Net Income (after tax) =	-$320,498.20		

Regression Analysis (Dampened)

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.87978696
R Square	0.77402509
Adjusted R Square	0.7514276
Standard Error	8748.39257
Observations	12

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2621508950	2621508950	34.2527006	0.00016105
Residual	10	765343726	76534372.6		
Total	11	3386852676			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	38506.0136	5821.47692	6.614475	5.97E-05	25534.9546	51477.0725	25534.9546	51477.0725
Total Sales	0.40259326	0.06878902	5.85258068	0.00016105	0.24932179	0.55586474	0.24932179	0.55586474

y=38506.01+0.403x		monthly	
y=462072.12+0.403x		yearly	
Total Sales Revenue =	$594,750.00	Breakeven Sales	
Total Cost for the Year =	$701,756.37	$773,463.19	
Net Income (before tax) =	-$107,006.37		
Taxes (20%) =	-$21,401.27		
Net Income (after tax) =	-$85,605.10		

Year 2 Market Projections:

High-Low Method (Market Study)			
Slope =	0.252975048		
Fixed Cost = Total Cost - Total Var. Cost =	$844,900.79	$70,408.40	
Monthly Cost Equation =	**0.253x+70408.40**		
	X = Sales Revenue		Breakeven sales
Yearly Cost Equation =	**0.253x+844900.79**		$1,131,020.84
Total Sales Revenue =	$732,000.00		
Total Cost for the Year =	$1,030,097.00		
Net Income (before tax) =	-$298,097.00		
Taxes (20%) =	-$59,619.40		
Net Income (after tax) =	-$238,478.00		

Regression Analysis (Market Study)

Regression Statistics	
Multiple R	0.87978696
R Square	0.77402509
Adjusted R Square	0.7514276
Standard Error	8748.39257
Observations	12

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2621508950	2621508950	34.2527006	0.00016105
Residual	10	765343726	76534372.6		
Total	11	3386852676			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	38506.0136	5821.47692	6.614475	5.97E-05	25534.9546	51477.0725	25534.9546	51477.0725
Total Sales	0.40259326	0.06878902	5.85258068	0.00016105	0.24932179	0.55586474	0.24932179	0.55586474

y=38506.01+0.403x		monthly	
y=462072.12+0.403x		yearly	
	X = Sales Revenue		Breakeven Sales
Yearly Cost Equation =	**y=0.403x+462072.12**		$773,463.19
Total Sales Revenue =	$732,000.00		
Total Cost for the Year =	$757,068.12		
Net Income (before tax) =	-$25,068.12		
Taxes (20%) =	-$5,013.62		
Net Income (after tax) =	-$20,054.50		

Year 2 Dampened Projections:

High-Low Method (Dampened)			
Slope =	0.252975048		
Fixed Cost = Total Cost - Total Var. Cost =	$844,900.79	$70,408.40	
Monthly Cost Equation =	**0.253x+70408.40**		
	X = Sales Revenue		Breakeven Sales
Yearly Cost Equation =	**0.253x+844900.79**		$1,131,020.84
Total Sales Revenue =	$686,250.00		
Total Cost for the Year =	$1,018,522.04		
Net Income (before tax) =	-$332,272.04		
Taxes (20%) =	-$66,454.41		
Net Income (after tax) =	-$265,817.63		

Regression Analysis (Dampened)

Regression Statistics	
Multiple R	0.87978696
R Square	0.77402509
Adjusted R Square	0.7514276
Standard Error	8748.39257
Observations	12

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2621508950	2621508950	34.2527006	0.00016105
Residual	10	765343726	76534372.6		
Total	11	3386852676			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	38506.0136	5821.47692	6.614475	5.97E-05	25534.9546	51477.0725	25534.9546	51477.0725
Total Sales	0.40259326	0.06878902	5.85258068	0.00016105	0.24932179	0.55586474	0.24932179	0.55586474

y=38506.01+0.403x		monthly	
y=462072.12+0.403x		yearly	
	X = Sales Revenue		
Yearly Cost Equation =	**y=462072.12+0.403x**		Breakeven Sales
Total Sales Revenue =	$686,250.00		$773,463.19
Total Cost for the Year =	$738,630.87		
Net Income (before tax) =	-$52,380.87		
Taxes (20%) =	-$10,476.17		
Net Income (after tax) =	-$41,904.70		

