Appendix III

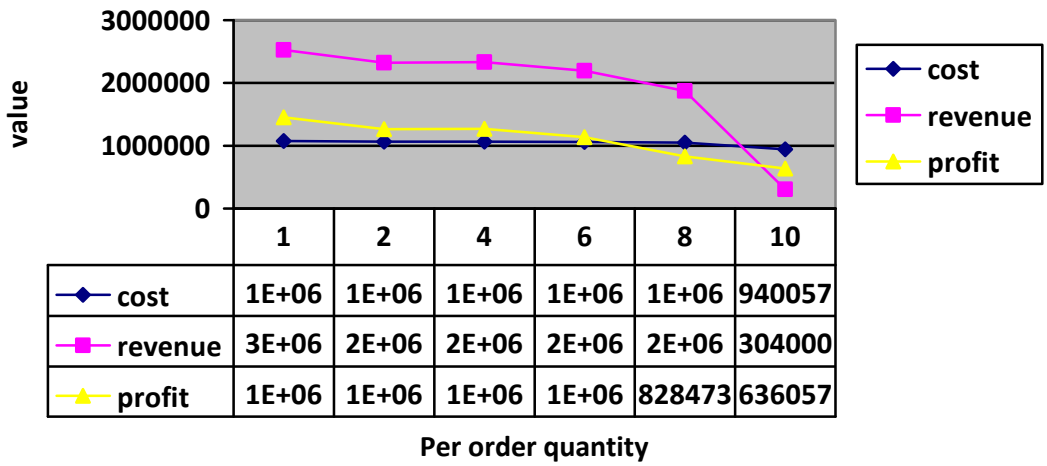
Simulation results in chapter 9

1) Scenario with purchase delays

Simulation result for each product family namely MM (mostly make) and MA (mostly assemble) air-conditioner runs under a Case 1 EoSS condition. Simulation input data is summarised in table 1.

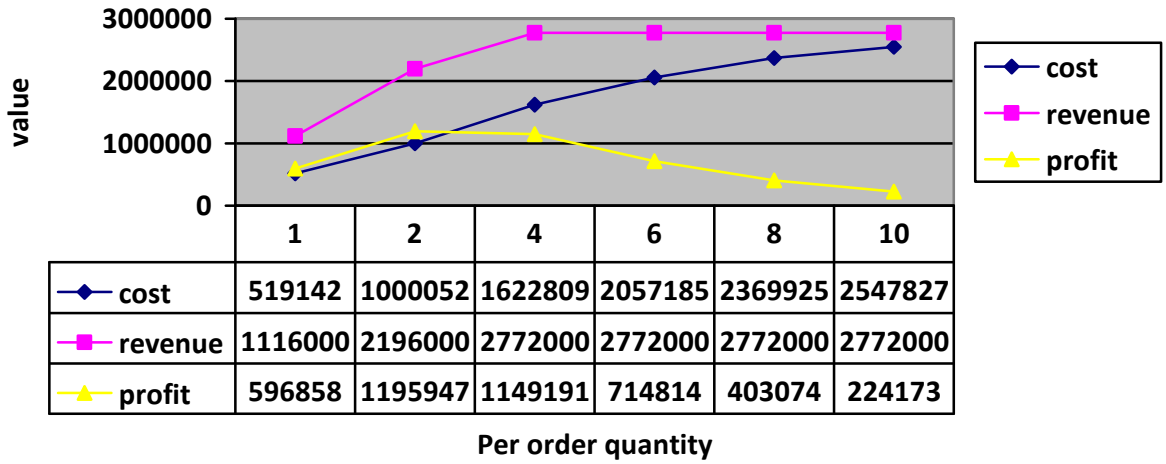
Table 1 summary of simulation runs (purchase delay scenarios)

Simulation runs	Order frequency	Order size
Standard MM (fig 1)	17 days	1 to 10
Standard MA (fig 2)	17 days	1 to 10
Customised MM (fig 3)	17 days	1 to 10
Customised MA (fig 4)	17 days	1 to 10
Special MM (fig 5)	17 days	1 to 10
Special MA (fig 6)	17 days	1 to 10



