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LAMPIRAN

Lampiran 1. Data Penjualan Furniure Juli 2016-Juni 2021

No	Jendela	Pintu	Kusen Jendela	Kusen Pintu
1	142	57	51	39
2	146	46	51	37
3	135	65	59	39
4	139	44	48	33
5	133	65	62	42
6	140	93	57	23
7	158	82	54	33
8	147	105	53	30
9	114	32	65	48
10	121	67	41	41
11	168	65	59	37
12	194	61	56	36
13	183	41	68	44
14	187	98	70	52
15	153	102	64	37
16	181	110	46	33
17	174	83	77	31
18	139	124	82	40
19	144	43	81	40
20	112	31	52	36
21	140	86	73	53
22	123	64	64	49
23	154	65	78	42
24	157	93	67	38
25	111	44	61	45
26	178	107	63	51
27	198	129	72	56
28	147	57	81	45
29	209	47	62	47
30	152	165	54	32
31	167	63	77	38
32	119	98	72	46
33	145	71	83	54
34	148	116	66	46
35	194	65	59	44
36	109	86	61	39
37	129	95	55	36

38	167	134	83	57
39	170	90	75	42
40	214	128	73	41
41	175	73	43	48
42	127	176	73	46
43	176	94	70	49
44	131	77	85	51
45	183	65	77	46
46	211	103	66	57
47	145	42	79	43
48	221	119	53	46
49	176	109	67	50
50	158	74	61	44
51	137	94	76	34
52	194	31	79	41
53	207	114	68	38
54	222	210	80	47
55	187	107	74	46
56	168	125	62	63
57	136	93	67	45
58	145	72	77	51
59	197	82	84	46
60	132	81	79	41

Lampiran 2. Hasil Transformasi Penjualan Furnitur

Jendela		Pintu		Kusen Jendela	Kusen Pintu	
Transform asi 1	Transform asi 2	Transform asi 1	Transform asi 2	Transform asi 1	Transform asi 1	Transform asi 2
4,95583	6,99567	4,04305	16,3463	2601	6,245	6,245
4,98361	7,04336	3,82864	14,6585	2601	6,08276	6,08276
4,90527	6,90904	4,17439	17,4255	3481	6,245	6,245
4,93447	6,95905	3,78419	14,3201	2304	5,74456	5,74456
4,89035	6,8835	4,17439	17,4255	3844	6,48074	6,48074
4,94164	6,97134	4,5326	20,5445	3249	4,79583	4,79583
5,0626	7,17927	4,40672	19,4192	2916	5,74456	5,74456
4,99043	7,05509	4,65396	21,6593	2809	5,47723	5,47723
4,7362	6,62069	3,46574	12,0113	4225	6,9282	6,9282
4,79579	6,72207	4,20469	17,6794	1681	6,40312	6,40312
5,12396	7,28518	4,17439	17,4255	3481	6,08276	6,08276
5,26786	7,53457	4,11087	16,8993	3136	6	6

5,20949	7,43322	3,71357	13,7906	4624	6,63325	6,63325
5,23111	7,47074	4,58497	21,0219	4900	7,2111	7,2111
5,03044	7,12388	4,62497	21,3904	4096	6,08276	6,08276
5,1985	7,41417	4,70048	22,0945	2116	5,74456	5,74456
5,15906	7,34586	4,41884	19,5262	5929	5,56776	5,56776
4,93447	6,95905	4,82028	23,2351	6724	6,32456	6,32456
4,96981	7,01967	3,7612	14,1466	6561	6,32456	6,32456
4,7185	6,59063	3,43399	11,7923	2704	6	6
4,94164	6,97134	4,45435	19,8412	5329	7,28011	7,28011
4,81218	6,75001	4,15888	17,2963	4096	7	7
5,03695	7,1351	4,17439	17,4255	6084	6,48074	6,48074
5,05625	7,16833	4,5326	20,5445	4489	6,16441	6,16441
4,70953	6,57541	3,78419	14,3201	3721	6,7082	6,7082
5,18178	7,38521	4,67283	21,8353	3969	7,14143	7,14143
5,28827	7,57007	4,85981	23,6178	5184	7,48331	7,48331
4,99043	7,05509	4,04305	16,3463	6561	6,7082	6,7082
5,34233	7,66424	3,85015	14,8236	3844	6,85565	6,85565
5,02388	7,1126	5,10595	26,0707	2916	5,65685	5,65685
5,11799	7,27486	4,14313	17,1656	5929	6,16441	6,16441
4,77912	6,69369	4,58497	21,0219	5184	6,78233	6,78233
4,97673	7,03156	4,26268	18,1704	6889	7,34847	7,34847
4,99721	7,06674	4,75359	22,5966	4356	6,78233	6,78233
5,26786	7,53457	4,17439	17,4255	3481	6,63325	6,63325
4,69135	6,54457	4,45435	19,8412	3721	6,245	6,245
4,85981	6,83129	4,55388	20,7378	3025	6	6
5,11799	7,27486	4,89784	23,9888	6889	7,54983	7,54983
5,1358	7,30563	4,49981	20,2483	5625	6,48074	6,48074
5,36598	7,70548	4,85203	23,5422	5329	6,40312	6,40312
5,16479	7,35578	4,29046	18,408	1849	6,9282	6,9282
4,84419	6,8046	5,17048	26,7339	5329	6,78233	6,78233
5,17048	7,36564	4,54329	20,6415	4900	7	7
4,8752	6,85758	4,34381	18,8686	7225	7,14143	7,14143
5,20949	7,43322	4,17439	17,4255	5929	6,78233	6,78233
5,35186	7,68084	4,63473	21,4807	4356	7,54983	7,54983
4,97673	7,03156	3,73767	13,9702	6241	6,55744	6,55744
5,39816	7,76169	4,77912	22,84	2809	6,78233	6,78233
5,17048	7,36564	4,69135	22,0087	4489	7,07107	7,07107
5,0626	7,17927	4,30407	18,525	3721	6,63325	6,63325
4,91998	6,93422	4,54329	20,6415	5776	5,83095	5,83095
5,26786	7,53457	3,43399	11,7923	6241	6,40312	6,40312
5,33272	7,64747	4,7362	22,4316	4624	6,16441	6,16441

5,40268	7,76958	5,34711	28,5916	6400	6,85565	6,85565
5,23111	7,47074	4,67283	21,8353	5476	6,78233	6,78233
5,12396	7,28518	4,82831	23,3126	3844	7,93725	7,93725
4,91265	6,92167	4,5326	20,5445	4489	6,7082	6,7082
4,97673	7,03156	4,27667	18,2899	5929	7,14143	7,14143
5,2832	7,56126	4,40672	19,4192	7056	6,78233	6,78233
4,8828	6,87059	4,39445	19,3112	6241	6,40312	6,40312

Lampiran 3. Hasil Differencing Penjualan Furnitur

Jendela (T2)(D)	Pintu (T2)(D)	Kusen Jendela (T)(D)	Kusen Pintu (T2)(D1)
0	0	0	0
0,047688	-1,6878	0	-0,16224
-0,134322	2,767	880	0,16224
0,050017	-3,1054	-1177	-0,50044
-0,075559	3,1054	1540	0,73618
0,087848	3,1189	-595	-1,68491
0,207926	-1,1253	-333	0,94873
-0,124182	2,2402	-107	-0,26734
-0,434398	-9,648	1416	1,45098
0,101382	5,6681	-2544	-0,52508
0,563107	-0,2539	1800	-0,32036
0,249397	-0,5262	-345	-0,08276
-0,101349	-3,1087	1488	0,63325
0,037514	7,2313	276	0,57785
-0,346856	0,3684	-804	-1,12834
0,290289	0,7041	-1980	-0,3382
-0,068312	-2,5684	3813	-0,1768
-0,386806	3,709	795	0,75679
0,06062	-9,0885	-163	0
-0,429044	-2,3544	-3857	-0,32456
0,380714	8,0489	2625	1,28011
-0,221335	-2,5449	-1233	-0,28011
0,385089	0,1292	1988	-0,51926
0,03323	3,1189	-1595	-0,31633
-0,59292	-6,2244	-768	0,54379
0,809804	7,5152	248	0,43322
0,184856	1,7824	1215	0,34189
-0,51498	-7,2715	1377	-0,77511
0,60915	-1,5226	-2717	0,14745

