

WEEKLY CASHFLOW FORECAST MODELLING FOR MEDICAL EQUIPMENT COMPANY

ABOUT THE CLIENT

A global medical device company that develops, manufactures, and sells orthopedic implant equipment and related surgical instruments for joint replacement



SITUATION

- Client **lacked timely visibility into the cash flows of the company** due to lack of common and organized reporting and data systems. With businesses across several countries, the client wanted consistency in reporting of actual and forecasted cash flows
- Merilytics partnered with the client to **build a Cash flow model** by restructuring and organizing the reporting across its entities. Also, **created Excel dashboards** that can be refreshed weekly to report and track actuals and forecast the cash flows across the company



VALUE ADDITION

- The cash flow model provides a **78-week weekly and monthly cash outlook** for each individual entity as well as a consolidated view for the entire company
- Created **bank activity helper files** which consolidates actual bank transactions from multiple banks for each entity and provides output of actuals in the required format by automatically mapping all the bank transactions to the line items in the cash flow (by using keywords and descriptions)
- Developed a mechanism to track and compare **Actuals vs. Forecast and Forecast vs. Forecast** for different periods
- Prepared a model to analyze forecast accuracy by identifying **consistently under or over forecasted** line items which would help the client to improve the accuracy of the forecasts by changing the methodology/forecast assumptions if needed
- Modelled an analysis of Intercompany flow variance to reconcile intercompany outflows and inflows



IMPACT

- The Cash Flow model helped the client to closely track and assess **the cash position of its different entities** which in turn helped them in managing their **short-term liquidity planning**
- The standardized reporting in the model enhanced the ability of the client to identify inaccuracies in reporting and providing valuable insights to improve the future forecasts over a period of time.
- The model improved reporting consistency which reduced intercompany flow variance by ~ \$ 6 M. It is also estimated that the model reduced time and effort required for consolidation by ~50-60%

METHODOLOGY/ APPROACH

DATA SOURCES

- **Bank Statements** provide actual weekly cash activities for US
- **Weekly Cash Projections** provide forecast figures for current year for US
- **Transmission files** provide actual cash activities and forecasts for the current year for global entities
- **International Exchange Rates** file to use the same conversion rates that are being used for other financial reporting

CHALLENGES

- **Inconsistency in Financial Reporting** process across the entities
- Global entities dealing in **multiple currencies** owing to company's global presence
- **Multiplicity in data sources** acting as a barrier in pulling data into the model
- **Format of bank activity transactions** were inconsistent across entities
- Categorizing bank activity transactions as per the model by looking for various **keywords** and **descriptions**
- **Standardization of mapping** in bank activity helper file impacts the derived cash flow actuals in the model

VALUE-ADD

- **Streamlined the reporting process** by producing common cashflow lines for all the entities
- Created a **Currency Conversion Matrix** to transform all currencies in operations into USD for consolidation and ease of interpretation
- Build **Bank Activity Helper Files** to automate the mapping of bank transactions into cashflow lines
- **Created Manual Adjustment section** to adjust for the standardization of mapping in bank activity
- Build analysis of **Actuals Vs Forecasts, Forecasts Vs Forecasts, Forecasting Accuracy** to improve forecasts
- **Intercompany Flow Variance** to reconcile intercompany inflows and outflows
- Provided added **flexibility** into the model by including dummy line items for the future

