Data, Information and Knowledge are the Same Thing, Aren’t They?

Quite often we hear the words data, information, and knowledge being used as if they were synonymous. But aren’t data, information, and knowledge actually the same thing? And if not, what is the difference? I strongly believe that there are subtle but very important differences among these concepts, and that the nature of these differences is a relatively complex one. Moreover, from a business process improvement perspective, data, information, and knowledge serve fundamentally different purposes.

The contribution of information technology (IT) providers perhaps has been unmatched in its ability to add to our confusion over the distinction between data and information. Examples can be found in almost any specialized IT publication, conversations with IT company representatives, and even in public speeches by self-proclaimed IT gurus. For example, a senior vice-president of a large software development company was one of the keynote speakers of an international information systems conference that I attended a few years ago. He referred to the advantages of a well-known commercial group support system in the following terms:
... information overflow can be considerably reduced... for example, a few weeks ago I prepared a 2 megabyte report and sent it via e-mail to ten people. Each of these ten people forwarded a copy of the report to about ten other people ... as a result, my report had generated a flow of 200 megabytes of information in the network, in less than four days ...

In this example, the speaker was referring to data, which can be measured in megabytes, as though it was synonymous with information. This can often be misleading, because a large amount of data may have very low information content, depending on how well prepared is the receiver of the data to make sense of it. Mistakenly identifying data as information is as commonplace as confusing knowledge with information.

It is curious that the confusion over information and knowledge has been nurtured by some who are widely recognized as the forerunners of the study of information and knowledge. They also have had an impact on organizations and society. One the most highly regarded personalities among management consultants and researchers, Claremont Graduate University Professor Peter Drucker (1989), describes the emergence of the information-based organization in the following terms:

...the business, and increasingly the government agency as well, will be knowledge-based, composed largely of specialists who direct and discipline their own performance through organized feedback from colleagues and customers. It will be an information-based organization... Today’s typical organization, in which knowledge tends to be concentrated in service staffs perched rather insecurely between top management and the operating people, will likely be labeled a phase, an attempt to infuse knowledge from the top rather than obtain information from below [my emphasis].

(Drucker, 1989, pp. 207–208)

If information and knowledge were the same thing, why use two words when just one would suffice? Even though information and knowledge mean different things to different people, most people use these words with different senses. The main reason these two words are often used interchangeably is because there is no agreement over their meaning.