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## Implementation of Quality Management Practice in E-Commerce

**Vinod Kumar, Uma Kumar, and Mahmud A. Shareef**

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### *Abstract*

Implementation of quality management practice in E-Commerce (EC) is a relatively new challenging area to researchers and managers. Proliferation of EC provides an opportunity to quality management gurus to reshape quality dimensions suitable for real sustainability, expansion, and success of EC. Based on the underpinning principles of Total Quality Management (TQM) and quality management practice this paper focuses on the quality dimensions required for launching a successful EC as the competitive edge in gaining market leadership. This article postulates a model to integrate quality management in EC.

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# IMPLEMENTATION OF QUALITY MANAGEMENT PRACTICE IN E-COMMERCE

## Introduction

To become the leader of the market, most successful companies are now implementing quality management principles which are completely customer focused. Propelled in the mid 1980s, total quality management (TQM), for example, has been applied to raise business competitiveness (Brown, 1992; Poter & Parker, 1993; Rajagopal *et al.*, 1995; Youssef *et al.*, 1996; Yang, 2003). Quality and efficiency generation, cost reduction, and customer satisfaction improvement are the prevalent incentives of TQM. TQM is viewed as a set of concepts, philosophies, and integrated practices used by an organization to enhance continuous improvements in all aspects of its services to meet customer requirements and expectations (Bertram, 1991; Brown, 1992; Ross, 1993).

Quality management practice in manufacturing and service systems of traditional business is not a new topic of this era. Extensive research on implementation of quality practice in traditional business has been conducted during the past 20 years (Parasuraman *et al.*, 2002). But after reviewing journal papers of the last 20 years on quality and EC, we found only a very limited number of scholarly research that deals directly with the integration of quality management practice in EC.

Over recent years information technology has experienced an unprecedented degree of change, enabling the transformation of the basic mechanism of business (Miers, 1996). EC represents a new way of conducting business through communication networks, such as the internet (Chou, 2001). The internet is now an effective way to gain access to new customers and enhance the portfolio of services being offered to existing customers (Chaston & Mangles, 2001). Companies who adopted EC are now striving to reach an unprecedented large population and starting to take on new forms. By 2010, about 25% of all business transactions are expected to be conducted electronically (Wolfenbarger & Gilly, 2003).

The most experienced and successful EC companies are now agreeing that the key determinants of success are mostly dependent on high quality e-services (Wang, 2003). Quality is the vital issue of EC. The importance of measuring and monitoring e-service quality is now well recognized among managers of e-services (Johnson & Whang, 2002). Even though lower price and web design were initially assumed to be the driving forces of success, service quality issues soon became the base stone (Barnes *et al.*, 2003). Exploring several research papers (e.g., Kurtus, 2000; Chou, 2001; Yang, 2003; Field *et al.*, 2004; Prybutok, 2005), this current study demonstrates that the most burning and challenging issues for EC in the future decade are:

1. Reshaping quality management principles for versatile and rapidly changing business like EC.
2. Recognizing the meaning and domain of fundamental quality issues for EC to become the international market leader in a competitive era.

3. Integrating quality management principles with quality issues of EC and establishing an effective way to implement the quality management practices in launching successful EC.

In the following section, based on an overview of the literature, we present a functional model and a process model of quality management practice. In the next section, sustainability and long-term success issues and consequently quality dimensions of EC are categorized in to six customer-interaction domains of EC to construct a quality model for EC. In the following section, quality management process model are compared, manipulated, and integrated with an EC customer-interaction domain model. The concept of implementing quality principles in EC is detected and discussed. Finally conclusions and future research guidelines in this context are presented.

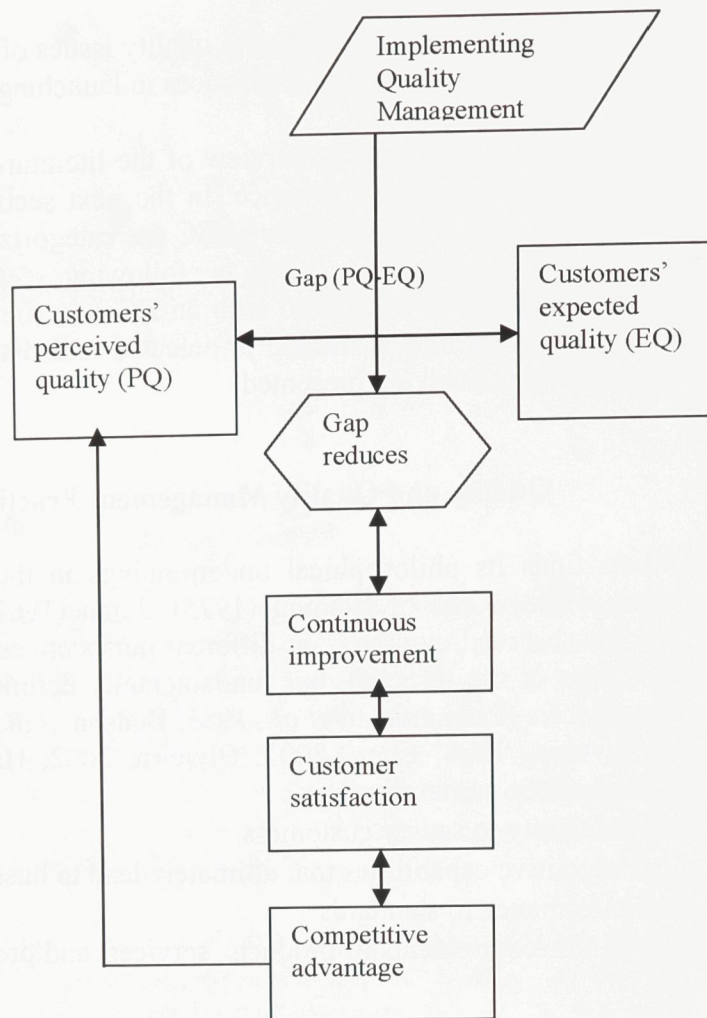
### **Quality and Quality Management Practice**