EXHIBIT #1 : CASH FLOW SUMARRY AT ENTITY LEVEL

ILLUSTRATIVE

Select Week's Starting Date			previous week						
Week 1			Actual	Actual	Actual	Actual	Actual	Actual	
ESP	Beginning Cash		Beginning Cash	\$1,099,535	\$991,766	\$1,049,554	\$711,023	\$120,456	\$529,390
ESP	Inflows	Cash Receipts -	Receivables - Domestic	-	-	-	-	-	-
ESP			Receivables - International	\$ 222,123	\$ 254,158	\$ 239,248	\$ 283,549	\$ 216,011	\$ 417,017
ESP			Other Receipts	-	-	-	-	\$ 150,000	-
ESP			Total Cash Receipts -	\$ 222,123	\$ 254,158	\$ 239,248	\$ 283,549	\$ 366,011	\$ 417,017
ESP									
ESP	Intercom pany	Cash Receipts -	Entity - Deutschland	-	-	-	-	-	-
ESP			Entity - Austria	-	-	-	-	-	-
ESP			Entity - Italy	-	-	-	-	-	-
ESP			Total Cash Receipts -	-	-	-	-	\$ 150,000	-
ESP									
ESP	Outflows	Cash Disbursements -	Check Registers	\$ 256,754	\$ 116,253	\$ 466,868	\$ 107,891	\$ 50,838	\$ 430,281
ESP			Pcard Funding	-	-	-	-	-	-
ESP			Payroll & Taxes	-	-	\$ 1,047	\$ 482,574	-	\$ 92,613
ESP			Comm/Royalty	\$ 73,138	\$ 58,487	\$ 31,528	\$ 179,087	\$ 56,239	\$ 37,332
ESP			EIO Payments	-	-	-	-	-	-
ESP			Total Cash Disbursements -	\$ 329,892	\$ 174,740	\$ 577,780	\$ 871,240	\$ 107,077	\$ 560,226
ESP	tercompar	Cash Disbursements -	Other - Korea	-	-	-	-	-	-
ESP			Other Intercompany Disbursements	-	-	-	-	-	-
ESP			Total Cash Disbursements -	-	-	-	-	-	-
ESP	Financing		Loan Interest/Principal	-	\$ 21,630	-	\$ 2,876	-	-
ESP			Principal Payments In	-	-	-	-	-	-
ESP			Principal Payments Out	-	-	-	-	-	-
ESP			Other Financing	-	-	-	-	-	-
ESP			Total Change in Financing Activity	-	\$(21,630)	-	\$(2,876)	-	-
ESP	Net Cash		Net Change in Cash	\$(107,769)	\$ 57,788	\$(338,532)	\$(590,567)	\$ 408,934	\$(143,209)

