

QUARTERLY PROFIT ANALYSIS OF NEPALESE MICROFINANCE COMPANIES

2015-2022

Background Information:

- The data was acquired from [Kaggle.com](https://www.kaggle.com)
- The companies analyzed are microfinance companies listed on the NEPSE (Nepal Stock Exchange). These are companies that assist lower income individuals and small businesses with financial services. These services help fill the role that conventional banking and related financial services would provide to people of higher income and larger businesses.
- Examples of provided services would be insurance products and loans.

Key Questions:

1. How are profits growing over time, and what year seems to be the worst?
2. What are the top 10 recorded profits from 2015-2022?
3. What are the bottom 10 recorded profits from 2015-2022?

1.) PROFITS OVER TIME



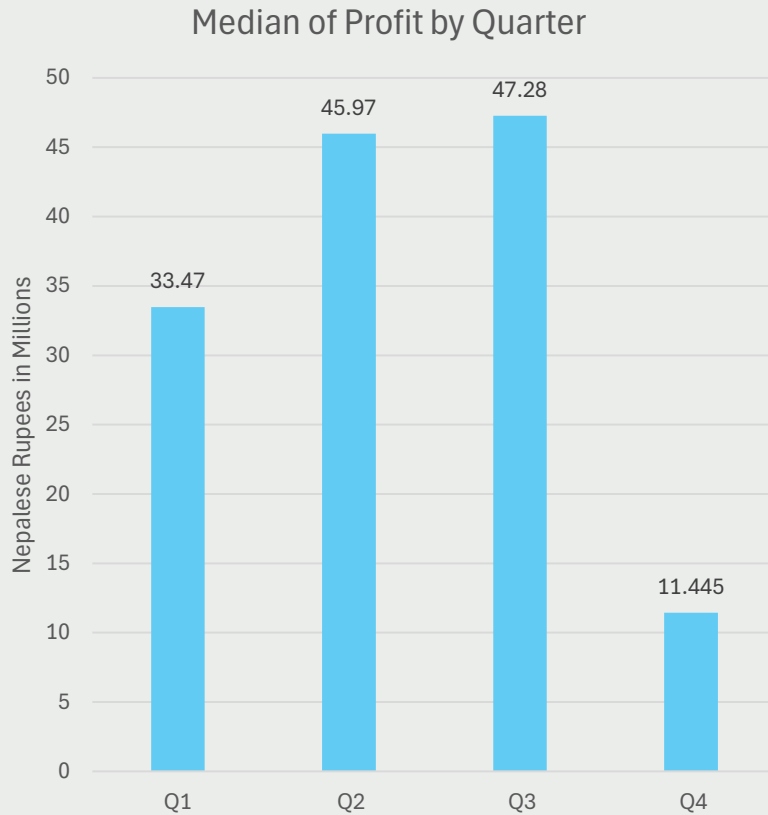
Maximum and Minimum

- **NOTE:** Profits are measured in millions of Nepalese Rupees (NPR).
- When looking at the entire data set from 2015-2022, we can see that the global minimum occurs in quarter 4, and it is -279.89.
- We can also see that the lowest maximum of 262.42 occurs in quarter 4. From these observations alone, it appears that quarter 4 might be the quarter that tends to have the lowest profits.

Minimum Profit	
Quarter	Min of Profit
1	-5.25
2	-7.66
3	-12.82
4	-279.89

Maximum Profit	
Quarter	Max of Profit
1	615.49
2	955.96
3	1210
4	262.42

Median



- It appears to be the case that profits tend to increase from Q1 to Q2 and then Q2 to Q3.
- Q3 to Q4 breaks this pattern, as it is the only instance where we see a decrease.
- Quarter 4 also has the lowest median profits with a value of 11.445. This is 3 to 4 times less than the other quarters!

Median 2015-2022

- **Note:** This data set had no recorded values for Q1-2015 or Q4-2022. Also note that the only company that had registered a value for Q3-2022 was RSDC.
- Because of this, we cannot say for certain that Q3-2022 was the best performing quarter out of all observations, but 2022 was on track to be the most successful year thus far.

Median Analysis By Year	
Year	Profit
2015	10.33
2016	21.42
2017	19.7
2018	17.69
2019	24.565
2020	29.02
2021	65.21
2022	87.7

Median Analysis				
Year	Q1	Q2	Q3	Q4
2015	0	12.88	16.43	8.36
2016	16.78	23.455	37.23	10.21
2017	15.39	36.68	23.835	5.22
2018	17.095	24.61	34.12	8.025
2019	16.37	33.28	42.94	14.18
2020	33.37	35.91	39.71	14.365
2021	53.75	79.27	119.125	30.64
2022	81.84	105.39	135.2	0

Median 2015-2022

- Profits have been increasing over the years, though we can see that there was a shakeup in 2017 and 2018.
- 2017 started with a slightly lower Q1 of 15.39 compared to the previous year's Q1 of 16.78.
- 2017 had a phenomenal Q2 with a median profit of 36.68! This is a whole 13.225 above Q2 of the previous year, and it was a 138% increase from 2017's Q1.
- Things then took a turn in Q3 where we saw a 35% decrease in profits.
- Ultimately, Q4 of 2017 had a median profit of 5.22, which is the worst out of all recorded quarters!

Median Analysis By Year		
Year		Profit
2015	<div></div>	10.33
2016	<div></div>	21.42
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Median 2015-2022

- 2018 followed a similar decreasing profits story to 2017.
- Q1-2018 was an improvement to all Q1s of previous years.
- 2018 saw a good increase in profits from Q2 and Q3 throughout the year.
- In Q4-2018, we saw the second lowest recorded Q4 median profits of 8.025.
- After the lower median profits of 2017 and 2018, we have seen constant growth ever since.