Quality definition finds its philosophical underpinnings in the issues of TQM, in ISO 9001 publications (2000), and in the works of Deming (1975), Juran (1962), Taguchi (1986), and Crosby (1979) etc. Several articles observed quality from different perspectives and some seem to be disparate depending on the focal point of the research, but fundamentally definitions of quality reveal the same attitude. From literature reviews (Parasuraman *et al.*, 1985; Benson *et al.*, 1989; Carman, 1990; Brown *et al.*, 1992; Powell, 1995; Aune, 1998; Chou, 2001; Oliveira, 2002; Hayes, 2002; Field *et al.*, 2004), ongoing quality definitions can be summarized as:

- Quality is the conformity to satisfy customers.
- Quality is the competitive capabilities that ultimately lead to business performance.
- Quality is the conformance to standards.
- Quality is the overall requirements of products, services, and processes to satisfy a given need at a suited price.

### **Quality Management Practice**

Quality Management Practice is a philosophy of managing business. Its fundamental focus is customer satisfaction. It is the culmination of the radical transformation of quality management paradigms that has emerged through the evolution of “quality by necessity”, “quality by inspection”, “statistical quality control (SQC)”, “quality assurance (QA)”, “quality measurement from competitors (demand)”, and “continuous quality improvement (CQI)”. TQM, the most widely known form of quality management practice, for example, is a proactive process which interacts continuously with all the relevant segments. ISO 8402 defines TQM as a “management approach of an organization centered on quality, based on the participation of all its members and aiming at long term success through customer satisfaction and benefits to all members of the organization and to society”. TQM is a structured management process that originally aims to insure all customers are delighted with the quality of goods and services provided by the organization. From literature reviews on quality management practice (Hayes, 2002; Field *et al.*, 2004; Maguad, 2006; Meirovich, 2006), very precisely and fundamentally, the function of quality management practice has been viewed by this current study as described in Figure 1.



**Figure 1: Quality Management Functional Model**

### Application and Conceptual Model

Based on the review of literature addressing quality management theory and practice, a quality management process model is proposed by the current study in Figure 2. The model has three main sections: action of organization, outcome, and effect on organization. It is a cyclic model and will be termed as Action-Outcome-Effect model of quality management process. This model is derived to investigate the anticipated correlation of quality management issues with quality dimensions of EC. The model is basically based on the main cycle of TQM, i.e., Plan-Do-Check-Act (Shewhart, 1931; Deming, 1986; Scholtes, 1988). 'Plan' is the cumulative preparation of the system depending on the quality attributes and standards fixed by the management. 'Do' is the execution of the plan involving all levels of employees. 'Check' refers to the evaluation, scientific review, surveillance, inspection, diagnosis, audit, appraisal, and overall measurement to assure the process. 'Act' is the improvement and enhancing level after problem detection but before problem occurrence. Then 'Act' feedbacks the 'Plan' stage and thus it will be continuous improvement. This cycle is at the core of the model presented in Figure 2. Employee involvement and empowerment is one of the cornerstones of successful execution of TQM (Deming,

