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DAFTAR LAMPIRAN

Lampiran 1. Implementasi Metode AHP

```
class AHP
{
    public $data; // matriks perbandingan AHP
    public $baris_total; // baris total dari matriks perbandingan
AHP
    public $normal; // hasil normalisasi matriks AHP
    public $prioritas; //hasil rata-rata normal per baris
    public $cm; // consistency measure
    public $ci; // consistency index
    public $ri; // ratio index
    public $cr; // consistency ratio
    public $konsisten; // konsisten atau tidak konsisten

    /**
     * Konstruktor
     *
     * @param array $data matriks perbandingan ahp
     */
    function __construct($data)
    {
        /** mengisi data sesuai inputan user */
        $this->data = $data;
        /**
         * memanggil function pada class AHP
         */
        $this->baris_total();
        $this->normal();
        $this->prioritas();
        $this->cm();

        /** Ratio index berdasarkan jumlah data */
        $nRI = array(
            1 => 0,
            2 => 0,
            3 => 0.58,
            4 => 0.9,
            5 => 1.12,
            6 => 1.24,
            7 => 1.32,
```

```
            8 => 1.41,
            9 => 1.46,
            10 => 1.49,
            11 => 1.51,
            12 => 1.48,
            13 => 1.56,
            14 => 1.57,
            15 => 1.59
        );
        /** menghitung CI */
        $this->ci = count($this->cm) == 0 ? 0 : ((array_sum($this-
>cm) / count($this->cm)) - count($this->cm)) / (count($this->cm) -
1);
        /** mengambil nilai RI */
        $this->ri = isset($nRI[count($this->data)]) ?
$nRI[count($this->data)] : 0;
        /** menghitung CI */
        $this->cr = $this->ri == 0 ? 0 : $this->ci / $this->ri;
        /**menentukan konsistensi */
        $this->konsistensi = $this->cr <= 0.1 ? 'Konsisten' : 'Tidak
Konsisten';
    }
    /**
     * Menghitung baris total matriks AHP
     */
    function baris_total()
    {
        $this->baris_total = array();
        foreach ($this->data as $key => $val) { // perulangan baris
data
            foreach ($val as $k => $v) { // perulangan kolom data
                if (!isset($this->baris_total[$k]))
                    $this->baris_total[$k] = 0; // mengatur nilai
awal baris 0
                $this->baris_total[$k] += $v; //menambahkan nilai
baris sesuai kolom
            }
        }
    }
    /**
     * Menghitung normalisasi matriks AHP
     */
    function normal()
```

```
    {
        $this->normal = array();
        foreach ($this->data as $key => $val) {
            foreach ($val as $k => $v) {
                /** normalisasi didapat dari nilai matriks AHP
dibagi baris total */
                $this->normal[$key][$k] = $v / $this-
>baris_total[$k];
            }
        }
    }
    /**
     * Menghitung bobot prioritas
     */
    function prioritas()
    {
        $this->prioritas = array();
        foreach ($this->normal as $key => $val) {
            /** prioritas didapat dari merata-ratakan matriks normal
per baris */
            $this->prioritas[$key] = array_sum($val) / count($val);
        }
    }
    /**
     * Menghitung consistency measure
     */
    function cm()
    {
        $this->cm = array();
        foreach ($this->data as $key => $val) {
            foreach ($val as $k => $v) {
                if (!isset($this->cm[$key]))
                    $this->cm[$key] = 0;

                /** cm didapat setiap baris matriks AHP dengan kolom
prioritas */
                $this->cm[$key] += $v * $this->prioritas[$k];
            }
            /** kemudian membagi hasilnya dengan prioritas beris
tersebut */
            $this->cm[$key] /= $this->prioritas[$key];
```

```
        }
    }
}

function get_nilai_option($selected = '')
{
    $nilai = array(
        '1' => 'Sama penting dengan',
        '2' => 'Mendekati sedikit lebih penting dari',
        '3' => 'Sedikit lebih penting dari',
        '4' => 'Mendekati lebih penting dari',
        '5' => 'Lebih penting dari',
        '6' => 'Mendekati sangat penting dari',
        '7' => 'Sangat penting dari',
        '8' => 'Mendekati mutlak dari',
        '9' => 'Mutlak sangat penting dari',
    );
    $a = '';
    foreach ($nilai as $key => $value) {
        if ($selected == $key)
            $a .= "<option value='$key' selected>$key -
$value</option>";
