

Optimization of ATM's filling-in with cash

Company: Credit Agricole Bank Serbia

Problem statement for 99th European Study Group with Industry

Credit Agricole Bank Serbia joint stock company Novi Sad operates on the whole territory of Serbia and has network containing 145 ATMs, out of which 65 ATMs are outside of the branches on independent locations. The Bank supplies ATMs with cash, per need, in order to enable clients, both internal and external, cash withdrawals per principle 24x7.

The problem that the Bank faces is optimization of costs for cash and it has 3 basic parts: cost for unwithdrawn cash in the ATM itself (problem of cash freezing), cost for transport from the nearest point (branch) to the ATM and cost for insurance of the cash in the ATM. The bank makes effort to establish optimal plan of filling-in for each ATM. If ATMs are often filled-in the costs of cash freezing are lower and if they are rarely filled-in costs for cash freezing are higher. Costs for insurance are proportional depending on amount of money in ATM. In order to decrease costs for filling-in, Bank always organizes cash transport for multiple subjects in the neighbourhood, therefore the transport is done in the loop (for 3-4 subjects) and not as star (for each subject separately). The Bank uses an application which proposes the time and the amount of filling-in for each ATM based on historical data.

In order to minimize the total costs, the Bank would like to have an optimal balance of costs i.e. the frequency of ATM's filling-in to be in function of the needs with minimal cash freezing and of course, to avoid ATM to be out of cash especially in critic periods (like 31.12, Christmas holidays..)