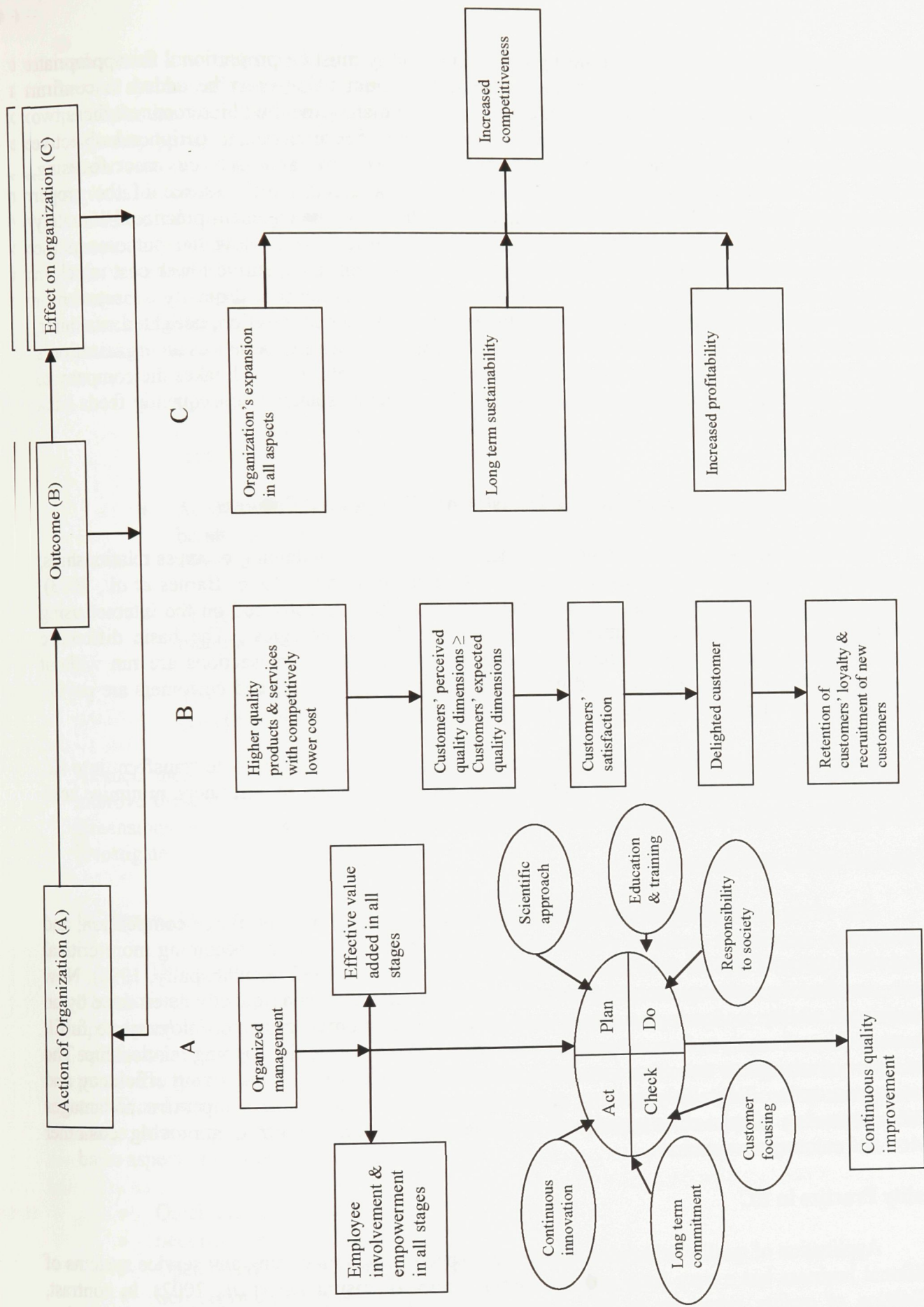


Figure 2: Quality Management Process Model

1975; Crosby, 1979; Aune, 1998). Authority and responsibility must be proportional for appropriate employee involvement. In all stages of the process, maximum value must be added to confirm maximum quality output compatible to input cost. Organized management will interconnect these two factors to implement the Plan-Do-Check-Act process model. Six prerequisite peripheral objective conditions, long term commitment, continuous innovation, scientific approach, customer focusing, education and training, and responsibility to society are the fundamental essence of the proper execution of the Plan-Do-Check-Act cycle compatible with quality management practice. Ultimately the first phase of this model insures continuous quality improvement. Now the outcome phase explains the conformity of high quality products and services with competitive lower cost which in turn reduces continuously the gap between customers' quality experience and quality expectation or makes the gap positive. The second phase concludes with customer satisfaction, delighted customer, and customer retention. The third phase or effect on organization phase experiences an organization's expansion in all aspects, long term sustainability, increasing profitability which takes the company to its ultimate goal, that is, increased competitiveness. This achieved standard consequently feeds back to the first phase.

### **E-Commerce (EC): A Transformed Traditional Business**

EC can be defined as the sharing of business information, maintaining business relationships, and conducting business transactions by means of the internet (Zwass, 1996; Barnes *et al.*, 2003). Boyer *et al.* (2002) defined EC as "all interactive services that are delivered on the internet using advanced telecommunications, information, and multi-media technologies". The basic difference between e-business and traditional business is that in e-business, all transactions are run without physical presence of goods, services, and payments. It is generally virtual and customers are paying for their shopping on trust depending on the information displayed by a company.

Unprecedented proliferation of EC is now pushing traditional business to transform into EC to speed up business transaction, adopt globalization, retain the loyalty of customers, minimize cost, expedite quality output, and reduce customers' time and effort in shopping.

### **EC Sustainability and Success**

One of the greatest challenges confronting organizations recently is fierce competition, and the continuous increase in customer expectation. Customers are day by day becoming more critical towards the quality of service they experience (Albrecht & Zemke, 1985; Kandampully, 1998). Now the criterion for long term sustainability and success of any business is subsequently determined by an organization's ability to develop, maintain, and continuously improve customers' loyalty: to fulfill customers' present needs, to forecast prospective needs, and to upgrade the ongoing relationship. The organization's motives to transform into EC can broadly be identified as improving efficiency and effectiveness, and ultimately gaining superior competitiveness. These competitive advantages include improving supply chain coordination, differentiating service offer, improving customer service, and entering new markets.

