

Quality and Process Standards for Electronic Commerce

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Abstract

Most traditional businesses operate in a local or national environment, and therefore, changes in transnational parameters do not affect them in a direct way. Being inherently global in nature, electronic commerce (ecommerce) needs quality and process standards from broader and multiple perspectives. As an effort to expand the utility of ecommerce systems to both businesses and consumers, we provide a conceptual framework of the different categories of criteria that should be considered in evaluating ecommerce sites. We then turn our attention to identifying current ecommerce standards practices. These exemplary situations may help set the foundation for future ecommerce practice, standards, and evaluation. The timeliness of such an issue is another concern. Traditional businesses took to the quality revolution only in the 1980's, after decades of development. It is certainly not preferable to wait for this long (in terms of the business life-cycle) before a consensus is evolved in respect of ecommerce standards. On the other hand, being a nascent and evolving part of businesses, it can be argued that standardization may be too premature, especially when there is disagreement among nations on how to conduct ecommerce.

1. Introduction

The growing miniaturization and convergence of computer and communication technologies are leading to a new vista for businesses in the form of Electronic Commerce (ecommerce). As compared to its traditional counterpart, ecommerce offers consumers new and substantial benefits, including convenience, access to a wide range of goods and services, and the ability to quickly gather and compare information about such goods and services. For businesses, it offers easy and fast communication of information concerning their products and services as well as the ability to engage in cross-national transactions. On the other hand, these newer paradigms of doing business have created many unfamiliar situations for consumers. These include awareness of their rights and obligations in the electronic marketplace, and of the legal ramifications involved in such transactions.

Responding to this issue, international bodies and many countries are proposing policies that open up access to electronic commerce for all consumers, while providing effective safeguards against fraudulent, misleading or unfair commercial conduct at both national and cross-national levels. In the US, the following principles have been adopted to guide concrete policy (Clinton and Gore, 1997):

- The private sector should lead;
- Governments should avoid undue restriction on ecommerce;
- Where governmental involvement is needed, it aim should be to support and enforce a predictable, minimalist, consistent and simple legal environment for ecommerce;
- Government should recognize the unique aspects of ecommerce; and
- Ecommerce should be facilitated on a global basis.

It is not clear whether other countries, especially those with differing economic and social norms, will establish rules and guidelines in consonance with a similar set of governing principles. Yet, a minimal set of process and quality standards must be in place in order to instill confidence in businesses and consumers alike about the safety and usefulness of *global* ecommerce. The issue of process and quality standards for e-commerce is central to the evaluation of systems, organizations, and relationships in this environment. Evaluating ecommerce-based systems is not possible without some agreed upon baselines, benchmarks, or metrics for their evaluation. As we shall see some of the many factors will have metrics and measurements that are easy to quantify, while others will be have more intangible characteristics. That is why standards and certifications will play a large role in determining the performance of these systems and systems providers. As we shall see there are a number of possibilities and directions that these evaluation and certification standards can take. This is one of the first papers that looks into this critical issue from an industry and business development perspective.

This paper and presentation's goal is threefold:

1. To determine the elements of standards for ecommerce.
2. To raise the question of whether it is timely for ecommerce standards.
3. Identify issues that need to be investigated and researched by both practitioners and academics for the advancement of this field and ultimately ecommerce.

To help achieve these goals this paper begins with the identification of a conceptual framework for quality evaluation in an ecommerce setting. This discussion includes providing some background on tools and mechanisms that may form the foundation for pursuant ecommerce quality standards. Within this framework we identify a number of dimensions and factors that have to be either implicitly or explicitly considered. Current certification agencies and practices form the following section. The roles, purpose, and characteristics of these agencies provide an overview of the state of the art in this area. In a comparison of these agencies, we also identify some differences and gaps. This brings us to the next discussion section, which focuses on the various future developments and possible investigations that are needed for effective ecommerce quality and business process standards development and adoption.