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Median 2015-2022

- Previously, it was noted that profits tended to increase from Q1 to Q2 and from Q2 to Q3.
- We also saw that Q4 had the lowest median profits out of all quarters.
- When dividing the data into specific years, we can see that this same pattern arises in all years except 2017.
- 2017 is the only year where we see an increase from Q1 to Q2 followed by a decrease from Q2 to Q3.
- 2017's minimum still occurs in Q4, but it is interesting that this is the only year where that pattern was broken.

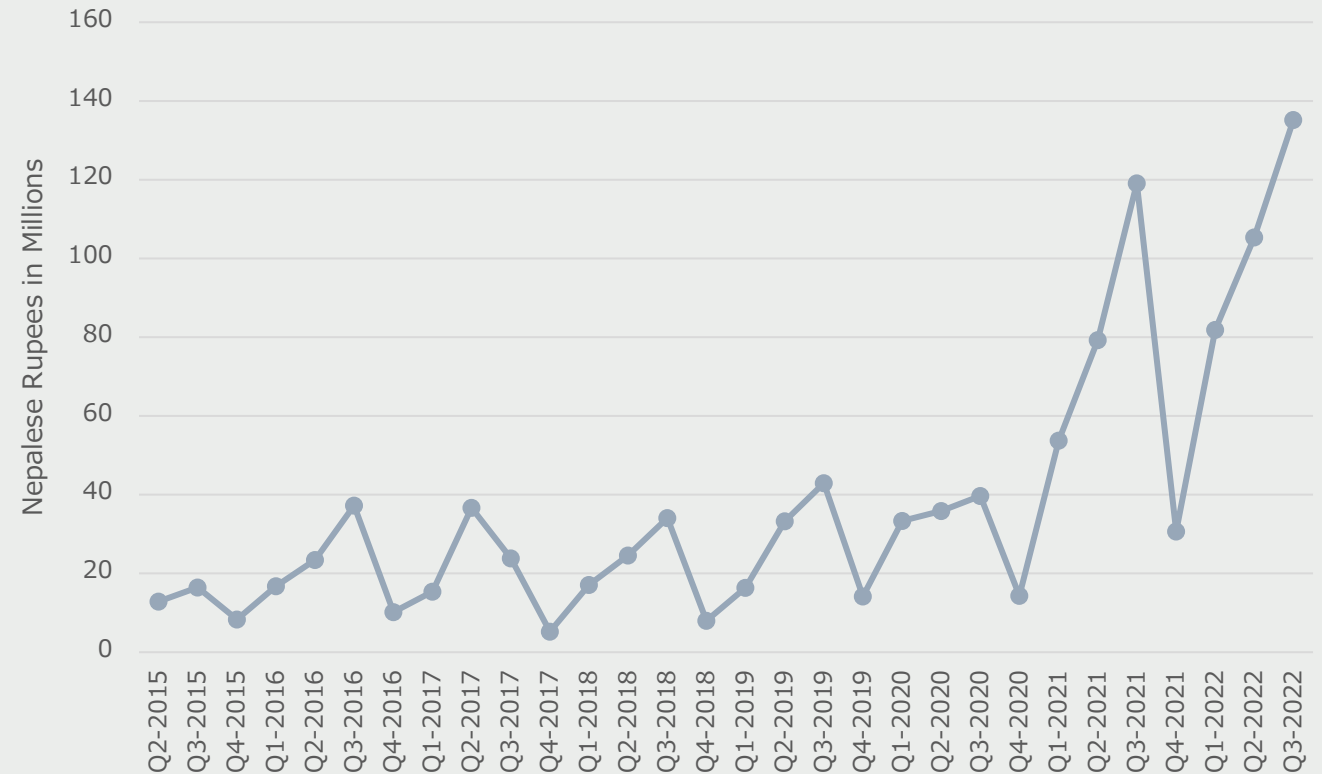
Median Analysis	
Quarter	Median of Profit
1	33.47
2	45.97
3	47.28
4	11.445

Median Analysis				
Year	Q1	Q2	Q3	Q4
2015	0	12.88	16.43	8.36
2016	16.78	23.455	37.23	10.21
2017	15.39	36.68	23.835	5.22
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Median 2015-2022

- We can see this pattern visually over the years.
- Besides 2017, we can see the pattern of 3 consecutive quarters of growth followed by a steep drop in quarter 4.
- 2021 had the steepest drop from Q3 to Q4. The median profits for that quarter decreased by 88.485 (more than 74%)!

Median Analysis of Profits Per Quarter



2.) TOP 10 PROFITS EVER RECORDED



Top 10

- As we expected, all of the top 10 profits consist of values that were recorded during the later years of the analysis.
- CBBL is the company with the highest recorded profit.
- CBBL also has made the most appearances on the top 10 list, making up 50% of it.