-0,551638	11,247	-928	-1,1988
0,162264	-8,9051	3013	0,50756
-0,581175	3,8564	-745	0,61792
0,337868	-2,8515	1705	0,56614
0,035181	4,4262	-2533	-0,56614
0,467837	-5,1711	-875	-0,14908
-0,990008	2,4157	240	-0,38825
0,286724	0,8966	-696	-0,245
0,443572	3,251	3864	1,54983
0,03077	-3,7405	-1264	-1,06909
0,399845	3,2939	-296	-0,07762
-0,349699	-5,1342	-3480	0,52508
-0,551173	8,3259	3480	-0,14587
0,561038	-6,0924	-429	0,21767
-0,508059	-1,7729	2325	0,14143
0,575641	-1,4431	-1296	-0,3591
0,24762	4,0552	-1573	0,7675
-0,649289	-7,5105	1885	-0,9924
0,730132	8,8698	-3432	0,22489
-0,396045	-0,8313	1680	0,28874
-0,186374	-3,4838	-768	-0,43782
-0,245048	2,1166	2055	-0,8023
0,600354	-8,8493	465	0,57217
0,112899	10,6393	-1617	-0,23871
0,122105	6,16	1776	0,69124
-0,298839	-6,7562	-924	-0,07332
-0,185561	1,4773	-1632	1,15492
-0,363504	-2,7682	645	-1,22905
0,109883	-2,2546	1440	0,43322
0,529703	1,1293	1127	-0,3591
-0,690672	-0,108	-815	-0,37921

Lampiran 4. Residual Hasil Model Sementara Penjualan Jendela

ARIMA (1,1,0)	ARIMA (4,1,0)	ARIMA (0,1,1)	ARIMA (1,1,1)	ARIMA (4,1,1)
0	0	0	0	0
0,036763	0,059375	-0,00384	-0,00049	0,041658
-0,1145	-0,08587	-0,14367	-0,14464	-0,10187
-0,01306	-0,01295	-0,09503	-0,08151	-0,04518
-0,05468	-0,07591	-0,1734	-0,16443	-0,1216

0,051536	0,024949	-0,08605	-0,06868	-0,03769
0,246038	0,193679	0,118798	0,127685	0,140122
-0,03138	0,03278	-0,01452	-0,02655	-0,01204
-0,49286	-0,42907	-0,45412	-0,45277	-0,45369
-0,09836	-0,13617	-0,34493	-0,29813	-0,27949
0,607384	0,46687	0,222759	0,25968	0,308314
0,503967	0,45549	0,459942	0,439233	0,435425
0,010341	0,172857	0,339363	0,293354	0,217528
-0,01054	0,301734	0,361214	0,326149	0,313286
-0,33167	-0,08505	-0,00195	-0,04036	0,077504
0,130415	0,131208	0,282771	0,280767	0,430871
0,062003	-0,06133	0,20047	0,169109	0,331784
-0,41982	-0,41795	-0,19789	-0,22159	-0,08504
-0,11745	-0,25073	-0,13704	-0,12013	-0,02104
-0,40333	-0,48226	-0,56766	-0,55631	-0,4027
0,183407	-0,03352	-0,17578	-0,11944	-0,03127
-0,04984	-0,28647	-0,39754	-0,37985	-0,33888
0,282384	0,27451	-0,00631	0,034831	0,019434
0,206721	0,154592	0,021478	0,023429	-0,02394
-0,57968	-0,35119	-0,5777	-0,57867	-0,59804
0,53786	0,487048	0,243566	0,304376	0,256152
0,551784	0,59447	0,415592	0,393309	0,444922
-0,43269	-0,24505	-0,11731	-0,15824	-0,16922
0,372703	0,413211	0,489688	0,502418	0,446077
-0,2761	-0,06279	-0,08206	-0,13171	0,000343
-0,09088	-0,04737	0,077008	0,084836	0,177286
-0,50917	-0,69842	-0,51207	-0,52042	-0,43679
0,071273	0,057201	-0,16468	-0,11242	0,0019
0,187166	-0,14771	-0,13025	-0,11227	-0,05675
0,481963	0,488679	0,335814	0,350704	0,366274
-0,77883	-0,77439	-0,66975	-0,70267	-0,74586
-0,16608	-0,02285	-0,36884	-0,29901	-0,32907
0,572263	0,36775	0,080016	0,120824	0,162898
0,230898	0,263013	0,102795	0,098277	0,127656
0,411961	0,344855	0,493974	0,486708	0,359448
-0,16949	0,169213	0,124039	0,075904	0,047134
-0,71234	-0,44091	-0,43643	-0,44801	-0,41411
0,308107	0,19623	0,131894	0,177766	0,248406
-0,25443	-0,36639	-0,38569	-0,39721	-0,25989
0,342347	0,168303	0,195734	0,237184	0,234176
0,507899	0,385954	0,43194	0,414457	0,394045

-0,53841	-0,22047	-0,23575	-0,27836	-0,25692
0,432515	0,425186	0,49573	0,520659	0,485097
-0,0654	0,079984	0,079396	0,029454	0,154781
-0,36865	-0,267	-0,11495	-0,1235	-0,0377
-0,33183	-0,52695	-0,36222	-0,35095	-0,30018
0,486848	0,48296	0,24322	0,280401	0,414766
0,384433	0,180673	0,3433	0,319055	0,392713
0,171627	0,295322	0,449625	0,414228	0,423729
-0,24513	-0,06156	0,131861	0,08438	0,11313
-0,32357	-0,07751	-0,06323	-0,07927	0,05757
-0,44992	-0,53626	-0,43048	-0,42673	-0,24977
-0,05757	-0,2694	-0,31349	-0,27153	-0,1052
0,577851	0,265805	0,219859	0,251152	0,35791
-0,45132	-0,50032	-0,48294	-0,50575	-0,45589