Year 3 Market Projections:

High-Low Method (Market Study)			
Slope =	0.252975048		
Fixed Cost = Total Cost - Total Var. Cost =	$844,900.79	$70,408.40	
Monthly Cost Equation =	**$0.253x+70408.40**		
	X = Sales Revenue		Breakeven sales
Yearly Cost Equation =	**$0.253x + $844900.79**		$1,131,020.84
Total Sales Revenue =	$823,500.00		
Total Cost for the Year =	$1,053,246.29		
Net Income (before tax) =	-$229,746.29		
Taxes (20%) =	-$45,949.26		
Net Income (after tax) =	-$183,797.03		

Regression Analysis (Market Study)

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.87978696
R Square	0.77402509
Adjusted R Square	0.7514276
Standard Error	8748.39257
Observations	12

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2621508950	2621508950	34.2527006	0.00016105
Residual	10	765343726	76534372.6		
Total	11	3386852676			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	38506.0136	5821.47692	6.614475	5.97E-05	25534.9546	51477.0725	25534.9546	51477.0725
Total Sales	0.40259326	0.06878902	5.85258068	1.61E-04	0.24932179	0.55586474	0.24932179	0.55586474

y=38506.01+0.403x		monthly
y=462072.12+0.403x		yearly
Yearly Cost Equation =	**y=462072.12+0.403x**	
Total Sales Revenue =	$823,500.00	
Total Cost for the Year =	$793,607.67	Breakeven sales
Net Income (before tax) =	$29,892.33	$773,463.19
Taxes (20%) =	$5,978.47	
Net Income (after tax) =	$23,913.86	

Year 3 Dampened Projections:

High-Low Method (Dampened)		
Slope =	0.252975048	
Fixed Cost = Total Cost - Total Var. Cost =	$844,900.79	Breakeven Sales
Monthly Cost Equation =	**$0.253x+70408.40**	$1,131,020.84
	X = Sales Revenue	
Yearly Cost Equation =	**$0.253x + $844900.79**	
Total Sales Revenue =	$777,750.00	
Total Cost for the Year =	$1,041,671.54	
Net Income (before tax) =	-$263,921.54	
Taxes (20%) =	-$52,784.31	
Net Income (after tax) =	-$211,137.23	

Regression Analysis (Dampened)

Regression Statistics	
Multiple R	0.87978696
R Square	0.77402509
Adjusted R Square	0.7514276
Standard Error	8748.39257
Observations	12

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2621508950	2621508950	34.2527006	0.00016105
Residual	10	765343726	76534372.6		
Total	11	3386852676			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	38506.0136	5821.47692	6.614475	5.97E-05	25534.9546	51477.0725	25534.9546	51477.0725
Total Sales	0.40259326	0.06878902	5.85258068	0.00016105	0.24932179	0.55586474	0.24932179	0.55586474

y=38506.01+0.403x		monthly
y=462072.12+0.403x		yearly
Monthly Cost Equation =	**y=38506.01+0.403x**	
	X = Sales Revenue	
Yearly Cost Equation =	**y=462072.12+0.403x**	
Total Sales Revenue =	$777,750.00	Breakeven sales
Total Cost for the Year =	$775,189.03	$773,463.19
Net Income (before tax) =	$2,560.97	
Taxes (20%) =	$512.19	
Net Income (after tax) =	$2,048.78	

Year 4 Market Projections:

High-Low Method (Market Study)			
Slope =	0.252975048		
Fixed Cost = Total Cost - Total Var	$844,900.79	$70,408.40	
Monthly Cost Equation =	**$0.253x + $70408.34**		
	X = Sales Revenue		Breakeven Sales =
Yearly Cost Equation =	**$0.253x + $84490.79**		Fixed Cost / (1 - Slope)
Total Sales Revenue =	$869,250.00		$1,131,020.84
Total Cost for the Year =	$1,064,821.25		
Net Income (before tax) =	-$195,571.25		
Taxes (20%) =	-$39,114.25		
Net Income (after tax) =	-$156,457.00		

