Assessing Quality Documents

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"One of the most comprehensive discussions of the multidimensional nature of quality documentation"

Abstract

In recent years, an emphasis on quality has emerged in a variety of organizations and in several fields, including technical documentation. Producing Quality Technical Information (PQTI) was one of the first comprehensive discussions of the quality of documentation. An important contribution of the book is in identifying quality as multiple, measurable dimensions that can be defined and measured (previous views of quality identified it more as some elusive thing that could be identified if present but was difficult to articulate and describe). Despite its contributions to the quality discussion, PQTI runs the risk of simplifying the quality process, reducing quality to a simple checklist that information developers can use to develop effective documentation. PQTI fails to address the fluid nature of some aspects of quality: some dimensions that are important in assessing one document may be less important or irrelevant with other documents. Additionally, PQTI falls short of accounting for the larger contextual framing of documents—that the importance of individual dimensions of quality changes depending upon the audience, context, and purpose of the document.

This commentary suggests that all quality efforts should be grounded in customer data and user-centered design processes, and that we should learn to better differentiate among quality dimensions, determining those dimensions that are essential to customer satisfaction and those that are merely attractive. Through increased attention to developing the quality of information, organizations can better differentiate their products and services, facilitate greater productivity, and increase customer satisfactions, all significant activities in an increasingly competitive marketplace.

I.7.5. Document analysis—*human factors*

Keywords*: quality, documentation, document design, quality dimensions, quality metrics*

> "Experience alone, without theory, tells [us] nothing about what to do to improve quality and competitive position, nor how to do it."
>
> –W. Edwards Deming, *Out of the Crisis* (1986)

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Occasionally, I come across a book or an article that truly engages my professional interest, and I think, "Here's something worth reading and talking about." For me, *Producing Quality Technical Information* (*PQTI*) (IBM, 1983) and its subsequent revised edition *Developing Quality Technical Information* (Hargis et al., 1997) have been important resources to me and influential in my thinking and views about the quality of documents and documentation. The seminal nature of this work certainly makes it an appropriate subject for the *Journal of Computer Documentation*'s classic reprint and commentary series.

Although *PQTI* has certain limitations that some may view critically, it remains as one of the earliest comprehensive discussions of quality in technical documents. In this article I highlight some of the important contributions that *PQTI* has made to the research and practice of quality in the field. In addition, I discuss some of its limitations and suggest ways we can extend the foundational theory of the book.

Contributions of Producing Quality Technical Information

An experience I had several years ago demonstrates what I see as the leading contribution of *PQTI*. As I was involved in some research to identify specific approaches to quality that could be used to assess and measure quality in documentation, I performed a search on Amazon.com to locate recently published books on "quality documentation." The revised edition of *PQTI*, *Developing Quality Technical Information*, was the first hit. With interest I read about the book and decided to buy it. My purchase of the book also happened to be one of my first online buying experiences. Within a week, I had my copy of the book, but in opening the package I discovered a disclaimer inserted with the packing slip: "Enclosed is an item you ordered that does not adhere to the quality standards we strive to meet. Recognizing that, at times, availability outweighs condition, we have determined to fill your order with the best product we currently have available." After chuckling with amusement in ordering a book on quality that failed to meet certain quality standards, I was left wondering about what the sender of the package meant by quality, since from anything that I could determine or that mattered to me, the book was of completely acceptable *quality*.

This experience of being confused about the meaning of quality points to one of the challenges both practitioners and researchers have in discussing, assessing, and measuring quality: no single definition or standard of quality exists. A challenge in trying to produce quality documentation is determining what constitutes quality. *PQTI* remains one of the earliest and best attempts at articulating and describing dimensions or characteristics that constitute quality documents, suggesting that the quality of documents is something we can assess and measure.

Several studies have recognized the multiple dimensions of quality (Anderson, 1994; Garvin, 1984; Parasuraman et al., 1994; Kopalle and Hoffman, 1992; Ortiz, 1993; Getty and Thompson, 1994). For instance, Garvin (1984) identifies eight dimensions of product quality–performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality–each having a different impact on customer satisfaction and on other factors such as price, market share, cost, and profitability. For example, the dimensions of performance, reliability, durability, serviceability, and aesthetics may describe the quality of an automobile. For many, a quality car should perform well and be reliable; that is, it will start and run when needed. Additionally, most people who purchase a car expect it to be durable, to last for several years. Moreover, most car owners want a serviceable car, one where competent, speedy repair or maintenance is easily accessible. Serviceability may also include an extended warranty that provides for any maintenance work free of charge during the first years of ownership. Finally, most car owners have certain tastes in automobiles that dictate aesthetic likes and preferences. A combination of all the dimensions provides tangible criteria that consumers can use to measure the quality of a car.