Lampiran 5. Residual Hasil Model Sementara Penjualan Pintu

ARIMA (1,1,0)	ARIMA (2,1,0)	ARIMA (5,1,0)	ARIMA (0,1,1)	ARIMA (1,1,1)	ARIMA (2,1,1)	ARIMA (5,1,1)
0	0	0	0	0	0	0
-1,2766	-1,4044	-1,66796	-2,17739	-2,33248	-2,36131	-1,48416
1,7965	1,579	1,02522	0,57337	0,26331	2,60644	1,01876
-1,7605	-1,8739	-1,96209	-2,61591	-2,66204	-2,66876	-2,04238
1,3981	1,7893	1,22745	0,48402	0,14735	2,2767	1,59614
4,6397	4,0853	3,91368	3,52131	3,48126	3,79925	3,64128
0,4025	2,0545	2,3208	2,23971	2,48479	0,48898	2,53453
1,562	2,441	4,4475	4,35507	4,48036	1,20627	4,04405
-8,577	-8,5873	-6,98699	-5,46975	-5,14779	-8,35439	-7,54819
0,5603	-0,4345	0,36274	0,26302	-0,32641	1,11554	0,7758
2,5988	0,1923	-0,5569	-0,06715	-0,11171	2,5878	-1,66992
-0,7515	1,1918	-1,53458	-0,66149	-0,73242	-1,41736	-0,7037
-3,4754	-3,6836	-4,0193	-3,82367	-3,94492	-2,75082	-3,68907
5,5223	4,7443	2,95314	3,43184	3,0237	5,2028	3,82762
4,0337	4,2342	5,56879	3,64617	3,92008	3,91265	5,65066
0,8024	3,4144	3,83755	4,19094	4,48259	-0,01419	2,62278
-2,2957	-2,0574	0,36849	1,44981	1,78945	-1,63448	0,8889
2,2808	2,0384	3,69842	5,05337	5,1362	1,81448	3,00129
-7,254	-7,5073	-5,15163	-4,22908	-3,81135	-6,90949	-5,8254
-7,1714	-7,5424	-8,69423	-6,54927	-6,99482	-6,9755	-9,19627
6,732	3,0538	0,7677	1,59085	0,94243	7,88732	1,90516
1,5453	2,1633	-1,59506	-1,06292	-0,94299	-0,20116	-1,56792

-1,2868	1,0815	-0,23908	-0,97736	-1,10214	-0,29094	0,93238
3,0928	2,1918	1,57798	2,09583	1,98437	2,39687	1,78863
-4,6966	-4,1007	-2,7392	-4,24981	-4,07193	-4,39001	-1,78841
4,1868	4,1314	5,77436	3,3001	2,89064	4,17652	4,50391
5,5952	4,7421	4,50019	4,93167	5,23124	5,51881	3,94988
-6,4383	-3,4664	-2,83337	-2,53081	-2,08318	-7,4886	-2,45279
-5,3953	-6,1169	-4,25781	-4,06101	-4,3092	-3,79976	-4,69051
10,3624	7,4814	6,53641	7,21607	6,83401	9,83527	6,83534
-3,1527	-1,6535	-1,29474	-1,93616	-1,26507	-3,7049	-1,82788
-0,8654	1,4722	0,77222	1,89801	1,71266	-0,72754	0,41532
-0,9404	-3,4153	-3,05033	-1,06989	-0,89422	-0,43369	-2,16183
2,8508	3,6752	3,62935	3,31282	3,21347	2,18396	3,95865
-2,9639	-3,1862	-1,4435	-2,00948	-1,69875	-2,46747	-2,75108
-0,3653	0,2362	-2,00668	0,38583	0,2012	-0,83611	-1,69163
2,0589	0,645	1,57533	1,20317	1,24641	2,86631	2,59778
3,6238	4,6237	3,55415	4,35487	4,47566	2,42521	2,47673
-2,1441	-1,2517	0,05937	0,43753	0,85027	-1,45326	0,70486
1,2565	1,7031	1,82407	3,65091	3,69625	0,58069	1,18008
-3,5154	-4,2607	-2,37817	-1,64274	-1,29827	-2,77773	-1,89039
5,5641	5,7705	5,58563	6,65373	6,50482	4,99054	4,64782
-1,8583	-2,176	-1,48228	0,32806	0,95212	-1,60489	-1,59315
-5,0327	-3,2162	-4,0598	-1,52266	-1,49276	-5,63802	-3,94854
-2,4579	4,9663	-3,99891	-2,99814	-3,13715	-0,94609	-3,49399
3,2119	2,2967	-0,19315	1,06097	0,79097	2,08998	-0,35079
-5,4961	-5,2866	-5,8596	-6,54541	-6,43207	-4,68457	-5,31861
4,8729	4,914	1,69657	2,41553	1,82593	4,39601	1,82608
3,6856	2,6243	2,28608	1,45512	1,70825	4,07322	3,69356
-4,0091	-1,0355	-1,13572	-2,13418	-1,97208	-5,39071	-1,73243
0,2126	-0,7424	1,31137	-0,03495	-0,20527	2,03338	1,62758
-7,8424	-8,7124	-9,12296	-8,95312	-8,92341	-9,45057	-9,68977
5,9466	5,0544	5,06494	1,83644	1,04337	8,22126	6,06397
11,5965	10,3844	8,41127	7,88152	8,10404	9,25838	6,69313
-3,6478	1,2349	0,66338	0,86183	1,64165	-3,34498	2,2091
-2,1276	-1,2013	2,4353	2,24816	2,36637	-2,44518	1,82768
-2,0936	-4,242	-2,01902	-0,64501	-0,39829	-1,14037	-2,24652
-3,7866	-3,7912	-1,57865	-2,95352	-2,97652	-4,61078	-2,12839
-0,1358	-1,5529	-2,75279	-1,8214	-2,0549	1,23936	-4,39674
0,3857	-0,229	-3,91122	-1,9544	-2,0762	-0,82688	-2,2486

Lampiran 6. Residual Hasil Model Sementara Penjualan Kusen Jendela

ARIMA (1,1,0)	ARIMA (3,1,0)	ARIMA (4,1,0)	ARIMA (0,1,1)	ARIMA (1,1,1)	ARIMA (3,1,1)	ARIMA (4,1,1)	ARIMA (0,1,3)	ARIMA (1,1,3)	ARIMA (3,1,3)	ARIMA (4,1,3)
0	0	0	0	0	0	0	0	0	0	0
-53,44	10,93	-214,72	-861,86	-831,12	15,11	-267,13	-479,67	-430,06	-381,81	-324,71
783,69	643,52	621,45	7,23	37,94	724,26	550,94	385,59	406,88	399,28	411,73
-881,63	-638,74	-694,69	-1211,84	-1216,84	-769,64	-826,31	-958,55	-973,76	-977,23	-841,03
919,82	1060,9	870,37	329,79	374,2	904,17	875,64	722,21	618,44	661,34	730,35
-5,87	110,12	420,38	-318,83	-337,56	-35,95	533,75	-115,12	82,84	303,75	373,11
-694,14	-783,57	-586,57	-682,21	-674,46	-593,16	-239,44	-427,83	-758,07	-541,26	-510,98
-351,52	62,98	-273,93	-806,57	-784,25	-367,08	68,02	-494,27	-309,01	-186,48	-155,08
1272,07	793,26	1213,69	596,54	623,55	1064,87	1322,08	916,95	932,19	1044,98	1202,97
-2010,06	-2074,25	-2193,27	-2010,65	-2040,92	-1836,59	-1702,93	-1880,54	-1948,37	-1915,93	-2065,22
571,38	691,08	192,23	-180,39	-104,61	510,26	317,49	264,1	130,96	43,94	187,75
359,85	232,44	448,06	-560,73	-560,17	170,77	427,75	-322,34	124,51	193,92	207,9
1238,14	626,69	800,72	905,56	921,5	1324,06	1042,76	1146,92	709,85	673,62	614,36
841,99	1718,73	1257,27	1107,3	1063,56	1066,12	1682,51	1169,53	1315,97	1410,14	1372,94
-777,46	-373,03	637,27	221,8	170,43	-722,36	862,53	235,25	-68,14	625,66	831,31
-2434,16	-1765,66	-1682,24	-1807,96	-1822,8	-2247,41	-950,66	-1674,05	-1747,34	-1087,27	-1314,72
2835,41	2344,32	2496,87	2028,04	2095,63	2357,62	2860,19	2433,08	2599,5	2675,11	2870,44
2395,82	1687,5	2006,91	2708,54	2619,7	2471,81	2632,77	2628,66	2756,72	2625,48	2527,31
94,54	691,87	606,85	2406,65	2291,33	569,18	1409,55	2180,35	1408,1	1565,03	1477,88
-4025,86	-1953,06	-1763,89	-1578,41	-1680,07	-3661,55	-1210,21	-1743,73	-1731,48	-817,97	-830,17
811,98	574,24	1641,43	1061,35	1122,47	279,78	1898,3	1422,88	1410,74	2140,84	2141,19
-160,95	-1452,29	-1310	-251,49	-298,3	-431,33	-426,22	-190,64	241,38	-203,4	-529,91