Top 10 Profit Records				
Date	Company	Profit	Quarter	Year
8/4/2021	CBBL	1210	3	2021
4/27/2021	CBBL	955.96	2	2021
8/15/2019	CBBL	920.71	3	2019
8/5/2021	NUBL	919.17	3	2021
5/12/2022	NUBL	802.69	2	2022
8/7/2019	NUBL	739.5	3	2019
5/9/2022	CBBL	717.7	2	2022
5/6/2021	NUBL	714.86	2	2021
7/30/2021	DDBL	713.72	3	2021
8/6/2018	CBBL	663.89	3	2018

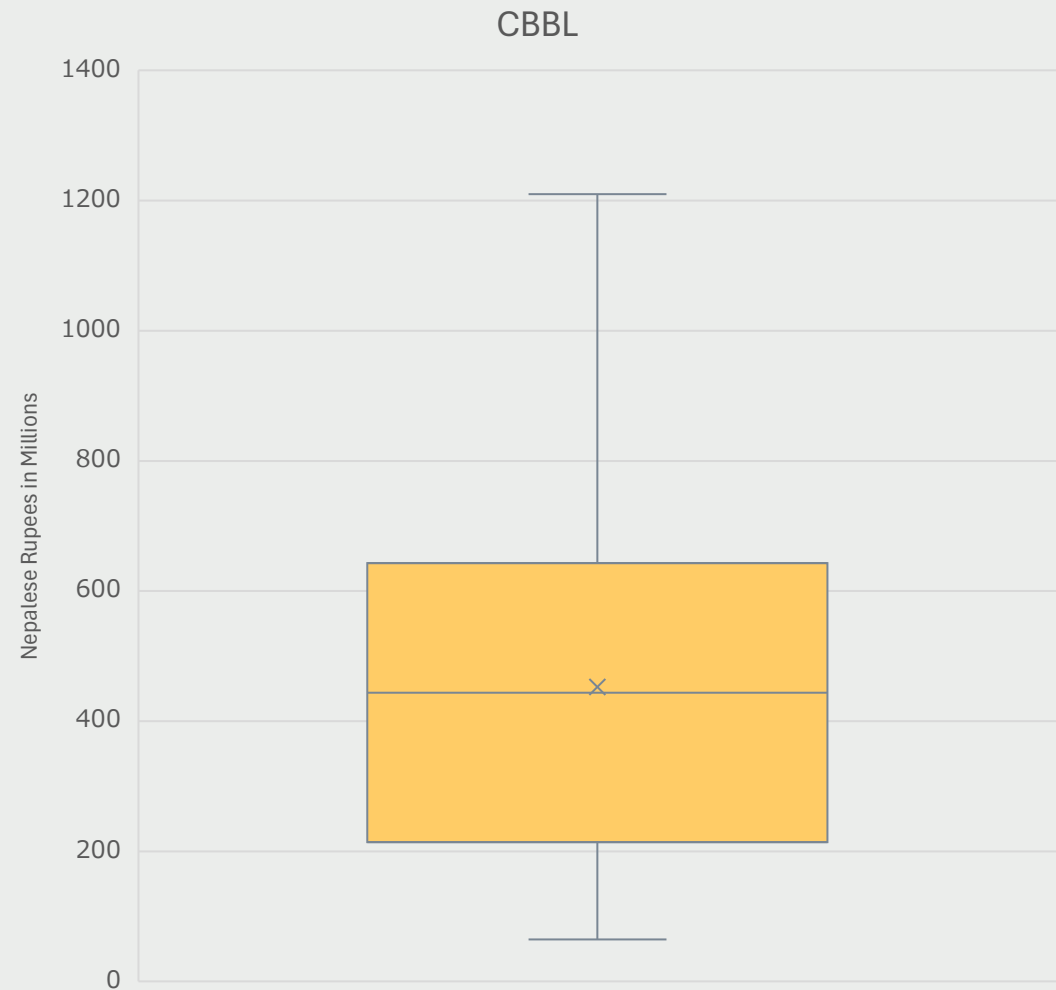
CBBL Records

- CBBL's worst 2 quarters were in Q4-2017 and Q4-2020.
- *In Q4-2017, they registered a profit of 80.67.*
- *Q4-2020 had a profit of 64.58.*
- Q3-2021 was their greatest recorded quarter (as well as the maximum of the entire data set) of 1210!
- Following that quarter, they had an 82% decrease in profits, resulting in a profit of 214.1 for Q4-2021.
- Overall, the profits for CBBL follow the same pattern that we discussed before of increases from Q1 to Q3, then followed by a noticeably lower Q4.
- Notice that CBBL did not see a decrease in profits in Q3-2017.