### **Quality Practice in EC**

Application of quality principles in different aspects of manufacturing and service systems of traditional business has a very long and successful history (Parasuraman *et al.*, 2002). In contrast, application of quality principles in EC context still needs extensive research. Literature review demonstrates that EC needs quality improvements in all of its quality dimensions (Cox, 2002; Gaudin, 2003). To deliver superior quality, managers of companies with Web presences must first



understand how consumers perceive and evaluate online customer service. For manufacturing and service systems of traditional business, improvement of quality dimensions through the use of quality principles has been well supported (Albrecht *et al.*, 1990; Parasuraman *et al.*, 1985). Implementation of quality principles in traditional business refers to the quality of all non-internet based customer interactions and experiences with companies. This is mainly based on direct people delivered services. In contrast, high involvement of people-technology interactions in EC imply that customer evaluation of new technology is a distinct process. Findings from an extensive qualitative study of customers perception of EC ( Mick & Fournier, 1995) indicate that customer satisfaction with EC involves a highly complex, meaning-laden, long term process and satisfaction in such context is not always a function of preconsumption comparison standards (Parasuraman *et al.*, 2005). The distinctive nature of electronic commerce operations, different from the manufacturing and service systems in traditional business lies in the fact that:

- Customers do not buy goods or services in the traditional sense. They buy an offering and the value may consist of many components, some of them being activities (service) and some being things (goods)(Gummesson, 1994).
- Acceptance and usage of technologies across customers depend on their technology beliefs and similar differences might exist in the evaluative process ( Cowels & Crosby, 1990).
- There is high component of self-service (customer uses the web-site) and even in case of manufactured goods, the service component of the total offering is increasing.
- Trust, Security, and Privacy play a very distinctive role in internet based purchase (Gefen, 2003).

As such, there is a need to identify the EC quality dimensions and recommend how the company can improve these quality dimensions by integrating quality principles. Identification of the EC quality dimensions and integration of quality principles in EC context is a new and important area to investigate.

### **EC Issues, Quality Dimensions, and Customer-Interaction Domains**

The fundamental issue of EC is to gain market leadership by improving business transactions, reducing service costs, upgrading quality of goods and services, improving operational process' performance, enhancing exchange, and consequently increasing customer satisfaction to expand long term profitability by expanding the market share. So quality management practice is the pivotal and emerging issue for EC. It is noteworthy that though the basic quality issues of EC and non-EC are very much identical, it differs on degree of significance, measurements, and usage. More significant and distinctive quality *issues* relevant to successful operation of EC on the basic aspect of customer focusing are:

- Quick interaction
- Security control and trust
- Open disposal of information & privacy
- Self-service shopping
- Online environment
- Robust service speed

- Extended functionality beyond an organization's boundary
- Website content and accessibility
- 24 hours availability
- Contracting and risk assessment
- Involvement of top management
- Complexity
- Huge quantity of non transactional customers
- Transactions from physical to virtual
- Customer satisfaction
- Ordering and delivery
- Efficiency
- Interactivity
- Substantial comparisons with competitors
- Diversity in system users
- Centralized warehouse management
- Security in payment automation
- Integration of information technology