All major line items impacting
Beginning and Ending Cash Balances

EXHIBIT #2 : CASHFLOW SUMMARY AT COMPANY LEVEL

ILLUSTRATIVE

Select Week's Starting Date

Week 1

Consolidated 78-week Forecast
and Actuals till previous week

			Actual	Actual	Actual	Forecast	Forecast	Forecast
US	Beginning Cash	Beginning Cash	\$ 15,336,037	\$ 10,549,663	\$ 24,668,114	\$ 20,985,234	\$ 5,132,288	\$ 3,715,878
Global			\$ 789,544	\$ 2,075,285	\$ 179,059	\$ 2,277,221	\$ 1,633,409	\$ 6,878,232
Consolidated			\$ 16,125,581	\$ 12,624,948	\$ 24,847,172	\$ 23,262,456	\$ 6,765,697	\$ 10,594,110
US	Inflows	Cash Receipts	Cash Receipts					
			Receivables - Domestic	\$ 3,066,025	\$ 4,040,783	\$ 3,689,419	\$ 3,588,257	\$ 3,457,283
			Receivables - International	\$ 20,824	\$ 4,820	-	\$ 101,506	\$ 72,766
			Other Receipts	\$ 32,275	\$ 308	\$ 3,456,325	-	-
			Total Cash Receipts	\$ 3,119,123	\$ 4,045,911	\$ 7,145,744	\$ 3,689,763	\$ 3,530,050
Global	Inflows	Cash Receipts	Cash Receipts					
			Receivables - Domestic	\$ 3,660	\$ 35,135	\$ 18,638	\$ 11,292	\$ 7,565
			Receivables - International	\$ 588,692	\$ 1,444,857	\$ 1,003,572	\$ 781,134	\$ 533,628
			Other Receipts	\$ 36,867	-	\$ 15,871	-	-
			Total Cash Receipts	\$ 629,219	\$ 1,479,993	\$ 1,038,080	\$ 792,426	\$ 541,194
Consolidated	Inflows	Cash Receipts	Total Cash Receipts (US+Global)					
				\$ 3,748,342	\$ 5,525,904	\$ 8,183,824	\$ 4,482,189	\$ 4,071,243
US	Intercom pany	Cash Receipts	Cash Receipts					
			Entity - Deutschland	\$ 3,296,457	\$ 1,607,299	\$ 2,894,328	\$ 3,226,321	\$ 429,946
			Entity - Austria	\$ 33,494	\$ 6,271	\$ 173,421	\$ 19,968	\$ 943
			Entity - Italy	-	-	-	\$ 149	-
			Total Cash Receipts	\$ 3,329,952	\$ 1,613,570	\$ 3,067,750	\$ 3,246,437	\$ 430,889
Global	Intercom pany	Cash Receipts	Cash Receipts					
			Entity - Deutschland	-	\$ 297,901	-	-	-
			Entity - Austria	\$ 2,038,376	\$ 1,250,061	\$ 207,945	\$ 915,892	\$ 913,522
			Entity - Italy	\$ 4,985	\$ 21	\$ 11,180	-	\$ 71,484
			Total Cash Receipts	\$ 2,043,361	\$ 1,547,983	\$ 219,125	\$ 915,892	\$ 985,005
Consolidated	Inflows	Cash Receipts	Total Cash Receipts (US+Global)					
				\$ 5,373,312	\$ 3,161,552	\$ 3,286,874	\$ 4,162,329	\$ 1,415,894

EXHIBIT #3: ACTUAL VS FORECAST WoW COMPARISON

ILLUSTRATIVE

Consolidated 78-week old Forecast
and Actuals/New Forecast

		Select Week's Starting Date		Week 1											
		Actuals as of Week 2 >>		Forecast as of Week 2 >>		Week 1		Week 2		Week 3		Week 4		Week 5	
		Forecast as of Week 1 >>				Week 1		Week 2		Week 3		Week 4		Week 5	
Beginning Cash		Beginning Cash	Actuals/New Forecast	\$	24,898,342	\$	20,663,577	\$	21,228,304	\$	22,897,720	\$	24,582,107		
			Old Forecast	\$	24,898,342	\$	19,587,969	\$	18,230,048	\$	18,553,997	\$	19,703,151		
			Variance	\$	-	\$	1,075,608	\$	2,998,256	\$	4,343,723	\$	4,878,956		
Inflows	Cash Receipts - PNC	Cash Receipts - PNC													
		Receivables - Domestic	Actuals/New Forecast	\$	2,287,652	\$	3,293,975	\$	17,934,768	\$	16,115,539	\$	31,672,314		
			Old Forecast	\$	2,307,477	\$	3,293,975	\$	17,934,768	\$	16,115,539	\$	31,672,314		
			Variance	\$	(19,825)	\$	-	\$	-	\$	-	\$	-		
		Receivables - International	Actuals/New Forecast	\$	6,235	\$	80,000	\$	80,000	\$	80,000	\$	80,000		
			Old Forecast	\$	4,570	\$	80,000	\$	80,000	\$	80,000	\$	80,000		
			Variance	\$	1,665	\$	-	\$	-	\$	-	\$	-		
		Other Receipts	Actuals/New Forecast	\$	9,856	\$	16,785	\$	23,799	\$	21,185	\$	23,334		
			Old Forecast	\$	7,800	\$	16,785	\$	23,799	\$	21,185	\$	23,334		
			Variance	\$	2,056	\$	-	\$	-	\$	-	\$	-		
		Total Cash Receipts - PNC	Actuals/New Forecast	\$	2,303,743	\$	3,390,760	\$	18,038,567	\$	16,216,724	\$	31,775,648		
			Old Forecast	\$	2,319,847	\$	3,390,760	\$	18,038,567	\$	16,216,724	\$	31,775,648		
Variance	\$		(16,104)	\$	-	\$	-	\$	-	\$	-				
Intercompany	Cash Receipts - PNC	Cash Receipts - PNC													
		Entity Japan	Actuals/New Forecast	\$	200,000	\$	-		\$	-	\$	-			
			Old Forecast	\$	-	\$	-	\$	-	\$	-				
			Variance	\$	200,000	\$	-	\$	-	\$	-				
		Entity Australia	Actuals/New Forecast	\$	-	\$	300,000	\$	-	\$	250,000	\$	-		
			Old Forecast	\$	-	\$	300,000	\$	-	\$	250,000	\$	-		
			Variance	\$	-	\$	-	\$	-	\$	-				
		Exactech Korea	Actuals/New Forecast		\$	-	\$	265,000	\$	-	\$	-			
			Old Forecast	\$	300,000	\$	-	\$	265,000	\$	-	\$	-		
			Variance	\$	(300,000)	\$	-	\$	-	\$	-				
		Total Cash Receipts - PNC	Actuals/New Forecast	\$	200,000	\$	300,000	\$	265,000	\$	250,000	\$	-		
			Old Forecast	\$	300,000	\$	300,000	\$	265,000	\$	250,000	\$	-		
Variance	\$		(100,000)	\$	-	\$	-	\$	-	\$	-				