2. Conceptual Framework for Ecommerce Quality

2.1 Background

Business Process and Quality Standards.

Since the 1970's when U.S. domestic industry was feeling the pressures of Japanese and other international competitors, quality has become a central strategic focus for organizations. The quality revolution continued to grow throughout the 1980's with initiatives such as major national and international quality awards, the introduction of total quality management philosophies, and international certifications for quality systems. The permeation of the quality philosophies and pressures has reached a variety of industries, moving to service oriented environments and beyond traditional durable products to include items such as software and customer satisfaction. The measures of quality also evolved during this time, typical conformance and tangible measures of quality started to incorporate intangible factors that are part of the full service or product description of quality. The 1990's and current environments have extended this description of quality and its management across organizational boundaries. A process focus on quality and standards to manage these processes have had profound implications on how organizations manage, especially with respect to their customers, both internal and external.

Tools for managing quality from a manufacturing setting have become more acceptable for the management of quality in software and systems development. Quality function deployment, reliability models, quality standards, statistical process control, continuous improvement, and benchmarking have all become part of the software engineering lexicon. The development of the supply chain management concept has also taken on many of these same quality philosophies. The extension of customer satisfaction, quality standards and processes across the Internet and eventually in the electronic commerce environment is currently evolving. Borrowing from traditional areas of quality tools, processes, standards, and philosophies, only seems natural. A brief background on these various quality mechanisms sets the stage for some of these developments.

Quality Standards and Mechanisms.

Quality process standards have been part of manufacturing and traditional businesses for a significant portion of their existence, since the early development of military standards. Today, one of the most prevalent quality standards are those set forth by the International Standards Organization (ISO) in 1987. These standards are less focused on actual numerical or specification values, but more so on quality process and documentation standards. An ISO 9000 certification essentially says that an organization is doing what it says it's doing. An organization may get certified at a number of levels, ISO 9001, ISO 9002, and ISO 9003. The level of certification depends on the organizational characteristics and functions covered. For the most complete certification (ISO 9001), 20 areas of organizational documentation are necessary. These areas are summarized in Table 1. In implementing ISO 9000, there are three major phases, planning and preparation, compliance, and registration (see Badiru, 1995, Goetsch and Davis, 1998). The first two are getting ready for the actual certification process by a third party auditor in the third stage. As part of any assessment, auditors (external or internal) have a checklist of different issues that must be addressed. This checklist is derived from the 20 areas of

documentation. The development history of ISO 9000 standards includes U.S. Military specifications and various international standards as set forth by governmental agencies.

An area more closely related with information technology process standards is that of ISO/IEC 15504 ISO/IEC 15504 - An Emerging Standard on Software Process Assessment standard. The current materials and guidelines associated with these standards are also summarized in Table 1 (see <http://www.sei.cmu.edu/iso-15504/moreinformation/overview.html> for further information). This set of standards will be discussed in detail below, with current and direct potential ecommerce implications.

Another set of quality based definitions for general businesses, both service and manufacturing oriented, have evolved from the academic community. One of these sets has been proposed by Parasuraman et al (1988), who defined a number of dimensions (and scales) on which customers assess service quality which they have defined SERVQUAL:

Tangibles - Physical facilities, equipment and appearance of personnel;

Reliability - Ability to perform the promised service dependably and accurately;

Responsiveness - Willingness to help customers and provide prompt service;

Assurance - Knowledge and courtesy of employees and their ability to inspire trust and confidence;

Empathy - Caring individualized attention the firm provides its customers; and

Value prioritizing service components to meet needs in relative order of importance, and utilizing resources effectively to achieve this.

In addition, to these scales, Garvin (1988) has proposed a number of dimensions of quality for use in service or manufacturing environments. These dimensions are also summarized in Table 1.

