

“TESTING THE MONEY FLOW INDEX (MFI) INDICATORS FOR SELECTION OF STOCKS: SPECIAL REFERENCE TO BANKING SECTORS”

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Abstract: There are multiple technical analysis tools available for security analysis such as MACD, RSI, MFI, ADX and candle stick pattern etc. but still investors or traders are confused about accuracy of indicators and pattern. This research article focuses to test accuracy of signals given by MFI indicator and also compared to the percentage of correctness towards buy and sell signals. This research article considered secondary data of twelve banks during the period of January 2020 to January 2021 in which all the selected banks are from “bank nifty index”. For the analysis Chi-square and cross tabulation output have been used for hypothesis testing. In the study it has been measured that the signals given by MFI indicator were not significant and there is significant difference in correctness of Buy signals and Sell signals as per MFI indicator. It is also observed that MFI indicator provide more sell signals as compare to buy signals. Hence, it can be concluded that the use of only MFI indicator will not be appropriate for the investor for decision making but this indicator would be more useful for selling decision rather than buying decision.

Keyword:- Money Flow Index, Trading, Investment, Buy signal, sell signal, Technical Analysis

1. Introduction:-

All of us are aware that technical analysis is being used for selection of stocks and find out trends, price movement, resistance and support level for any stock or Index. Technical analysis is based on historical price and volume movement. This type of analysis assumed that history repeats itself, in other words future price of stock and index is depends on past price movements. In technical analysis, there are so many methods based on chart, and price movement like candlestick chart, line chart, bar chart, RSI, MFI, MACD, EMA, SMA etc. The problem in technical Analysis is that any method among them is not absolutely accurate but most of investors use for intraday or short term investment. A common problem in India is that very less investors are aware about various methods of technical analysis.

In this paper it has been tried to test accuracy of Money flow index (MFI) in terms of stock selection based on it. MFI was founded by Joseph Granville in 1963. It is an extended form of Relative strength Index (RSI) and works as an Oscillator which value vary from 0 to 100. It is also known as Volume weighted RSI because both Price and volume are considered for calculation. Most of investors believe that Price and volume are interconnected. Hence, if volume decreases and price increases then price may move down and Vice versa. There may be a divergence which means movement of direction of Price and Indicators in opposite direction. In others word if price is going up and at same time indicators is going down and vice versa. Divergence is very important for investors in decision making. It may be of two type positive and negative divergence. Positive divergence indicates buy signals where as negative Divergence show sell signals.

We can found MFI from following steps:-

Typical Price = (High + Low + Close)/3

Raw Money Flow = Typical Price x Volume

Money Flow Ratio = (14-period Positive Money Flow)/(14-period Negative Money Flow)

Money Flow Index = 100 - 100/(1 + Money Flow Ratio)

- If MFI crossed 80 it will consider overbought so it is the right time to sell the stock.
- If MFI below 20 it will considered as oversold and it is time to buy.
- A Bearish (Negative) divergence came out when share price makes higher high and MFI make lower high.
- A Bullish (positive) Divergence came out when share price makes lower low and MFI makes higher low

Figure.1 Buy signal and sell signal through MFI



Source: <https://school.stockcharts.com/>

2. Literature Review

Earlier so many studies have been done on technical analysis and most of indicators have been covered. Few of them as follows:

Brown and Jennings (1989) found in their study that price based indicators of technical analysis not provide accurate signal so traders have rational about price cum indicators such as money flow index.

Brock, Lakonishok and LeBaron(1992),include 26 technical indicators including MFI in their study and found that all indicators provided more than 80% correct signal.

Blume, Easley and O'Hara (1994) found that volume consideration for any indicator is better than that consider only price.

Ghobadi Mohsen (2014) evaluated various indicators like SMA, RSI, and MFI for commodity market in London metal exchange. And he concluded the MFI gave good signal and trader made good profit on the basis of MFI signals.

Basavarajnagesh, Kadamudimatha (2017) done a study on RSI and MFI signals for the selective bank for the period of 2012 to 2016. They found the many time both indicator provided Divergence results.

3. Research methodology:

This study is based on secondary data which is collected from money control site. The sample includes 12 banks listed in BANK NIFTY Index. We took data from January 2020 to 15 January 2021. Chi-square has been used for testing the hypothesis. Data related to Buy or sell signals have been observed on the basis of Money flow index indicator. SPSS was used for Chi- square test.

3.1 Problem Statement:

As we know there are so many technical tools are used by investors or traders such as RSI, ADX, MFI,EMA, SMA, MACD etc. but problem is that none of these provide 100% accuracy. In this paper only MFI has been taken as a technical tool to understand how much is this tool accurate.