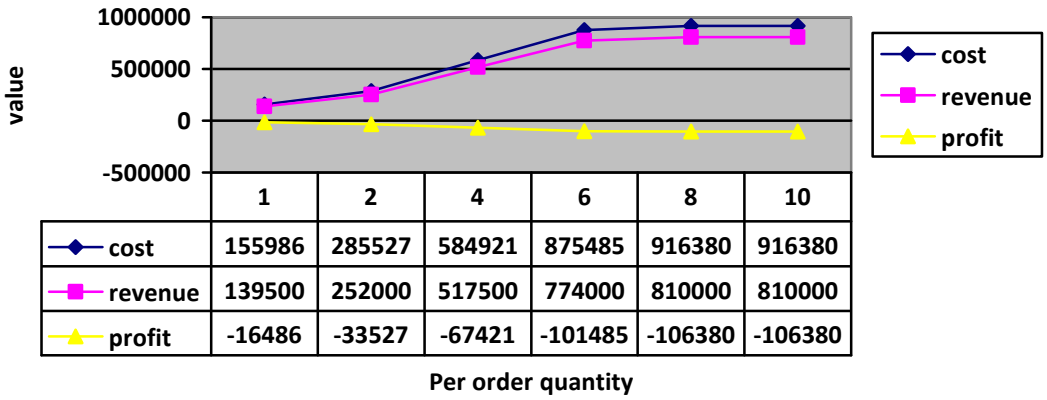
	1	2	4	6	8	10
cost	1E+06	1E+06	1E+06	1E+06	1E+06	940057
revenue	3E+06	2E+06	2E+06	2E+06	2E+06	304000
profit	1E+06	1E+06	1E+06	1E+06	828473	636057

Figure 1 standard MM trials results (purchase delay)



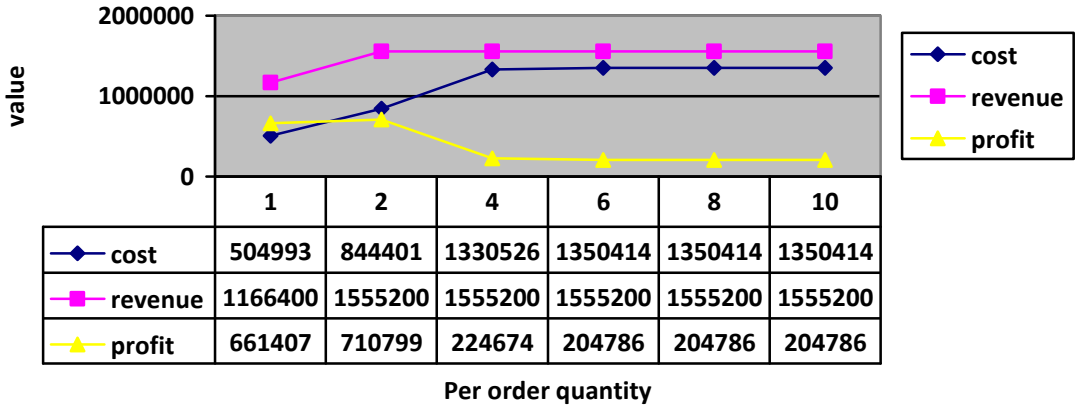
	1	2	4	6	8	10
cost	519142	1000052	1622809	2057185	2369925	2547827
revenue	1116000	2196000	2772000	2772000	2772000	2772000
profit	596858	1195947	1149191	714814	403074	224173

Figure 2 standard MA trials results (purchase delay)



	1	2	4	6	8	10
cost	155986	285527	584921	875485	916380	916380
revenue	139500	252000	517500	774000	810000	810000
profit	-16486	-33527	-67421	-101485	-106380	-106380

Figure 3 Customised MM trials results (purchase delay)



	1	2	4	6	8	10
cost	504993	844401	1330526	1350414	1350414	1350414
revenue	1166400	1555200	1555200	1555200	1555200	1555200
profit	661407	710799	224674	204786	204786	204786

Figure 4 Customised MA trials results (purchase delay)