We have stated that a number of countries and regions have quality programs and specifications. In the United States, the Department of Commerce, since the late 1980's, has sponsored the Malcolm Baldrige National Quality Award. This award is based on assessments of organizational quality programs. It's development is based on the philosophies of total quality management and its "Gurus" such as Deming, Juran, and Crosby (see Bell and Keys, 1998). Assessments of organizations are based on a checklist of practices that are comprised of 1000 points allocated over seven major areas as identified in Table 1. The major focus (defined by points allocation) in this situation are Business Results, with Leadership a distant second.

2.2 Dimensions of Ecommerce Quality

The nuances of living in a traditional commercial environment have been ingrained in most people for a long time. This is unlike the case with ecommerce that comes with a substantial unique aspects (Clinton and Gore, 1997). The novelty of ecommerce technology has brought about new and unimagined ways of conducting commerce for both businesses and consumers alike. The locations and structures of organizations, the manner by which businesses deliver their goods and services to the consumer, the manner by which a consumer gets to a store, gets

information from the store, and orders products and services from the store are all different. New laws, including national and trans-national ones, are being discussed and formed because the existing laws are seen to be inadequate. Thus, the dimensions of ecommerce quality cover the aspects of regular commerce (outlined in Section 2.1), but, in addition, they need to address many issues from a broader perspective. To provide a conceptual framework, we have divided these issues into four categories:

- Governmental
- Societal
- Business
- IS Related

2.2.1 Governmental Dimensions

Customs and Taxation.

This area refers to how tariffs must be applied to the ecommerce setting. It is a category where there is likely to be divergent views for a number of reasons. First, since tax laws and regulations were established before the advent of ecommerce, their application to this new medium in unintended and unpredictable ways threatens every user, access provider and business. Further, the Internet lacks the clear and fixed geographic lines of transit that have characterized the physical trade of goods. Thus, while it is possible to administer tariffs for products ordered over the Internet, but ultimately delivered by traditional means of transportation, it may be difficult to deal with services delivered electronically, because the packet-switching nature of the Internet makes it impossible to determine (with certainty) the endpoints involved in the specific service. On the other hand, many nations are looking for new sources of revenue, and given that the number of ecommerce transactions is likely to increase, it may be hard to ignore this additional source (Clinton and Gore, 1997).

Intellectual Property and Antitrust.

Sellers must know that their intellectual property will not be stolen, and buyers must know that they are buying authentic “products” or services. While technology such as encryption can help combat piracy, an adequate and effective legal framework is also necessary to deter fraud and theft of intellectual property, and to provide effective legal recourse when such crimes occur. Also, anticompetitive business practices that occur over the Internet must also be monitored, investigated and deterred (Swindle, 1998).

2.2.2 Societal Dimensions

Privacy.

Privacy is one of the key difficulties in dealing with ecommerce. Although the degree of awareness and reactions to privacy policy can vary markedly between countries and cultures, the following are the results of a survey among US Internet users (Cranor et. al., 1999).

- Internet users are more likely to provide information when they are not identified;

- Some types of data (e.g., credit card number, phone number) are more sensitive than others;
- Many factors are important in decisions about information disclosure;
- Acceptance of the use of persistent identifiers (e.g., Cookies) varies according to their purpose;
- Users dislike automatic data transfers;
- Users dislike unsolicited communications; and
- Privacy policies and privacy seals, when associated with well known organizations such as the Better Business Bureau seemingly provides a comparable level of user confidence as that provided by privacy laws.

The scope of a privacy policy must cover not only personal and other demographic information provided, but also details about the transaction itself (i.e., what was bought, what was the amount etc.). Technical solutions for privacy include Privacy Enhanced Mail (PEM), and Pretty Good Privacy (PGP) (Cranor et. al., 1999; Ghosh, 1998)

Children.

With respect to children under 13, verifiable parental consent must be obtained before providing access to interactive services, or when using information provided by children (FTC1, 1999).