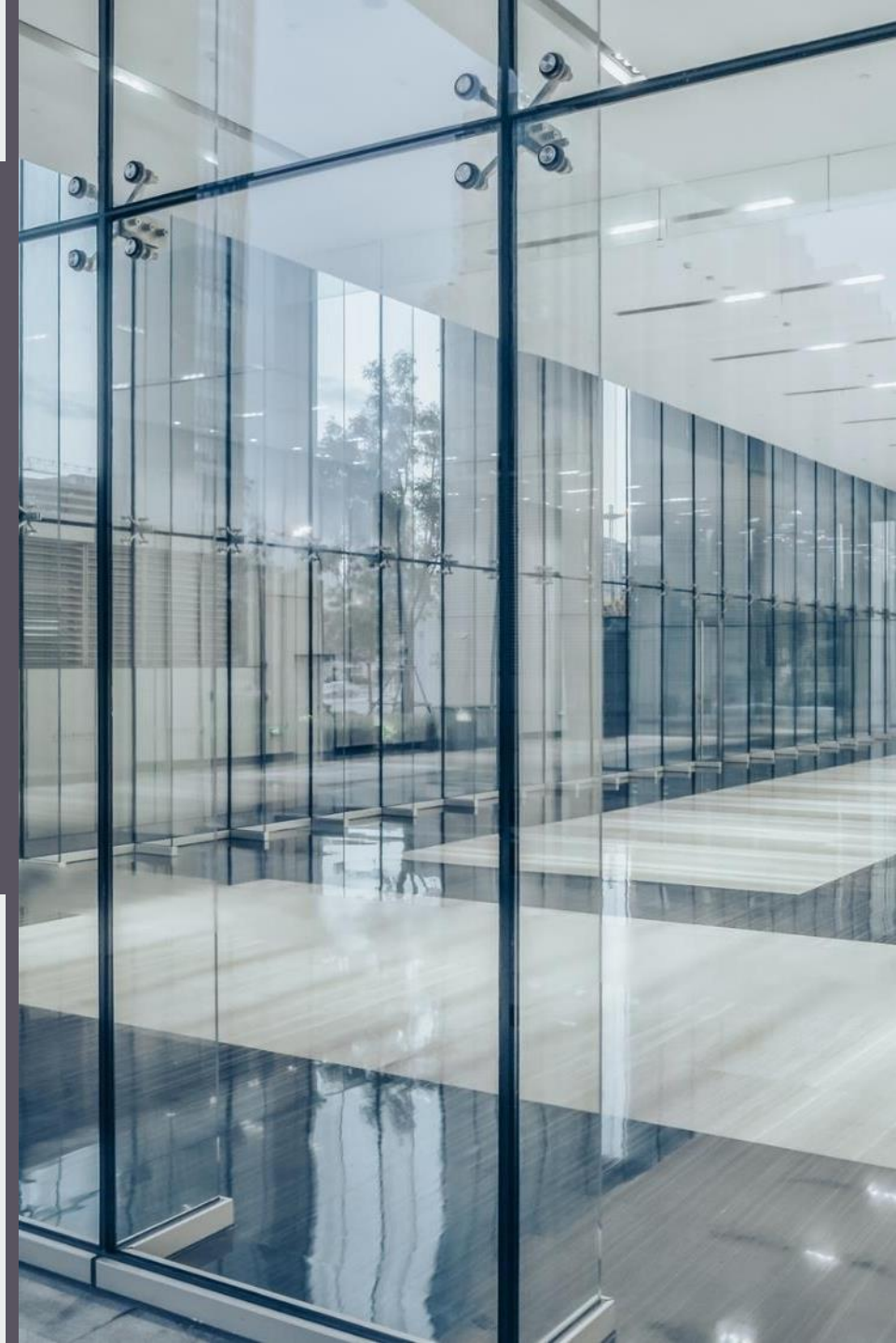


CBBL Records

- CBBL has a median profit of 443.74 and a mean of 452.43.
- 75% of the profit records fall below 643.02.
- The bottom 25% of records fall below 214.1.



3.) BOTTOM 10 PROFITS EVER RECORDED



Bottom 10

- There are 4 records on this list from 2017. This is not surprising since we know 2017 was historically the 3rd worst year in median profits, had the worst Q4, and it is the only year where there was a decrease in profits from Q2 to Q3.
- The only company to appear on this list more than once is ALBSL (both in 2017).
- Also notice that NUBL has the worst profit recorded in this data set, and it took place in Q4-2020.

Bottom 10 Profit Records				
Date	Company	Profit	Quarter	Year
11/11/2020	NUBL	-279.89	4	2020
8/18/2017	ALBSL	-12.82	3	2017
8/14/2020	MSMBS	-11.49	3	2020
5/6/2017	ALBSL	-7.66	2	2017
5/1/2017	GMFBS	-6.43	2	2017
8/18/2017	ILBS	-5.62	3	2017
2/8/2018	SABSL	-5.25	1	2018
8/16/2018	NICLBSL	-4.95	3	2018
11/16/2021	NSEWA	-4.5	4	2021
11/26/2020	KMCDB	-4.18	4	2020