To adequately assess the quality of documentation, we must similarly determine the individual components or dimensions of quality for documents—significant challenges technical communicators have faced. For some, quality is an ephemeral aspect of a product that they can identify if present but cannot explain. Such a belief promotes a narrow view of quality, suggesting that quality is only in the "eye of the beholder," that it exists only as some subjective, indefinable facet of a product. Those who subscribe to this view find quality not only difficult

to define but almost impossible to replicate, measure, and control.

Assessing the quality of technical information according to various characteristics helps both in the understanding and in the control of quality. Through the years, a variety of dimensions have been discussed relating to the quality of documents, including such qualities as usability, accessibility, readability, and consistency. *PQTI* suggests seven dimensions we should assess in determining the quality of information: task-orientation, organization, entry points, clarity, visual communication, accuracy, and completeness. Although we may argue of the need or importance of some these dimensions in our own work with documents, it is obvious that these were important dimensions to the work of information developers at IBM at the time of *PQTI*'s publication.

In the revised edition, *Developing Quality Technical Information* (1997), these dimensions were refined and organized into three overriding categories—easy to use, easy to understand, and easy to find—with specific characteristics under each element. Table 1 identifies and defines the specific characteristics or dimensions as they relate to the three general elements or categories.

Identifying specific dimensions in quality documents helps to demonstrate the complex nature of quality while providing an identifying schema to evaluate information and its corresponding quality. Several of the dimensions identified in Table1 (and in *PQTI*) have been verified by other practitioners and have been the subject of additional research. For example, Wright (1994) says that quality documentation must be usable and assist users in performing their desired task. Wright points out that something may be functional but unusable. For instance, a hyperlink may work (be functional) but take you to the wrong information (being unusable). The question about documentation then becomes, "Does it give me the information I need to perform a desired task?" Additionally, Redish (1998) corroborates *PQTI*'s assertion about task orientation, observing that "we rarely help our readers when we tell them how a product works or how it is structured internally" (p. 1). Rather, readers want information presented from their point of view, focusing on the tasks they want to accomplish (not the workings of the system used) to complete their work.

Easy to Use	
Task Orientation	Helps users complete tasks related to their work by using the product
Accuracy	Contains no mistakes or errors, truthful and factual
Completeness	Includes all essential parts (but only these parts)
Easy to Understand	
Clarity	Contains no ambiguity or obscurity
Concreteness	Contains no abstractions; including appropriate examples, scenarios, and metaphors
Style	Uses correct and appropriate writing conventions and word choice
Easy to Find	
Organization	Organizes material coherently in a way that makes sense to the user
Retrievability	Presents information in a way that lets users find information quickly and easily
Visual Effectiveness	Uses layout, illustrations, color, type, icons, and other graphical devices to enhance meaning and attractiveness

Table 1. Quality Dimensions for Technical Information

Specific dimensions of quality documents can be measured by asking probing questions. For example, to assess if documentation is task oriented, we might ask the following types of questions:

- Is the information appropriate for the intended audience?
- Is information presented from a user's point of view?
- Is there a focus on real tasks?
- Is the reason for the information evident?
- Do titles and headings reveal real tasks?

PQTI provides a great starting point for the discussion of those dimensions that are integral to quality documents and probing questions that can be used in assessing the degree of quality a document possesses. The book articulates aspects of quality we often take for granted and makes explicit what we sometimes value implicitly—important activities in attempt to find a process to create and replicate quality information.