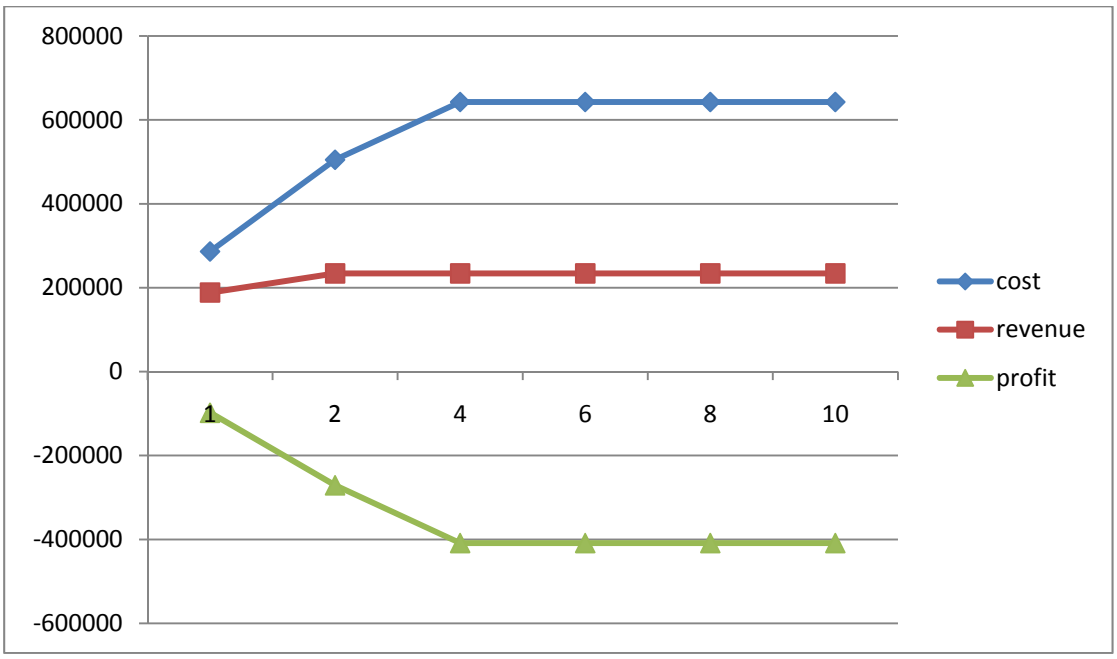


Figure 5 Special MM trials results (purchase delay)

	1	2	4	6	8	10
cost	751100	1092201	1092357	1092357	1092357	1092357
revenue	2304000	2592000	2592000	2592000	2592000	2592000
profit	1552900	1499799	1499642	1499642	1499642	1499642

Figure 6 Special MA trials results (purchase delay)

2) Scenario with rework scenarios

Simulation results for each product family, Simulation input data is summarised in table 2.

Table 1 summary of simulation runs (rework scenarios)

Simulation runs	Order frequency	Order size
Standard MM (fig 7)	17 days	1 to 10
Standard MA (fig 8)	17 days	1 to 10
Customised MM (fig 9)	17 days	1 to 10
Customised MA (fig 10)	17 days	1 to 10
Special MM (fig 11)	17 days	1 to 10
Special MA (fig 12)	17 days	1 to 10