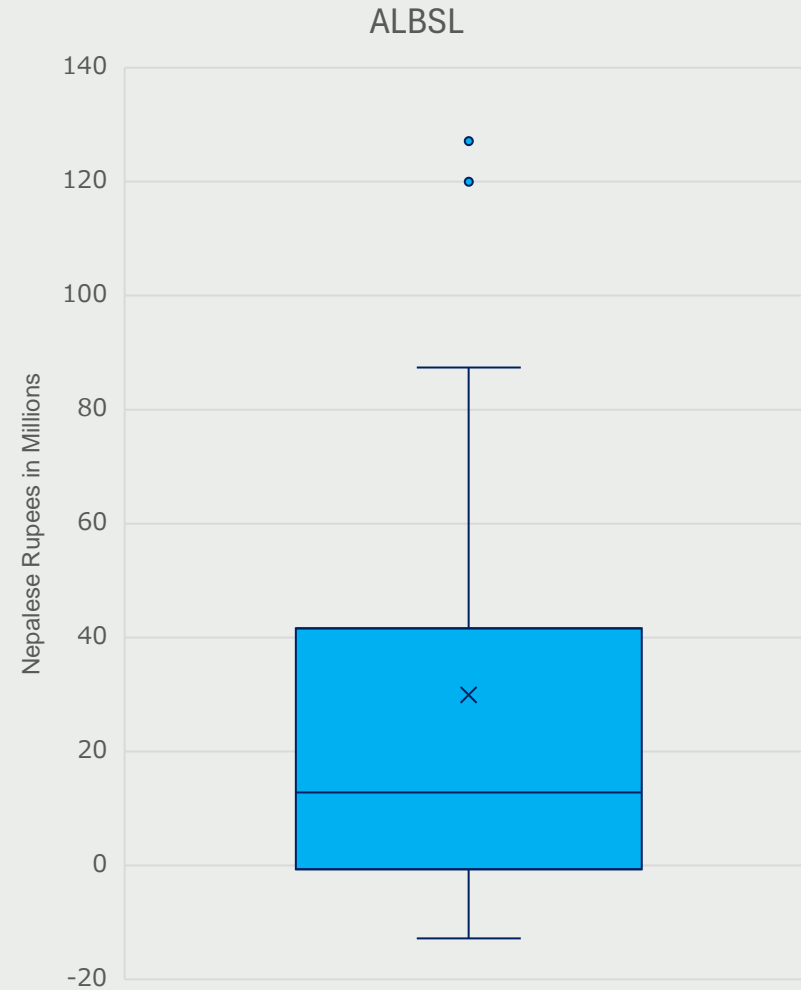
ALBSL Records

- **Note:** Q2 of 2021 is missing, but it is a safe assumption that Q2 is somewhere between Q1 and Q3 of that year using the median data we analyzed previously.
- ALBSL started in 2017, which historically was a terrible year overall. This was the only year when looking at all companies, the median profits decreased from Q2 to Q3.
- ALBSL had a minimum of -12.82 in Q3 of 2017, and they remained in the negatives all of 2017.
- Q2 of 2018 is when ALBSL finally got out of the negatives with a profit of 0.00445.
- Q4 of 2020 was the only other quarter where this company was in the negatives, with a value of -0.95.



ALBSL Records

- ALBSL has a median profit of 12.79 and a mean of 29.93.
- The mean is much higher than the median due to the rapid growth that ALBSL saw in 2021 and 2022.
- Those 2 outliers are 127.14 from Q3-2021 and 120.01 from Q2-2022.
- 75% of the profit records fall below 41.59.
- The bottom 25% of records fall below -0.71.



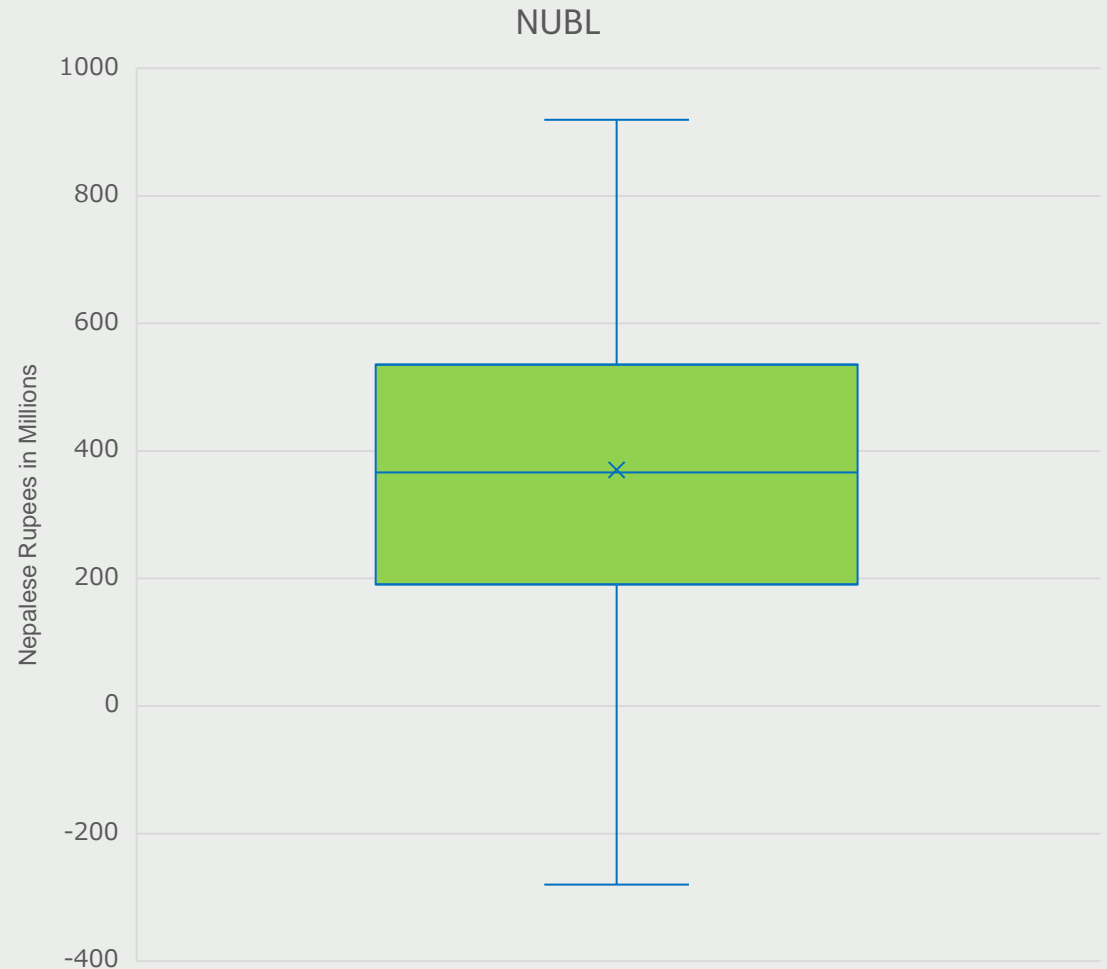
NUBL Records

- **Note:** Q4 of 2017 is missing from NUBL's profit reports. Q4-2017 was the quarter with the lowest median profits out of all quarters, so it is likely that NUBL suffered a similar fate.
- Q4 of 2020 was the absolute minimum for this company with a value of -279.89.
- This is the only measured quarter where NUBL was in the negatives.
- This value is also the minimum out of all profit records of the data set.
- Going from Q3-2020 to Q4-2020 resulted in a decrease of 198%!
- Q4-2020 and Q1-2021 are the 2 lowest values that are recorded for NUBL.