Limitations of *Producing Quality Technical Information*

In pointing out some of the limitations of *PQTI*, I would stress that the book still serves a valuable function despite its weaknesses. Limitations provide areas where we can continue to refine and build more effective theories and processes. One of the greatest dangers of a book like *PQTI* comes from those individuals who look for a simple solution to complex issues in the guidelines suggested. Determining and assessing quality is complex, and no single tool or checklist can guarantee the development of a quality document. One of the stated intents of *PQTI* is "To help you judge quality" (iii). Correspondingly, a checklist is provided to indicate adherence or noncompliance to the requirements specified in the dimension. For example, under accuracy, we read the statement, "Technical information is accurate," with a place to check whether this requirement is "Met" or "Not Met." Although this type of an approach can be used as a useful heuristic, a document may meet many if not all of the stated requirements and still be of questionable quality. *PQTI* fails to address the fluid nature of some aspects of quality: some dimensions are important in assessing a document and may be irrelevant with other documents. Additionally, *PQTI* falls short of accounting for the larger contextual framing of documents—that the importance of individual dimensions of quality changes depending upon the audience, context, and purpose of the document.

Any application of guidelines, such as those articulated in *PQTI*, must be contextual. No single set of guidelines can service all situations, customers, and needs. For example, the dimensions of quality that one person finds essential for an automobile may be relatively unimportant to other consumers' evaluation of quality. For instance, individuals who lease a new car every two years may be less concerned with durability: how the car performs in five years. However, if car owners generally keep a car for over ten years, durability becomes more important.

Similarly, users of documents may value certain quality dimensions more in one context than another—something not addressed in *PQTI*. But building upon the multidimensional nature of quality *PQTI* outlines, we can take the next step of trying to account for differences among customer preferences and contextual situations. We need to acknowledge that some dimensions of quality are more important than others in the overall evaluation of quality. For example, if car owners expect a car to be durable and reliable yet it has several mechanical problems that require constant repair work, their estimation of the car quality diminishes, even if it rates high in serviceability, supported by a competent and courteous service staff. Additionally, customers may view individual dimensions of quality differently. In a car, a dimension like aesthetics varies widely depending on individual consumer preferences.

Similarly, acknowledging multiple dimensions in the quality of documents (and differences in their value) can help to account for specific needs and preferences of individuals in varying contextual situations. For instance, the accuracy of information is essential when accompanying a product or process where human life is in jeopardy. Although still valued, accuracy may be less crucial in other situations where inaccuracy may cause an inconvenience but a person's safety is not in question. Or, a software application may ship with an exhaustive users' guide, complete with colored illustrations. But a lack of an index that provides an entry point to retrieving the information compromises the overall perceived quality of the documentation. Although the dimensions identified in *PQTI* may implicitly reflect its context and intended audience (information developers at IBM), I would suspect that differences in valuing and applying certain dimensions still exist in a large company like IBM. *PQTI* could benefit from a more extended discussion of the contextual application of the principles, clarifying how the dimensions may be applied and suggesting which dimensions may be more critical in varying situations.

Additionally, *PQTI* offers little grounding as to who developed the dimensions or how. The book provides little empirical or even experiential evidence that the stated dimensions are critical to users' assessment of quality and corresponding customer

satisfaction. In short, the context of use and the application of the dimensions are lacking. We may wonder, how do these dimensions relate to internal company processes? Have customer needs and preferences been accounted for? How do information developers determine which dimensions are important in which situations and to which audiences? Do competing companies and products use similar dimensions? Can the documents created following *PQTI*'s assessment be evaluated and benchmarked against documents of other companies? Questions such as these underscore the notion that each dimension depends on the customer, the context, and the product and its use. Organizations must determine which dimensions customers value most—those that will likely increase customer satisfaction and result in a competitive advantage for the company.

Extending the Theory and Our Understanding of Quality

As with all research, concepts and ideas are refined and adapted over time. Although *PQTI* provides a good foundational beginning point for developing quality documents, I suggest two areas for extending our discussion of quality that build upon the limitations of *PQTI*:

- Clarifying approaches and definitions to quality
- Differentiating among quality dimensions
- Clarifying Approaches to Quality

Over the past several years, many organizations have embraced the belief that sustaining a high level of quality serves as a key in competing successfully in an increasingly global marketplace. As an approach to ensuring quality, Total Quality Management (TQM) has become viewed as "one of the Good Things of the 1990s" (Wright, 1994). The popularity of quality initiatives is so widespread that one business analyst claims, "TQM has become as pervasive a part of business thinking as quarterly financial reports" (Bench, 1993). Yet quality efforts have met only marginal levels of success in many organizations and continue to meet staunch resistance. The resistance to quality is especially keen among some technical communicators: "Total Quality in design and writing eludes us because it does not exist" (Teather and Taylor, 1992, as quoted in Wright, 1994).