1342,9	306,87	-625,76	1703,71	1710,64	1403,46	-56,61	1875,2	1332,26	143,33	210,34
-806,47	184,75	-705,88	5,84	-66,69	-583,22	-709,36	-44,99	319,47	-237,24	-394,2
-1574,23	-1646,72	-802,39	-804,17	-807,04	-1685,79	-1184,68	-667,33	-1031,42	-966,45	-1064,49
-190,14	-9,06	-521,32	-569,16	-539,27	-185,45	-303,68	-297,27	54,98	-368,31	-789,71
1229,07	146,33	499,95	624,44	644,3	750,4	447,21	859,02	977,58	105,15	311
1821,48	1660,85	992,81	1937,25	1908,36	2241,64	1322,67	2004,2	1935,62	1065,59	804,79
-2200,42	-1473,19	-1288,01	-890,99	-972,84	-2213,9	-1189,37	-1008,27	-1122,46	-1373,93	-1337,51
-2233,62	-1516,89	-1442,15	-1828,87	-1795,1	-1906,21	-1333,51	-1587,14	-1686,32	-1594,63	-1684,24
2503,65	1931,01	2133,23	1207,88	1279,11	1719,22	2182,3	1608,61	2164,68	1761,85	1735,49
499,75	-820,96	-492,87	377,78	324,87	714,57	-48,38	370,8	359,84	-502,77	-525,93
1277,1	1864,11	725,9	2027,43	2008,76	1519,63	1227,85	2084,14	1680,46	917,85	852,1
-1870,43	-539,03	31,29	-620,04	-705,45	-1656,93	-31,9	-747,54	-414,44	-141,92	20,2
-2098,72	-2170,93	-1267,36	-1514,63	-1491,72	-2242,97	-980,08	-1323,39	-1660,68	-1250,36	-1404,68
-245,76	-581,85	-1137,87	-1262,14	-1203,39	-482,74	-581,15	-916	-357,59	-941,39	-1034,44
-685,49	-2261,75	-2307,89	-1954,71	-1907,07	-1127,33	-2239,61	-1654,72	-1523,29	-2634,33	-2349,85
3457,91	2991,42	1466,68	1937,54	2012,56	3694,39	1441,38	2310,93	2387,53	1130,79	904,29
359,52	661,98	977,39	562,29	478,46	245,77	562,75	434,5	680,2	233,7	350,36
-954,9	8,39	317,41	204,33	177,27	-201,78	432,54	203,45	-396,65	-77,77	-217,5
-3708,05	-2434,17	-2043,56	-3324,8	-3337,08	-4078,35	-1725,19	-3237,55	-2779,91	-2275,53	-2221,28
1834,78	605,49	1201,28	232,56	363,42	1625,35	1419,25	768,8	841,04	717,08	960,01
1023,6	-71,61	-652,97	-246,58	-261,7	570,01	-2,07	-140,2	401,84	-495,33	-653,32
2037,75	1623,22	1052,03	2045,45	2049,9	2587,46	1233,14	2144,41	1600,99	824,71	1078,11
-357,47	1403,48	1126,42	634,33	545,74	-236,45	1211,09	463,89	762,33	1075,19	968,1
-2246,14	-1761,19	-191,17	-1003,21	-1033,51	-2022,26	-111,32	-1019,28	-1401,97	-428,34	-300,12
1088,57	1442,69	1269,88	875,94	912,34	851,66	2091,73	1104,11	1416,06	1722,22	1519,7

-2689,31	-3728,23	-2941,91	-2629,26	-2669,59	-2962,79	-2361,48	-2636,78	-2439,31	-2657,6	-2317,44
56,14	-461,58	-1891,8	-896,83	-794,61	204,99	-1356,29	-485,03	-745,44	-1487,65	-1635,52
-116,56	-382,04	-890,21	-1674,49	-1643,89	-632,38	-1271,82	-1439,75	-625,41	-1315,68	-1192,44
1616,86	476,25	515,89	398,72	460,41	1797,63	123,68	683,9	345,57	-218,39	-303,39
1283,35	2011,45	1158,33	807,62	784,43	1338,05	1178,07	838,98	1158,06	714,71	496,22
-1506,34	-1058,32	-74,7	-880,13	-919,63	-1223,59	-243,26	-933,44	-1194,72	-856,56	-522,31
959,98	1867,91	1773,89	885,61	915,02	1021,35	2217,06	1059,27	1105,56	1639,66	1420,94
-229,83	-454,38	648,99	-111,94	-154,53	-490,73	1093,02	-146,35	142,92	550,01	802,32
-2139,57	-2391,26	-2527,1	-1781,73	-1783,37	-1866,93	-1620,64	-1718,95	-2095,85	-2019,33	-2070,19
-177,69	50,56	-754,24	-1114,68	-1048,63	-475,88	-434,59	-813,36	-430,54	-640,96	-505,47
1630,77	584,38	950,18	323,47	361,58	1383,77	800,74	546,36	817,43	604,26	720,66
1671,62	1280,94	804,75	1397,07	1376,37	1827,64	1126,8	1410,22	1244,08	871,64	605,08
-409,69	563,43	450,1	490,19	426,22	-69,74	621,46	351,16	258,88	366,26	519,7



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Lampiran 7. Residual Hasil Model Sementara Penjualan Kusen Pintu

ARIMA (1,1,0)	ARIMA (3,1,0)	ARIMA (0,1,1)	ARIMA (1,1,1)	ARIMA (3,1,1)
0	0	0	0	0
-0,13765	-0,06919	0,01508	-0,04855	0,014
0,08578	0,08652	0,16227	0,1518	0,17884
-0,43953	-0,39979	-0,35624	-0,40019	-0,30185
0,51655	0,44744	0,37256	0,45956	0,47058
-1,38104	-1,4112	-1,33477	-1,43813	-1,31511
0,22767	0,09401	-0,37321	-0,05565	-0,19229
0,12652	-0,02105	-0,64757	-0,63072	-0,37506
1,33003	0,96789	0,80206	0,85844	0,66409
0,0814	0,46394	0,24568	-0,07934	0,08366
-0,55042	-0,28814	-0,09448	-0,25049	-0,29993
-0,22616	0,09672	-0,19003	-0,25729	0,04797
0,59044	0,29212	0,43242	0,37767	0,56575
0,83815	0,74724	0,98661	0,77016	0,91947
-0,89149	-0,69697	-0,17684	-0,50433	-0,41409
-0,82364	-0,54856	-0,52611	-0,52954	-0,42727
-0,32775	-0,49043	-0,70678	-0,64045	-0,34798
0,67417	0,14767	0,04988	0,12582	0,17903
0,3126	0,19971	0,03412	-0,11206	-0,05227
-0,33233	-0,18914	-0,30587	-0,45251	-0,47191
1,13494	1,36194	0,96583	0,89356	1,05116
0,25403	0,2672	0,65104	0,25584	0,50363
-0,64562	-0,43018	0,10361	-0,1716	-0,14359
-0,54392	-0,22964	-0,22959	-0,34569	-0,05346
0,4021	0,11195	0,30421	0,26748	0,48964
0,65565	0,41855	0,71642	0,53699	0,68067
0,51751	0,5899	1,02878	0,76463	0,79961
-0,63816	-0,30044	0,21769	-0,08357	0,02806
-0,18846	-0,01969	0,34592	0,29061	0,3842
-1,14416	-1,24405	-0,87476	-0,94738	-0,75016
-0,00771	-0,36347	-0,36386	-0,12974	-0,21374
0,82501	0,56738	0,24684	0,31348	0,40068
0,81995	0,58544	0,79315	0,69542	0,50864
-0,33425	0,06452	0,1959	-0,01741	-0,10088
-0,39652	-0,07824	0,02805	-0,00104	-0,03978
-0,45914	-0,44663	-0,37552	-0,35261	-0,25079
-0,41714	-0,709	-0,62749	-0,50625	-0,56422