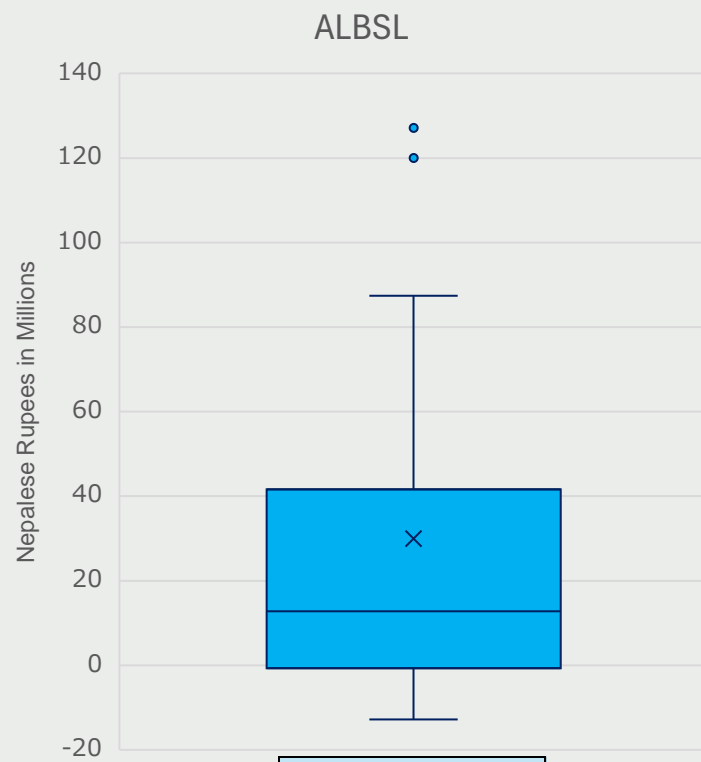
NUBL Records

- NUBL has a median profit of 366.19 and a mean of 370.50.
- 75% of the profit records fall below 535.49.
- The bottom 25% of records fall below 190.72.
- Outside of Q4-2020, NUBL appeared to be a well-off company.

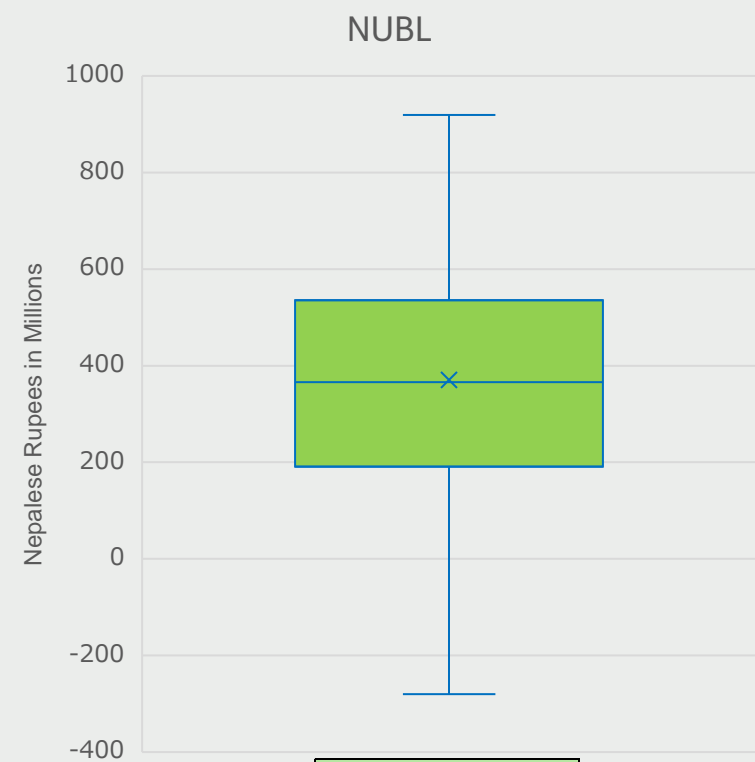


NUBL & ALBSL

- **Note:** As discussed previously, ALBSL and NUBL are on vastly different scales. One has a median of 12.79 and the other has a median of 366.19.
- Because of this, IQR (the range/spread of the middle 50% of the data) is also on vastly different scales.
- CQD (Coefficient of Quartile Dispersion) and relative IQR give us a form of unitless measurement that makes it very easy to compare the spread of the middle 50% of the data that is on different scales (further explanation is provided at the end).