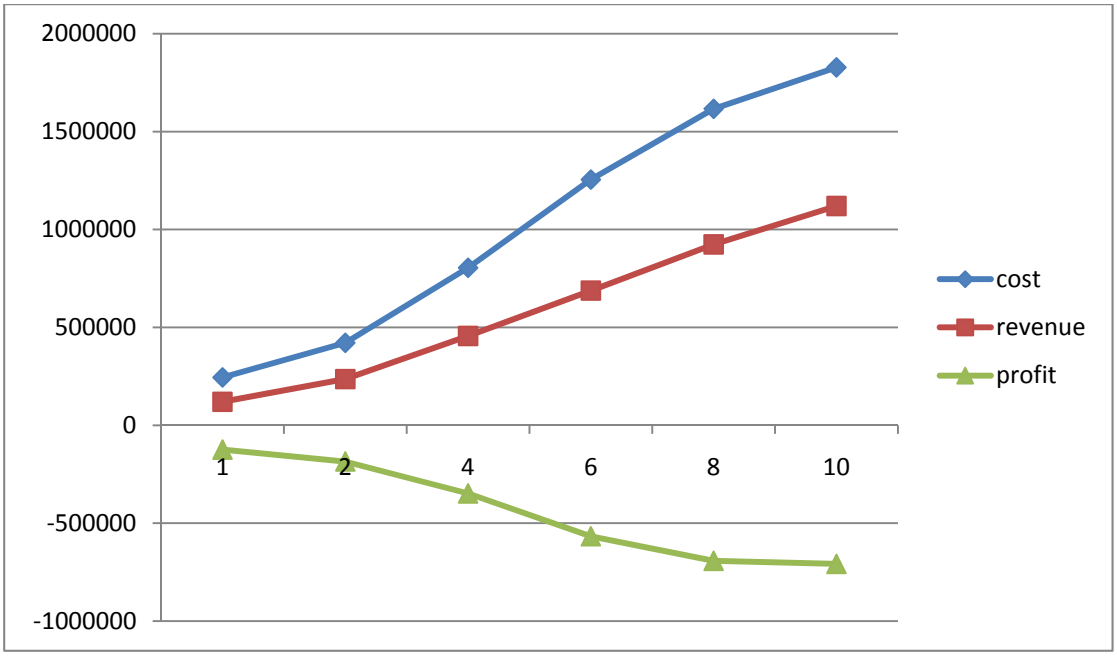


Figure 7 standard MM trials results (rework)