2.2.3 Business Dimensions

In addition to the dimensions of quality given in Section 2.1, there are additional business dimensional elements that must be considered for ecommerce purposes. These elements are drawn from general principles of fair disclosure that have been in vogue. Existing standards concerning “unfair or deceptive business practices” do apply to the ecommerce settings as well, although the derivative rules arising from the applications of these general principles is quite different. This difference is perhaps accentuated by the limitations on space (which is restricted to the size of a computer screen).

In the US, the Federal Trade Commission has issued guidelines for evaluating whether disclosures regarding information about goods and services can be construed as being clear and conspicuous (FTC2, 2000). Ecommerce sites must ensure:

- proximity of the disclosure to the relevant claim;
- prominence of the disclosure;
- distractions do not make the disclosure unintelligible;
- loudness and cadence of disclosures; and
- understandability of the disclosures to the intended audience.

In some instances, it may be sufficient to hyperlink a disclosure pertaining to a claim. However, disclosures that are an integral part of a claim or inseparable from the claim, should be placed on the same page and immediately next to the claim, so that the claim and disclosure can be read together. This is particularly true for cost information or certain health-related

disclosure. For example, if the cost of a product is advertised on one page, but there are significant additional fees that would not nominally be expected, the existence of those additional fees must be disclosed on the same page. This may not always be easy, because different computers and, of course, different “information appliances” have varying screen sizes and display information from ecommerce sites differently.

2.2.4 IS related Dimensions

User interface.

The importance of user interface design in ecommerce stem from the fact that it serves as the only primary point of contact between an online customer and an online store. As graphic user interfaces have replaced command-type user interfaces, intricate syntax has given way to relatively direct manipulations to visual representations of objects and actions. This paradigm of using information systems, while increasing the number of users, has comparably increased the complexity of designing usable systems. Ergonomic issues form a core consideration in user interface design. For example, in a study of a system to manage telephone directory assistance, Springer (1987) estimated that a 0.8-second reduction in the 15-second mean time per call would save \$40 million per year. However, given the diversity of users that online stores are likely to face, human factors assume greater significance. Some reasons for diversity include (Schneiderman, 1998): physical, cognitive, psychological and cultural. Schnederman (1998) proposes the following considerations in setting up ecommerce sites:

- Compactness and branching factors, which refers to the page length and the number of links in a page. A balance must be achieved between extremely long pages with few links and short pages filled with links.
- Clustering of information, which refers to the relationship among the categories of information that can be obtained from following a link
- Support for universal access, which refers to providing for diversities in transmission speeds, browsers types etc.
- Navigation Support, which refers to a tree or a network diagram providing a high-level map of the ecommerce site.

Security.

The security of an ecommerce system must be ensured on four fronts (Ghosh 1996): Client security; Web server security; Computer system security and Transport security.

Client security is violated when an executable file is downloaded from a remote site. Browsers are given the privilege to execute programs locally (i.e., on client), to write to user disks, and to upload and download files and programs from the Internet. The user must trust that the browser is not vulnerable to exploitation. It is important to note that such attacks are not restricted to private individuals alone; corporation must also concerned especially if their employees have to use the Internet as part of their duties.

A Web server is a software system that appropriately channels an *http* request to the appropriate parts of the computer system. When a request is received, it calls an interface

program called *Common Gateway Interface* which stores and retrieves information to and from back-end databases in order to serve requests from the Internet. Failure in the interface program or in the software that calls this interface could create problems to the ecommerce site.

The computer system involves systems such as the operating systems and databases. Firewalls are used to ensure this aspect of security.

Finally, most of the literature on security concentrates on the last area mentioned above--transport security. Two schemes namely the Secure Sockets Layer and S-HTTP are commonly used for this purpose (Ghosh 1996).

Interoperability.

Different ecommerce sites can be set up using different combinations of hardware, software and networking systems. In order to make ecommerce truly global, it must be possible for all systems to be interoperable with all other systems. For example, if sites were to exchange ordering information via EDI (Electronic data interchange) then every system must be able to understand the different file formats possible for EDI.