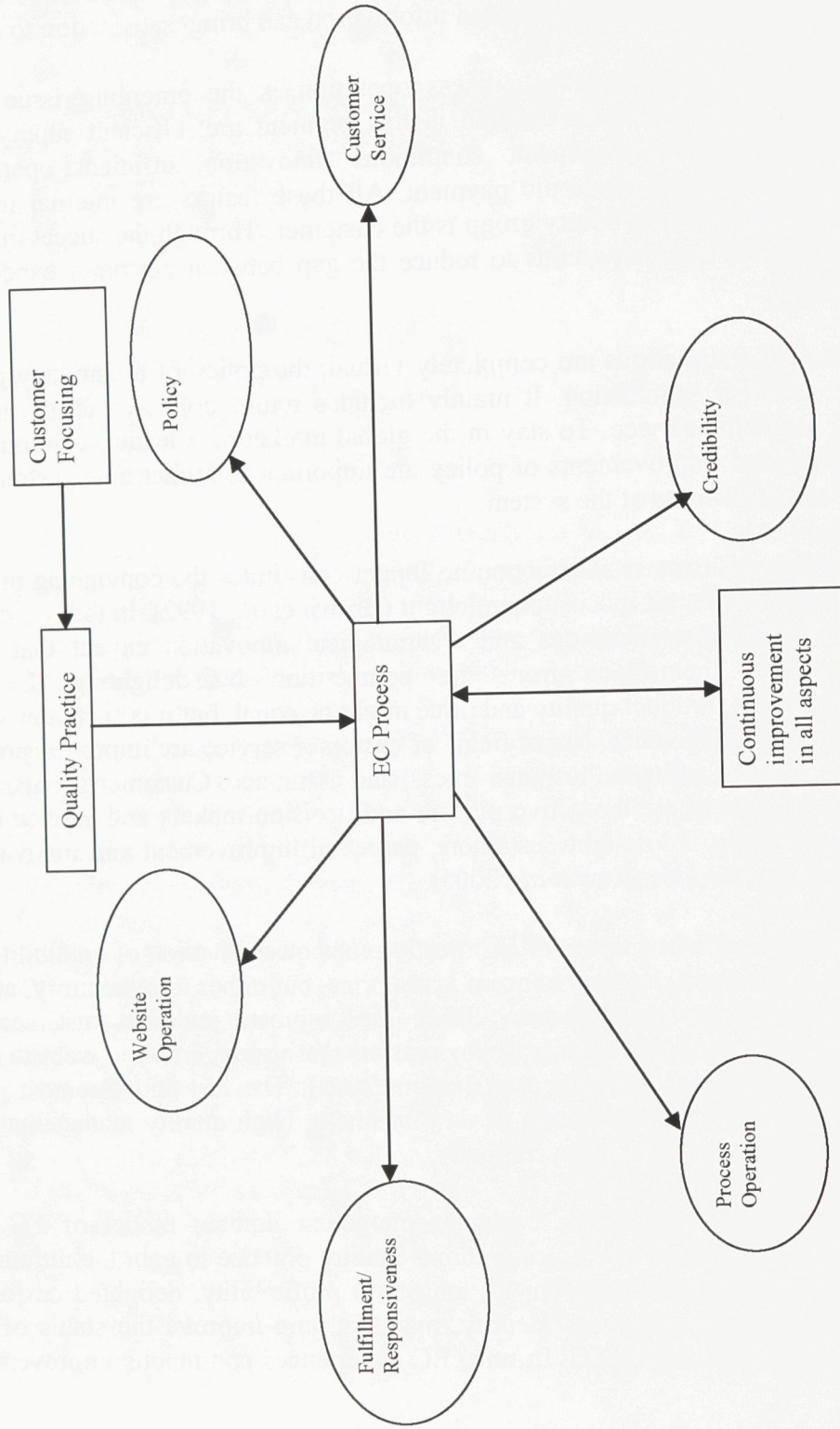
These issues need continuous improvement in responding to customers. So implementation of quality management principles of EC quality dimensions is more significant, vulnerable, and at the same time more critical due to the complex, competitive, advance, and robust nature of EC. Quality management can benefit to different quality dimensions of EC. Indeed, how to integrate and measure the benefits of such integration is a major issue in its own right.

Although the basic principles of service quality are universally and equally valuable to both traditional and online business, academic research into web based service quality has started being addressed only recently. This study attempts to identify various quality *dimensions* in EC from the literature and set a mechanism to implement quality principles in EC to improve those dimensions. The importance of improving e-service quality is now well recognized among managers of e-services (Johnson and Wang, 2002). There are a number of online rating companies, such as Bizrate, Rating wonders, Web watchdog, Gomez advisors, Consumer reports online, etc. These rating companies evaluate the performance of an e-business based on abstract, perceptual e-service quality dimensions. Several dimensions including customers' perception of convenience, product and service quality, process information, documentation and quality practice, site design, financial security of internet stores, privacy, and trust are found influential to customer satisfaction with online shopping (Liang and Huang, 1998; Szymanski and Hise, 2000; Gefen *et al.*, 2003; Vatanasombut *et al.*, 2004). Inevitably, upgrading the performance of those associated factors can potentially attract and retain more customers and increase the effectiveness of EC. Based on the review of relevant literature (e.g., Chou, 2001; Molla, 2001; Balasubramanian *et al.*, 2003; Geoffrion *et al.*, 2003; Wang, 2003; Yang, 2003; Field *et al.*, 2004; Ohl *et al.*, 2004; Prybutok *et al.*, 2004; Schoder *et al.*, 2004; Chiu *et al.*, 2005; Parasuraman *et al.*, 2005) and reports of quality rating companies, a number of major quality dimensions of EC are identified which require quality practice to improve continuously. This research has categorized these quality dimensions into the following six *customer-interaction domains* relevant to EC.

1. Website Operation – It includes user-friendly technology, efficient ordering system, up-to-date information delivery, and improved website. Customer feedback is essential for website operation. Only a high quality website operation can attract and retain customers. Quality management practice is the vital issue to improve website operation continuously.