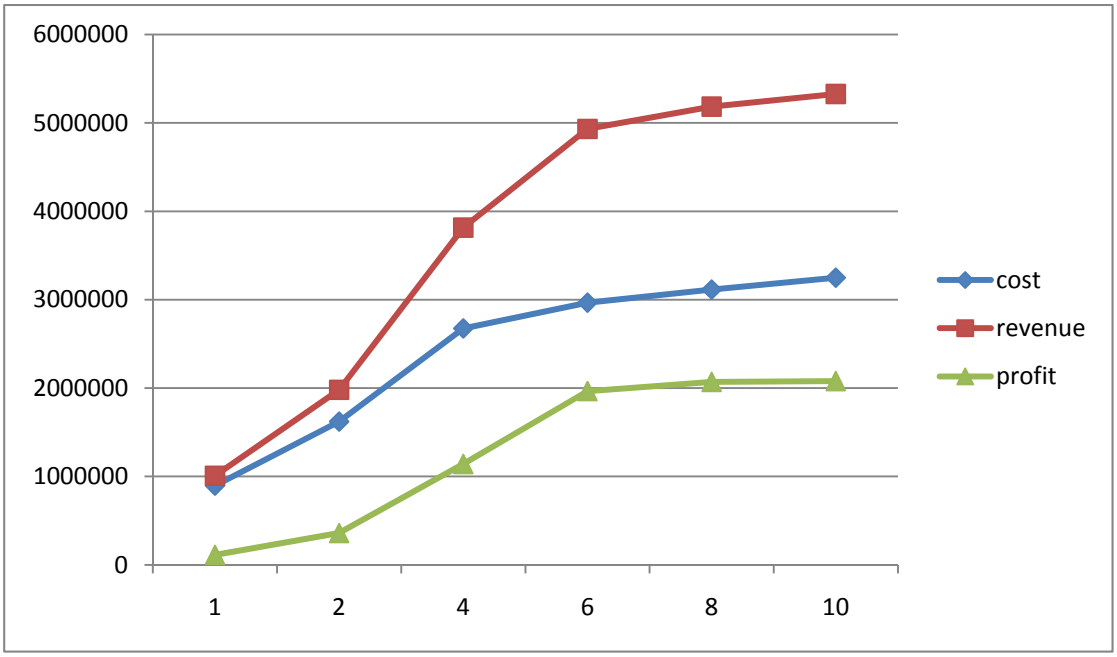
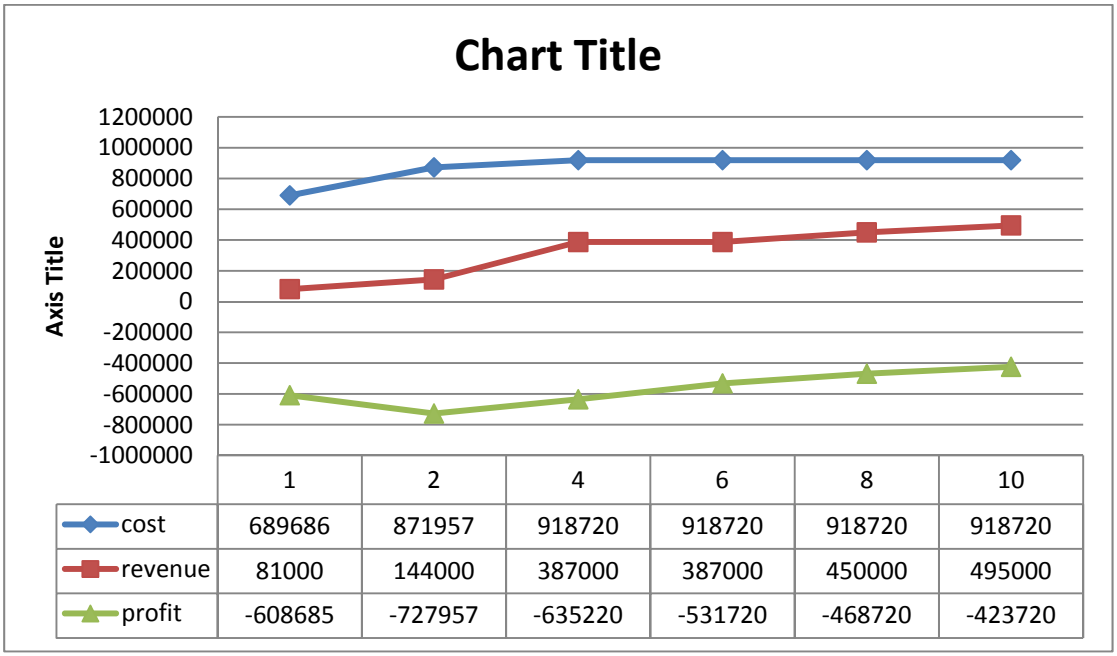
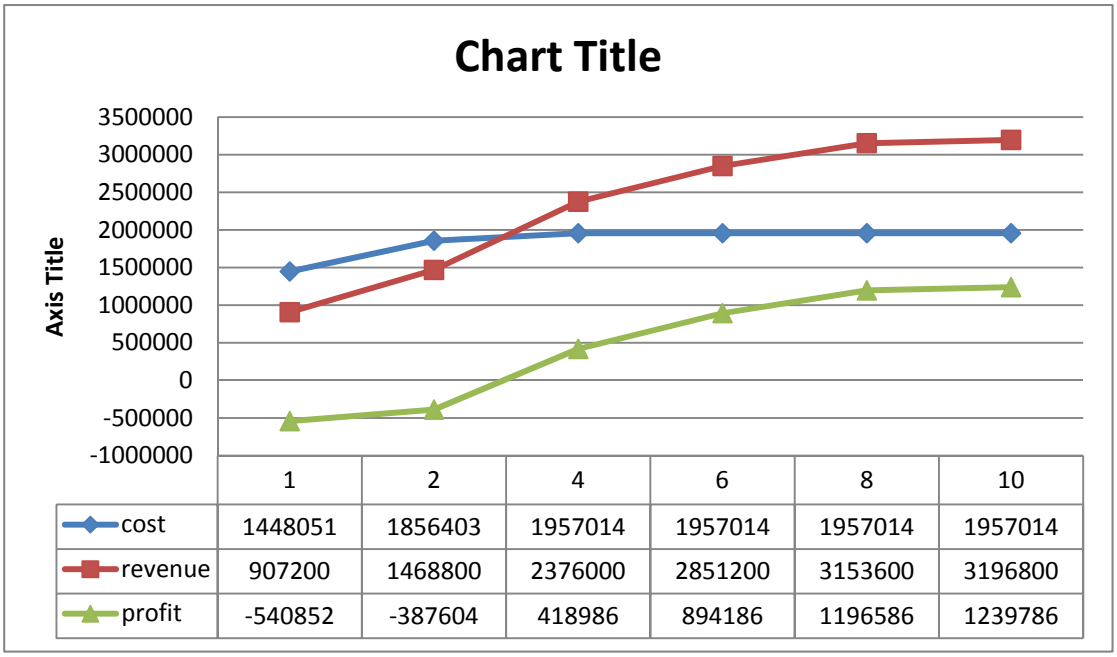


Figure 8 standard MA trials results (rework)