1,43834	1,23906	0,92057	1,08179	1,01676
-0,42077	-0,49769	-0,18226	-0,41823	-0,46482
-0,53798	-0,28964	-0,27084	-0,19646	-0,48786
0,48444	0,70829	0,2451	0,33214	0,48276
0,06863	-0,29684	0,07943	0,03199	-0,0473
0,14814	0,24637	0,28073	0,28719	0,13665
0,2258	0,37865	0,40163	0,36741	0,3527
-0,307	-0,29494	0,01951	-0,0247	-0,10756
0,60771	0,68067	0,77188	0,84347	0,75724
-0,67526	-0,66923	-0,25119	-0,34994	-0,3643
-0,203	-0,21333	-0,03584	0,15432	-0,09123
0,37617	0,37212	0,23891	0,37216	0,38029
-0,32336	-0,59637	-0,21857	-0,14421	-0,39219
-0,99542	-0,88476	-1,03109	-0,82806	-1,07808
0,22475	0,11519	-0,45235	-0,06242	-0,24747
-0,00427	-0,34972	-0,69645	-0,49215	-0,66192
0,58241	0,42812	-0,00555	0,23613	-0,14349
0,21153	0,39821	-0,0935	-0,04851	-0,19986
1,11611	1,21165	1,04863	1,11688	0,86674
-0,74791	-0,42839	-0,21681	-0,41834	-0,44485
-0,09485	0,08599	0,20616	0,364	0,13197
-0,18348	-0,09872	-0,17192	-0,11903	0,01623
-0,539	-0,89607	-0,56231	-0,40285	-0,63671

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Lampiran 8. Hasil Optimal dengan Solver Peramalan Data Asli Jendela

Bulan	Data Asli	L	T	S	F	PE	APE
Jul-17	183	185,75	-57,5	-2,75			
Ag-17	187	159,6579	-49,3388	4,281331	129,5	0,307487	30,74866
Sep-17	153	138,9582	-41,897	-6,98591	100,5692	0,342685	34,26853
Okt-17	181	146,0514	-29,1671	-1,02171	91,31115	0,495519	49,55185
Nov-17	174	154,5005	-19,3927	-8,11948	105,1343	0,39578	39,57798
Des-17	139	139,8284	-18,1661	-4,29439	130,3578	0,062174	6,217436
Jan-18	144	126,6262	-16,8762	13,72909	134,9123	0,063109	6,310909
Feb-18	112	109,75	-16,8762	2,25	112	-4,6E-08	4,57E-06
Mar-18	140	135,4117	-5,82291	-26,6445	62,12378	0,556259	55,62587
Apr-18	123	138,9627	-3,38715	-22,8453	105,8388	0,139522	13,95219

Mei-18	154	132,9397	-4,07206	22,9956	158,8255	-0,03133	3,13346
Jun-18	157	117,3327	-7,06937	48,1367	178,1176	-0,13451	13,45073
Jul-18	111	112,1678	-6,57449	-2,56618	107,5133	0,031412	3,141182
Ag-18	178	142,8051	3,094835	7,872817	109,8747	0,382727	38,27266
Sep-18	198	178,1742	11,48117	-3,87097	138,914	0,298414	29,84141
Okt-18	147	166,914	5,571926	-3,21659	188,6336	-0,28322	28,32219
Nov-18	209	196,8659	11,90696	-5,76646	164,3664	0,213558	21,35577
Des-18	152	180,1078	4,458464	-7,06099	204,4785	-0,34525	34,5253
Jan-19	167	167,472	0,016577	12,07924	198,2954	-0,1874	18,73974
Feb-19	119	139,7739	-7,18496	-0,42488	169,7385	-0,42637	42,63743
Mar-19	145	153,922	-1,64164	-24,5855	105,9445	0,269349	26,93485
Apr-19	148	162,421	0,993354	-21,8666	129,4351	0,125438	12,54385
Mei-19	194	167,5602	2,070642	23,39574	186,41	0,039124	3,912395
Jun-19	109	110,2193	-13,3672	42,40261	217,7676	-0,99787	99,78676
Jul-19	129	115,8138	-8,44009	-0,7361	94,28591	0,269101	26,91014
Ag-19	167	135,6427	-1,09449	10,6012	115,2465	0,309901	30,99011
Sep-19	170	156,0273	4,486749	-1,79792	130,6773	0,23131	23,13101
Okt-19	214	191,4864	12,53479	-0,2273	157,2975	0,264965	26,49651
Nov-19	175	191,3189	9,234144	-6,99242	198,2547	-0,13288	13,28841
Des-19	127	164,2334	-0,20336	10,5664	193,492	-0,52356	52,35592
Jan-20	176	163,9704	-0,21887	12,07348	176,1093	-0,00062	0,062101
Feb-20	131	146,0939	-4,80713	-2,1291	163,3266	-0,24677	24,6768
Mar-20	183	177,5008	4,602941	-21,0903	116,7013	0,362288	36,22882
Apr-20	211	209,8317	11,80793	-19,1904	160,2372	0,240582	24,05822
Mei-20	145	166,9978	-2,39052	18,122	245,0353	-0,6899	68,98988
Jun-20	221	172,249	-0,40484	43,14015	207,0099	0,063304	6,330367
Jul-20	176	174,5163	0,289491	-0,4782	171,1081	0,027795	2,779495
Ag-20	158	159,8354	-3,6005	9,156336	185,407	-0,17346	17,34618
Sep-20	137	146,7104	-6,0754	-2,71718	154,437	-0,12728	12,72772
Okt-20	194	169,9084	1,531185	2,598026	140,4077	0,276249	27,6249
Nov-20	207	194,683	7,570888	-4,74909	164,4472	0,205569	20,5569
Des-20	222	218,8113	11,87327	-8,96834	191,6875	0,136543	13,65426
Jan-21	187	200,2281	3,959282	9,133979	242,7581	-0,29817	29,81715
Feb-21	168	185,5839	-0,87477	-3,92461	202,0583	-0,20273	20,27282

Mar-21	136	169,6231	-4,79483	-22,5463	163,6188	-0,20308	20,30797
Apr-21	145	164,4798	-4,88536	-19,224	145,6378	-0,0044	0,439874
Mei-21	197	170,1276	-2,14836	19,1386	177,7165	0,097886	9,78859
Jun-21	132	124,7623	-13,3781	38,96907	211,1194	-0,59939	59,93894