2. Fulfillment/Responsiveness – This segment consists of improved goods and services, on-time delivery of goods and services, reliability, and guarantee of information and quick feedback. All these items are fundamental quality attributes to business transactions. Reliability is the key factor to attract customers. High quality goods and services, on-time delivery, and quick feedback of guaranteed information can bring satisfaction to customers.
3. Process Operation – High quality process operation is the emerging issue of quality management practice. Sub items covered in this segment are: efficient supply chain and centralized warehouse management, continuous innovation, efficient operation, cost management, and secured electronic payment. All these factors are internal management oriented, but the pivotal beneficiary group is the customer. Through the successful operation of this segment, one company tends to reduce the gap between customer expectation and perceived quality.
4. Policy – Since EC transactions are completely virtual, the policy of a company plays a key function for customer satisfaction. It mainly includes return policy, external and internal environment, and legal service. To stay in the global market as a leader, continuous, up-to-date, and customized improvements of policy are important to attract new customers and to support the competitiveness of the system.
5. Customer Service – Customer satisfaction no longer constitutes the convincing pin point for success; it has been replaced by customer delight (Brown *et al.*, 1992). In today's competitive environment, customer expectations and technological innovation expect that e-business leaders distinguish themselves from the competition by delighting the customer (Kandampully, 1997). Product quality and price might be equal, but it is customer service that can make the quality difference. Major fields of customer service are improved pre-sale, sale and post-sale service, effective responsiveness, and assurance. Customer service is a cyclic service where customers are the active players and decision makers and service employees should act accordingly. To delight customers, perpetual improvement and innovation is the passport of customer service (Kuo *et al.*, 2005).
6. Credibility – The long term success of EC mostly relies on cultivation of credibility. For any EC transaction, customers' primary concern is not price, but rather trust, security, and privacy feelings about that company (Vehovar, 2002). This segment includes trust, security, and privacy. Credibility stands tall among all key reasons that users go to one website and not to another (Princeton Survey Research Association, 2002). The last and foremost part is the customer who evaluates the credibility of an e-business. High quality management practice can only maintain the credibility of a company.

Based on the above discussion, a customer-interaction domain model of EC has been developed and presented in Figure 3. EC process adopts quality practice to gain the ultimate goal of EC, that is, price reduction, quality improvement, long term profitability, delighted customers, and superior competitiveness. Quality practices identify, maintain, and improve the status of these six major customer-interaction domains of EC. In turn, EC experiences continuous improvement in all aspects.



**Figure 3: EC Customer-Interaction Domain Model**

## Integrating Quality Principles and EC Quality Dimensions

Quality principles emphasize customer orientation, that is, through all levels of employees' participation and teamwork, they preach continuous improvement to fulfill customer needs and expectations (Bertram, 1991; Ross, 1993; McAdam & Mckeown, 1999). The quality management practice includes a toolbox for efficient and effective quality (process and product): control, assurance, improvement (continuous) and innovation for process, products, and services. According to EC quality dimension model as presented in Figure 3, to gain continuous improvement in customer aspects, the major six customer-interaction domains of EC, Website Operation, Fulfillment /Responsiveness, Process Operation, Policy, Credibility, and Customer Service, need effective quality practice in a cyclic manner to ride on seamless competition. Various principles of quality management practice should cover all of the above six aspects referred as EC customer-interaction domains. Such integration should be characterized by customer focus, long term commitment, continuous innovation, scientific approach, education and training, and responsibility to society with the involvement of empowered employee and addition of values in all stages to gain most competitiveness. Each web business should detect its unique essence in terms of processes, payments, products and services, and seamless needs of customers. Chou (2001) emphasized that EC needs to develop a scientific approach and provide a long term commitment to implement the quality management practice. Kurtus (2000), for example, pointed out that EC should follow TQM management philosophies and use ISO 9000 standards to enhance their chances of success.

### Implementation of Quality Principles in EC

The quality principles emphasize satisfying customers and giving them value for the money paid. Often that value goes beyond simply delivering a product or service. It should include special services. An important aspect of customer satisfaction is finding out what the customer really wants and expects. The basic objective and success story of EC lies on the assurance of this question.

**Website Operation:** Improved website design, up-to-date information delivery, user friendly technology, and an efficient ordering system are the basic functional objectives and base stones of a website operation. Continuous quality improvements are the fundamental characteristics of these fields. Deming Plan-Do-Check-Act cycle can push this segment in the success regime. In general, it suggests a need to jointly consider service design and quality management. A successful website operation may need to provide the characteristics of connectivity (Sullivan, 1999), information quality (Li *et al.*, 2002), interactivity (Dutta & Segev, 1999), playfulness (Rice, 1997), learning (Liu & Arnett, 2000), adoption of technology (Barnes *et al.*, 2003). Planning of website operation as per designed value or standards ('Plan' phase), implementation of the advanced standards ('Do' phase), measurements of the bottlenecks of the process ('Check' phase) and redesign to improve continuously ('Act' phase) on the basis of long term commitment, continuous innovation, scientific approach, responsibility to society, education and training (both employee and customer), and customer focusing will insure top quality web operation. Involvement and empowerment of all level of employees and value addition in all stages is the core element of EC.

**Fulfillment/Responsiveness:** Improved goods and services, on-time delivery of goods and services, and reliability must gain competitiveness through quality management process model. Finally, to make the customer delighted with products and services at a lower cost, the expected quality should surpass the perceived quality. So continuous improvements through quality management process and complete teamwork can give the customer the essence of physical quality and reliability of goods and services of EC in the virtual market community.

**Process Operation:** Efficient supply chain and centralized warehouse management, continuous innovation, efficient operation, cost management, secured electronic payment can be achieved through quality management in the process and quality practice of EC. Continuous innovation is directly a tool of quality management. The Plan-Do-Check-Act cycle can find out the defect before occurring and reduce cost by adding values from all stages without cutting corners. A critical element in process operation is the empowerment of employees who are in direct contact with the process. Critical to the success of this activity is the education and training of employees and the dissemination of relevant information. So process operation is one of the base stones of success of EC and implementation of quality management practice will write the success story of process operation.