Regression Analysis (Market Study)									
Regression Statistics									
Multiple R	0.87978696								
R Square	0.77402509								
Adjusted R Square	0.7514276								
Standard Error	8748.39257								
Observations	12								
ANOVA									
	df	*SS*	*MS*	*F*	*Significance F*				
Regression	1	2621508950	2621508950	34.2527006	0.00016105				
Residual	10	765343726	76534372.6						
Total	11	3386852676							
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*	
Intercept	38506.0136	5821.47692	6.614475	5.97E-05	25534.9546	51477.0725	25534.9546	51477.0725	
Total Sales	0.40259326	0.06878902	5.85258068	0.00016105	0.24932179	0.55586474	0.24932179	0.55586474	
y=38506.01+0.403x		**monthly**							
y=462072.12+0.403x		**yearly**							
Total Sales Revenue =	$869,250.00		breakeven sales: FC/(1-slope)						
Total Cost for the Year =	$812,379.87		773,463.19						
Net Income (before tax) =	$56,870.13								
Taxes (20%) =	$11,374.03								
Net Income (after tax) =	$45,496.10								

Year 4 Dampened Projections:

HIGH LOW (DAMPENED)			
Monthly Cost Equation =	**$0.253x+70408.40**		
	X = Sales Revenue		
Yearly Cost Equation =	**$0.253x + $844900.79**		
Total Sales Revenue =	$823,500.00		
Total Cost for the Year =	$1,053,246.50		Breakeven Sales =
Net Income (before tax) =	-$229,746.50		Fixed Cost / (1 - Slope)
Taxes (20%) =	-$45,949.30		1131020.84
Net Income (after tax) =	-$183,797.20		

Regression Analysis (Dampened)

Regression Statistics	
Multiple R	0.87978696
R Square	0.77402509
Adjusted R Square	0.7514276
Standard Error	8748.39257
Observations	12

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2621508950	2621508950	34.2527006	0.00016105
Residual	10	765343726	76534372.6		
Total	11	3386852676			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	38506.0136	5821.47692	6.614475	5.97E-05	25534.9546	51477.0725	25534.9546	51477.0725
Total Sales	0.40259326	0.06878902	5.85258068	0.00016105	0.24932179	0.55586474	0.24932179	0.55586474

y=38506.01+0.403x	monthly	
y=462072.12+0.403x	yearly	

Total Sales Revenue =	$823,500.00	breakeven sales: (FC/(1-slope)	
Total Cost for the Year =	$793,942.62	773,463.19	
Net Income (before tax) =	$29,557.38		
Taxes (20%) =	$5,911.48		
Net Income (after tax) =	$23,645.90		

Year 5 Market Projections:

High-Low Method (Market Study)			
Slope =	0.252975048		
Fixed Cost = Total Cost - Total Var. Cost =	$844,900.79	$70,408.40	
Monthly Cost Equation =	**$0.253x + $70408**		
	X = Sales Revenue		Breakeven Sales =
Yearly Cost Equation =	**$0.253x + $844901**		Fixed Cost / (1 - Slope)
Total Sales Revenue =	$915,000.00		$1,131,020.84
Total Cost for the Year =	$1,076,396.00		
Net Income (before tax) =	-$161,396.00		
Taxes (20%) =	-$32,279.20		
Net Income (after tax) =	-$129,116.80		

Regression Analysis (Market Study)

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.87978696
R Square	0.77402509
Adjusted R Square	0.7514276
Standard Error	8748.39257
Observations	12

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2621508950	2621508950	34.2527006	0.00016105
Residual	10	765343726	76534372.6		
Total	11	3386852676			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	38506.0136	5821.47692	6.614475	5.97E-05	25534.9546	51477.0725	25534.9546	51477.0725
Sales	0.40259326	0.06878902	5.85258068	0.00016105	0.24932179	0.55586474	0.24932179	0.55586474

Monthly Cost Equation =	**$0.403x + $38506.01**		
	X = Sales Revenue	Breakeven Sales =	
Yearly Cost Equation =	**$0.403x + $462072.12**	Fixed Cost / (1 - Slope)	
Total Sales Revenue =	$915,000.00	$773,463.19	
Total Cost for the Year =	$830,817.12		
Net Income (before tax) =	$84,182.88		
Taxes (20%) =	$16,836.58		
Net Income (after tax) =	$67,346.30		