This attitude should not surprise us, considering the confusion and differences of opinion that exist among technical communicators as to what quality is and how it should be implemented. For instance, while one view claims that "quality happens as the result of a well-managed, well-organized process" (Hackos, 1994), others maintain that quality comes from listening to the "voice of the customer" and producing information "fit for use" (Bibus, 1996). Still others argue that neither product nor process standards nor users' perceptions can achieve quality, only the use of "professional communicators" (Reilly, 1993), suggesting that quality is something that only experts can identify, even if they cannot define it.

Although these approaches to quality are not mutually exclusive (for example, technical communicators can assess the voice of the customer and design effective processes), confusion arises when quality becomes synonymous with a successfully implemented strategy, tool, or emphasis—such as the checklist provided in *PQTI*. Frequently, a prescribed procedure or tool may become "quality" for some individuals and organizations. As a result, a useful tool can be mistakenly viewed as a universal principle of quality management.

A significant amount of the literature on quality management—specifically quality in technical communication—is normative, focusing on how to implement standards, tools, and procedures. This focus has supplied numerous descriptions of specific successes in quality without accounting for all of the reason for the successful experience. As research has shown, technical communicators need to view quality holistically, accommodating the multifaceted nature of quality (Smart et al., 1995). A comprehensive quality focus must consider a variety of issues in addition to tools, including such things as the type of product or service provided and variations in resources, regulations, and customer preferences. Although most practitioners claim a concern about producing quality documentation (Shriver, 1993), challenges arise in the actual implementation of quality, given the variety of definitions and approaches.

Figure 1 suggests five approaches to quality, showing various emphases arranged on a continuum depending upon an internal or external focus. Understanding the various quality emphases helps reduce semantic disagreements and misunderstandings and assists implementers of quality in making sure quality initiatives are broad based and comprehensive.

From the continuum, an internal focus on quality suggests an emphasis on improving processes and setting internal standards. Conversely, the external focus concentrates more on customer satisfaction that results from the design and production processes. Plotting *PQTI*'s approach to quality on the continuum would place it as product based, where specific attributes of documents are identified and measured. Although this is an accepted and valid approach, it runs the danger of failing to account for customer differences and preferences, as noted in the discussion of limitations. Care must be taken to make certain that characteristics or dimensions of quality are based upon customer need.

Many approaches to quality concentrate on only one emphasis. For example, trying to develop detailed design specifications or quality metrics to identify defects in production is an internal, design-based approach. As noted, *PQTI* represents a more product-based approach. Increasingly, greater focus has been on external emphases that center on customer satisfaction and strategic advantage. Organizations have found that unless customer involvement drives the internal focus, the result fails to meet and satisfy customer needs (Crosby, 1984). Although *PQTI*'s approach to quality has merit, the book lacks the contextual sense of how customer involvement and needs are used in determining or adapting the specified dimensions. Greater success in developing quality will come when both internal and external emphases are accounted for, with fulfilling the needs of customers being an essential part of the focus (Juran, 1988). Ultimately, the purpose of any quality product or service is to positively differentiate it from its competitors, thereby providing a competitive advantage, an emphasis suggested by the strategic approach to quality. Both internal and external emphases must be accounted for if documents truly become strategic.

Differentiating among Quality Dimensions

In addition to differentiating among the various quality emphases, care must be taken in establishing and prioritizing quality requirements or dimensions based upon customer need and expectation. Meeting customers' needs requires an understanding of how customers evaluate and value products and services. Customer satisfaction has traditionally been measured as the difference between consumers' expectations and actual experience with a product (Oliver, 1993; Olson and Dover, 1979). Satisfaction refers to the extent to which the product or service meets or exceeds the *a priori* expectations of the customer. When customer expectations are met or exceeded, satisfaction results. Otherwise, customers are dissatisfied with their experience with a product.