3 Certifications and Seals for Ecommerce Evaluation

Figure 1 provides a summary of the various conceptual dimensions, discussed above, needed for ecommerce standards. It should be pointed out, however, that some of the elements of the standards can appear in multiple categories. For example, it is our view that privacy is essentially a social element, and that any laws framed on this issue are done to codify societal attitudes into a legalistic framework; others could view privacy from a legal perspective. The dotted lines in the middle of the figure indicate the possibility of such an overlap among the categories.

To give an idea as to how ecommerce certifying agencies measure the categories given above, we provide an overview of: Better Business Bureau (www.bbbonline.org), Clicksure (www.clicksure.com), Truste (Benassi, 1999), and International Organization for Standards (www.iso.org).

3.1 Better Business Bureau

The better business bureau (BBB) is a collection of 133 member bureaus located throughout the United States. It serves more than 270,000 local businesses and approximately 320 leading-edge corporations. BBB's mission is to promote the highest relationship between businesses and the public through self-regulation, consumer and business education, and service excellence. BBBOnline is a subsidiary of BBB, created in 1995, to fulfill BBB's mission in the constantly evolving ecommerce market.

BBBOnline runs a *reliability-seal* program that indicates that to users that the business adheres to the following five principles (BBB1, 2000).

- Truthful and accurate communication: Online businesses should not engage in deceptive or misleading practices with regard to any aspect of ecommerce, including advertising, marketing or in their use of technology.
- Disclosure: Online businesses should disclose to their customers and prospective customers information about their goods or services available for purchase online, and the transaction itself.
- Information Practice and security: Online businesses should adopt information practices that treat customers' personal information with care. They should post and adhere to a privacy policy based on fair information principles, take appropriate measures to provide adequate security, and respect customer's preferences regarding unsolicited mail.
- Customer satisfaction: Online businesses should seek to ensure that their customers are satisfied by honoring their representations, answering questions and resolving customer disputes in a timely and responsive manner.
- Children: Online businesses targeting children under the age of 13 should take special care to protect children by recognizing their developing cognitive abilities.

3.2 ISO

The ISO has its process standards for software quality. These standards include ISO/IEC 15504 ISO/IEC 15504 - An Emerging Standard on Software Process Assessment standard. The evolution of this set of standards arises from the Software Engineering Institutes (SEI) capability maturity matrix (CMM) and the Software Process Improvement and Capability dEtermination (SPICE) project. With these groups, there are assessment tools to determine the level of capabilities of software engineering projects. Part of the motivation behind these standards was a recognition (by the UK ministry of defense) that there is a general need to supplement reliance of software procurers on ISO 9001. These process oriented standards are relatively new and still in development, and may influence standards development for electronic commerce. The current materials and guidelines associated with these standards are also summarized in Table 1 (see <http://www.sei.cmu.edu/iso-15504/moreinformation/overview.html> for further information).

3.3 TRUSTe

The TRUSTe program was designed expressly to ensure that privacy is protected through open disclosure and to empower the customer to make informed choices. A cornerstone of the program is the TRUSTe "trustmark," an online branded seal displayed by member Web sites, numbering about a few thousands to date. The trustmark is awarded only to sites that adhere to established privacy principles and agree to comply with ongoing TRUSTe oversight and consumer resolution procedures. Privacy principles embody fair information practices approved by the U.S. Department of Commerce, Federal Trade Commission, and prominent industry-represented organizations and associations. The principles include (http://www.truste.com/users/users_how.html; Benassi, 1999):

- Adoption and implementation of a privacy policy that takes into account consumer anxiety over sharing personal information online.
- Notice and disclosure of information collection and use practices.
- Choice and consent, giving users the opportunity to exercise control over their information.
- Data security and quality and access measures to help protect the security and accuracy of personally identifiable information.