**Policy:** It includes return policy, external and internal environment (management policy, company objective, responsibility, values, government control, taxation policy etc.), legal service. If the policy of an EC can be displayed accurately and documented clearly and unambiguously, there is a high probability that the application can be successfully designated and implemented. These policies must be customer facing. So, continuous survey, feedback, competitor information, and customer interest and intention are essential tools to construct policy, and policy should be revised and improved continuously. Integrating quality principles in this EC segment is also widespread. Long term commitment, continuous innovation, customer focusing, responsibility to society, education and training, and scientific approach make the game of continuous policy improvement of EC more competitive, efficient, and effective.

**Customer Service:** The other major area of EC where quality management practice might play an important role is customer service which includes improved pre-sale, sale, and post-sale services, effective responsiveness, and assurance. Direct application of the Plan-Do-Check-Act cycle can benefit customer service. Actually, two way transmittal of quality and other information (Management to and from Customer) through the Plan-Do-Check-Act cycle will detect defectiveness or deficiencies, scheduling, planning, and quality related other issues. This is primarily a fact-finding exercise that requires analysis of data on products and services, process, and customers. Quality practices can fix the customer problem to identifying causes and eliminating the potential recurrence. Adopting quality management in EC enhances product, service, and process quality which consequently increase the demand for information on customers, products, and processes. It also makes it inevitable to transfer information horizontally across departmental boundaries and forward and backward in the operation chain to suppliers and customers. This information is a critical component of the Plan-Do-Check-Act cycle advocated by Deming (1986). Using quality principles, continuous analysis of customer requirements and satisfaction indicators become an essential component of the decision making of customer service.

**Credibility:** Research conducted by academicians and e-rating organizations finds privacy, trust, and security are the main components for customers to be attracted for a specific e-business (Miers, 1996; Molla & Licker, 2001; Liljander *et al.*, 2002; Balasubramaniam, 2003; Gefen *et al.*, 2003; Wolfingbarger & Gilly, 2003; Zhou *et al.*, 2004; Kuo *et al.*, 2005). In the absence of physical appearance, the virtual environment of EC impacts customer decision-making mostly through the continuous improvement of privacy, trust, and security related quality issues. Application of quality principles and certification of ISO-9000 can directly pull back the trustworthy sentiment on the customers. Credibility of an EC is primarily an abstract matter, a psychological feeling of customers about that organization. Long term commitment, education and training, responsibility to society, scientific approach, continuous innovation, and customer focusing --- the executive components of TQM, for example, integrate the concepts of trust, privacy, and security. Involvement and empowerment of employees in all stages integrate customers' trust disposal to a company. Plan-Do-Check-Act of quality principles continuously focuses on customers' anticipated, expressed, and

hidden needs, demands, and fulfillment of customer loyalty through improvement of the key playing segment of EC, that is, trust, security, and privacy.

### **Integrated Quality Management-EC Model**

An ideal EC system can result in speed up transactions, reducing cost, improving product and service quality, retaining customer loyalty, reaching new customers or suppliers, creating new ways of running system operations, increasing market share, and satisfying customers through the integration of quality principles in quality dimensions of EC.

A conceptual "Integrated Quality Management-EC Model" developed on the basis of the quality improvement practices needed for the major six customer-interaction domains of EC is presented in Figure 4. After implementation of quality management practice in EC customer-interaction domains, the organization is likely to experience the following benefits:

- Quality planning integrated with quality standards (customer focusing)
- Effective partnership with suppliers
- Chain of customers and all levels of employees
- Quality surpasses expectations
- Meaningful team contribution
- Leadership
- Price reduction through value addition in all stages with quality improvement both for products, services, processes, and employees
- Customer loyalty
- Recognition of meaningful contribution of team and individual
- Competitive advantage
- Interdependent process
- Cyclic order improvement
- Controlled long term vision
- Employees and customers' feelings as process managers

