Natural resources have being polluted by variety of heavy metals due to urbanization, industrialization and excessive fertilizer and pesticide usage. Since heavy metals accumulate in soils, their treats to ecosystem and human health became more serious to the time. On the other hand, at least two or more heavy metals are co-added to the soil environment. Therefore, it should be known competitive adsorption mechanism of heavy metals in soils. Their relations with soil properties can help to develop an efficient way of tackling undesirable effects of such pollution. For this aim, competitive adsorption of Cd, Cu, Ni and Zn in 36 soil samples taken from 7 different cities in Turkey with differing physic-chemical properties was investigated in this study. Scope of 1 g soil samples were equilibrated with 25 mL solutions containing different equivalent amounts of Cd, Cu, Ni, and Zn (10^{-4}, 2.10^{-4}, 4.10^{-4}, 6.10^{-4}, 1.10^{-3}, 2.10^{-3} and 8.10^{-3} mole L^{-1}) at 25±2°C for 24 h by using batch sorption technique. After equilibration Cd, Cu, Ni and Zn contents of liquid phase were determined. The conformation of the data to modified Freundlich and Langmuir models were tested by regression analysis. Results showed that both adsorption isotherms can be successfully used to describe simultaneous adsorption of the heavy metals in all soils except for Cu adsorption. Correlation analysis was made between soil physico-chemical characteristics and the parameters of the adsorption isotherms. Freundlich Kd parameters of Zn, Ni and Cd had significant negative correlation coefficients with soil pH (p<0.01). A significant correlation was also found between Kd parameters of Zn and Cd and carbonate content of soils. Consequently, the selectivity order of the heavy metal adsorption was found to be related to physico-chemical characteristics of soils and chemical properties of the adsorbed elements.