Lampiran 9. Hasil Optimal dengan Solver Peramalan Data Asli Pintu

Bulan	Data Asli	L	T	S	F	PE	APE
Jul-17	41	49,16667	-7,66667	-8,16667			
Ag-17	98	60,7442	-7,20541	-11,1206	22,33333	0,772109	77,21088
Sep-17	102	65,90626	-6,90898	5,004242	53,37213	0,476744	47,67438
Okt-17	110	77,35203	-6,46904	-13,4924	37,83062	0,656085	65,60853
Nov-17	83	74,00708	-6,39416	1,139534	70,71633	0,147996	14,79961
Des-17	124	74,87496	-6,22009	30,86963	95,44626	0,230272	23,02721
Jan-18	43	57,8489	-6,4791	12,31529	85,4882	-0,9881	98,80978
Feb-18	31	36,05842	-6,84609	33,43155	91,20313	-1,94204	194,2037
Mar-18	86	52,09029	-6,29774	-23,6013	-3,95434	1,045981	104,5981
Apr-18	64	49,95696	-6,19792	3,574496	47,62589	0,255845	25,58455
Mei-18	65	49,20361	-6,06742	2,109741	43,59237	0,329348	32,93481
Jun-18	93	56,87769	-5,73806	1,578735	38,96952	0,580973	58,09728
Jul-18	44	51,40084	-5,7318	-8,05746	42,97297	0,023342	2,334162
Ag-18	107	64,09554	-5,29014	-3,41633	34,54849	0,677117	67,71169
Sep-18	129	75,38518	-4,89274	11,93634	63,80965	0,505352	50,53516
Okt-18	57	70,49244	-4,89274	-13,4924	57	-2,8E-08	2,75E-06
Nov-18	47	60,57945	-5,01307	-0,95946	66,73924	-0,41998	41,99837
Des-18	165	75,54746	-4,53415	39,22384	86,43601	0,476145	47,61454
Jan-19	63	65,84316	-4,65807	10,15363	83,3286	-0,32268	32,26762
Feb-19	98	62,04557	-4,63745	33,79133	94,61664	0,034524	3,452405
Mar-19	71	66,86741	-4,41072	-19,6463	33,80687	0,523847	52,38468
Apr-19	116	75,16519	-4,10611	8,887995	66,03118	0,430766	43,07657
Mei-19	65	68,98151	-4,15591	1,241099	73,16882	-0,12567	12,56742
Jun-19	86	69,80934	-4,03646	3,662465	66,40434	0,227857	22,78565
Jul-19	95	75,25542	-3,80917	-4,09275	57,71543	0,392469	39,24691
Ag-19	134	88,22434	-3,40702	3,598688	68,02993	0,492314	49,2314
Sep-19	90	83,09967	-3,44819	11,21818	96,75366	-0,07504	7,504064
Okt-19	128	95,37941	-3,07121	-6,9165	66,15903	0,483133	48,31326
Nov-19	73	87,64158	-3,18307	-2,9106	91,34873	-0,25135	25,13525
Des-19	176	97,7644	-2,86414	44,7871	123,6824	0,297259	29,72593

Jan-20	94	92,08894	-2,93152	8,978197	105,0539	-0,11759	11,75945
Feb-20	77	77,47133	-3,21163	28,90531	122,9487	-0,59674	59,67369
Mar-20	65	76,90131	-3,14831	-18,5418	54,61343	0,159793	15,97934
Apr-20	103	78,93088	-3,0242	11,0529	82,64099	0,19766	19,76603
Mei-20	42	66,96759	-3,23846	-2,49639	77,14777	-0,83685	83,68518
Jun-20	119	76,85463	-2,92386	9,150313	67,39159	0,433684	43,36841
Jul-20	109	83,89078	-2,68513	0,071589	69,83801	0,359284	35,92843
Ag-20	74	78,4578	-2,75099	2,449794	84,80434	-0,146	14,60046
Sep-20	94	77,50618	-2,70786	11,97051	86,92499	0,075266	7,526606
Okt-20	31	65,41821	-2,93269	-10,8384	67,88182	-1,18974	118,9736
Nov-20	114	76,32738	-2,60092	2,876762	59,57492	0,477413	47,7413
Des-20	210	96,99409	-2,04323	54,51543	118,5136	0,43565	43,56497
Jan-21	107	95,73189	-2,02451	9,30475	103,9291	0,0287	2,870041
Feb-21	125	94,31454	-2,00995	29,15917	122,6127	0,019098	1,909848
Mar-21	93	97,19717	-1,89268	-16,4962	73,76279	0,206852	20,68518
Apr-21	72	86,56641	-2,10212	7,39946	106,3574	-0,47719	47,71858
Mei-21	82	84,47245	-2,10193	-2,49297	81,9679	0,000391	0,039142
Jun-21	81	79,69477	-2,16606	8,031566	91,52084	-0,12989	12,98869

**Lampiran 10. Hasil Optimal dengan Solver Peramalan Data Asli Kusen
Jendela**

Bulan	Data Asli	L	T	S	F	PE	APE
Jul-17	68	71,66667	14,33333	-3,66667			
Ag-17	70	80,44593	12,76211	-4,41396	82,33333	-0,17619	17,61905
Sep-17	64	78,10335	8,48905	2,301007	97,54137	-0,52408	52,40839
Okt-17	46	71,31462	4,167026	-8,72228	79,92573	-0,73752	73,75159
Nov-17	77	72,86299	3,426218	6,980994	82,81498	-0,07552	7,55192
Des-17	82	77,81018	3,856495	2,537979	78,62254	0,041189	4,118858
Jan-18	81	81,66667	3,856494	-0,66667	81	-6,1E-08	6,09E-06
Feb-18	52	71,17722	-0,20192	-3,5969	83,8565	-0,61262	61,26249
Mar-18	73	67,23368	-1,26041	9,829899	81,30864	-0,11382	11,3817
Apr-18	64	71,23916	0,229291	-12,9581	52,3066	0,182709	18,27094
Mei-18	78	72,45837	0,509336	4,466527	75,80178	0,028182	2,818229
Jun-18	67	69,67983	-0,42079	0,890951	74,30104	-0,10897	10,89708

Jul-18	61	67,19095	-1,00584	-3,94493	65,59237	-0,07528	7,528477
Ag-18	63	66,7385	-0,84929	-4,33951	61,77115	0,019506	1,950561
Sep-18	72	67,60487	-0,36394	2,531848	68,19021	0,052914	5,291369
Okt-18	81	77,36496	2,50011	-7,3601	58,51865	0,277548	27,75476
Nov-18	62	68,67614	-0,6652	5,475531	86,84606	-0,40074	40,0743
Des-18	54	60,55847	-2,77347	1,535253	70,54892	-0,30646	30,64615
Jan-19	77	66,73831	-0,24061	0,537996	57,11833	0,258204	25,82036
Feb-19	72	70,59534	0,918595	-3,04557	62,90079	0,126378	12,63779
Mar-19	83	72,25976	1,129584	9,930249	81,34384	0,019954	1,995377
Apr-19	66	75,89714	1,839031	-12,6207	60,4312	0,084376	8,437579
Mei-19	59	67,2873	-1,11691	3,060638	82,2027	-0,39327	39,32661
Jun-19	61	63,44078	-1,88911	0,523685	67,06133	-0,09937	9,936614
Jul-19	55	60,37778	-2,2212	-4,10287	57,60675	-0,0474	4,73954
Ag-19	83	71,29853	1,496608	-2,57126	53,81707	0,351602	35,16015
Sep-19	75	72,64789	1,454951	2,512036	75,32698	-0,00436	0,435979
Okt-19	73	76,92067	2,252105	-6,98096	66,74274	0,085716	8,571595
Nov-19	43	60,41729	-3,05375	2,951992	84,64831	-0,96857	96,85653
Des-19	73	63,71374	-1,2573	2,389668	58,89879	0,193167	19,31672
Jan-20	70	65,61125	-0,36482	0,962475	62,99443	0,10008	10,00795
Feb-20	85	75,51357	2,539716	-1,66413	62,20087	0,268225	26,82251
Mar-20	77	73,10707	1,14045	9,264738	87,98354	-0,14264	14,26433
Apr-20	66	76,2169	1,697581	-12,3557	61,6268	0,066261	6,626062
Mei-20	79	77,02503	1,445957	2,940962	80,97512	-0,025	2,500157
Jun-20	53	66,7648	-1,86568	-1,05137	78,99467	-0,49047	49,04655
Jul-20	67	67,69286	-1,07534	-3,72698	60,79625	0,092593	9,259324
Ag-20	61	65,2457	-1,46342	-2,75584	64,04626	-0,04994	4,993862
Sep-20	76	68,15304	-0,22695	3,100119	66,29431	0,127706	12,77064
Okt-20	79	76,05674	2,073179	-5,88699	60,94513	0,228543	22,85427
Nov-20	68	72,23874	0,406588	2,159338	81,08191	-0,19238	19,23811
Des-20	80	74,88122	1,039112	2,690506	75,035	0,062063	6,206253
Jan-21	74	74,62212	0,671852	0,787801	76,88281	-0,03896	3,895685
Feb-21	62	70,0567	-0,80975	-2,3688	73,62984	-0,18758	18,7578
Mar-21	67	64,06289	-2,2763	8,567226	78,51169	-0,17182	17,18163
Apr-21	77	74,20181	1,235916	-10,6853	49,43085	0,358041	35,80409