3.2 Objective Of paper:

1. To test the accuracy of Buy or sell signals given by Money Flow index and Price Movement.
2. To compare correctness of buy and sell signals given by MFI.

To compare the correctness of signals given by MFI towards Buy or sell signals

Null Hypothesis:

H01= There is no relationship between Buy or sell signals given by MFI and price movement.

For the second objective we don't have any null hypothesis because output will be based on cross table data.

3.3 Scope of Study:

For this study, we include following banks AXIS Bank, Bandhan Bank, Bank of Baroda, Federal Bank, HDFC Bank, ICICI Bank, IDFC Bank, INDUSIND Bank, Kotak Mahindra Bank, Punjab National Bank, RBL Bank, State Bank of India. All twelve banks belong from Bank NIFTY Index. Data of all twelve banks are from the period of January 2019 to 15th January 2021.

4. Data Analysis

In this section we have tried to observed data of twelve banks and indentify buy signal and sell signal on the basis of MFI.

Axis bank

In below chart we can see that before April MFI gave buy signal because MFI went below 20% level and the same time price increased so we can say that here MFI gave correct signal regarding buy but before November month MFI gave sell signal because MFI crossed 80 % but price moved upward it was against the MFI rule again in the month of November MFI indicated buy signal but again MFI failed because there was a side way trend in price. If any trader buy this stock at price around Rs.300 before April when MFI was below 20% than they could make profit approx 25% profit after selling this stock around Rs. 400 when MFI was reached approx Level of 80%.

Figure: 2 MFI of Axis Bank



Source: Moneycontrol.com

Bandhan Bank

In below chart we can see that in the month of January MFI gave sell signal because MFI was touched 80% level and the same time price decreased so we can say that here MFI gave correct signal regarding sell. In the month of February MFI gave buy signal because MFI touched 20% level and the same time price increased so we can say that here MFI gave correct signal regarding buy but before April month MFI gave buy signal because MFI touched 20 % but price moved down it was against the MFI rule. After May month MFI gave sell signal because MFI touched 80% level and the same time price decreased so we can say that here MFI gave correct signal regarding sell. During the months of June July MFI gave two times sell signal but both price increased against the MFI rule. After July month MFI gave sell signal because MFI touched 80% level and the same time price decreased so we can say that here MFI gave correct signal regarding sell. After August month MFI gave buy signal because MFI touched 20% level but there was upward change in price so it was against the MFI rule.

Before October month MFI gave buy signal because MFI was below 20% level and the same time price increased so we can say that here MFI gave correct signal regarding sell. After October month MFI gave sell signal because MFI touched 80% level but same time price decreased so MFI gave correct signal. After October MFI also provided two buy signal but both time it was failed. During the one year MFI gave 2 times success buy signal apart from failed buy and all sell signals. In case of first success buy signal in the month of February, trader must have face loss because they purchased share around the price of Rs 440 and sold it at the price around the Rs 280 after showing selling signal by MFI in the month of May. In another buy signal given by MFI just before the month of October, trader must have benefit.

Figure: 3 MFI of Bandhan Bank

Source:

Moneyconarol.com

Bank of Baroda

In the below chart we can see that in the month of March MFI gave buy signal because MFI was below 20% level and the same time price decreased so we can say that here MFI gave incorrect signal regarding buy. During the July and August MFI gave two time sell signal but again MFI gave a wrong signal at that time. After October MFI gave buy signal but there was not seen a rally in price. In the month of December MFI provided sell signal but again it was failed in right indication.

Figure: 4 MFI of BOB

Source: Moneycontrol.com

Federal bank

Before April month MFI gave buy signal because MFI was below 20% level and the same time price increased so we can say that here MFI gave correct signal regarding buy. After June MFI gave sell signal because it touched to level of overbought and there was slight drop in price.

Before November month again MFI gave sell signal and price slightly dropped. In case of buy signal given by MFI before April month, trader could have make a good profit through buy at below Rs. 40 and sold it above Rs. 50 after sell signal given by MFI.

Figure: 5 MFI of Federal bank

Source: Moneycontrol.com

HDFC Bank

Before April month MFI gave buy signal because MFI was below 20% level and the same time price increased so we can say that here MFI gave correct signal regarding buy. After June MFI gave sell signal because it touched to level of overbought and there was slight drop in price. In June MFI gave sell signal because it touched to level of overbought but there was no decreased in price (Failure of MFI). After October MFI gave sell signal because it touched to level of overbought and but there was no decreased in price (Failure of MFI). Before December month MFI gave buy signal because MFI was below 20% level and the same time price increased so we can say that here MFI gave correct signal regarding sell. In case of buy signal given by MFI before April month, trader could have make a good profit through buy at below Rs.800 and sold it about Rs. 1000 after sell signal given by MFI.