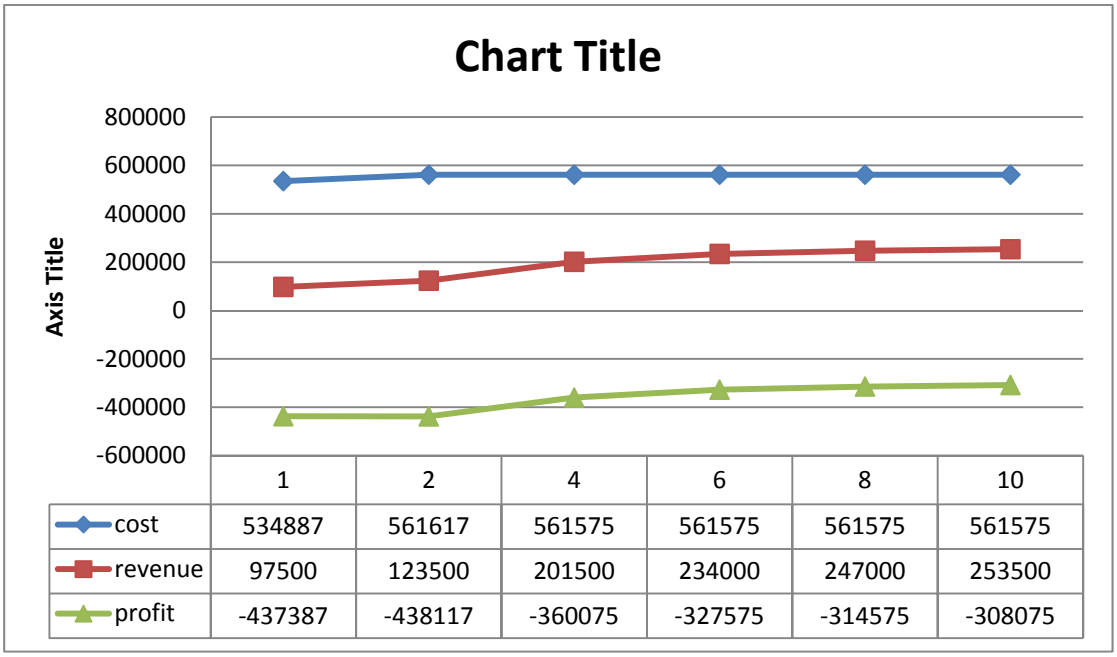
	1	2	4	6	8	10
cost	689686	871957	918720	918720	918720	918720
revenue	81000	144000	387000	387000	450000	495000
profit	-608685	-727957	-635220	-531720	-468720	-423720

Figure 9 Customised MM trials results (rework)



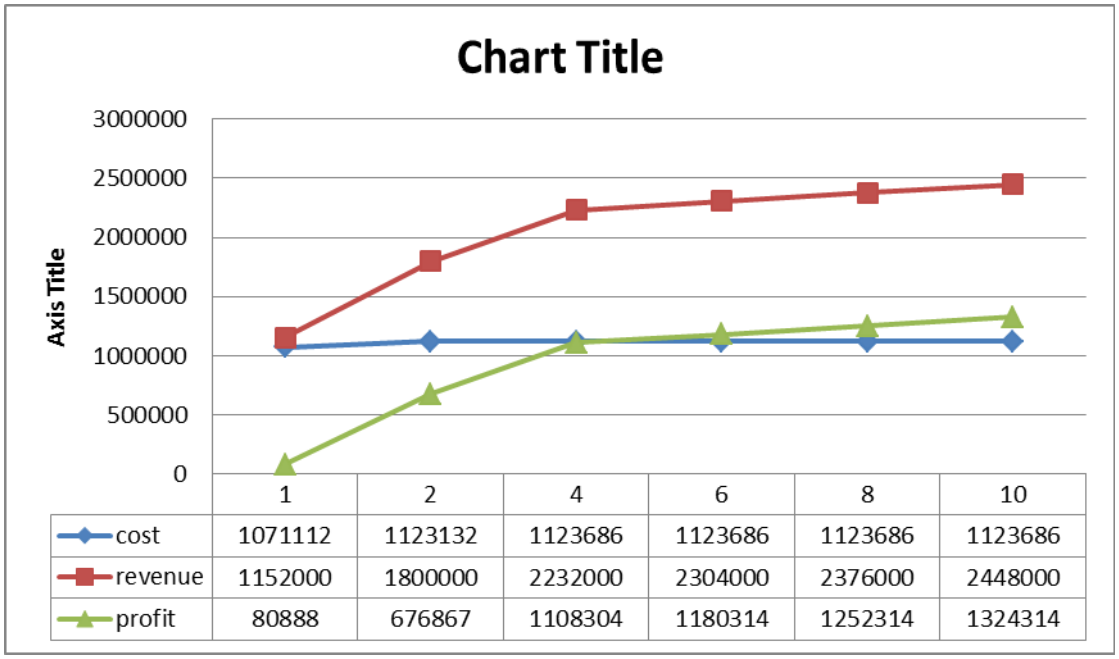
	1	2	4	6	8	10
cost	1448051	1856403	1957014	1957014	1957014	1957014
revenue	907200	1468800	2376000	2851200	3153600	3196800
profit	-540852	-387604	418986	894186	1196586	1239786