Mei-21	84	77,96917	1,952053	3,281566	78,37869	0,06692	6,692038
Jun-21	79	79,97984	1,968633	-1,04349	78,86985	0,001647	0,164746

Lampiran 11. Hasil Optimal dengan Solver Peramalan Data Asli Kusen Pintu

Bulan	Data Asli	L	T	S	F	PE	APE
Jul-17	44	41,5	6	2,5			
Ag-17	52	49,60983	6,797328	0,865912	48	0,076923	7,692308
Sep-17	37	44,85207	2,430529	0,495979	58,90716	-0,59209	59,20853
Okt-17	33	41,59524	0,281211	-4,48637	43,7826	-0,32675	32,67454
Nov-17	31	33,23857	-2,98314	4,001917	47,37645	-0,52827	52,82726
Des-17	40	42,51595	1,650247	-11,3736	16,75543	0,581114	58,11142
Jan-18	40	43,8148	1,517453	-3,56094	40,66619	-0,01665	1,665484
Feb-18	36	43,83836	0,952893	-6,75909	38,83226	-0,07867	7,867383
Mar-18	53	43,05526	0,29684	11,19892	56,29126	-0,0621	6,209918
Apr-18	49	43,95757	0,525654	4,605007	47,8521	0,023427	2,342653
Mei-18	42	42,9097	-0,069	0,227101	44,98322	-0,07103	7,102908
Jun-18	38	40,55117	-0,93424	-0,89708	42,3407	-0,11423	11,4229
Jul-18	45	41,13763	-0,35955	2,763737	42,11693	0,064068	6,406826
Ag-18	51	45,71297	1,505403	1,72178	41,64399	0,183451	18,34513
Sep-18	56	51,5887	3,156998	1,253933	47,71435	0,147958	14,7958
Okt-18	45	51,97163	2,108646	-4,96748	50,25933	-0,11687	11,68739
Nov-18	47	48,23489	-0,10039	2,988141	58,08219	-0,23579	23,57913
Des-18	32	45,62335	-1,04938	-11,8092	36,76087	-0,14878	14,87771
Jan-19	38	42,98472	-1,64998	-3,83657	41,01302	-0,07929	7,92901
Feb-19	46	47,3606	0,627262	-5,71401	34,57566	0,248355	24,83552
Mar-19	54	45,25205	-0,40663	10,72445	59,18678	-0,09605	9,605155
Apr-19	46	43,02547	-1,09441	4,289369	49,45043	-0,07501	7,500938
Mei-19	44	42,90255	-0,72727	0,395589	42,15816	0,04186	4,186004
Jun-19	39	40,97362	-1,18139	-1,10548	41,2782	-0,05842	5,841531
Jul-19	36	36,33424	-2,48821	2,164011	42,55597	-0,18211	18,21103
Ag-19	57	45,15059	1,783916	3,682351	35,56781	0,376003	37,60033
Sep-19	42	43,67037	0,550361	0,687827	48,18844	-0,14734	14,73438
Okt-19	41	45,14207	0,898544	-4,80769	39,25325	0,042604	4,260366

Nov-19	48	45,49799	0,693481	2,894033	49,02875	-0,02143	2,143235
Des-19	46	52,3193	3,009257	-10,7464	34,38232	0,252558	25,25583
Jan-20	49	54,01414	2,512524	-4,06453	51,49199	-0,05086	5,08569
Feb-20	51	56,62548	2,549869	-5,69688	50,81265	0,003674	0,367357
Mar-20	46	46,56923	-2,21413	8,538144	69,8998	-0,51956	51,95608
Apr-20	57	48,76229	-0,5486	5,053715	48,64447	0,146588	14,65882
Mei-20	43	45,25503	-1,66671	-0,11754	48,60927	-0,13045	13,04482
Jun-20	46	45,44347	-0,96563	-0,78374	42,48284	0,07646	7,646003
Jul-20	50	46,24912	-0,29624	2,471207	46,64186	0,067163	6,716286
Ag-20	44	42,98054	-1,41952	3,166852	49,63523	-0,12807	12,80734
Sep-20	34	37,2101	-3,06378	-0,06676	42,24884	-0,24261	24,26129
Okt-20	41	40,29719	-0,7393	-3,74093	29,33863	0,284424	28,44237
Nov-20	38	37,20969	-1,62671	2,48678	42,45193	-0,11716	11,71561
Des-20	47	47,27323	2,791168	-8,71893	24,8366	0,471562	47,15618
Jan-21	46	50,06447	2,791194	-4,06452	45,99987	2,83E-06	0,000283
Feb-21	63	61,21122	5,948856	-4,24775	47,15879	0,251448	25,14479
Mar-21	45	50,96808	-0,17028	5,729935	75,69822	-0,68218	68,21827
Apr-21	51	48,23883	-1,13735	4,609909	55,85151	-0,09513	9,512769
Mei-21	46	46,58249	-1,33348	-0,20755	46,98395	-0,02139	2,139022
Jun-21	41	43,42123	-2,02422	-1,10074	44,46527	-0,08452	8,451888