Year 5 Dampened Projections:

High-Low Method (Dampened)			
Slope =	0.252975048		
Fixed Cost = Total Cost - Total Var. Cost =	$844,900.79	$70,408.40	
Monthly Cost Equation =	**$0.253x + $70408**		
	X = Sales Revenue		Breakeven Sales =
Yearly Cost Equation =	**$0.253x + $844901**		Fixed Cost / (1 - Slope)
Total Sales Revenue =	$850,950.00		$1,131,020.84
Total Cost for the Year =	$1,060,191.35		
Net Income (before tax) =	-$209,241.35		
Taxes (20%) =	-$41,848.27		
Net Income (after tax) =	-$167,393.08		

Regression Analysis (Dampened)

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.87978696
R Square	0.77402509
Adjusted R Square	0.7514276
Standard Error	8748.39257
Observations	12

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2621508950	2621508950	34.2527006	0.00016105
Residual	10	765343726	76534372.6		
Total	11	3386852676			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	38506.0136	5821.47692	6.614475	5.97E-05	25534.9546	51477.0725	25534.9546	51477.0725
Sales	0.40259326	0.06878902	5.85258068	0.00016105	0.24932179	0.55586474	0.24932179	0.55586474

Monthly Cost Equation =	**$0.403x + $38506.01**		
	X = Sales Revenue	Breakeven Sales =	
Yearly Cost Equation =	**$0.403x + $462072.12**	Fixed Cost / (1 - Slope)	
Total Sales Revenue =	$850,950.00	$773,463.19	
Total Cost for the Year =	$805,004.97		
Net Income (before tax) =	$45,945.03		
Taxes (20%) =	$9,189.01		
Net Income (after tax) =	$36,756.02		

Recommendations:

Dear Ms. Donna Smith,

Upon review of the costs associated with the opening of your new boutique in Greenville and your goal to earn an after-tax income of $60,000 by year 5 at the new location, it is recommended that you do not follow through with the opening of your new business. According to the market analysis for year 5 when using regression analysis, there is the possibility that you could make a maximum of $67,346.30 in operating income after taxes, however the dampened projections estimate that there is also the possibility you could only make $36,756.02, $23,244 below your goal. In this analysis as well, breakeven sales are $773,463.19, which isn't met until year 3 when Greenville sales are at minimum 85% of Clemson 2019 sales. Our R-squared value in using the regression equation for our predictions is 0.77, meaning that the equation used fits the cost and revenue data moderately well and therefore is moderately reliable in its projections (an r-squared value of 1 would mean it fits the data perfectly). Furthermore, when looking at our high-low analyses, even when analyzing using the market projections, breakeven sales needed is $1,131,020.84, and net revenue in year 5 at highest (100% of the Clemson 2019 sales) is $915,000, leaving you with a possible net income after taxes of -$129,116.80. When using the dampened projections, the loss is even steeper at -$167,393.08. There is the possibility that you could meet your goal in year 5, however, only one of the four analyses used points towards this favorable outcome. Overall, if your variable and fixed costs are to remain the same at the Greenville location, it does not seem financially worthwhile to open the business. However, your total annual fixed costs found through both the regression formula and high-low method are very high, $462,072.12 and $844,900.79 respectively annually based off of the Clemson 2019 sales, and the changes in costs for the new store (rent, utilities, insurance, etc.). Therefore, if measures are taken to reduce both the fixed and variable costs at your new store, then the odds of reaching your goal of a $60,000 income in year 5 would become much more feasible. We recommend that if you are determined to expand your business to Greenville, you find a way to reduce costs, focusing on those that are the highest, such as costs of goods sold, rent, and wages (which make up a total of $667,294 in annual costs). This can be done by hiring fewer employees or finding a cheaper rental space to lower fixed costs or finding a cheaper supplier of the goods you sell in order to lower variable costs, ultimately lowering the cost per dollar of revenue and increasing contribution margin. If these changes are made, the chances of success in Greenville will greatly increase, however, if costs remain the same, then the odds of losing large amounts of money, and ultimately having to close the new location is quite probable.

Sincerely,

The Accounting Consulting Firm