A series of new mixed ligand complexes of cobalt(II), nickel(II), copper(II) and cadmium(II) have been synthesized with 3-benzyl-1H -4-[(2-methoxybenzylidene)amino]-1,2,4-triazole-5-thione (MBT), 3-benzyl-1H -4-[(4-chlorobenzylidene)amino]-1,2,4-triazole-5-thione (CBT), 3-benzyl-1H -4-[(4-nitrobenzylidene)amino]-1,2,4-triazole-5-thione (NBT) and dehydroacetic acid sodium salt (Nadha). The mixed ligand complexes have been characterized by elemental analyses, spectroscopic spectral measurements (IR, UV – Vis.), molar conductance, magnetic measurements and thermal studies. The stoichiometry of these complexes is M:L1:L2 = 1:1:1, 1:2:1 or 1:1:2 where L1=NBT, CBT and MBT and L2=Nadha. Tetrahedral structure was proposed for all Cd(II) mixed ligand complexes and Cu(II) mixed ligand complex with NBT while octahedral structure was proposed for Cu(II) mixed ligand complexes with CBT and MBT ligands as well as all Ni(II) and Co(II) mixed ligand complexes. The thermal decomposition study of the prepared complexes was monitored by TG, DTG and DTA analysis in dynamic nitrogen atmosphere. TG, DTG and DTA studies confirmed the chemical formulations of these complexes. The kinetic parameters were determined from the thermal decomposition data using the graphical methods of Coats-Redfern and Horwitz-Metzger. Thermodynamic parameters were calculated using standard relations. In case of Cu(II), Co(II) and Cd(II), MBT forms the most stable complex while CBT rather than MBT or NBT forms the most stable Ni(II) complex.