Lampiran 12. Perhitungan Manual Peramalan Jendela dengan Metode *Winters*

$$L_s = \frac{1}{12}(142 + 146 + 135 + 139 + 133 + 140 + 158 + 147 + 114 + 121 + 168 + 194) = 144,75$$

$$T_1, T_2, \dots, T_{12} = 0$$

$$S_1 = Y_1 - L_s = 142 - 144,75 = -2,75$$

$$S_2 = Y_2 - L_s = 146 - 144,75 = 1,25$$

$$S_3 = Y_3 - L_s = 135 - 144,75 = -9,75$$

$$S_4 = Y_4 - L_s = 139 - 144,75 = -5,75$$

$$S_5 = Y_5 - L_s = 133 - 144,75 = -11,75$$

$$S_6 = Y_6 - L_s = 140 - 144,75 = -4,75$$

$$S_7 = Y_7 - L_s = 158 - 144,75 = 13,25$$

$$S_8 = Y_8 - L_s = 147 - 144,75 = 2,25$$

$$S_9 = Y_9 - L_s = 114 - 144,75 = -30,75$$

$$S_{10} = Y_{10} - L_s = 121 - 144,75 = -23,75$$

$$S_{11} = Y_{11} - L_s = 168 - 144,75 = 23,25$$

$$S_{12} = Y_{12} - L_s = 194 - 144,75 = 49,25$$

$$L_{13} = Y_{13} - S_1 = 183 - (-2,75) = 185,75$$

$$T_{13} = L_{13} - Y_{12} - S_{12} = 185,75 - 194 - 49,25 = -57,5$$

$$L_t = \alpha(Y_t - S_{t-m}) + (1 - \alpha)(L_{t-1} + T_{t-1})$$

$$L_{14} = 0,1(187 - 1,25) + (1 - 0,1)(185,75 + (-57,5)) = 134$$

$$L_{15} = 0,1(153 - (-9,75)) + (1 - 0,1)(134 + (-56,925)) = 85,6425$$

⋮

$$L_{60} = 0,1(132 - 84,17144) + (1 - 0,1)(166,9291 + 5,367084) = 159,8494$$

$$T_t = \beta(L_t - L_{t-1}) + (1 - \beta)T_{t-1}$$

$$T_{14} = 0,1(134 - 185,75) + (1 - 0,1)(-57,5) = -56,925$$

$$T_{15} = 0,1(85,6425 - 134) + (1 - 0,1)(-56,925) = -56,0683$$

⋮

$$T_{60} = 0,1(159,8494 - 166,9291) + (1 - 0,1)(5,367048) = 4,122371$$

$$S_t = \gamma(Y_t - L_t) + (1 - \gamma)S_{t-m}$$

$$S_{13} = 0,1(183 - 185,75) + (1 - 0,1)(-2,75) = -2,75$$

$$S_{14} = 0,1(187 - 134) + (1 - 0,1)(1,25) = 6,425$$

$$\vdots$$

$$S_{60} = 0,1(132 - 159,8494) + (1 - 0,1)(84,17144) = 72,96935$$

$$F_{t+1} = L_t + T_t + S_{t-m+1}$$

$$F_{14} = 185,75 + (-57,5) + 1,25 = 129,5$$

$$F_{15} = 134 + (-56,925) + (-9,75) = 67,325$$

$$\vdots$$

$$F_{60} = 166,9291 + 5,367048 + 84,17144 = 256,4676$$

$$MPE = \frac{1}{n} \sum_{t=1}^n \frac{Y_t - \hat{Y}_t}{Y_t}$$

$$MPE = \frac{1}{59} \left[\left(\frac{187 - 129,5}{187} \right) + \left(\frac{153 - 67,325}{153} \right) + \dots + \left(\frac{132 - 256,4676}{132} \right) \right] = 0,84823$$

$$MAPE = \frac{1}{n} \sum_{t=1}^n \frac{|Y_t - \hat{Y}_t|}{Y_t} \times 100\%$$

$$MAPE = \frac{1}{59} \left[\left(\frac{|187 - 129,5|}{187} \times 100\% \right) + \left(\frac{|153 - 67,325|}{153} \times 100\% \right) + \dots + \left(\frac{|132 - 256,4676|}{132} \times 100\% \right) \right] = 97,99761\%$$

Kemudian dilakukan pengoptimalan dengan solver pada Ms. Excel. Pada bagian ini tidak dijelaskan dalam penelitian karena pada bagian ini hanya memfokuskan pada metode *winters*. Selanjutnya dicari peramalan untuk 12 bulan ke depan.

$$F_{t+k} = L_t + k \times T_t + S_{t-M+k}$$


$$F_{61} = 159,8494 + 1 \times 4,122371 + 38,34449 = 202,3163$$

$$F_{62} = 159,8494 + 2 \times 4,122371 + 50,04618 = 218,1403$$

$$\vdots$$

$$F_{72} = 159,8494 + 12 \times 4,122371 + 72,96935 = 282,2872$$

Lampiran 13. Surat Izin Riset

**KEMENTERIAN AGAMA REPUBLIK INDONESIA
UNIVERSITAS ISLAM NEGERI SUMATERA UTARA MEDAN
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Telp. (061) 6615683-6622925 Fax. 6615683**

Nomor : B.445/ST.I/ST.V.2/TL.00/6/2021 03 Juni 2021
Lampiran : -
Hal : Izin Riset

Yth. Bapak/Ibu Kepala UD. Podomoro Asahan

Assalamulaikum Wr. Wb.

Dengan Hormat, diberitahukan bahwa untuk mencapai gelar Sarjana Strata Satu (S1) bagi Mahasiswa Fakultas Sains dan Teknologi adalah menyusun Skripsi (Karya Ilmiah), kami tugaskan mahasiswa:


Nama : Ledy Frischa
NIM : 0703162003
Tempat/Tanggal Lahir : Kab. Rokan Hilir Riau, 23 Juli 1998
Program Studi : Matematika
Semester : XI (Sebelas)
Alamat : SUKA RUKUN, KECAMATAN BAGAN SINEMBAH Kab. Rokan Hilir Riau 28992 Kelurahan Bagan Batu Kecamatan Bagan Sinembah

untuk hal dimaksud kami mohon memberikan Izin dan bantuannya terhadap pelaksanaan Riset di Jln. Kenanga LK. VIII Sirantau Datuk Bandar Kota Tanjung Balai Sumatera Utara., guna memperoleh informasi/keterangan dan data-data yang berhubungan dengan Skripsi (Karya Ilmiah) yang berjudul:

Komparasi Metode ARIMA dan Winters Terhadap Peramalan Penjualan Perusahaan Furnitur pada UD. Podomoro Asahan

Demikian kami sampaikan, atas bantuan dan kerjasamanya diucapkan terima kasih.

Medan, 03 Juni 2021
a.n. DEKAN
Wakil Dekan Bidang Akademik dan Kelembagaan


Digitally Signed
Dr. Abdul Halim Dawlay, ST., M.Si
NIP. 198111062005011003

Lampiran 14. Balasan Surat Izin Riset

UD. Podomoro Asahan
Jl. Kenanga Lk. VIII Sirantau Datuk Bandar Kota Tanjung Balai Sumatera Utara
No. Hp : 085266907176

Yang bertanda tangan dibawah ini Pemilik UD. Podomoro Asahan :

Nama : **SAMSUL HADI**
Jabatan : Pemilik UD. Podomoro Asahan

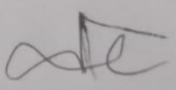
Menunjuk Surat Pemilik Usaha UD. Podomoro Asahan pada tanggal 21 Mei 2021 Perihal Izin Penelitian, maka dengan ini menerangkan bahwa :

Nama : **LEDYA FRISCHA**
NIM/Jurusan : 0703162003/Matematika
Instansi/Pekerjaan : Mahasiswa (SI)
Alamat : Jl. Jend. Ahmad Yani, Bagan Batu, Rokan Hilir
Judul : **"Komparasi Metode ARIMA dan *Winters* Terhadap Peramalan Penjualan Perusahaan Furnitur pada UD. Podomoro Asahan"**

Yang bersangkutan benar telah melakukan penelitian di UD. Podomoro Asahan mulai tanggal 21 Mei 2021 sampai dengan 20 Juni 2021.

Demikian surat keterangan ini untuk dapat dipergunakan sebagaimana mestinya.

Medan, 20 Juni 2021

Pemilik Usaha,

SAMSUL HADI

**Lampiran 15. Gambar Jendela, Pintu, dan Kusen yang Dijual di UD.
Podomoro**



