

Project Status Update

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A decorative vertical bar on the left side of the image, featuring a gold color and a pattern of various currency symbols (dollar, euro, yen, pound, etc.) in a 3D, embossed style.

What's my topic?

**What's my
topic?**

**How has
technology
been used in
the financial
world?**





**Why did I choose
this topic?**

Why did I choose this topic?

Formal:
Academic curiosity





What have I done so far?



1960s

- Development of electronic systems such as ATS

1970s

- Introduction of ATM

1980s

- Personalized computers and internet
- Online trading platforms (ex: E*TRADE)

2000s

- Rise of mobile devices
- Cryptocurrency, blockchain



Using tools such as python to automate and construct financial model

```
In [61]: revenues=[income_statement[i]['revenue'] for i in range(len(income_statement))]
#reverse it because the years go from most recent to least if you do [0]...
revenues=list(reversed([income_statement[i]['revenue'] for i in range(len(income_statement))]))
profits=list(reversed([income_statement[i]['grossProfit'] for i in range(len(income_statement))]))
ebitda=list(reversed([income_statement[i]['ebitda'] for i in range(len(income_statement))]))
net_income=list(reversed([income_statement[i]['netIncome'] for i in range(len(income_statement))]))
```

```
In [62]: #convert to array for calculation
revenues_array=np.array(revenues)
profits_array=np.array(profits)
```

```
ebitda_array=np.array(ebitda)
net_income_array=np.array(net_income)
```

```
In [63]: gross_profit_margin=(profits_array/revenues_array)*100
gross_profit_margin
```

```
Out[63]: array([43.90866913, 55.83364004, 53.94009996, 53.00879304, 51.36260409,
56.75913932, 50.70853411, 46.74098638, 36.28306381, 25.50764261,
25.83619599, 9.84440151, 19.31930518, 24.89479886, 27.64916857,
27.1326569 , 23.02815588, 27.91710206, 27.51731916, 27.28590409,
29.02160649, 28.98265597, 33.96650837, 34.31448013, 35.9635438 ,
39.37753929, 40.47889588, 43.87123981, 37.62448072, 38.58803578,
40.05990202, 39.07595565, 38.46986049, 38.34371882, 37.81776811,
38.23324773, 41.77935963, 43.30963056])
```

```
In [64]: net_profit_margin=(net_income_array/revenues_array)*100
net_profit_margin
```

```
Out[64]: array([ 3.19032477,  8.09716599,  8.17331179,  9.83199882,
 8.59197578,  8.54382556,  4.91060107,  7.48465392,
 1.08562116,  3.37562854,  3.8329416 , -8.29858639,
-14.75780257,  5.20114459,  9.79784806,  9.84592259,
-0.466157 ,  1.13200975,  1.11164814,  3.33373596,
 9.58294451, 10.29769609, 14.56302591, 14.88346316,
15.61157183, 21.48409352, 23.94664154, 26.6650906 ,
21.67046984, 21.61437676, 22.8457737 , 21.18679831,
21.09242085, 22.41420207, 21.23809451, 20.91361128,
25.88179336, 25.30964071])
```

	September 24,	September 25,	September 26,
	2022	2021	2020
Net sales:			
Products	\$ 316,199	\$ 297,392	\$ 220,747
Services	78,129	68,425	53,768
Total net sales	394,328	365,817	274,515
Cost of sales:			
Products	201,471	192,266	151,286
Services	22,075	20,715	18,273
Total cost of sales	223,546	212,981	169,559
Gross margin	170,782	152,836	104,956
Operating expenses:			
Research and development	26,251	21,914	18,752
Selling, general and administrative	25,094	21,973	19,916
Total operating expenses	51,345	43,887	38,668
Operating income	119,437	108,949	66,288
Other income/(expense), net	(334)	258	803
Income before provision for income taxes	119,103	109,207	67,091
Provision for income taxes	19,300	14,527	9,680
Net income	\$ 99,803	\$ 94,680	\$ 57,411
Earnings per share:			
Basic	\$ 6.15	\$ 5.67	\$ 3.31
Diluted	\$ 6.11	\$ 5.61	\$ 3.28
Shares used in computing earnings per share:			
Basic	16,215,963	16,701,272	17,352,119
Diluted	16,325,819	16,864,919	17,528,214
Gross Profit Margin	43%	42%	38%
Net Profit Margin	25%	26%	21%