Figure:6 MFI of HDFC Bank



Source: Moneycontrol.com

ICICI Bank

Before April month MFI gave buy signal because MFI was below 20% level and the same time price increased so we can say that here MFI gave correct signal regarding buy. Before November month MFI gave sell signal because MFI touched 80% level and the same time price slightly dropped so we can say that here MFI gave correct signal regarding sell. In case of buy signal given by MFI before April month, trader could have make a good profit through buy at below Rs.300 and sold it about Rs.350 after sell signal given by MFI.

Figure:7 MFI of ICICI Bank



Source: Moneycontrol.com

IDFC First bank

Before April month MFI gave buy signal because MFI was below 20% level and the same time price increased so we can say that here MFI gave correct signal regarding buy. After April MFI gave sell signal because it touched to level of overbought and at the same time price decreased, it was correct signal given by MFI. After June MFI gave sell signal because it touched to level of overbought but there was sideways trend in price. It means it was incorrect signal given by MFI.

Before September MFI gave sell signal because it touched to level of overbought but there was sideways trend in price. It means it was incorrect signal given by MFI. In case of buy signal given by MFI before April month, trader could have make a good profit through buy at below Rs.20 and sold it about Rs.25 after sell signal given by MFI.

Figure: 8 MFI of IDFC First bank

Source: Moneycontrol.com

IndusInd Bank

Before February month MFI gave buy signal because MFI was below 20% level but the same time price decreased so we can say that here MFI gave incorrect signal regarding buy. Before April month MFI gave buy signal because MFI was below 20% level but the same time price decreased so we can say that here MFI gave incorrect signal regarding buy. After July month MFI gave sell signal because MFI was above 80% level and the same time price slightly decreased so we can say that here MFI gave correct signal regarding sell. In September month MFI gave sell signal because MFI was above 80% level and the same time price slightly decreased so we can say that here MFI gave correct signal regarding sell. In September month MFI gave sell signal because MFI was above 80% level and the same time price slightly decreased so we can say that here MFI gave correct signal regarding sell. In December month MFI gave sell signal because MFI was above 80% level but there was sideways trend in price so we can say that here MFI gave incorrect signal regarding sell.

Figure:9 MFI of IndusInd Bank

Source: Moneycontrol.com

Kotak Mahindra Bank

After June month MFI gave sell signal because MFI touched 80% level and the same time price decreased so we can say that MFI gave correct signal regarding sell. Before October month MFI gave buy signal because MFI was below 20% level and the same time price increased so we can say that here MFI gave correct signal regarding buy. In the month of November month MFI gave sell signal because MFI was above 80% level for the few days but the same time price increased so we can say that here MFI gave incorrect signal regarding selling case of buy signal given by MFI before October month, trader could have make a good profit through buy at below Rs.1250 and sold it above Rs.1300 after sell signal given by MFI.

Figure:10 MFI of Kotak Mahindra bank

Source : Moneycontrol.co

Punjab National Bank

In the month of March MFI gave buy signal because MFI was below 20% level but the same time price decreased so we can say that here MFI gave incorrect signal regarding buy. Before July month MFI gave sell signal because MFI was above 80% level but the same time price increased so we can say that here MFI gave incorrect signal regarding selling the month of August MFI gave buy signal because MFI was below 20% level but there was side way trend in price, so we can say that MFI gave incorrect signal regarding buy. Before October MFI gave buy signal because MFI was below 20% level but the same time price decreased so we can say that here MFI gave incorrect signal regarding buy. Before December MFI gave sell signal because MFI was above 80% level and the same time price decreased so we can say that here MFI gave correct signal regarding sell.

Figure:11 MFI of PNB



Source: Moneycontrol.com

RBL Bank

During June and July month MFI gave two time sell signal because MFI were above 80% level at both time but the first time there was side way trend in price and at second time price slightly dropped, we can say that MFI was incorrect at first time and second time MFI was correct.

After December month MFI gave sell signal because MFI was above 80% level and the same time price also decreased so we can say that here MFI gave correct signal regarding sell.