Additional research (Olshavsky and Spreng, 1989; Spreng et al., 1993) suggests that customer desires should be a factor in evaluating customer satisfaction. Expectations refer to the experience with

Design-based	**Product-based**	**Customer-based**	**Value-based**	**Strategic**
Conformance to predetermined design spaces	Measurable attributes (accessibility, usability, reliability, etc.)	Satisfied customer needs and expectations	Satisfaction through product excellence at an acceptable price	Combination of previous, with emphasis on differentiation and competitive advantage

Internal ——— External

Figure 1. A Quality Continuum, Showing Various Quality Emphases

product or service that the customer perceives is possible while desires refer to the ideal experience. When economic or physical inability keep customer desires from being met, dissatisfaction can occur even if expectations are met. Therefore, customer desires as well as expectations become an important component in predicting customer satisfaction

The characteristics of a product (here defined as dimensions) impact customer satisfaction in that product characteristics are sometimes deemed the actual quality of the product (Dodds and Monroe, 1985; Garvin, 1986). Identifying the quality dimensions of a product important to customers must become a driving force in determining product and process design specifications. But any quality effort will fail by trying to focus on all the dimensions at once. To determine what customers want requires gathering and using information about intended audiences and use. Certain aspects of quality are customer dependent. Just as one color and style of car fails to satisfy all consumers, the needs and use of technical information differ depending on varying customers and users. As creators of documents become more aware of the needs of their readers and users, they can focus efforts on those characteristics of quality that will bring about greatest satisfaction for the greatest number of users.

Kano et al. (1984) argue that each quality dimension impacts customer satisfaction differently and varies in importance. For instance, Kano would argue that, if *PQTI* has indeed identified dimensions important to customers, the dimensions vary in importance to customers. Adapting Kano's definitions, I classify quality dimensions in three categories, which suggest their difference in importance:

- Essential (or must-be) quality
- Conventional (or one-dimensional) quality
- Attractive quality.

Brief definitions of these categories with clarifying examples follow.

Essential Quality. Essential quality is the basic or expected category of quality. As the modal level of quality for a particular product or service, essential quality describes those attributes necessary to achieve minimal levels of customer satisfaction. Customers generally take dimensions in this category for granted: they fail to notice the attribute unless it is absent. Dimensions of essential quality cause dissatisfaction when absent but go relatively unnoticed when present because they are expected or assumed.

For example, a clean grocery store demonstrates essential quality. Customers may not notice when a grocery store is clean (it is expected or assumed and therefore does not result in satisfaction), but they may be dissatisfied if it is not clean. Or, customers expect a cordless telephone to function in their homes without static and to remain charged for a reasonable length of time. Customers may not be aware of their satisfaction until the phone fails to function as they expect: a phone with static and with constant need of charging causes dissatisfaction. Essential quality for document users may include such things basic accuracy in spelling and grammar. Users generally do not notice the absence of problems, although a document with multiple errors generally leads to dissatisfaction and a lower assessment of a document's quality.

Conventional Quality. Conventional quality is a more traditionally recognized category of quality. This type of quality results in satisfaction when present and in dissatisfaction when not present, as characterized in the common notion that more of a desirable product or service attribute is better and less is worse. Customers typically think of conventional quality as a the-more-the-better element: the more there is of it, the better the customer likes it.

For example, a customer takes a car in for detailing—the cleaner the car at the same cost, the more satisfied the customer feels. Or, when purchasing a major household appliance like a washing machine, a customer expects the washer to operate for a long period without failure. The more years the machine operates successfully, the better or higher the level of customer satisfaction. Conventional quality in a document may relate to a dimension like completeness. If users are trying to find support for tasks they are completing in a computer manual, the more thorough or complete the manual, the greater the degree of satisfaction.

Attractive Quality. Attractive quality consists of those elements that go beyond customers' expectations and desires. Customers remain satisfied even with the absence of these attributes but are delighted with their presence. Customers tend to be unaware of attractive elements of quality because they are unexpected. If customers are satisfied with the other elements of quality, the lack of attractive quality characteristics does not cause dissatisfaction.

