### 3.6 Aspiration Criteria

The most common interpretation of the aspiration criteria, as described in the introduction of the TS framework, must use the cost function $f$ to decide, whether an improvement of the best solution obtained so far in a given TS iteration is achievable. Since in our application, for a given intermediate result $\mathcal{B}$ of a TS iteration, this would imply calculating $f(m(\mathcal{B}))$ for all $m \in M(\mathcal{B})$, that is, coloring the induced ensemble graphs for all $m(\mathcal{B})$, this is not a managable way in our case. Instead, and to keep things simple, we reformulate the aspiration criteria, ignoring a tabu on any move $m = (v, u, z, s) \in M(\mathcal{B})$ if $z \neq |\mathcal{B}_v| + 1$ and if $d(m) > 0$ (implying $b_1(m) > 0$). In addition, to prevent the emergence of loops, we must demand that the service $s$ of the move $m$ has not previously been removed from $B_z$, for then it would return to its origin, ignoring the tabu set to prevent situations of this kind.

### 3.7 Algorithmic Description

The following program code describes the adaption of TS to the EPP:

```
Choose 𝓑₀ ∈ 𝔹;                  // Choose initial value.
f̄ := f(𝓑₀);                     // Remember best result so far.
i := 0;                         // Counter for the TS iteration steps.
TL := ∅;                        // Initialize tabu list.
WHILE (termination condition not fulfilled) DO
BEGIN
   // Be aware that all tabued moves of K₁(𝓑ᵢ) fulfill the aspiration criteria,
   // so we do not remove any tabued moves.
   K₁(𝓑ᵢ) := {m = (v,u,z,s) ∈ M(𝓑ᵢ) | (m ∉ TL ∨ z ≠ |𝓑ᵥ| + 1)  ∧  d(m) > 0};
   K₂(𝓑ᵢ) := {m ∈ M(𝓑ᵢ) | b₂(m) > 0} \ TL;
   K₃(𝓑ᵢ) := {m ∈ M(𝓑ᵢ) | b₃(m) > 0} \ TL;
   K₄(𝓑ᵢ) := M(𝓑ᵢ) \ TL;
   IF (Kⱼ(𝓑ᵢ) = ∅  ∀j ∈ {1,...,4}) THEN error handling;
   Choose smallest j₀ ∈ {1,...,4} such that Kⱼ₀(𝓑ᵢ) ≠ ∅;
   Choose m₀ ∈ Kⱼ₀(𝓑ᵢ) such that for all m ∈ Kⱼ₀(𝓑ᵢ) :  m ◁ m₀  ∨  m ≡ m₀;
   𝓑ᵢ₊₁ := m₀(𝓑ᵢ);
   IF (f(𝓑ᵢ₊₁) < f̄) THEN f̄ := f(𝓑ᵢ₊₁);
   i := i + 1;
   Actualize tabu list TL;
END;   // of WHILE
```

Remarks:

1. $K_j(\mathcal{B})$, $j = 1, \dots, 4$, is a system of so called candidate lists. In our algorithmic context, we have a priority level set on the candidate lists such that the candidate list $K_j(\mathcal{B})$ is of higher priority than all the candidate lists $K_{j+1}(\mathcal{B}), \dots, K_4(\mathcal{B})$, $j = 1, \dots, 3$. Each candidate list $K_j(\mathcal{B})$, $j = 1, \dots, 4$, consists of the moves $m \in M(\mathcal{B})$ relevant for the priority level it represents.