3.4 Clicksure

Clicksure is an agency established exclusively for certifying ecommerce businesses. Its seal signifies adherence to the following principles:

- **Provision of Information:** Online businesses must provide information concerning its goods and services, and related information concerning returns, cancellations and refunds.
- **Transaction Management:** Online businesses must implement systems that provide adequate assurance that all customers' orders are delivered and billed in accordance with the business practices advertised.
- **Privacy:** Online businesses must maintain controls that safeguard the privacy of all personal information provided by users, except where a user gives express permission for that information to be provided to third parties.
- **Security:** Online businesses must main effective systems to ensure the security of payments made by its customers and to prevent ay unauthorized use of personal information.
- **Social:** Online businesses must ensure that parental consent before soliciting information from or providing content to children.
- **Quality:** Online businesses must establish demonstrate the effective implementation of an appropriate quality management system.
- **Complaints:** Online businesses must monitor its own performance with regards to meeting customer expectations and must take remedial actions where necessary.

A comparison of the features of these standards is given in Table 2. We observe that:

- No standard covers all the categories of ecommerce quality

- Even when a standard covers a category, there are gaps in certain elements within the category.

4. Practical and Research Issues

So far we have presented some background on business process and quality standards, the dimensions (framework) that should be considered from an ecommerce perspective, and some current practices. This is a relatively new area for development and research. Providing some direction is very important to help progress the ecommerce industry. Standards are meant to aid in that effort. There are a number of practical and research questions that need to be answered during this development. We identify some of these issues and where each of these issues can have both a research and practitioner angle.

4.1 Is it time for standards?

This question does not necessarily have an answer. Clearly a number of specific questions should be asked and investigated. The answer could be yes or no, depending on the expected outcomes. Currently, the Internet and its various ecommerce mutations are a very chaotic system. Standards will provide some structure to this chaos. It is expected that this structure will reduce uncertainty and variance in the system, thus boosting organizational and consumer confidence in the system. With the various changes and "shakeups" that are occurring with ecommerce businesses and possible market declines, the uncertainties are very high. Standards will help reduce uncertainties and risk. This is one set of arguments for the affirmative position. The negative side (i.e., delay the implementation of standards development) also has substantial concerns. Standards specifications may limit or stifle creativity and innovation. One of the major service components and competitive advantages of ecommerce based businesses is that they have proprietary processes and methodologies that help them to deliver their product or service. Strict standards may limit these advantages, thus waiting for the ecommerce industry to mature, when processes will be more broadly accepted and designed for more efficiency, may seem prudent. The other viewpoint on the building competitiveness issues is that some organizations may view standards as a barrier to competition.

4.2 Should there be a global uniform standard?

The characteristics of the standards themselves is a very important issue from a development and adoption perspective. The level of detail and flexibility of these standards are two very important characteristics. Higher levels of detail could mean a very prescriptive and relatively inflexible characteristic. Yet, it would leave little room for mistakes to occur with possible misinterpretations of the standards. A higher level of detail is very helpful for certification guidance. Those organizations that will complete registrations of certifications (similar to ISO 9000) will be very clear and consistent in understanding what is a good or poor process. The major difficulties of global and detailed standards (less flexible standards) stem from the differences in societal, governmental, legal, and industry norms. These will not be detailed here, but suffice to say that these various norms and characteristics may require a very flexible and high level of process and standard definition.

4.3 Who will be responsible for standards development and maintenance?

The question of who is capable of not only developing the standards, but maintaining them is also an important issue. Is ISO the appropriate outlet for these types of developments or are they too industry-oriented, with many government agencies, consumer groups and other non-government organizations (NGO's) left out of the development and diffusion process? Are international governing bodies like the United Nations and one of its divisions the necessary development and delivery mechanism? Private companies, e.g. Clicksure, may also be the route, where the free market system would determine who truly has the best quality standards and process certification approach. This issue may also depend on what type and scope of standards should be pursued, as discussed in the previous section.

4.4 Why should/would an organization wish to adopt standards?

We have, thus far, been speaking mostly of the supply of standards and a general macro viewpoint, now the issue is why would a specific organization want standards. The corollary question here is what differences would exist among organizations for reasons to adopt standards?