For example, if a customer brings a car to a garage and the mechanic fixes the car at a fair price, the customer will be satisfied; the mechanic provided the expected service. If the garage also washes and vacuums the car, the added service is differentiating and may bring the customer delight. Or, a hotel chain may provide a large, spacious, king-bed room with a complimentary continental breakfast at a reasonable price. Attractive quality would include a welcome basket in the room with assorted snacks and beverages at no extra charge. The customer would be delighted with the welcome basket but would not be dissatisfied if they hotel did not provide it since it was unexpected. Attractive quality in documentation may relate to a dimension such as visual communication. For example, a manual may include visuals that help users orient themselves and follow steps in a process. Most users would expect some visuals in a computer manual. An attractive element of quality may be a visual index. A regular index is likely an essential element, with a more thorough index creating greater satisfaction. But a visual index—which is not expected by the user—that shows examples of the tasks and demonstrates may cause delight to users and increase satisfaction.

After determining the dimensions of quality for a particular product or service, companies need to identify which dimensions are critical to customer satisfaction. The three categories of quality help organizations differentiate among the dimensions and decide on those that become customer requirements. Figure 2 shows a diagram that depicts the three categories of quality as they relate to customer dissatisfaction, satisfaction, and delight. The three categories of customer response—dissatisfaction, satisfaction, and delight—typify how customers react to the absence or presence of quality dimensions within a product (Zeithmal, 1988).

Organizations must realize that a dimension of quality can shift in its classification over time. Frequently, differentiating elements of quality that are initially unexpected by the customer come to be expected over time. For instance, American Airlines developed the use of frequent flyer programs in the airline industry. Initially, the bonuses received from frequent flyer miles served as an element of differentiating quality for American Airlines.

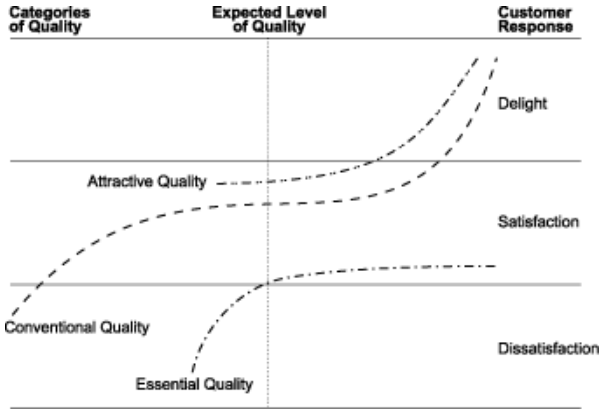

Figure 2. Three Types of Quality: Essential, Conventional, and Attractive

Within a short period of time, however, other major airlines adopted similar programs. Soon, customers expected the airlines to provide them with some sort of reward or incentive for flying with them. What first served as a differentiating attractive element became conventional: the existence of the program did not delight the customer, but the more miles or better the bonus for flying, the better or greater the customer satisfaction.

Other dimensions of quality in the airline industry have moved from conventional to essential quality. For example, most airlines provide reasonably priced, on-time travel between most U.S. cities. Customers have come to expect this for most domestic flights and are generally dissatisfied only when these elements are lacking. We can see a similar shift from attractive to essential quality with computer documentation. Early online help consisted of little more than large text files available to users. The addition of context sensitivity and hyperlinking help systems initially provide an attractive add-on that delighted customers. Widespread adoption of context sensitivity, however, has made it become an essential expectation of online help today.

Understanding the various dimensions of quality as well as how customers respond to those dimensions becomes a critical component of a company's ability to differentiate itself from competitors and gain a competitive advantage. Such an understanding becomes a critical tool in planning and producing quality products.

These concepts have implications for *PQTI* in several ways. Although we may assume IBM based the seven dimensions of *PQTI* upon customer need and feedback, the application or use of them in other

contexts would need validating input from corresponding audiences. Moreover, it would be critical to determine which dimensions are most critical to the needs of an audience in the given situation of use. In some instances, a dimension may be essential, while in others, merely conventional or attractive. For example, Accuracy may be viewed as an essential element for most documents. Readers expect correct technical information along with correct grammar, punctuation, and spelling. Providing accurate information is essential to customer satisfaction but fails to delight customers. Inaccurate information would likely be a leading cause of dissatisfaction.

Entry Points could be viewed as a dimension of conventional quality. A failure to provide adequate points of entry into documents causes dissatisfaction, while satisfaction and even delight can occur concurrent with well-developed entry points. For instance, the lack of an index could cause dissatisfaction among many users. The better developed an index—the more thorough the cross-references and adaptation to users' own terminology—the more likely it is to be a source of user satisfaction or even delight. The element of Visual Communication could be viewed as attractive quality in some contexts. While users may be delighted by full-color illustrations and graphics in a document, the lack of color would likely not be a cause for dissatisfaction.

