











### Convergence Diversity

ODV EV technique produces low convergence when compare to other existing techniques. Hence our proposed technique is proven to be efficient. To overcome the premature convergence problem convergence diversity is an important factor which illustrates the different range between the individuals. This shown in Table 6.5 and ODV- EV is efficient as per computational results.

Table 4. Experiment results w.r.t Convergence Diversity (%)

SL. NO	I	S	M	T	O
1	p01	0.468	0.383	1.421	0.468
2	p02	1.554	0.118	4.139	1.552
3	p03	1.751	1.609	2.716	1.751
4	p04	3.051	1.317	0.542	2.152
5	p07	0.841	0.682	0.657	0.841
6	p09	-0.002	0.953	0.598	0.228
7	p10	0.021	0.604	0.356	0.111
8	P11	0.028	0.707	0.654	0.085
9	p12	0.003	0.429	0.561	0.002
10	P13	0.153	5.108	1.299	0.077
11	P14	0.042	1.403	1.339	0.074
12	P16	0.034	-0.507	0.842	0.036
13	P17	0.088	1.670	1.504	0.255
14	P19	0.080	0.828	0.635	0.028
15	P20	0.176	0.181	0.519	0.024
16	pr10	0.391	0.227	0.631	0.071

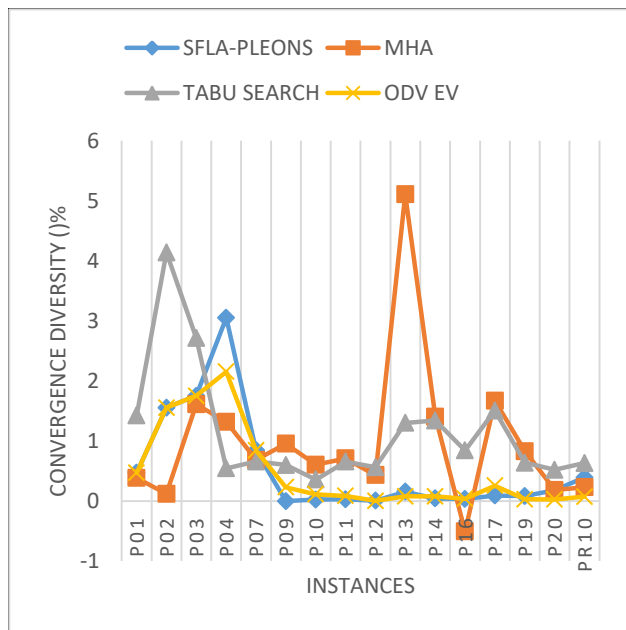


Figure 5. Performance of different techniques w.r.t Convergence diversity (%)

### 6. Conclusion and Future Work

Enhanced Ordered Distance Vector (ODV) based Genetic Algorithm (GA) is proposed to solve Multi-Depot Vehicle Routing Problem (MDVRP). For generating an initial population with individual diversity, randomness and quality, the ODV based population seeding technique is an active and recent population initialization method for GA and ODV based GA improves the fitness of the solution at the time of population initialization itself. The performance of the proposed technique is compared with state of the art methods and the experimental analysis is done through based performance factors such as convergence rate, error rate and convergence diversity. The values obtain from various instances shows that our proposed ODV EV population seeding technique based genetic algorithm solves MDVRP effectively than other methods. In future these ODV EV work can be extended to solve the others variants of vehicle routing problem in efficient manner.

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