EXHIBIT #4: CASH FLOW FORECAST ACCURACY MODEL

ILLUSTRATIVE

- Note :-**
- Tracking Signal** - It indicates the degree and direction of forecasting . Positive value indicates under forecasting and Negative value indicates over forecasting . The higher the value,higher is the degree of under
 - Mean Absolute Percentage Error (MAPE)** - It indicates the extent of the forecasting error with respect to actuals in % terms and is calculated as the mean of the % errors for a given period.
 - Mean Absolute Deviation (MAD)** - It indicates the average absolute deviation of actuals and forecast for a given period .
 - Absolute Deviation** - It Indicates the magnitude of the deviation between actuals and forecast in absolute terms and is an indicator of the importance that can be assigned to the deviation for a given line item
 - This sheet provides summary level view of Actuals Vs Forecast for different metrics- Absolute Deviation,MAD,MAPE & Tracking Signal for 4-week, 8 week and 12 week period.It is calculated for one selection o

Click to drill

Click to see top line items

Week start date		Week 1	Forecast Accuracy across Time Periods					
			Next 4 Weeks from Week 1				Next 8 Weeks from Week 1	
Forecast date as of T-0 week		0	Absolute Deviation	MAD	Tracking Signal	Forecast Direction	MAPE	Tracking Signal
Inflows	Cash Receipts - PNC	Total Cash Receipts - PNC	\$ 3,272,029	\$ 903,007	3.21	Under Forecasting	16%	7.23
Intercompany	Cash Receipts - PNC	Total Cash Receipts - PNC	\$ 1,005,000	\$ 168,750	-1.76	Over Forecasting	76%	0.32
Outflows	Cash Disbursements - BBVA	Total Cash Disbursements - BBVA	\$ 6,417,733	\$ 1,104,433	0.86	Under Forecasting	38%	-1.36
Intercompany	Cash Disbursements - BBVA	Total Cash Disbursements - BBVA	\$ 200,000	\$ 45,000	-3.80	Over Forecasting	31%	-7.45
Financing		Total Change in Financing Activity	\$ 449,195	\$ 84,299	-0.76	Over Forecasting	49%	2.32

Tracking Signal over 4 Weeks of period (Actuals Vs Forecast)

LEARNINGS

- Understood the processes of building a Cash Flow model by Direct Method, the complexities it has when dealing with a client with global presence and the various line items that goes into such a model
- Learned on consolidating bank transactions for different countries and mapping these transactions to the line items in the cash flow model
- Expanded the knowledge of Storage model in excel by building variance analysis of Forecast Vs Forecast view from the stored data