

ABSTRAK

PT. X adalah perusahaan yang intensif mengkomodir keinginan konsumen dalam hal mendapatkan akses informasi. Saat ini perangkat *router* terbaru yang digunakan adalah *Network Metro Ethernet* yang memiliki kapasitas 80 *port* dan digunakan pada awal September 2008. Penelitian ini didasarkan pada pertumbuhan pelanggan di PT. X khususnya periode September 2008 sampai September 2009. Kemudian data ini disimulasikan untuk mengestimasi penambahan perangkat *ethernet* jangka waktu 5 tahun ke depan.

Dari data awal yang disimulasikan diperoleh beberapa simulasi grafis, yaitu bentuk linear $y = 1,5549x + 35,731$, bentuk eksponensial $y = 33,378 e^{0,0437x}$, bentuk polinomial orde 2 $y = -0,407x^2 + 7,254x + 21,48$ dan bentuk polinomial orde 3 $y = 0,091x^3 - 2,322x^2 + 18,38x + 6,160$. Dari hasil simulasi dapat disimpulkan bahwa persamaan polinomial orde 3 memiliki kesesuaian karena akurasi paling tinggi sebesar 95%.

Hasil penelitian menunjukkan jika tidak terjadi perubahan pertumbuhan pelanggan maka penambahan perangkat *Ethernet* baru dilakukan pada bulan ke 16, seperti halnya jika perubahan pertumbuhan pelanggan diasumsikan sama dengan pertumbuhan penduduk kota Jakarta Utara (2005-2009) yang besarnya 0,32%.

Jika perubahan pertumbuhan pelanggan 5%, 10% dan 15% maka penambahan perangkat *Ethernet* baru dilakukan pada bulan ke 15. Sedangkan pada bulan ke 60 atau Agustus 2013 dengan perubahan pertumbuhan pelanggan 0,32%, 5%, 10% dan 15% maka total perangkat *ethernet* yang digunakan masing-masing adalah 156 unit, 163 unit, 171 unit dan 179 unit.

ABSTRACT

PT. X is one of number companies which have intensively accommodated consumer's interests in getting access of information. Nowadays, they have been using one of newest router peripherals applied called Metro Ethernet Network. This hardware has capacities of 80 ports and this hardware has been applied since the beginning of September 2008. This research based on nearly of customer's growth in PT. X area, especially for the period of September 2008 to September 2009. Based on this data, a simulation was then made to analyze it for next five years.

By using these data, some graphical simulations were then made. Forms of mathematical equations of them obtained from graphical simulation were achieved sequentially, $y = 1,5549x + 35,731$ for linear equation, $y = 33,378 e^{0,0437x}$ for exponential equation, $y = -0,407x^2 + 7,254x + 21,48$ for polynomial order 2 and $y = 0,091x^3 - 2,322x^2 + 18,38x + 6,160$ for polynomial order 3. The latest one was precisely met with mathematical order-3 polynomial equation and the accuracy is almost 95%.

The results of research showed that if not change of the customer's growth the use of ethernet will increase in the 16th month, the model was verified by taking into account its assumption closely related to North Jakarta residents's growth (2005-2009) of 0.32% annually.

By considering change of the customer's growths of 5%, 10% and 15%, the addition of ethernet will take place on the 15th month. The model was finally applied for the use of ethernet in the 60th month, precisely August 2013 with change of the customer's growth of 0.32%, 5%, 10% and 15%. The results clearly showed that the total usage of ethernet hardware will be 156 units, 163 units, 171 units and 179 units.