Figure 10 Customised MA trials results (rework)



	1	2	4	6	8	10
cost	534887	561617	561575	561575	561575	561575
revenue	97500	123500	201500	234000	247000	253500
profit	-437387	-438117	-360075	-327575	-314575	-308075

Figure 11 Special MM trials results (rework)



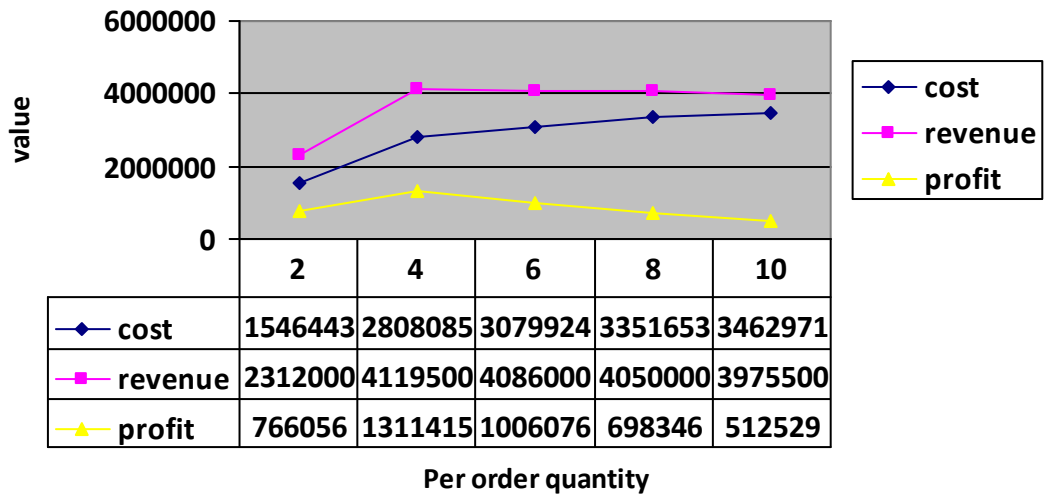
	1	2	4	6	8	10
cost	1071112	1123132	1123686	1123686	1123686	1123686
revenue	1152000	1800000	2232000	2304000	2376000	2448000
profit	80888	676867	1108304	1180314	1252314	1324314

Figure 12 Special MA trials results (rework)