Figure:12 MFI of RBL bank



Source: Moneycontrol.com

State Bank of India

Before February month MFI gave buy signal because MFI was below 20% level but the same time price decreased so we can say that here MFI gave incorrect signal regarding buy. Before June month MFI gave buy signal because MFI was below 20% level and at the same time price increased so we can say that here MFI gave correct signal regarding buy. In the month of September MFI gave sell signal because MFI touched 80% level and the same time price increased so we can say that here MFI gave correct signal regarding sell. Before October month MFI gave buy signal because MFI was below 20% level and at the same time price increased so we can say that here MFI gave correct signal regarding buy. After October month MFI gave sell signal because MFI touched 80% level and at the same time price decreased so we can say that here MFI gave correct signal regarding sell. Before November month MFI gave sell signal because MFI touched 80% level but the same time price increased so we can say that here MFI gave incorrect signal regarding sell. After December month MFI gave sell signal because MFI touched 80% level but the same time price increased so we can say that here MFI gave incorrect signal regarding sell. In case of buy signal given by MFI before June month, trader could have make a good profit through buy at below Rs.250 and sold it above Rs.330 after sell signal given by MFI. Second time buy signal given by MFI before October month, trader could have make a good profit through buy at below Rs.170 and sold it above Rs.200 after sell signal given by MFI.

Figure:13 MFI of SBI

Source: moneycontrol.com

5. Result and discussion:

We have received total 58 signals (Appendix 1) during this period on the basis of MFI. Out of total 22 buy signal and 36 sell signals have been received. But only 10 buy signals were correct out of 22 and only 19 sell signals were correct out of 36. All data has been summarized for Chi square test in below table:-

Table.1 Buy and sell signal

	correct signal	incorrect signal	Total signal
BUY	10	12	22
SELL	19	17	36
Total	29	29	58

Chi-Square Test-

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.293 ^a	1	.588		
Continuity Correction ^b	.073	1	.787		
Likelihood Ratio	.293	1	.588		
Fisher's Exact Test				.787	.394
Linear-by-Linear Association	.288	1	.592		
N of Valid Cases	58				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.00.

b. Computed only for a 2x2 table

From the above table, chi- square value .293 is less then significance value.394. So here null hypothesis for first objective has been accepted.

Decision * Signal Crosstabulation

		Signal		Total
		Correct	Incorrect	
Signal	Count	10	12	22
	Buy	45.5%	54.5%	100.0%
	% within Decision	34.5%	41.4%	37.9%
	% within Signal	17.2%	20.7%	37.9%
	% of Total			
	Count	19	17	36
	Sell	52.8%	47.2%	100.0%
	% within Decision	65.5%	58.6%	62.1%
	% within Signal	32.8%	29.3%	62.1%
Total	% of Total			
	Count	29	29	58
	% within Decision	50.0%	50.0%	100.0%
	% within Signal	100.0%	100.0%	100.0%
		50.0%	50.0%	100.0%

For objective number two, on the basis of cross tabulation we can say that buy signal on the basis of MFI were less corrected compare to sell signals given by MFI. Out of 22 buy signal we found only 45.5% was correct signal whereas out of 36 sell signals, 52.8% were correct. In other term out of total 29 correct signals (including buy and sell), we found only 34.5% buy signals were correct whereas 65.5% sell signals were correct.

6. Finding:

We can say that Money flow index indicator is less effective signal because in this study we found that only 29 signals were correct out of 58 signals. Second thing was found in this study that more sell signal were given by MFI compare to buy signals. Third thing was found that accuracy of sell signal were more then buy signal. Apart from objective of this study one thing found that MFI indicated buy signal in case of most banks after lockdown in the month of March or before April 2020 due to COVID-19.

7. Limitations:

- This study was based on data for the period of one year so we cannot generalize.
- This study consists only banking data so result may be different for other sector.

8. Implementation:

- It will be useful for finance students.
- It will be useful for trader and investor in decision making related to trading and investing.
- It may be use as base for future research related to equity market, Forex market and commodity market.

Conclusion:

We have taken twelve banks for this study and considered only one year for data collection. During this period we observed 58 signals from twelve banks on the basis of MFI. After study we found that MFI is not a good indicator for trading and investment because only 50% signals were corrected. But one thing is notable that even MFI is not accurate indicator but trader can take sell decision on the basis of MFI signals.

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Appendix1.**Signals given by MFI for various Banks**

S.N	Bank name	No. of signal in one year	Correct Signal		Incorrect Signal	
			Buy	Sell	Buy	Sell
1	AXIS bank	3	1			2
						3
				1	3	
			2			5
				4		6
				7	8	
			9		11	
2	Bandhan Bank	12		10	12	
			0		1	
						2
						3
3	BOB	5			4	
						5
			1		0	
4	Fedral Bank	3		2		
				3		
			1			3
5	HDFC Bank	5		2		4
				5		
6	ICICI Bank	2	1		0	
				2		
7	IDFC First	4	1			3
				2		4
				3	1	
8	IndusInd Bank	6		4	2	
				5		6
9	Kotak Mahindra Bank	3		1		3
			2			
				5	1	
						2
10	Panjab National Bank	5			3	
					4	
11	RBL	3		2		1
				3		
			2		1	
				3		6
12	SBI	7	4			7

				5		
	Total	58				