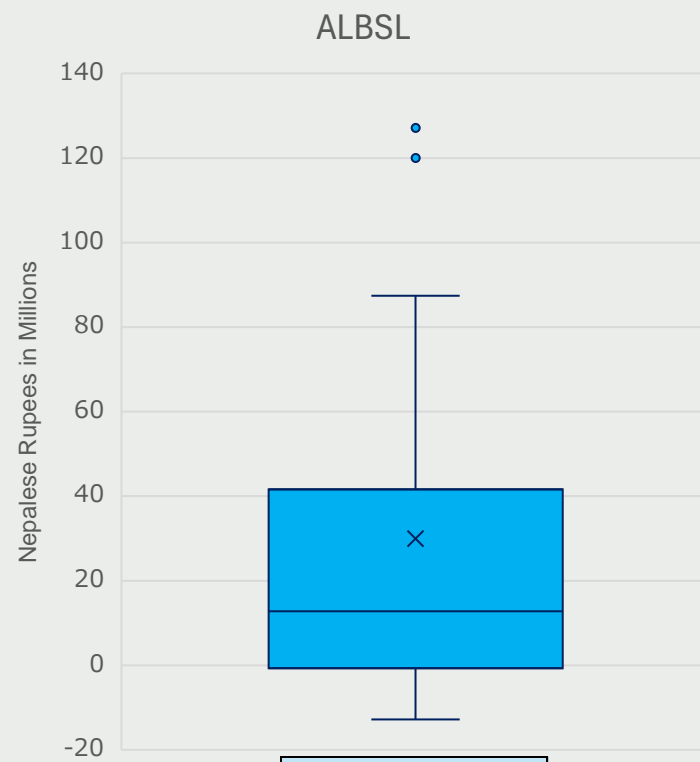
ALBSL Stats	
Mean	29.93172
Quartile 1	-0.71139
Quartile 2	12.79
Quartile 3	41.585
IQR	42.29639
Rltv IQR	3.306989
CQD	103.48%



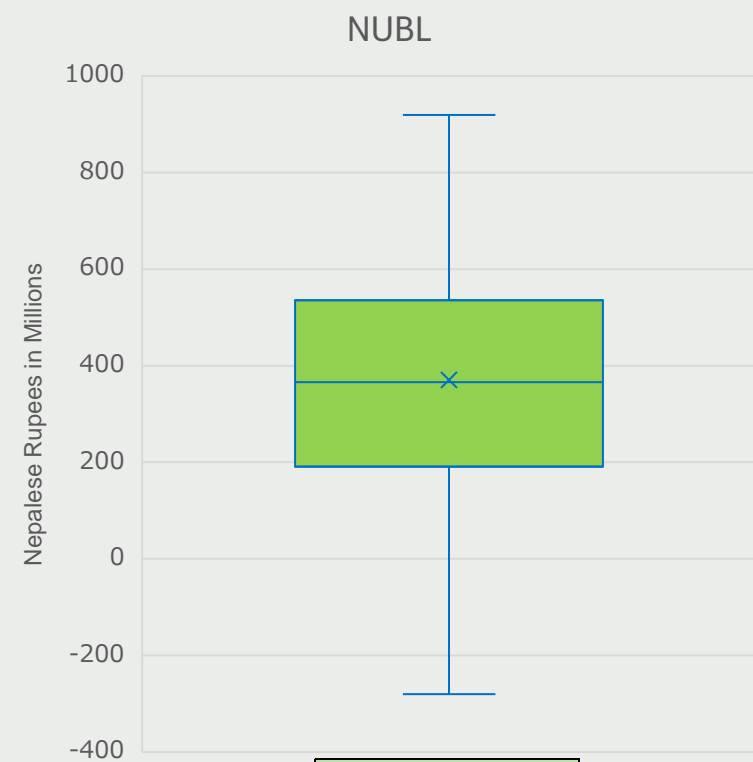
NUBL Stats	
Mean	370.5031
Quartile 1	190.7175
Quartile 2	366.185
Quartile 3	535.4925
IQR	344.775
Rltv IQR	0.941532
CQD	47.48%

NUBL & ALBSL

- ALBSL has a CQD of 103.48% while NUBL has a CQD of 47.48%.
- The higher the CQD value, the more spread out the data is.
- Even though NUBL has a much higher IQR, we can clearly see that the data on profits for ALBSL is much more spread out.
- ALBSL has a relative IQR of 3.3070, whereas NUBL has a relative IQR of 0.9415.
- When looking at the relative IQR, we can also clearly see that ALBSL has a much larger spread compared to NUBL.