One of the most obvious reasons is that there might be marketing reasons. If an organization is certified or has some recognition that it has adopted effective standards, then consumer confidence would tend to rise for that organization. In this situation, first party standards certification would not be as effective a ploy and would require at least second and preferably third-party certification. In a business-to-business (B2B) environment, one set of standards may help industries maintain easier ecommerce protocol management. That is, if each B2B customer partner has different standards, maintaining different standards protocols to meet each partner's requirements could be very expensive and time consuming. The other B2B linkage direction, e.g. managing your suppliers and certifying them, is also an issue. With a number of different B2B vendors having to certify each separately could be a cumbersome undertaking. Thus, having a third party certification and accepting this standard would be relatively easier. Also in a B2B environment organizations may be required to adopt these standards if their customers require them. That would be a reactive and necessary reason for maintaining a customer relationship.

Another possible reason might be that these agreed upon standards have been tested and evaluated. Newer or even existing ecommerce organizations may not be as efficient as those that have had thorough development and assessment. Thus, it might be easier, quicker and less expensive to follow an accepted standard than a process which may not work as well.

These standards may be acceptable to many companies (especially small ones) because they level the playing field. With organizations following similar standards, the barriers of having unique processes with the latest updates falls somewhat. The only difficulty with this is that someone with a unique innovation may become the competitive differentiator.

4.5 To what extent will adoption be done?

Organizational adoption is one issue, but the level of adoption is another related issue. That is, similar to ISO 9000 standards, the level of adoption may be different depending on the various characteristics of the organizations. These characteristics may be due to "reach" requirements. For example, would an organization only wish to do business with local customers or international customers? Maybe the customers may only be internal organizational customers. Another issue may be the size of the organization and its internal process or supply chain complexities. Industry type may also play a role or where they fit within the supply chain. Again, an example might be that manufacturers may have differing standards and process needs than transportation service providers.

We have only identified some very general issues related to ecommerce business process and quality standards. The development of these standards is in its initial stages. A significant amount of work still needs to be completed before they are widely recognized and accepted. We have presented a number of questions pertaining to their development, adoption and implementation. Even though this list is relatively comprehensive, it is by no means exhaustive. As developments in the area continuing emerging research and practical issues will always be on the horizon. This paper is one of the initial efforts to bring this topic to the forefront for businesses, governments, consumers, and researchers.

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Table 1: Business and Process Standards and Mechanisms

ISO - 9001	ISO/IEC TR 15504	SERVQUAL	Quality Dimensions	Malcolm Baldrige
Management Responsibility Quality System Documentation Contract Review Design Control Document and Data Control Purchasing Customer-Supplied Product Product Identification and Traceability Process Control Inspection and Testing Inspection, Measuring, and Test Equipment Inspection and Test Status Control of Nonconforming Product Corrective and Preventive Action Handling, Storage, Packaging, and Delivery Quality Records Internal Quality Audits Training Servicing Statistical Techniques	Concepts and introductory guide A reference model for processes and process capability Performing an assessment Guide to performing assessments An assessment model and indicator guidance Guide to competency of assessors Guide for use in process improvement Guide for use in determining supplier process capability	Tangibles Reliability Responsiveness Assurance Empathy Value	Performance Features Reliability Durability Conformance Serviceability Perceived Quality Aesthetics	Leadership Strategic Planning Customer and Market Focus Information and Analysis Human Resource Development Process Management Business Results

Table 2 Comparison of Certifications and Seals

	Governmental	Societal	Business	IS
BBBOnline	None	Covers	Mostly: ignores transaction management	Mostly: ignores user interface
ISO-CMM	None	None	None	Covers
TrustE	None	Covers	None	None
Clicksure	None	Covers	Ignores disclosures about advertising	Mostly: ignores user interface