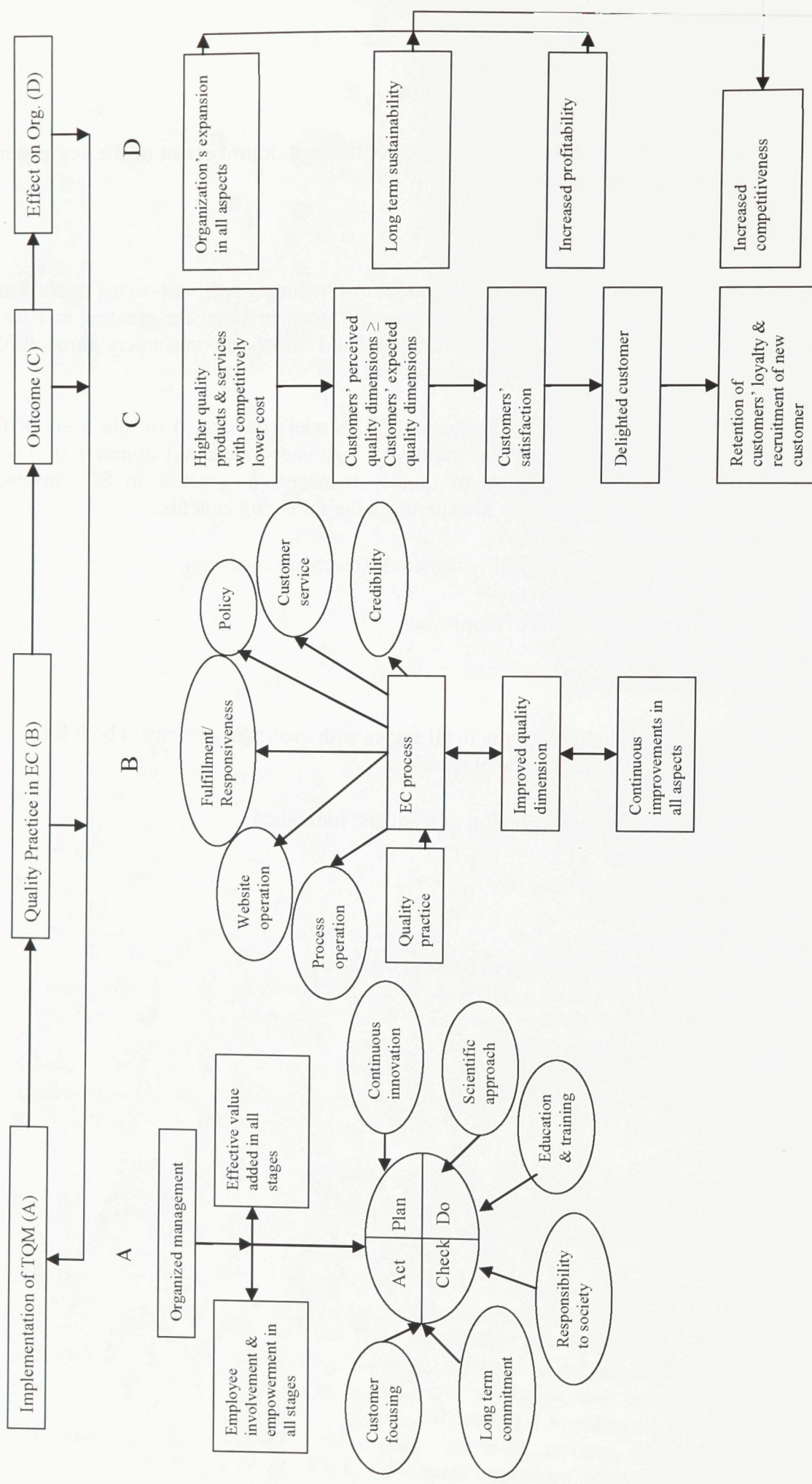


Figure 4: Integrated Quality Management-EC Model



## Conclusion

Implementation of quality management practice in EC context is completely a new research theme. Much research has been conducted on quality management and EC separately, but little work has been done on integrating quality principles with different customer-interaction domains of EC. The “Integrated Quality Management-EC Model” presented in this article adds a new dimension to the existing body of knowledge in the field of EC service quality. There are many forms of e-business, like B2B, B2C, C2C, C2B, and B2G. Depending on the functional nature, organizational structure, and implementation pattern, cross-road interactions of quality principles with quality dimensions of EC should vary. But the basic approach, what this article tries to describe is unique, that is, improvement of various quality dimensions in the six customer-interaction domains of EC continuously tend to integrate quality management to delight customers and to retain customer loyalty by creating long term customer relationship. Analyzing literature on quality management practice and various issues and quality dimensions associated with EC, it seems rationale and realistic that the focal elements, like customer satisfaction, supplier management, competitor relationships, employee empowerment and involvement, internal operations, credibility, quality results, and customer service can be improved efficiently and effectively by such an integration.

## Limitations and Future Research Direction

It should be noted that in this research no attempt has been made utilizing the formation of this Quality Management-EC conceptual model to determine the long term success on focusing customer satisfaction. As such, it is to be emphasized that this research is not attempting, at this stage, to judge whether the approaches prescribed in the model can run without complexity. The main objective of the research is merely to describe, catalogue various EC specific issues and its quality dimensions and show the opportunity of integrating them with quality principles. Various challenges and complexities should be resolved before functionalizing complete Quality Management-EC model. The issue of validity is the major limitation of this research.

This study tends to form and focus a Quality Management-EC model that integrates quality principles to different quality dimensions of EC. It will serve as a conceptual model for future research. Vigorous research is essential on different e-businesses who have already implemented quality principles in their process system and who are segmenting their e-operations for such an integration. Data from these e-businesses could be compared to see where, and how, and at what cost, organizations are achieving continuous improvement in efficiency and effectiveness in their operation processes to meet the challenges of, and to gain, competitive advantage. Quality practice will improve the performance of different EC customer-interaction domains undoubtedly. But intensive survey on different e-businesses among management authorities, employees, and customers is essential to justify the “Integrated Quality Management-EC Model”. In this regard, such surveys could be aimed at:

Management’s perspective: What is the gap between management’s recommended quality and quality output after integration of quality principles in EC quality dimensions?

Employee’s perspective: What is the gap between specified quality and perceived quality after practicing quality in EC process?

Customer’s perspective: What is the gap between perceived quality and expected quality?

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