        else
            $a .= "<option value='$key'>$key - $value</option>";
    }
    return $a;
}
```

Lampiran 2. Implementasi Metode TOPSIS

```
class TOPSIS
{
    public $rel_alternatif;
    public $bobot;
    public $atribut;
    public $bobot_normal;
    public $kuadrat;
    public $kuadrat_total;
    public $akar;
    public $normal;
    public $terbobot;
    public $solusi_ideal;
    public $matriks_solusi;
    public $jarak_solusi;
    public $pref;

    function __construct($rel_alternatif, $bobot, $atribut)
    {
        $this->rel_alternatif = $rel_alternatif;
        $this->bobot = $bobot;
        $this->atribut = $atribut;
        $this->bobot_normal();
        $this->normal();
        $this->terbobot();
        $this->solusi_ideal();
        $this->jarak_solusi();
        $this->pref();
        $this->rank = $this->get_rank($this->pref);
    }
    function get_rank($array)
    {
        $data = $array;
        arsort($data);
        $no = 1;
        $new = array();
        foreach ($data as $key => $value) {
            $new[$key] = $no++;
        }
        return $new;
    }
    function bobot_normal()
    {
```

```
        $this->bobot_normal = array();
        foreach ($this->bobot as $key => $val) {
            $this->bobot_normal[$key] = $val / array_sum($this-
>bobot);
        }
    }
    function normal()
    {
        foreach ($this->rel_alternatif as $key => $val) {
            foreach ($val as $k => $v) {
                $this->kuadrat[$key][$k] = $v * $v;
            }
        }
        $this->kuadrat_total = array();
        foreach ($this->kuadrat as $key => $val) {
            foreach ($val as $k => $v) {
                if (!isset($this->kuadrat_total[$k]))
                    $this->kuadrat_total[$k] = 0;
                $this->kuadrat_total[$k] += $v;
            }
        }
        foreach ($this->kuadrat_total as $key => $val) {
            $this->akar[$key] = sqrt($val);
        }
        foreach ($this->rel_alternatif as $key => $val) {
            foreach ($val as $k => $v) {
                $this->normal[$key][$k] = $v / $this->akar[$k];
            }
        }
    }
    function terbobot()
    {
        foreach ($this->normal as $key => $val) {
            foreach ($val as $k => $v) {
                $this->terbobot[$key][$k] = $v * $this-
>bobot_normal[$k];
            }
        }
    }
    function solusi_ideal()
    {
        $temp = array();
        foreach ($this->terbobot as $key => $val) {
            foreach ($val as $k => $v) {
```

```
                $temp[$k][$key] = $v;
            }
        }
        foreach ($temp as $key => $val) {
            $max = max($val);
            $min = min($val);
            if ($this->atribut[$key] == 'benefit') {
                $this->solusi_ideal['positif'][$key] = $max;
                $this->solusi_ideal['negatif'][$key] = $min;
            } else {
                $this->solusi_ideal['positif'][$key] = $min;
                $this->solusi_ideal['negatif'][$key] = $max;
            }
        }
    }
    function jarak_solusi()
    {
        foreach ($this->terbobot as $key => $val) {
            foreach ($val as $k => $v) {
                foreach ($this->solusi_ideal as $a => $b) {
                    $this->matriks_solusi[$a][$key][$k] = pow($v -
$b[$k], 2);
                }
            }
        }

        $this->jarak_solusi = array();
        foreach ($this->matriks_solusi as $key => $val) {
            foreach ($val as $k => $v) {
                foreach ($v as $a => $b) {
                    if (!isset($this->jarak_solusi[$k][$key]))
                        $this->jarak_solusi[$k][$key] = 0;
                    $this->jarak_solusi[$k][$key] += $b;
                }
            }
        }
        foreach ($this->jarak_solusi as $key => $val) {
            foreach ($val as $k => $v) {
                $this->jarak_solusi[$key][$k] = sqrt($v);
            }
        }
        //echo '<pre>' . print_r($this->jarak_solusi, 1)  .
'</pre>';
    }
```

```
    function pref()
    {
        $this->pref = array();
        foreach ($this->jarak_solusi as $key => $val) {
            if (($val['positif'] + $val['negatif']) == 0)
                $this->pref[$key] = 0;
            else
                $this->pref[$key] = $val['negatif'] /
($val['positif'] + $val['negatif']);
        }
    }
}
```