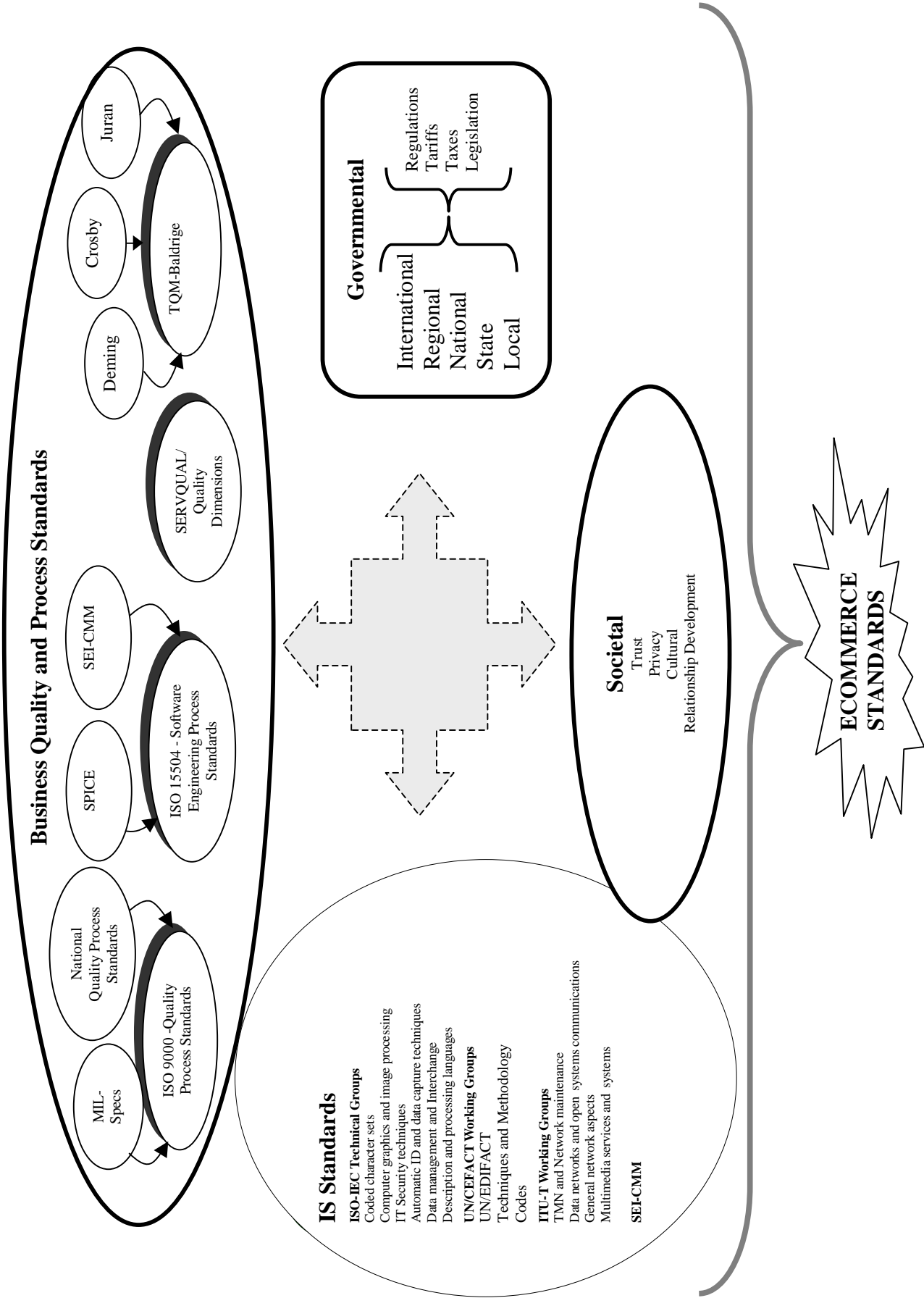


FIGURE 1: Framework and Dimensions for Ecommerce Standards