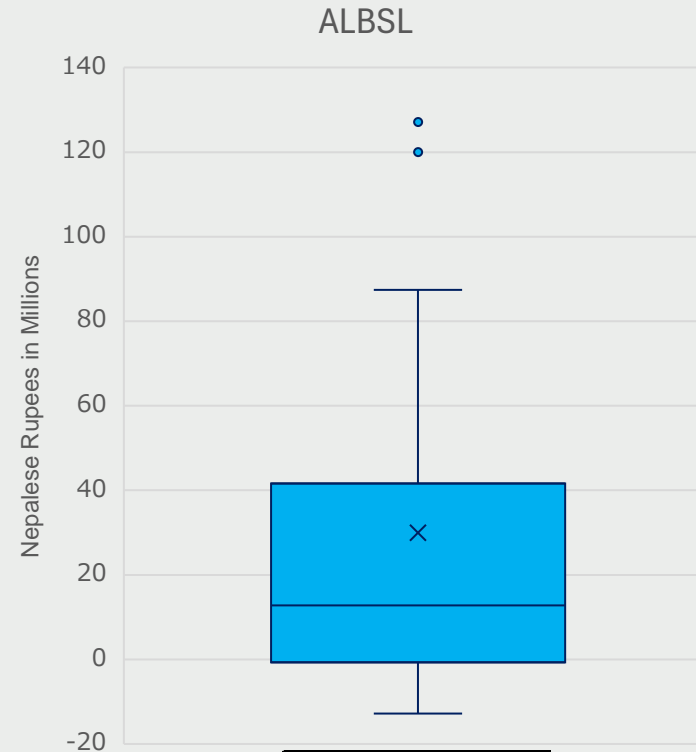
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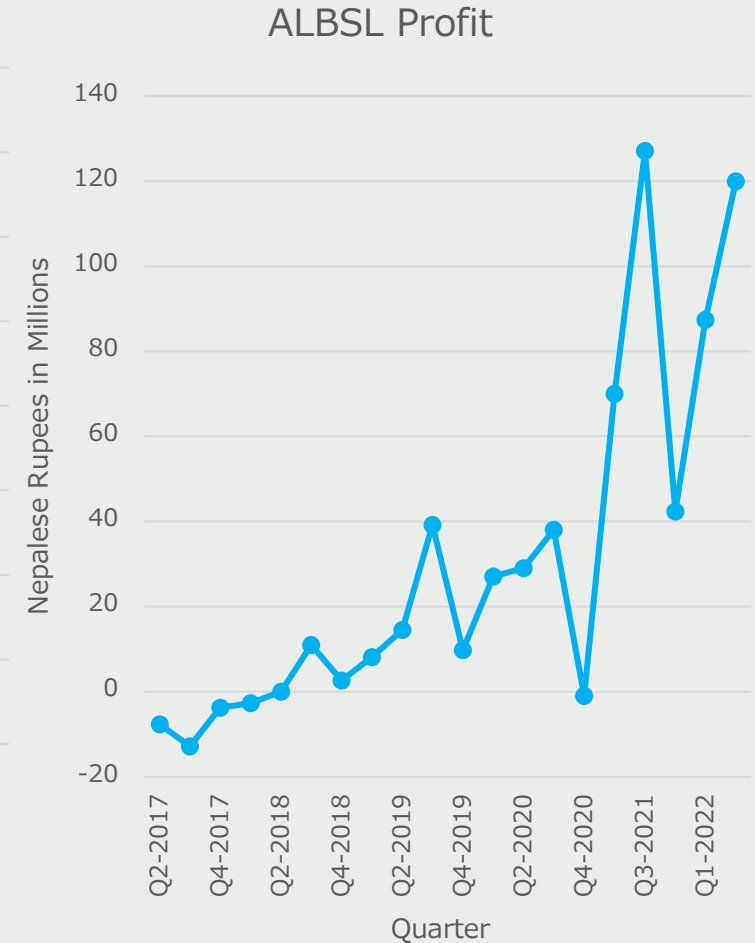
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Quartile 3	535.4925
IQR	344.775
Rltv IQR	0.941532
CQD	47.48%

ALBSL Spread

- Having a higher CQD and relative IQR is not always a bad thing.
- Higher CQD and relative IQR values can signify growth occurring over time in certain cases.
- ALBSL started in 2017. As we saw earlier, 2017 and 2018 were 2 of the worst years, and ALBSL had negative and/or very low profits during this time.
- ALBSL has been increasing overtime, and they had a great run in 2021 and 2022.



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IQR	42.29639
Rltv IQR	3.306989
CQD	103.48%



ALBSL Spread

- ALBSL having a higher CQD and relative IQR is indeed showing us that the company does have a higher spread, but it is also a great measure, in this case, of how much the company has grown overtime.
- With increasing profits and high values for CQD and relative IQR, this is showing us that ALBSL was having a period of volatile growth.
- ALBSL only consists of data recorded over 20 quarters, and they didn't start to have major growth until 2021 and 2022.
- If growth continued to occur from then, we would see a stabilizing and decreasing value for CQD and relative IQR.
- This would signify the company entering an era of stable growth, which is much more preferred and easier to predict.



CONCLUSIONS



Conclusions:

- Profits have been growing over the years.
- 2017 and 2018 were years where many companies struggled.
- The typical profit growth pattern throughout a year has increasing profits from Q1-Q3, and then a lower Q4 (2017 is the only year where this pattern has a slight change).

Conclusions:

- CBBL is the most profitable company overall with it making up 5 out of the 10 records in the top 10 profits.
- CBBL also has the #1 highest profit record in this data set with 1210.
- NUBL has the lowest profit record in the data set with -279.78, but it has been a solid company outside of that one quarter.

Conclusions:

- ALBSL is the only company to appear on the bottom 10 profits list multiple times.
- They started out in the negative profits for a while but were experiencing large volatile growth in 2021 and 2022.

Further Questions:

1. Q4-2020 was a difficult quarter for many companies, but what made it so much worse for NUBL?
2. Did ALBSL continue to stabilize its growth?
3. Using outside research, what occurred in 2017 and 2018 in Nepal to result in those difficult profit years?

RELATIVE IQR AND CQD EXPLAINED



Why Use These Methods?

- IQR is the difference between the 3rd and 1st quartiles. This provides us with the range/spread of the middle 50% of the data. In situations where you are analyzing data of different scales, it is better to use a relative IQR and CQD.
- In this analysis, we saw that the median for NUBL was more than 28 times that of ALBSL.
- Therefore, the use of relative IQR and CQD were necessary.

Relative IQR

- Relative IQR gives us a measure of spread relative to the median. It provides us with a unitless value that we can use to fairly compare the 2 companies.

$$\text{Relative IQR} = \frac{IQR}{Median}$$

CQD (Coefficient of Quartile Dispersion)

- CQD gives us a unitless number to show us the proportion of spread relative to the average of the 1st and 3rd quartiles.

$$CQD = \frac{IQR}{Q3 + Q1}$$

Where $Q3$ = quartile 3 and $Q1$ = quartile 1

RESOURCES AND CONTACTS

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[Data Acquired Here](#)