3) Example of simulation results for case 3 EoSS system

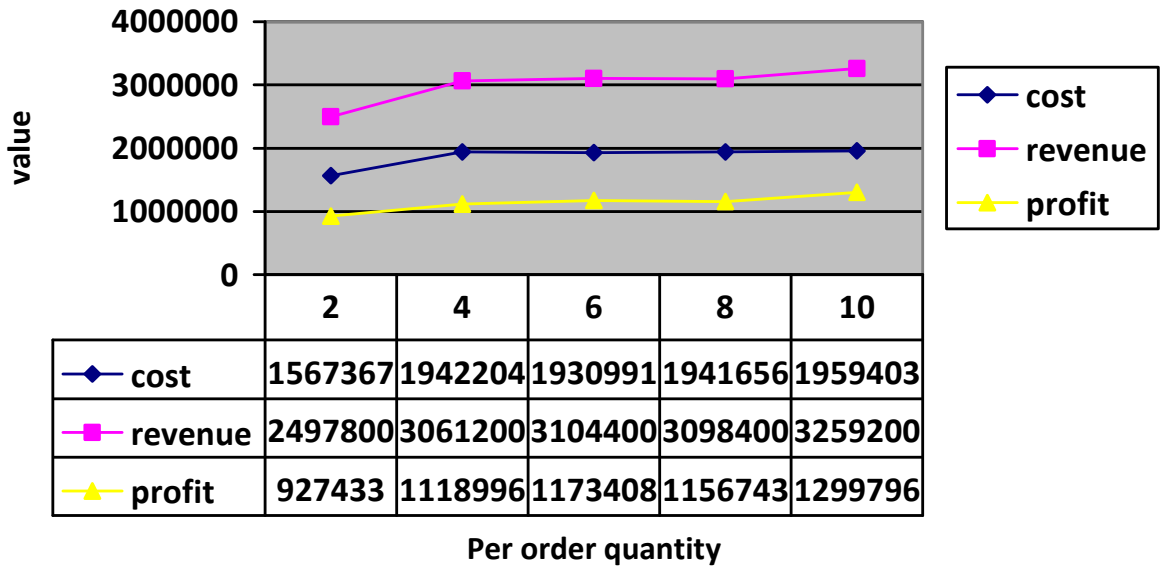
In order to show the modelling method can be used for specific mix production decision making, the results in below illustrated the systems run under case 3 EoSS condition.

Simulation runs	Order frequency	Order size
Standard MM & MA (fig 13)	17 days	2 to 10
Customised MM &MA (fig 14)	17 days	2 to 10
Special MM & MA (fig 15)	17 days	2 to 10



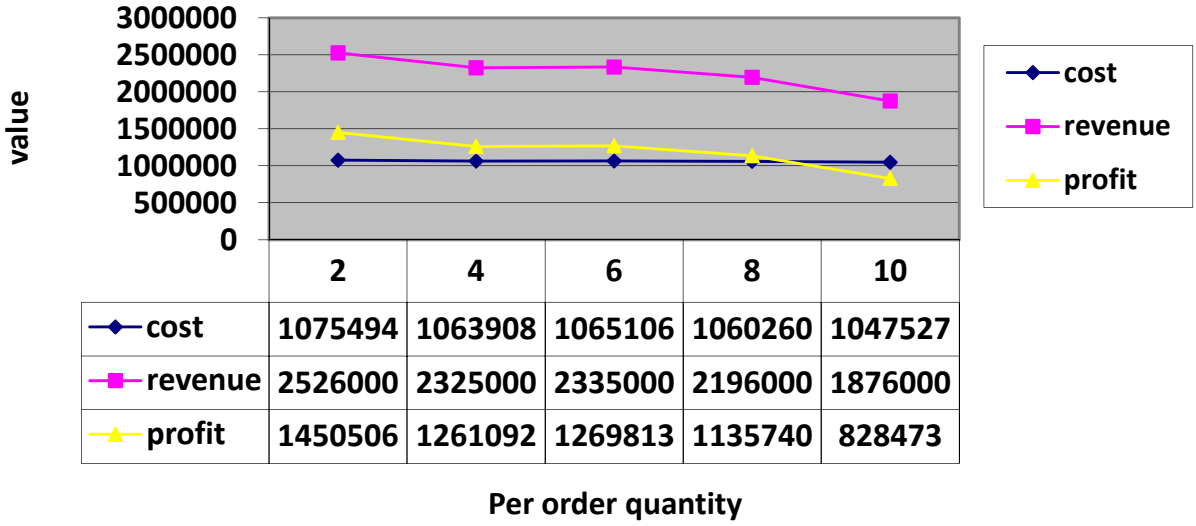
	2	4	6	8	10
cost	1546443	2808085	3079924	3351653	3462971
revenue	2312000	4119500	4086000	4050000	3975500
profit	766056	1311415	1006076	698346	512529

Figure 13 standard MM & MA trials results



	2	4	6	8	10
cost	1567367	1942204	1930991	1941656	1959403
revenue	2497800	3061200	3104400	3098400	3259200
profit	927433	1118996	1173408	1156743	1299796

Figure 14 customised MM & MA trials results



	2	4	6	8	10
cost	1075494	1063908	1065106	1060260	1047527
revenue	2526000	2325000	2335000	2196000	1876000
profit	1450506	1261092	1269813	1135740	828473

Figure 15 special MM & MA trials results