These differences in dimensions of quality can be demonstrated through a recent experience I had in purchasing a third-party manual for a new software application. The application I purchased had little documentation that accompanied the product, and I wanted a manual to orient me with the program. Although I have been a long-time computer user, the program was one I had not used before. As a novice user of this program, I looked for several elements of what I term conventional quality (the more of these elements the better). I wanted a manual that reviewed the major tasks I hoped to accomplish (Task Orientation). Additionally, I wanted one in which I could locate the information quickly and easily (Organization). Another factor for me in such a purchase is always the index (Entry Points), and I compared several manuals to see what terms they used and how comprehensive the indexes were. As a matter of course, I expected certain elements, such as Clarity, Completeness, and Accuracy (essential elements). Certainly, I noticed the graphics and pictures (Visual Communication), but color graphics were not a requisite to the book I purchased (attractive quality).

These dimensions of quality—in terms of essential, conventional, and attractive quality—affected my ultimate purchase. Some of the books I chose not to buy failed to meet my expectations of essential quality. A few seemed less complete than the others, not as thorough in covering some of the features I had a particular interest in. The writing style of another seemed more basic than I needed (Clarity), covering rudimentary computer functions that are second nature to me. I even discovered one with a misspelled word, which led me to wonder about its accuracy. The elements that mattered most to me were Task Orientation, Organization, and Entry Points. As dimensions of conventional quality, the better done the manual was in these areas, the greater my satisfaction. For this purchase, Visual Communication dimension fell into the category of attractive quality. Although wonderful illustrations and graphics were nice, several of the most appealing manuals lacked extensive visuals.

My ultimate purchase was based most on the task focus and a comprehensive index, with acceptable levels of organization, clarity, accuracy, and completeness. The addition of colorful graphics, useful icons that identified key types of information, and an accompanying CD with templates and getting started help were elements that delighted me by exceeding my expectations. And of course, the manual was acceptable within the amount of money I wanted to spend for this particular purchase. My buying experience suggests that, even if unconsciously, my assessment of quality was based on certain dimensions or characteristics of the documentation. For my needs and with my skill level, certain aspects of a book became more important to me than others. Although companies may not have the luxury of the amount of detail described in my purchasing scenario, they certainly need to gather as much information they can about customers and users to make certain that critical needs and expectations are met.

Conclusion

Although *PQTI* has certain limitations, it remains an important step in trying to understand the sometimes elusive thing we call quality. *PQTI* (along with its revised edition) remains one of the most compre-

hensive discussions of the multidimensional nature of quality documentation. In addition to the further development and refinement of the dimensions that comprise quality documentation, we need additional work in how the dimensions fit into an overall definition of and approach to quality. More research is needed to identify the underlying principles that determine quality, distinguishing the principles from the practices that implement them. This need to understand fundamental principles of quality has grown increasingly more crucial in today's global marketplace where failed quality efforts demonstrate that particular practices are highly successful under certain circumstances but are not always universally applicable.

Likewise, we need further work on gathering customer data to determine which dimensions are most important to which customers in which settings and contexts. Analyzing the contextual nature and application of quality helps to focus on the needs and expectations of customers, the readers of the documents we produce. We must also remember that needs and desires change over time, that what may have been attractive initially may have become essential to current expectations.

If nothing more, *PQTI* can remind us of the importance of quality documents in an information age. Despite economic downturns and corporate downsizing, documents do impact a product's perceived value, usefulness, and quality—and ultimately sales. Through adequately defining what we mean by quality and developing appropriate processes and metrics for developing and measuring quality, we can better demonstrate the value of what we do. Work such as *PQTI* helps dispel the mistaken notion that assessing the quality of written documents is purely subjective, something a person can know if it is present but cannot fully define. In an information age, quality documents will continue to grow as a feature that distinguishes products and services (Porter, 1985). Quality documentation can enhance product differentiation by facilitating the work of customers, thereby increasing its perceived value. Understanding what quality is, what customers need, and the context of document usage will lead to more effective documents. Creating quality documentation can generate greater productivity and increase customer satisfaction, significant activities for organizations desiring to remain competitive in a global market.

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